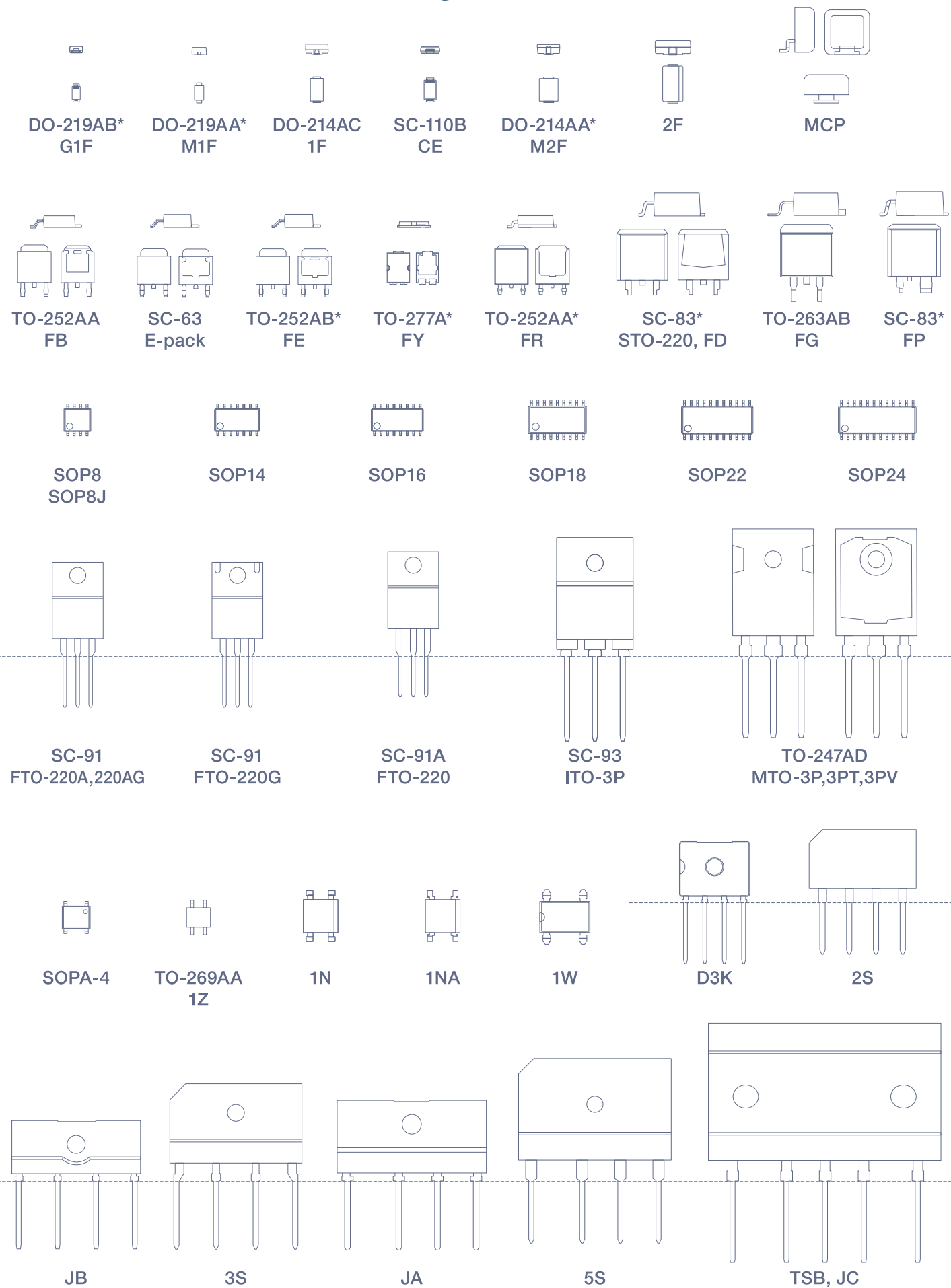
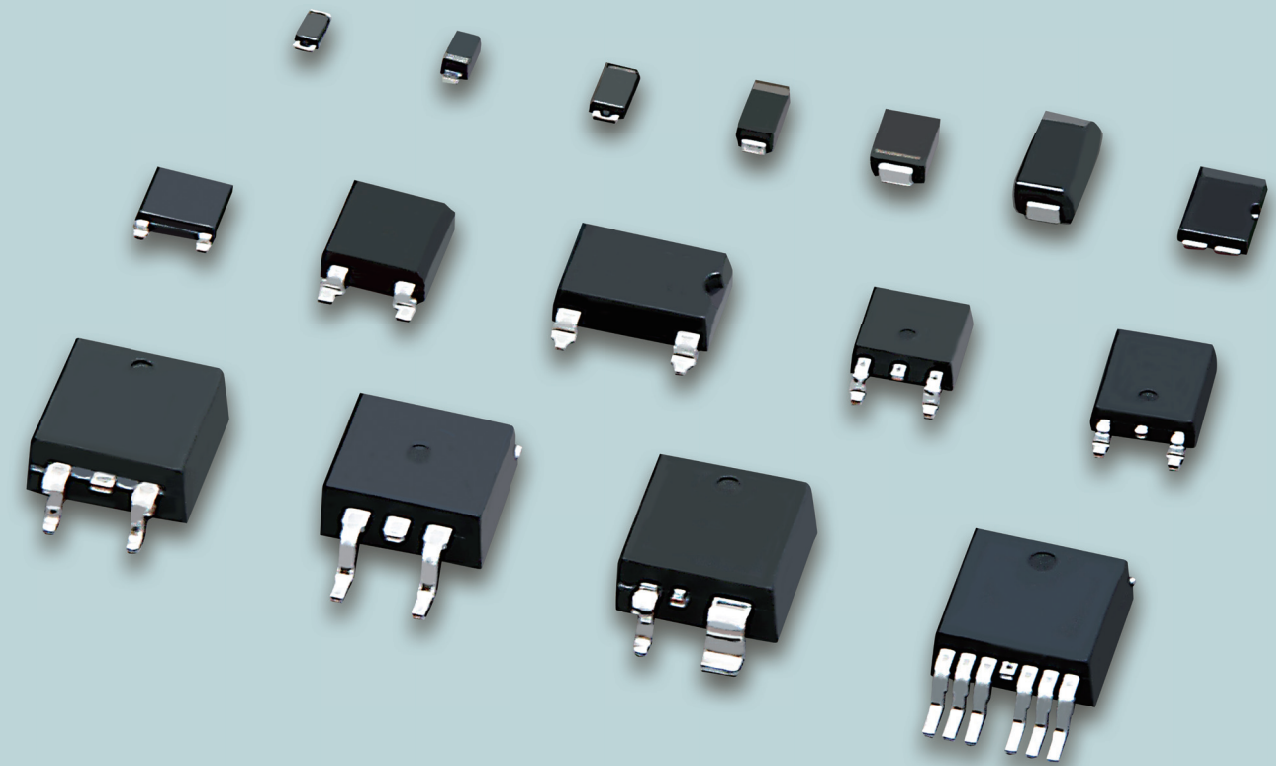


Package Outline

* = Similar Package



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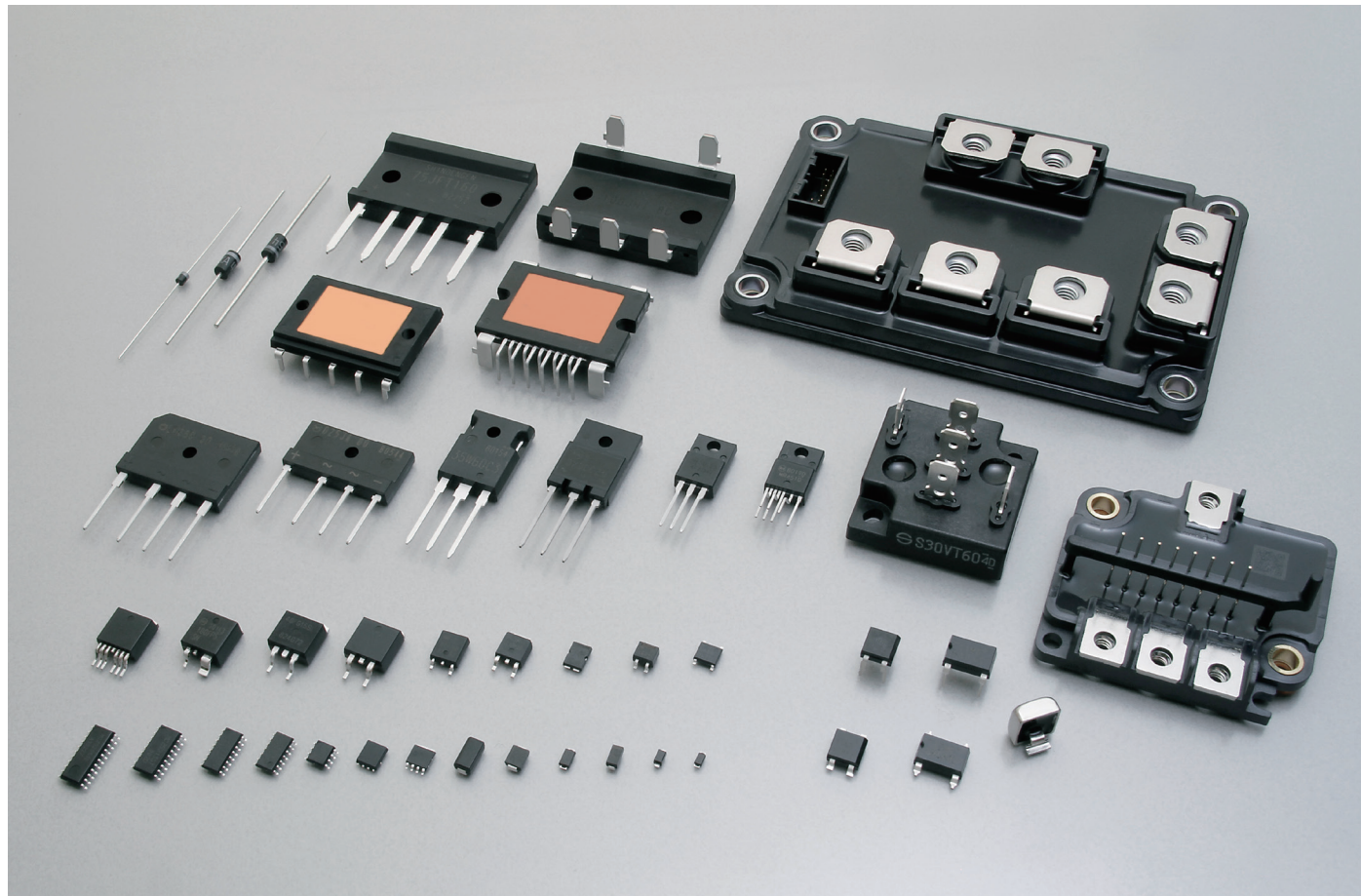
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SALES OFFICES

U.S.A.

Shindengen America, Inc. www.shindengen.com/

2333 Waukegan Road Suite250, Bannockburn, IL.60015. U.S.A
Phone:+1-847-444-1363 FAX:+1-847-444-0654

Europe

Shindengen UK Ltd. www.shindengen.co.eu/

Head Office
Unit 1, 1 Tapper Walk, King's Cross, London, N1C 4AQ U.K.
Phone:+44-20-3829-6980 FAX:+44-20-3725-6855

German Branch
Prinzenallee 1, 40549 Düsseldorf, Germany
Phone:+49-211-5206-590 FAX:+49-211-4986-499

Asia

Shindengen Singapore PTE Ltd.

750d, Chai Chee Road, #05-01,
Viva Business Park, Singapore 469004
Phone:+65-6445-0082 FAX:+65-6445-6089

Shindengen (H.K.) Co., Ltd.

Head Office
Suite 2006B, 20/F., Exchange Tower, 33 Wang Chiu Road,
Kowloon Bay, HK
Phone:+852-2317-1884 FAX:+852-2314-8561

Taiwan Representative Office
20Fl, No.85, Sec.1, Jhongsiao E. Road, Taipei, 10049,
Taiwan, R.O.C.
Phone:+886-2-2321-3990 FAX:+886-2-2358-3991

Shindengen (SHANGHAI) Electric Co., Ltd.

Room1506, Sheng Gaolnt'l Building, 137 Xian Xia Road,
Chang Ning, Shanghai, China
Phone:+86-21-6270-8000 FAX:+86-21-6270-0419

Shindengen Electric Mfg. Co., Ltd.

Seoul Office
B701-4. 230, Simin-daero, Dongan-gu, Anyang-si,
Gyeonggi-do, 14067 Korea
Phone:+82-31-385-1431 FAX:+82-31-385-1430

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Japan

Shindengen Electric MFG. Co., Ltd. www.shindengen.co.jp/

Head Office
New-Ohtemachi Bldg., 2-2-1, Ohtemachi, Chiyoda-ku,
Tokyo 100-0004, Japan
Phone:+81-3-3279-4431 FAX:+81-3-3279-6478

Osaka Branch Office
Minami Senba Heart Bldg., 2-3-2, Minami-Senba,
Chuo-ku, Osaka City, Osaka 542-0081, Japan
Phone:+81-6-6264-7770 FAX:+81-6-6260-1222

Nagoya Branch Office
Nagoya Daiichi Bldg., 1-19-24, Nishiki, Naka-ku,
Nagoya City, Aichi 460-0003, Japan
Phone:+81-52-221-1361 FAX:+81-52-201-4780

Hamamatsu branch
Hamamatsu Daiichi Seimei Nittsu Bldg., 110-5, Itaya-cho,
Naka-ku, Hamamatsu City, Shizuoka 430-0928, Japan
Phone:+81-53-450-3800 FAX:+81-53-450-3801

Utsunomiya Sales Office
Flora Bldg., 1-9-15 Higashi Syukugou Utsunomiya City,
Tochigi 321-0953, Japan
Phone:+81-28-637-3615 FAX:+81-28-637-3115

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P15F60HP2	54	P40F10SN	52	P94FG5R5SL	52	S2VB60	16	S30VT80	18	SG15SC4M	28	ST02DH-320	48		
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P15FH60HP2	54	P40LF12SL	50	P98LF6QLK	50	S3K60	32	S30VTA60	18	SG20JC6M	28	ST03-47F1	46		
P15LA12SL	50	P40LF12SLK	50	P98LF6QN	50	S3L20U	32	S30VTA80	18	SG20LC20USM	36	ST03-58F1	46		
P16B6SB	50	P40LF12SN	50	P98LF6QNK	50	S3L40U	32	S30VTA160	18	SG20SC3LM	28	ST03-68F1	46		
P17F28HP2	54	P40LF12SNK	50	P100FA7R5EN	52	S3L60	32	S40HC1R5T	28	SG20SC4M	28	ST03-240F1	46		
P18LA12SL	50	P42F6EN	52	P100FH4ENK	52	S3V60	8	S40T15V	24	SG20SC6M	28	ST03D-82	48		
P19LA10SL	50	P46LF7R5SL	50	P100FP12SN	52	S3V80	8	S50VB60	16	SG20SC9M	28	ST03D-140	48		
P20B12SL	50	P46LF7R5SLK	50	P100FP12SNK	52	S3V100D	8	S50VB80	16	SG20TC10M	28	ST03D-170	48		
P20B12SN	50	P46LF7R5SN	50	P105LF4QL	50	S3WB60	16	S60HC1R5T	28	SG20TC12M	28	ST03D-200	48		
P20F50HP2	54	P46LF7R5SNK	50	P105LF4QLK	50	S4VB60	16	S60HC3T	28	SG20TC15M	28	ST03DH-240	48		
P20FE12SLK	52	P50F10SN	52	P105LF4QN	50	S5VB60	16	S60JC10V	28	SG30JC6M	28	ST04-12F1	46		

INDEX











GENERAL RECTIFYING DIODES

General Rectifying Diodes are defined as high-voltage and PN junction type devices.




These devices utilize our original glass passivation which is physically stable with a superior structure for resistance against heat and humidity.

Variations are available for breakdown voltage up to 800V and output current from 1 to 30A.

Single

Surface Mount		JEDEC Code JEITA Code House Name	Fig.	IF(AV) [A]	VRRM [V]			Remarks
Package					400	600	800	
	3.9 × 1.8 × 1.4(mm)	DO-219AA similar M1F	B2	1	M1F60 M1FE60	M1F80		
				2	M1FE40			
	5.0 × 2.5 × 2.0(mm)	DO-214AC 1F	B3-1	1	D1F60 D1FE60 LN1F60			
				1.1				
				1.2	D1F60A			
	4.7 × 2.4 × 0.98(mm)	SC-110B CE	B5-1	3	D3CE60V		① ← → ②	
				3.5	D3CE60VE			
	5.1 × 3.75 × 2.0(mm)	DO-214AA similar M2F	B6	1.2	M2F60			
				3	M3FE40 M3F60 M3FE60			
	7.6 × 4.0 × 2.8(mm)	SC-63 E-pack	B9-1	1.4	D2F60			
				3	D3F60 D3FE60			
				4	D4F60			
				5	D5FE60			
	9.5 × 6.6 × 2.65(mm)	SC-63 E-pack	G1-5	5	DE5VE40		① ④ ② ③ N.C.	
	6.5 × 4.5 × 1.1(mm)	TO-277A similar FY	G4	10	D10FY60VE		① ② ③	
	9.6 × 6.6 × 2.3(mm)	TO-252AA similar FR	G5	10	D10FR60V		① N.C. ② ④ ③	
				15	D15FR60V			
	13.2 × 10.2 × 4.7(mm)	SC-83 similar STO-220	H1-2	25	DF25V60		① ② ④ ③	
	13.2 × 10.2 × 4.6(mm)	SC-83 similar FD	H2-1	25	D25FD60V		① N.C. ② ④ ③	

■ : New product

Axial		JEDEC Code JEITA Code House Name	Fig.	IF(AV) [A]	VRRM [V]			Remarks
Package					400	600	800	
	3.0 × φ 2.6(mm)	AX057	A1	1	D1N60	D1N80	① ← → ②	
	7.0 × φ 4.4(mm)	AX10	A5-1	1.7	S2V60	S2V80		
	7.0 × φ 4.4(mm)	AX14	A7	3	S3V60	S3V80		

Single

Surface Mount		JEDEC Code JEITA Code House Name	Fig.	Type No.	Absolute Maximum Ratings				Electrical Characteristics				Based on AEC-Q101	Automotive	
Package					IF (AV) [A]	Conditions Ta [°C]	IFSM [A]	VRRM [V]	Tj [°C]	Vf (max) [V]	Conditions IF [A]	Ir (max) Vr=VRRM [μA]			VESD (typ) [kV]
DO-219AA similar M1F	B2			M1F60	1	25	25	600	150	1.10	1	10	—	—	○
				M1FE60	1	129 *1	30	600	150	1.10	1	10	25	○	○
				M1F80	1	25	25	800	150	1.10	1	10	—	—	○
				M1FE40	2	103 *2	25	400	150	1.10	1	10	—	—	○
DO-214AC 1F	B3-1			D1F60	1	25	25	600	150	1.10	1	10	—	—	○
				D1FE60	1	126 *1	30	600	150	1.10	1	10	25	○	○
				LN1F60 *3	1.1	25	25	600	150	1.05	0.8	10	—	—	—
SC-110B CE	B5-1			D1F60A	1.2	25	45	600	150	0.97	1.2	10	—	—	○
				D3CE60V	3	101 *1	50	600	150	1.10	3	10	—	—	○
DO-214AA similar M2F	B6			D3CE60VE	3.5	93 *1	60	600	-55 to 150	1.10	3.5	10	25	○	■
				M2F60	1.2	51	50	600	150	0.97	1.2	10	—	—	○
				M3FE40	3	76 *1	75	400	150	1.10	3	10	30	—	○
				M3F60	3	100 *1	90	600	150	1.05	3	10	—	—	○
SC-63 E-pack	B9-1			M3FE60	3	76 *1	90	600	150	1.05	3	10	25	○	○
				D2F60	1.4	25	60	600	150	1.05	1.4	10	—	—	○
				D3F60	3	80 *1	150	600	150	1.05	3	10	—	—	○
				D3FE60	3	105 *1	150	600	150	1.05	3	10	25	○	○
TO-277A similar FY	G4			D4F60	4	68 *1	200	600	150	0.95	4	10	—	—	○
				D5FE60	5	82 *1	300	600	150	0.95	5	10	25	○	○
				DE5VE40	5	130 *2	80	400	150	1.00	5	10	30	—	■
TO-252AA similar FR	G5			D10FY60VE	10	120 *1	220	600	-55 to 150	1.10	10	10	25	○	○
				D10FR60V	10	130 *2	200	600	-55 to 150	1.05	10	10	—	—	■
SC-83 similar STO-220	H1-2			D15FR60V	15	125 *2	300	600	-55 to 150	1.05	15	10	—	—	■
				DF25V60	25	136 *2	400	600	150	1.10	25	10	—	—	—
SC-83 similar FD	H2-1			D25FD60V	25	113 *2	450	600	150	1.10	25	10	—	○	○


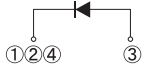
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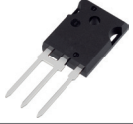

Axial		JEDEC Code JEITA Code House Name	Fig.	Type No.	Absolute Maximum Ratings				Electrical Characteristics				Based on AEC-Q101	Automotive	
Package					IF (AV) [A]	Conditions Ta [°C]	IFSM [A]	VRRM [V]	Tj [°C]	Vf (max) [V]	Conditions IF [A]	Ir (max) Vr=VRRM [μA]			VESD (typ) [kV]
AX057	A1			D1N60	1	25	30	600	150	1.05	1	10	—	—	—
				D1N80	1	25	30	800	150	1.05	1	10	—	—	—
AX10	A5-1			S2V60	1.7	40	60	600	150	1.05	1.7	10	—	—	—
				S2V80	1.7	40	60	800	150	1.05	1.7	10	—	—	—
AX14	A7			S3V100D	3	130 *1	150	800	150	1.05	3	10 *2	—	—	—
				S3V60	3.5	40	120	600	150	1.05	2.6	10	—	—	—
				S3V80	3.5	40	120	800	150	1.05	2.6	10	—	—	—

*1 : Tl *2 : Vr=1000V

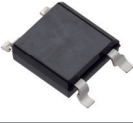
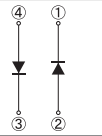

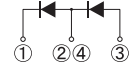
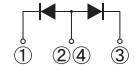
GENERAL RECTIFYING DIODES

Single


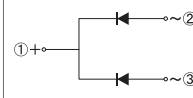
Two Terminal Type							
Package	JEDEC Code JEITA Code House Name	Fig.	IF(AV) [A]	VRRM [V]			Remarks
				400	600	800	
 41.0 × 16.0 × 5.0(mm)	TO-247AD - MTO-3PT	K2	30		S30V60T		

Three Terminal Type							
Package	JEDEC Code JEITA Code House Name	Fig.	IF(AV) [A]	VRRM [V]			Remarks
				400	600	800	
 41.0 × 16.0 × 5.0(mm)	TO-247AD - MTO-3PV	K6	30		S30V80V		

Array

Surface Mount							
Package	JEDEC Code JEITA Code House Name	Fig.	IF(AV) [A]	VRRM [V]			Remarks
				400	600	800	
 10.0 × 6.8 × 2.6(mm)	- 1NA	C6-2	3		S1NAD80		
 13.2 × 10.2 × 4.7(mm)	- SC-83 similar STO-220	H1-5	5		DF5VD60		
			15		DF15VD60		
		H1-7	16		DF16VC60R		

Diode Module

Diode Module							
Package	JEDEC Code JEITA Code House Name	Fig.	IF(AV) [A]	VRRM [V]			Remarks
				400	600	800	
 22.3 × 22.3 × 25.0(mm)	- D30VC	E2	30		D30VC60		

Single

Two Terminal Type													
Package		Type No.	Absolute Maximum Ratings					Electrical Characteristics				Based on AEC-Q101	Automotive
JEDEC Code JEITA Code House Name	Fig.		IF (AV) [A]	Conditions Tc [°C]	IFSM [A]	VRRM [V]	Tj [°C]	Vf (max) [V]	Conditions IF [A]	Ir (max) Vr=VRRM [μA]	VESD (typ) [kV]		
TO-247AD - MTO-3PT	K2	S30V60T	30	119	360	600	150	1.1	30	10	-	-	-

Three Terminal Type													
Package		Type No.	Absolute Maximum Ratings					Electrical Characteristics				Based on AEC-Q101	Automotive
JEDEC Code JEITA Code House Name	Fig.		IF (AV) [A]	Conditions Tc [°C]	IFSM [A]	VRRM [V]	Tj [°C]	Vf (max) [V]	Conditions IF [A]	Ir (max) Vr=VRRM [μA]	VESD (typ) [kV]		
TO-247AD - MTO-3PV	K6	S30V80V	30	131	450	800	150	1.1	30	10	-	-	○

Array

Surface Mount													
Package		Type No.	Absolute Maximum Ratings					Electrical Characteristics				Based on AEC-Q101	Automotive
JEDEC Code JEITA Code House Name	Fig.		IF (AV) [A]	Conditions Tc [°C]	IFSM [A]	VRRM [V]	Tj [°C]	Vf (max) [V]	Conditions IF [A]	Ir (max) Vr=VRRM [μA]	VESD (typ) [kV]		
- 1NA	C6-2	S1NAD80	3	102 *	110	800	150	1.05	0.75	10	-	-	-
- SC-83 similar STO-220	H1-5	DF5VD60	5	140	140	600	150	1.05	2.50	10	-	-	-
		DF15VD60	15	127	190	600	150	1.05	7.50	10	-	-	-
	H1-7	DF16VC60R	16	124	190	600	150	1.05	8.00	10	-	-	-

* : Tl

Diode Module


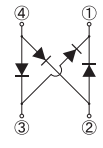





Diode Module													
Package		Type No.	Absolute Maximum Ratings					Electrical Characteristics				Based on AEC-Q101	Automotive
JEDEC Code JEITA Code House Name	Fig.		IF (AV) [A]	Conditions Tc [°C]	IFSM [A]	VRRM [V]	Tj [°C]	Vf (max) [V]	Conditions IF [A]	Ir (max) Vr=VRRM [μA]	VESD (typ) [kV]		
- D30VC	E2	D30VC60	30	124	300	600	150	1.05	15	10	-	-	-


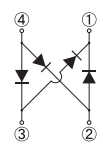




BRIDGE DIODES

Bridge Diodes are suitable for the rectification of commercial voltage.

Variations are available for various packaging as well as high voltage (Max 1600V), high IFSM, low VF, and low noise.

Small Bridge Diodes

Surface Mount							
Package	JEDEC Code JEITA Code House Name	Fig.	IF(AV) [A]	VRRM [V]			Remarks
				600	800	1000	
 7.0 × 4.7 × 2.6(mm)	TO-269AA 1Z	C2-1	0.8	S1ZB60	S1ZB80		
 6.2 × 5.15 × 1.45(mm)	SOPA-4	C1	1		D1UBA80		
 10.0 × 6.8 × 2.6(mm)	1N	C4	1	S1NB60	S1NB80		
 10.0 × 6.8 × 2.6(mm)	1NA	C6-1	1		S1NBB80		
 10.0 × 6.8 × 2.6(mm)	1NA	C6-1	1.5	S1NBC60	S1NBC80		
 10.6 × 10.2 × 3.1(mm)	1W	C8	1	S1WB(A)60 S1WB(A)60B	S1WB(A)80		
			2		S2WB(A)80		

THD (Through Hole Device)							
Package	JEDEC Code JEITA Code House Name	Fig.	IF(AV) [A]	VRRM [V]			Remarks
				600	800	1000	
 3.8 × 4.7 × 2.5(mm)	1Z	C3	0.8	S1ZB60	S1ZB80		
 6.5 × 6.8 × 2.5(mm)	1N	C5	1	S1NB60	S1NB80		
 6.5 × 6.8 × 2.5(mm)	1NA	C7	1		S1NBB80		
 6.5 × 6.8 × 2.5(mm)	1NA	C7	1.5	S1NBC60	S1NBC80		
 6.2 × 10.2 × 3.0(mm)	1W	C9	1	S1WB(A)60 S1WB(A)60B	S1WB(A)80		
			2		S2WB(A)80		

Small Bridge Diodes

Surface Mount													
Package		Type No.	Spec. Code	Absolute Maximum Ratings					Electrical Characteristics			UL	Automotive
JEDEC Code JEITA Code House Name	Fig.			IF (AV) [A]	Conditions Ta [°C]	IFSM [A]	VRRM [V]	Tj [°C]	Vf (max) [V]	Conditions IF [A]	IR (max) Vr=VRRM [μA]		
TO-269AA 1Z	C2-1	S1ZB60	-7072	0.8	25	30	600	150	1.05	0.4	10	--	--
		S1ZB80	-7072	0.8	25	30	800	150	1.05	0.4	10	--	--
SOPA-4	C1	D1UBA80	-7062	1	25	30	800	150	0.95	0.4	10	--	--
1N	C4	S1NB60	-7062	1	25	30	600	150	1.05	0.5	10	--	--
		S1NB80	-7062	1	25	30	800	150	1.05	0.5	10	--	--
1NA	C6-1	S1NBB80	-7062	1	26	50	800	150	1.05	0.5	10	--	--
		S1NBC60	-7062	1.5	105 *	60	600	150	1.05	0.75	10	--	--
		S1NBC80	-7062	1.5	105 *	60	800	150	1.05	0.75	10	--	--
1W	C8	S1WB(A)60	-7062	1	25	30	600	150	1.00	0.5	10	--	--
		S1WB(A)60B	-7062	1	25	50	600	150	1.00	0.5	10	--	--
		S1WB(A)80	-7062	1	25	30	800	150	1.00	0.5	10	--	--
		S2WB(A)80	-7062	2	112 *	50	800	-40 to 150	1.05	1	10	--	--

* : Tj









THD (Through Hole Device)													
Package		Type No.	Spec. Code	Absolute Maximum Ratings					Electrical Characteristics			UL	Automotive
JEDEC Code JEITA Code House Name	Fig.			IF (AV) [A]	Conditions Ta [°C]	IFSM [A]	VRRM [V]	Tj [°C]	Vf (max) [V]	Conditions IF [A]	IR (max) Vr=VRRM [μA]		
1Z	C3	S1ZB60	-7101	0.8	25	30	600	150	1.05	0.4	10	--	--
		S1ZB80	-7101	0.8	25	30	800	150	1.05	0.4	10	--	--
1N	C5	S1NB60	-7101	1	25	30	600	150	1.05	0.5	10	--	--
		S1NB80	-7101	1	25	30	800	150	1.05	0.5	10	--	--
1NA	C7	S1NBB80	-7101	1	26	50	800	150	1.05	0.5	10	--	--
		S1NBC60	-7101	1.5	105 *	60	600	150	1.05	0.75	10	--	--
		S1NBC80	-7101	1.5	105 *	60	800	150	1.05	0.75	10	--	--
1W	C9	S1WB(A)60	-7101	1	25	30	600	150	1.00	0.5	10	--	--
		S1WB(A)60B	-7101	1	25	50	600	150	1.00	0.5	10	--	--
		S1WB(A)80	-7101	1	25	30	800	150	1.00	0.5	10	--	--
		S2WB(A)80	-7101	2	112 *	50	800	-40 to 150	1.05	1	10	--	--

* : Tj

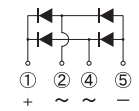
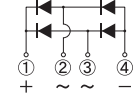
BRIDGE DIODES

BRIDGE DIODES


SIP (Single In-line Package) Bridge Diodes

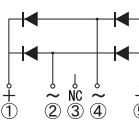
THD (Through Hole Device)							
Package	JEDEC Code JEITA Code House Name	Fig.	IF(AV) [A]	VRRM [V]			Remarks
				600	800	1000	
 24.0 × 13.8 × 3.1(mm)	-	D3K	D1	2	UD2KB80		
				3	UD3KB80		
				4	UD4KB80		
				6	UD6KBA80		
				8	UD8KBA80		
 24.5 × 20.0 × 3.5(mm)	-	2S	D2	1.5	D2SBA60 D2SB60		
				2	D2SB60A		
 25.2 × 25.0 × 4.2(mm)	-	JB	D5	6	D6JBB60V	D6JBB80V	
				8	D8JBB60V	D8JBB80V	
				10	D10JBB60V	D10JBB80V	
 32.5 × 25.0 × 4.6(mm)	-	3S	D3	4	D3SBA60 D3SB60 D4SB60L	D3SB80 D4SB80	
				10	D10XB60 D10XB60H	D10XB80	
 29.4 × 29.0 × 4.6(mm)	-	JA	D6	15	D15JAB60V	D15JAB80V	
				25	D25JAB60V	D25JAB80V	
 37.5 × 30.0 × 4.6(mm)	-	5S	D4	6	D5SBA60 D5SB60 D6SB60L	D5SB80 D6SB80	
				15	D15XB60 D15XB60H	D15XB80	D15XB100
				20	D20XB60	D20XB80	
				25	D25XB60	D25XB80	D25XB100
				35		 D35XB80	
 47.0 × 45.7 × 7.5(mm)	-	TSB(4pin)	D7	50		D50XB80	
				50		D50JCB80V	

 : New product











































DIP (Dual In-line Package) Bridge Diode

Package	JEDEC Code JEITA Code House Name	Fig.	IF(AV) [A]	VRRM [V]			Remarks
				600	800	1000	
 47.0 × 45.7 × 7.5(mm)	-	JH	D10-1	70	D70JHB80V		



SIP (Single In-line Package) Bridge Diodes

THD (Through Hole Device)												
Package		Type No.	Absolute Maximum Ratings				Electrical Characteristics			UL	Automotive	
JEDEC Code JEITA Code House Name	Fig.		IF (AV) [A]	Conditions Tc [°C]	IFSM [A]	VRRM [V]	Tj [°C]	Vf (max) [V]	Conditions IF [A]			Ir (max) VR=VRRM [μA]
-	D3K	UD2KB80	2	143	62	800	150	1.05	1	10		-
		UD3KB80	3	140	90	800	150	1.05	1.5	10		-
		UD4KB80	4	138	135	800	150	1.00	2	10		-
		UD6KBA80	6	131	135	800	150	1.05	3	10		-
		UD8KBA80	8	126	165	800	150	1.05	4	10		-
-	2S	D2SBA60	1.5	25 *1	60	600	150	1.05	0.75	10	-	-
		D2SB60	1.5	25 *1	80	600	150	1.05	0.75	10	-	-
		D2SB60A	2	115 *2	120	600	150	0.95	1	10	-	-
-	JB	D6JBB60V	6	131	100	600	150	1.05	3	10		-
		D6JBB80V	6	131	100	800	150	1.05	3	10		-
		D8JBB60V	8	130	130	600	150	1.05	4	10		-
		D8JBB80V	8	130	130	800	150	1.05	4	10		-
		D10JBB60V	10	129	150	600	150	1.05	5	10		-
-	3S	D3SBA60	4	108	80	600	150	1.05	2	10		-
		D3SB60	4	108	120	600	150	1.05	2	10		-
		D4SB60L	4	111	150	600	150	0.95	2	10		-
		D3SB80	4	108	120	800	150	1.05	2	10		-
		D4SB80	4	108	150	800	150	0.95	2	10		-
-	D6	D10XB60	10	100	120	600	150	1.10	5	10		-
		D10XB60H	10	112	170	600	150	1.05	5	10		-
		D10XB80	10	100	120	800	150	1.10	5	10		-
		D15JAB60V	15	110	200	600	150	1.05	7.5	10		-
		D15JAB80V	15	110	200	800	150	1.05	7.5	10		-
		D25JAB60V	25	107	350	600	150	1.05	12.5	10		-
		D25JAB80V	25	107	350	800	150	1.05	12.5	10		-
		D5SBA60	6	111	120	600	150	1.05	3	10		-
		D5SB60	6	110	170	600	150	1.05	3	10		-
		D6SB60L	6	112	170	600	150	1.05	3	10		-
-	D4	D5SB80	6	110	170	800	150	1.05	3	10		-
		D6SB80	6	110	170	800	150	1.05	3	10		-
		D15XB60	15	100	200	600	150	1.10	7.5	10		-
		D15XB60H	15	107	240	600	150	1.05	7.5	10		-
		D15XB80	15	100	200	800	150	1.10	7.5	10		-
		D15XB100	15	110	200	1000	150	1.10	7.5	10		-
		D20XB60	20	87	240	600	150	1.10	10	10		-
		D20XB80	20	87	240	800	150	1.10	10	10		-
		D25XB60	25	98	350	600	150	1.05	12.5	10		
		D25XB80	25	98	350	800	150	1.05	12.5	10		
-	D7	D50XB80	50	95	600	800	150	1.05	25	10		-
		D50JCB80V	50	94	600	800	150	1.05	25	10		


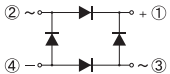






 : New product *1 : Ta *2 : Tl  : Please contact us.  : UL recognized (UL File No. E142422)

DIP (Dual In-line Package) Bridge Diode


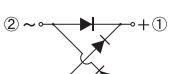



THD (Through Hole Device)												
Package		Type No.	Absolute Maximum Ratings				Electrical Characteristics			UL	Automotive	
JEDEC Code JEITA Code House Name	Fig.		IF (AV) [A]	Conditions Tc [°C]	IFSM [A]	VRRM [V]	Tj [°C]	Vf (max) [V]	Conditions IF [A]			Ir (max) VR=VRRM [μA]
-	JH	D70JHB80V	70	99	500	800	-55 to 150	1.1	35	10	-	-

BRIDGE DIODES


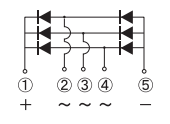




SQIP (Square In-line Package) Bridge Diodes

Package	JEDEC Code JEITA Code House Name	Fig.	IF(AV) [A]	VRRM [V]			Remarks
				600	800	1000	
 13.0 × 13.0 × 27.5(mm)	— S2VB	E3	2	S2VB60			
 17.0 × 17.0 × 32.5(mm)	— S4VB	E4	4	S4VB60			
 25.0 × 25.0 × 32.5(mm)	— S5VB	E5	6	S5VB60			
 22.0 × 22.0 × 32.5(mm)	— S10VB	E6	10	S10VB60			
 26.5 × 26.5 × 25.0(mm)	— S15VB	E7	15	S15VB60			
 32.0 × 32.0 × 25.0(mm)	— S25VB	E8	25	S25VB60	S25VB80		
 36.0 × 36.0 × 24.0(mm)	— S50VB	E9	50	S50VB60	S50VB80		

Input/Output In-line Terminal Type


Package	JEDEC Code JEITA Code House Name	Fig.	IF(AV) [A]	VRRM [V]			Remarks
				600	800	1000	
 17.0 × 17.0 × 31.0(mm)	— S3WB	E10	2.3	S3WB60			
 22.5 × 22.5 × 32.5(mm)	— S10WB	E11	10	S10WB60			
 26.5 × 26.5 × 32.5(mm)	— S15WB	E12	15	S15WB60			
 32.5 × 32.5 × 32.5(mm)	— S20WB	E13	20	S20WB60	S20WB80		

3 Phase Bridge Diodes

Package	JEDEC Code JEITA Code House Name	Fig.	IF(AV) [A]	VRRM [V]			Remarks
				800	1200	1600	
 47.0 × 45.7 × 7.5(mm)	— TSB(5pin)	D8	30	D30XT80			
			45	D45XT80		D45XT160	
 47.0 × 45.7 × 7.5(mm)	— JC(5pin)		30		D30JCT120V		
		45		D45JCT120V	D45JCT160V		
 47.0 × 45.7 × 7.5(mm)	— JF	D9	75	D75JFT80V			
 47.0 × 45.7 × 7.5(mm)	— JH	D10-2	100	D100JHT80V	D100JHT120V	 D100JHT160V	


 : New product

SQIP (Square In-line Package) Bridge Diodes

Package		Type No.	Absolute Maximum Ratings				Electrical Characteristics				UL	Automotive
JEDEC Code JEITA Code House Name	Fig.		IF(AV) [A]	Conditions Tc [°C]	IFSM [A]	VRRM [V]	Tj [°C]	Vf (max) [V]	Conditions IF [A]	Ir (max) Vr=VRRM [μA]		
— S2VB	E3	S2VB60	2 *1	40	40	600	150	1.05	1	10	—	—
— S4VB	E4	S4VB60	4	40	80	600	150	1.05	2	10	—	—
— S5VB	E5	S5VB60	6	40	200	600	150	1.05	3	10	—	—
— S10VB	E6	S10VB60	10	40	200	600	150	1.05	5	10	—	—
— S15VB	E7	S15VB60	15	83 *2	200	600	150	1.05	7.5	10	—	—
— S25VB	E8	S25VB60	25	85 *2	400	600	150	1.05	12.5	10	—	—
— S25VB80		S25VB80	25	85 *2	400	800	150	1.05	12.5	10	—	—
— S50VB	E9	S50VB60	50	95 *2	500	600	150	1.05	25	10	—	—
— S50VB80		S50VB80	50	95 *2	500	800	150	1.05	25	10		—











*1 : Without heatsink *2 : Tc  : UL recognized (UL File No. E142422)



Input/Output In-line Terminal Type

Package		Type No.	Absolute Maximum Ratings				Electrical Characteristics				UL	Automotive
JEDEC Code JEITA Code House Name	Fig.		IF(AV) [A]	Conditions Tc [°C]	IFSM [A]	VRRM [V]	Tj [°C]	Vf (max) [V]	Conditions IF [A]	Ir (max) Vr=VRRM [μA]		
— S3WB	E10	S3WB60	2.3	40 *	120	600	150	1.05	2	10	—	—
— S10WB	E11	S10WB60	10	74	170	600	150	1.05	5	10	—	—
— S15WB	E12	S15WB60	15	77	200	600	150	1.05	7.5	10	—	—
— S20WB	E13	S20WB60	20	76	500	600	150	1.05	10	10	—	—
— S20WB80		S20WB80	20	76	500	800	150	1.05	10	10		—

* : Ta  : UL recognized (UL File No. E142422)

3 Phase Bridge Diodes


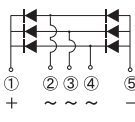

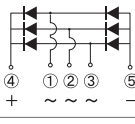


Package		Type No.	Absolute Maximum Ratings				Electrical Characteristics				UL	Automotive
JEDEC Code JEITA Code House Name	Fig.		IF(AV) [A]	Conditions Tc [°C]	IFSM [A]	VRRM [V]	Tj [°C]	Vf (max) [V]	Conditions IF [A]	Ir (max) Vr=VRRM [μA]		
— TSB(5pin)	D8	D30XT80	30	117	300	800	150	1.05	10	10		—
		D45XT80	45	101	400	800	150	1.05	15	10		—
		D45XT160	45	97	330	1600	150	1.05	15	100		—
— JC(5pin)		D30JCT120V	30	116	300	1200	150	1.05	10	10		—
		D45JCT120V	45	99	450	1200	150	1.05	15	10		—
	D45JCT160V	45	97	450	1600	150	1.05	15	10		—	
— JF	D9	D75JFT80V	75	109	400	800	150	1.05	25	10	—	—
— JH	D10-2	D100JHT80V	100	99	500	800	-55 to 150	1.10	35	10		—
		D100JHT120V	100	92	450	1200	-55 to 150	1.17	35	10		—
		 D100JHT160V	100	92	540	1600	-55 to 150	1.15	35	10		—

 : New product  : UL recognized (UL File No. E142422)

BRIDGE DIODES


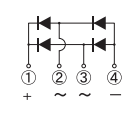


Series	Feature
S	Evenly balanced VF and Ir
N	Low VF, High Voltage
K	Low VF

3 Phase Bridge Diodes


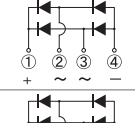

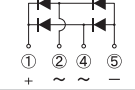
Package	JEDEC Code JEITA Code House Name	Fig.	IF(AV) [A]	VRRM [V]			Remarks
				600	800	1600	
 36.0 × 36.0 × 24.0(mm)	-	SVT	E15	10	S10VT60	S10VT80	
				15	S15VT60	S15VT80	
				20	S20VT60	S20VT80	
				30	S30VT60	S30VT80	
 36.0 × 36.0 × 23.0(mm)	-	SVTA	E14	10	S10VTA60	S10VTA80	
				15	S15VTA60	S15VTA80	
				20	S20VTA60	S20VTA80	
				30	S30VTA60	S30VTA80	
 89.0 × 50.0 × 16.6(mm)	-	-	F7	150	MG038B150080A	★MG038D150160A	
				200	MG038A200080A	★MG038C200160A	

■ : New product ★ : Under development

High Speed Bridge Diodes (SBD)

THD (Through Hole Device)							
Package	JEDEC Code JEITA Code House Name	Fig.	IF(AV) [A]	VRRM [V]			Remarks
				40	60	200	
 32.5 × 25.0 × 4.6(mm)	-	D3	4	D4SBS4	D4SBS6	D4SBN20	
			10	D10SBS4			
			15		D15XBS6		
 37.5 × 30.0 × 4.6(mm)	-	D4	6			D6SBN20	
			15			D15XBN20	
			20		D20XBS6		
			30			D30XBN20	

High Speed Bridge Diodes (FRD)

THD (Through Hole Device)							
Package	JEDEC Code JEITA Code House Name	Fig.	IF(AV) [A]	VRRM [V]			Remarks
				200	400	1000	
 32.5 × 25.0 × 4.6(mm)	-	D3	4	D4SBL20U			
 47.0 × 45.7 × 7.5(mm)	-	D7	30			D30JCB100K	

3 Phase Bridge Diodes

Package JEDEC Code JEITA Code House Name	Fig.	Type No.	Absolute Maximum Ratings					Electrical Characteristics			UL	Automotive
			IF (AV) [A]	Conditions Tc [°C]	IFSM [A]	VRRM [V]	Tj [°C]	Vf (max) [V]	Conditions IF [A]	Ir (max) Vr=VRRM [μA]		
-	E15	S10VT60	10	137	170	600	150	1.05	3.5	10	-	-
		S10VT80	10	137	150	800	150	1.05	3.5	10	-	-
		S15VT60	15	132	200	600	150	1.05	5	10	-	-
		S15VT80	15	132	200	800	150	1.05	5	10	-	-
		S20VT60	20	128	300	600	150	1.05	7	10	-	-
		S20VT80	20	128	300	800	150	1.05	7	10	-	-
		S30VT60	30	121	400	600	150	1.05	10	10	-	-
		S30VT80	30	121	400	800	150	1.05	10	10	UL	-
-	E14	S10VTA60	10	137	170	600	150	1.05	3.5	10	-	-
		S10VTA80	10	137	150	800	150	1.05	3.5	10	-	-
		S15VTA60	15	132	200	600	150	1.05	5	10	-	-
		S15VTA80	15	132	200	800	150	1.05	5	10	-	-
		S20VTA60	20	128	300	600	150	1.05	7	10	-	-
		S20VTA80	20	128	300	800	150	1.05	7	10	-	-
		S30VTA60	30	121	400	600	150	1.05	10	10	-	-
		S30VTA80	30	121	400	800	150	1.05	10	10	-	-
-	F7	MG038B150080A	150	125	2350	800	150	1.05	67	10	UL	-
		★MG038D150160A	150	125	2350	1600	150	1.05	50	10	to be certified	-
		MG038A200080A	200	125	2750	800	150	1.05	67	10	UL	-
		★MG038C200160A	200	125	2750	1600	150	1.05	50	10	to be certified	-

■ : New product ★ : Under development UL : UL recognized (UL File No. E142422)

High Speed Bridge Diodes (SBD)

THD (Through Hole Device)													
Package JEDEC Code JEITA Code House Name	Fig.	Type No.	Absolute Maximum Ratings					Electrical Characteristics			UL	Automotive	Remarks
			IF (AV) [A]	Conditions Tc [°C]	IFSM [A]	VRRM [V]	Tj [°C]	Vf (max) [V]	Conditions IF [A]	Ir (max) Vr=VRRM [μA]			
-	D3	D4SBS4	4	116	60	40	150	0.55	2	2mA	-	-	S series
		D4SBS6	4	114	60	60	150	0.62	2	2mA	-	-	S series
		D4SBN20	4	103	60	200	150	0.90	2	1.5	-	-	N series
		D10SBS4	10	67	100	40	150	0.55	5	3.5mA	-	-	S series
		D15XBS6	15	59	150	60	150	0.63	7.5	6.0mA	-	-	S series
-	D4	D6SBN20	6	110	120	200	150	0.90	3	2	-	-	N series
		D15XBN20	15	106	200	200	150	0.90	7.5	5	-	-	N series
		D20XBS6	20	100	200	60	150	0.63	10	8.0mA	-	-	S series
-	-	D30XBN20	30	91	350	200	150	0.90	15	10	-	-	N series

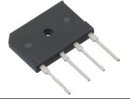
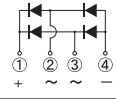
High Speed Bridge Diodes (FRD)

THD (Through Hole Device)													
Package JEDEC Code JEITA Code House Name	Fig.	Type No.	Absolute Maximum Ratings					Electrical Characteristics			UL	Automotive	Remarks
			IF (AV) [A]	Conditions Tc [°C]	IFSM [A]	VRRM [V]	Tj [°C]	Vf (max) [V]	Conditions IF [A]	Ir (max) Vr=VRRM [μA]			
-	D3	D4SBL20U	4	108	80	200	150	0.98	2	10	-	-	
-	D7	D30JCB100K	30	90	450	1000	150	1.90	15	10	UL	○	K series


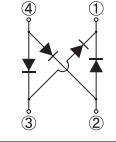
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BRIDGE DIODES


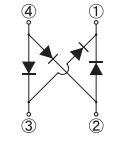

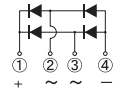

Low Vf Bridge Diodes

THD (Through Hole Device)							
Package	JEDEC Code JEITA Code House Name	Fig.	IF(AV) [A]	VRRM [V]			Remarks
				600	800	1000	
 37.5 × 30.0 × 4.6(mm)	— — 5S	D4	15	LL15XB60			
			25	LL25XB60			

Low Noise Bridge Diodes

Surface Mount							
Package	JEDEC Code JEITA Code House Name	Fig.	IF(AV) [A]	VRRM [V]			Remarks
				600	800	1000	
 10.6 × 10.2 × 3.1(mm)	— — 1W	C8	1.1	LN1WBA60			

THD (Through Hole Device)

Package	JEDEC Code JEITA Code House Name	Fig.	IF(AV) [A]	VRRM [V]			Remarks
				600	800	1000	
 6.2 × 10.2 × 3.0(mm)	— — 1W	C9	1.1	LN1WBA60			
 32.5 × 25.0 × 4.6(mm)	— — 3S	D3	4	LN4SB60			
 37.5 × 30.0 × 4.6(mm)	— — 5S	D4	6	LN6SB60			
			15	LN15XB60 LN15XB60H			
			25	LN25XB60			

Low Vf Bridge Diodes

THD (Through Hole Device)													
Package		Type No.	Absolute Maximum Ratings				Electrical Characteristics				UL	Automotive	
JEDEC Code JEITA Code House Name	Fig.		IF (AV) [A]	Conditions Tc [°C]	IFSM [A]	VRRM [V]	Tj [°C]	Vf (max) [V]	Conditions IF [A]	Ir (max) Vr=VRRM [μA]			trr (max) [μs]
—	D4	LL15XB60	15	124	200	600	150	0.90	7.5	10	3	UL	—
5S		LL25XB60	25	113	300	600	150	0.92	12.5	10	3	UL	■

■ : Please contact us. UL : UL recognized (UL File No. E142422)





Low Noise Bridge Diodes

Surface Mount:THD (Through Hole Device)														
Package		Type No.	Absolute Maximum Ratings				Electrical Characteristics				UL	Automotive	Remarks	
JEDEC Code JEITA Code House Name	Fig.		IF (AV) [A]	Conditions Tc [°C]	IFSM [A]	VRRM [V]	Tj [°C]	Vf (max) [V]	Conditions IF [A]	Ir (max) Vr=VRRM [μA]				trr (max) [μs]
—	C8(SMD) C9(DIP)	LN1WBA60	1.1	25 *	50	600	150	1.00	0.55	10	5	—	—	SMD-7072 DIP-7101
1W														
—	D3	LN4SB60	4	111	150	600	150	0.95	2	10	5	UL	—	
—	D4		6	111	170	600	150	1.05	3	10	5	UL	—	
—			15	100	200	600	150	1.10	7.5	10	5	—	—	
—			15	106	290	600	150	1.05	7.5	10	5	—	—	
5S			25	85	350	600	150	1.05	12.5	10	5	—	—	

* : Ta UL : UL recognized (UL File No. E142422)

SCHOTTKY BARRIER DIODES

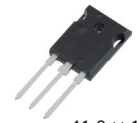

Single

Axial						
Package	JEDEC Code JEITA Code House Name	Fig.	IF(AV) [A]	VRRM[V]		Remarks
				40	60	
 3.0 x φ 2.6(mm)	— — AX057	A1	1	D1NS4	D1NS6	
 5.0 x φ 4.0(mm)	— — AX078	A4-1	2	D2S4M	D2S6M	
 7.0 x φ 4.4(mm)	— — AX14	A7	3	D3S4M	D3S6M	

Two Terminal Type

Package	JEDEC Code JEITA Code House Name	Fig.	IF(AV) [A]	VRRM[V]				Remarks
				40	60	90	150	
 28.5 x 10.0 x 4.5(mm)	— SC-91 FTO-220G	J4	5	SG5S4M	SG5S6M	SG5S9M		

Three Terminal Type

Package	JEDEC Code JEITA Code House Name	Fig.	IF(AV) [A]	VRRM[V]				Remarks
				40	60	90	150	
 41.0 x 16.0 x 5.0(mm)	TO-247AD — MTO-3PV	K7-2	40				S40T15V	
			90				S90T15V	

Single

Axial														
Package		Type No.	Absolute Maximum Ratings					Electrical Characteristics				Based on AEC-Q101	Automotive	Series
JEDEC Code JEITA Code House Name	Fig.		VRRM [V]	IF (AV) [A]	Conditions Ta [°C]	IFSM [A]	Tj [°C]	Vf (max) [V]	Conditions IF [A]	Ir (max) Vr=VRRM [mA]	Ct (typ) [pF]			
— — AX057	A1	D1NS4	40	1	59	30	150	0.55	1	0.8	50	—	—	S series
— — AX078	A4-1	D1NS6	60	1	46	30	150	0.58	1	1	53	—	—	S series
— — —	A7	D2S4M	40	2	122 *1	60	150	0.55	2	2	95	—	—	S series
— — —		D2S6M	60	2	119 *1	60	150	0.58	2	2	90	—	—	S series
— — —	A7	D3S4M	40	3	63	80	150	0.55	3	3.5	150	—	—	S series
— — AX14		D3S6M	60	3	133 *1	80	150	0.58	3	2.5	130	—	—	S series

*1 : Tj

Two Terminal Type




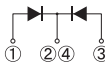

Two Terminal Type														
Package		Type No.	Absolute Maximum Ratings					Electrical Characteristics				Based on AEC-Q101	Automotive	Series
JEDEC Code JEITA Code House Name	Fig.		VRRM [V]	IF (AV) [A]	Conditions Tc [°C]	IFSM [A]	Tj [°C]	Vf (max) [V]	Conditions IF [A]	Ir (max) Vr=VRRM [mA]	Ct (typ) [pF]			
— SC-91 FTO-220G	J4	SG5S4M	40	5	131	150	150	0.52	5	0.5	157	—	—	S series
— — —	J4	SG5S6M	60	5	130	120	150	0.56	5	0.5	165	—	—	S series
— — —		SG5S9M	90	5	124	90	150	0.75	5	0.5	140	—	—	S series

Three Terminal Type

Three Terminal Type														
Package		Type No.	Absolute Maximum Ratings					Electrical Characteristics				Based on AEC-Q101	Automotive	Series
JEDEC Code JEITA Code House Name	Fig.		VRRM [V]	IF (AV) [A]	Conditions Tc [°C]	IFSM [A]	Tj [°C]	Vf (max) [V]	Conditions IF [A]	Ir (max) Vr=VRRM [mA]	Ct (typ) [pF]			
TO-247AD	K7-2	S40T15V	150	40	131	700	150	0.92	40	0.12	595	—	○	N series
MTO-3PV		S90T15V	150	90	122	1400	150	0.95	90	0.35	1690	—	○	N series

SCHOTTKY BARRIER DIODES

Center Tap, Common Cathode

Surface Mount											Remarks	
Package	JEDEC Code JEITA Code House Name	Fig.	IF (AV) [A]	VRRM[V]						Remarks		
				30	40	60	90	100	120			150
 9.5 × 6.6 × 2.65(mm)	— SC-63 E-pack	G1-1	5	DE55C3ML	DE55C4M	DE55C6M						
			10	DE10SC3L	DE10SC4							
 9.5 × 6.6 × 2.65(mm)	TO-252AB similar SC-63 FE	G3-1	6		D6FEC4ST				D6FEC10ST	D6FEC12ST	D6FEC15ST	
 13.2 × 10.2 × 4.7(mm)	— SC-83 similar STO-220	H1-1	10		DF10SC4M	DF10SC6	DF10SC9				DF10NC15	
			15		DF15SC4M			DF15JC10		DF15NC15		
			20		DF20SC4M		DF20SC9M	DF20JC10		DF20NC15		
			25			DF25SC6M						
			30	DF30SC3ML	DF30JC4 DF30SC4M	DF30JC6		DF30JC10		DF30NC15		
 13.2 × 10.2 × 4.6(mm)	— SC-83 similar FD	H2-2	10						D10FDC10ST			
			20						D20FDC10ST		D20FDC15ST	
			30		D30FDC4S				D30FDC10ST		D30FDC15ST	
			40						D40FDC10ST		D40FDC15ST	

Center Tap, Common Cathode


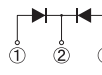

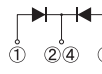

Surface Mount															
JEDEC Code JEITA Code House Name	Package	Fig.	Type No.	Absolute Maximum Ratings				Electrical Characteristics				Based on AEC-Q101	Automotive	Series	
				VRRM [V]	IF (AV) [A]	Conditions Tc [°C]	IFSM [A]	Tj [°C]	Vf (max) [V]	Conditions IF [A]	Ir (max) Vr=VRRM [mA]				Ct (typ) [pF]
— SC-63 E-pack	G1-1		DE55C3ML	30	5	110	90	150	0.45	2.5	3.5	190	—	■	S series
			DE55C4M	40	5	101	80	150	0.55	2.5	3.5	150	—	■	S series
			DE55C6M	60	5	92	80	150	0.58	2.5	2.5	130	—	■	S series
			DE10SC3L	30	10	124	100	150	0.45	4	5	290	—	■	S series
TO-252AB similar SC-63 FE	G3-1		D6FEC4ST	40	6	158	90	175	0.74	3	8μA	93	○	○	SL series
			D6FEC10ST	100	6	154	100	175	0.86	3	8μA	60	○	○	SL series
			D6FEC12ST	120	6	154	100	175	0.87	3	8μA	60	○	○	SL series
			D6FEC15ST	150	6	154	100	175	0.88	3	8μA	52	○	○	SL series
— SC-83 similar STO-220	H1-1		DF10SC4M	40	10	125	100	150	0.55	5	3.5	180	—	—	S series
			DF10SC6	60	10	132	150	150	0.58	5	4.5	260	—	—	S series
			DF10SC9	90	10	131	150	150	0.75	5	3	185	—	—	S series
			DF10NC15	150	10	123	100	150	0.88	5	0.2	110	—	—	N series
			DF15SC4M	40	15	129	150	150	0.55	7.5	5	340	—	—	S series
			DF15JC10	100	15	126	150	150	0.86	7.5	0.6	200	—	—	J series
			DF15NC15	150	15	126	150	150	0.88	7.5	0.3	155	—	—	N series
			DF20SC4M	40	20	122	230	150	0.55	10	7.5	390	—	—	S series
			DF20SC9M	90	20	111	200	150	0.75	10	10	370	—	—	S series
			DF20JC10	100	20	121	200	150	0.86	10	0.7	260	—	—	J series
			DF20NC15	150	20	121	200	150	0.88	10	0.4	200	—	—	N series
			DF25SC6M	60	25	115	300	150	0.58	12.5	10	490	—	—	S series
			DF30SC3ML	30	30	119	350	150	0.48	15	10	820	—	—	S series
			DF30JC4	40	30	115	250	150	0.61	15	0.7	560	—	—	J series
			DF30SC4M	40	30	112	360	150	0.55	15	10	590	—	—	S series
			DF30JC6	60	30	108	250	150	0.69	15	0.7	490	—	—	J series
			DF30JC10	100	30	116	300	150	0.86	15	1	390	—	—	J series
			DF30NC15	150	30	115	300	150	0.88	15	0.5	300	—	—	N series
			DF40SC3L	30	40	112	400	150	0.45	15	17	1200	—	—	S series
			DF40SC4	40	40	106	350	150	0.55	20	14	860	—	—	S series
— SC-83 similar FD	H2-2		D10FDC10ST	100	10	158	150	175	0.86	5	15μA	104	○	○	SL series
			D20FDC10ST	100	20	119	250	150	0.86	10	30μA	185	○	○	N series
			D20FDC15ST	150	20	118	250	150	0.88	10	30μA	159	—	—	N series
			D30FDC4S	40	30	114	300	150	0.55	15	1.5	415	○	○	S series
			D30FDC10ST	100	30	108	300	150	0.86	15	40μA	242	—	—	N series
			D30FDC15ST	150	30	107	300	150	0.88	15	40μA	209	—	—	N series
			D40FDC10ST	100	40	105	400	150	0.86	20	60μA	360	—	—	N series
			D40FDC15ST	150	40	103	400	150	0.88	20	60μA	315	—	—	N series

■ : Please contact us.

SCHOTTKY BARRIER DIODES

SCHOTTKY BARRIER DIODES

Center Tap, Common Cathode

Three Terminal Type														
Package	JEDEC Code JEITA Code House Name	Fig.	IF (AV) [A]	VRRM[V]							Remarks			
				15	30	40	60	90	100	120		150	600	
 28.5 × 10.0 × 4.5(mm)	SC-91 FTO-220G	J9	8			SG8SC4M								
			10		SG10SC3LM	SG10SC4M	SG10SC6M	SG10SC9M				SG10TC15M		
			15			SG15SC4M	SG15SC6M							
			20		SG20SC3LM	SG20SC4M	SG20JC6M SG20SC6M	SG20SC9M	SG20TC10M	SG20TC12M	SG20TC15M			
			30		SG30SC3LM	SG30SC4M	SG30JC6M SG30SC6M		SG30TC10M	SG30TC12M	SG30TC15M			
			40						SG40TC10M	SG40TC12M				
 41.0 × 16.0 × 5.0(mm)	TO-247AD MTO-3PT	K5-2	20					S20SC9MT						
			30			S30SC4MT	S30SC6MT				S30TC15T			
			40	S40HC1R5T										
			60	S60HC1R5T	S60HC3T S60SC3LT	S60SC4MT	S60SC6MT							
 41.0 × 16.0 × 5.0(mm)	TO-247AD MTO-3PV	K7-1	60						S60JC10V					



Center Tap, Common Cathode

Three Terminal Type																
JEDEC Code JEITA Code House Name	Fig.	Type No.	Absolute Maximum Ratings					Electrical Characteristics				Based on AEC-Q101	Automotive	Series		
			VRRM [V]	IF (AV) [A]	Conditions Tc [°C]	IFSM [A]	Tj [°C]	Vf (max) [V]	Conditions IF [A]	Ir (max) Vr=VRRM [mA]	Ct (typ) [pF]					
SC-91 FTO-220G	J9	SG8SC4M	40	8	155	80	175	0.56	4.0	0.3	100	-	-	S series		
		SG10SC3LM	30	10	136	150	150	0.45	4.0	5	310	-	-	S series		
		SG10SC4M	40	10	150	150	175	0.52	5.0	0.5	157	-	-	S series		
		SG10SC6M	60	10	145	140	175	0.56	5.0	0.5	165	-	-	S series		
		SG10SC9M	90	10	139	150	175	0.75	5.0	0.5	140	-	-	S series		
		SG10TC15M	150	10	153	120	175	0.88	5.0	15µA	92	-	-	SL series		
		SG15SC4M	40	15	117	150	150	0.52	7.5	0.8	230	-	-	S series		
		SG15SC6M	60	15	113	180	150	0.61	7.5	0.6	185	-	-	S series		
		SG20SC3LM	30	20	124	250	150	0.45	8.0	9	570	-	-	S series		
		SG20SC4M	40	20	115	200	150	0.52	10.0	1.1	315	-	-	S series		
		SG20JC6M	60	20	106	200	150	0.69	10.0	0.1	250	-	-	J series		
		SG20SC6M	60	20	107	200	150	0.61	10.0	0.8	250	-	-	S series		
		SG20SC9M	90	20	112	200	150	0.75	10.0	1	245	-	-	S series		
		SG20TC10M	100	20	140	200	175	0.86	10.0	30µA	185	-	-	SL series		
		SG20TC12M	120	20	137	200	175	0.87	10.0	30µA	175	-	-	SL series		
		SG20TC15M	150	20	136	200	175	0.88	10.0	30µA	159	-	-	SL series		
		SG30SC3LM	30	30	117	350	150	0.45	12.5	15	960	-	-	M series		
		SG30SC4M	40	30	101	300	150	0.55	15.0	1.5	415	-	-	S series		
		SG30JC6M	60	30	90	250	150	0.69	15.0	0.15	325	-	-	J series		
		SG30SC6M	60	30	100	300	150	0.61	15.0	1.2	385	-	-	S series		
		SG30TC10M	100	30	126	300	175	0.86	15.0	40µA	242	-	-	SL series		
		SG30TC12M	120	30	122	300	175	0.87	15.0	40µA	228	-	-	SL series		
		SG30TC15M	150	30	122	300	175	0.88	15.0	40µA	209	-	-	SL series		
		SG40TC10M	100	40	116	350	175	0.86	20.0	60µA	362	-	-	SL series		
		SG40TC12M	120	40	112	350	175	0.87	20.0	60µA	336	-	-	SL series		
		TO-247AD MTO-3PT	K5-2	S20SC9MT	90	20	136	200	150	0.75	10.0	1	245	-	-	S series
				S30SC4MT	40	30	132	300	150	0.55	15.0	1.5	410	-	-	S series
				S30SC6MT	60	30	129	300	150	0.61	15.0	1.2	385	-	-	S series
				S30TC15T	150	30	128	300	150	0.88	15.0	40µA	209	-	-	N series
				S40HC1R5T	15	40	111	450	125	0.41	20.0	10	960	-	-	H series
S60HC1R5T	15			60	110	600	125	0.41	30.0	15	1400	-	-	H series		
S60HC3T	30			60	112	650	125	0.40	30.0	20	1100	-	-	H series		
S60SC3LT	30			60	138	650	150	0.48	30.0	25	1600	-	-	S series		
S60SC4MT	40			60	127	500	150	0.55	30.0	3	790	-	-	S series		
S60SC6MT	60			60	121	470	150	0.67	30.0	2	640	-	-	S series		
TO-247AD MTO-3PV	K7-1	S60JC10V	100	60	118	500	150	0.95	30.0	0.2	695	-	○	J series		


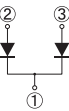

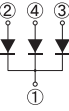
SCHOTTKY BARRIER DIODES

SCHOTTKY BARRIER DIODES

Array

Surface Mount						
Package	JEDEC Code JEITA Code House Name	Fig.	I _{F(AV)} [A]	V _{RRM} [V]		Remarks
				40	60	
 7.0 × 4.7 × 2.6(mm)	TO-269AA - 1Z	C2-2	1.2	S1ZAS4		

Diode Module

Surface Mount						
Package	JEDEC Code JEITA Code House Name	Fig.	I _{F(AV)} [A]	V _{RRM} [V]		Remarks
				40	60	
 43.0 × 27.0 × 21.0(mm)	- Module	F1	120	D120SC4M	D120SC6M	
			240	D240SC4M	D240SC6M	
 43.0 × 27.0 × 21.0(mm)		F3-1	180	D180SC4M	D180SC6M	
				360	D360SC4M	

Array

Surface Mount														
Package		Type No.	Absolute Maximum Ratings					Electrical Characteristics				Based on AEC-Q101	Automotive	Series
JEDEC Code JEITA Code House Name	Fig.		V _{RRM} [V]	I _{F(AV)} [A]	Conditions T _a [°C]	I _{FSM} [A]	T _J [°C]	V _F (max) [V]	Conditions I _F [A]	I _r (max) V _R =V _{RRM} [mA]	C _t (typ) [pF]			
TO-269AA - 1Z	C2-2	S1ZAS4	40	1.2	47	40	150	0.55	1	1	65	-	-	S series

Diode Module

Surface Mount														
Package		Type No.	Absolute Maximum Ratings					Electrical Characteristics				Based on AEC-Q101	Automotive	Series
JEDEC Code JEITA Code House Name	Fig.		V _{RRM} [V]	I _{F(AV)} [A]	Conditions T _c [°C]	I _{FSM} [A]	T _J [°C]	V _F (max) [V]	Conditions I _F [A]	I _r (max) V _R =V _{RRM} [mA]	C _t (typ) [pF]			
- Module	F1	D120SC4M	40	120	90	800	125	0.58	60	40	2.1	-	-	S series
		D120SC6M	60	120	85	800	125	0.67	60	40	2.2	-	-	S series
		D240SC4M	40	240	77	1600	125	0.6	120	80	4.2	-	-	S series
	F3-1	D240SC6M	60	240	71	1600	125	0.67	120	80	4.4	-	-	S series
		D180SC4M	40	180	83	800	125	0.58	60	40	2.1	-	-	S series
		D180SC6M	60	180	78	800	125	0.67	60	40	2.2	-	-	S series
	D360SC4M	40	360	64	1600	125	0.6	120	80	4.2	-	-	S series	
	D360SC6M	60	360	58	1600	125	0.67	120	80	4.4	-	-	S series	

SCHOTTKY BARRIER DIODES










FAST RECOVERY DIODES

Fast Recovery Diodes are high speed type PN junction rectifying devices.



These diodes for the switching of power supply are suitable for use in household appliances, OA apparatuses, and FA apparatuses.

Series	Feature
K	Low Vf
ML	Low Vf, Low trr, Soft Recovery
US	Ultra Fast, Soft Recovery
A	Ultra Fast, Low Vf

Single

Surface Mount											
Package	JEDEC Code JEITA Code House Name	Fig.	If (AV) [A]	VRRM[V]						Remarks	
				200	400	600	700	1000	1200		
	DO-219AA similar M1F	B2	1			M1FK60					
			1.1	M1FL20U							
			1.5		M1FL40U						
	DO-214AC 1F	B3-1	0.8			D1FK60	D1FK70				
			1				D1FK100	N D1FK120P D1FK120			
			1.1	D1FL20U							
	SC-110B CE	B5-1	3	D3CE20LUS		D3CE60K					① → ← ②
			1.5	M2FL20U							
			3	M3FL20U							
	DO-214AA similar M2F	B6	1.3		D2FL40						
			1.5	D2FL20U		D2FK60					
			2.1			D3FK60					
	SC-63 E-pack	G1-5	3	DE3L20UA							① ④ ② ③ N.C.
			5			DE5L60U DE5L60A					
	TO-277A similar FY	G4	5			D5FY60K					① ② ③
			8			DF8L60US					
			10			DF10L60					
	SC-83 similar STO-220	H1-2	20			DF20L60 DF20L60U					① ② ④ ③
	TO-252AA similar FR	G5	10			D10FR60LA					
			15			D15FR60LA					
	SC-83 similar FD	H2-1	8			D8FD60LUS					① NC ② ④ ③
			20			D20FD60LU					
			30			D30FD60K					

N : New product

Axial											
Package	JEDEC Code JEITA Code House Name	Fig.	If (AV) [A]	VRRM[V]						Remarks	
				200	400	600	700	1000			
	AX057	A1	0.8			D1NF60 D1NK60					
			1	D1NL20U	D1NL40U			D1NK100			
	AX078	A4-1	1.5	D2L20U							① → ← ②
			2		D2L40U						
	AX10	A5-1	1.5	S2L20U		S2L60					
			2		S2L40U				S2K100		
	AX14	A7	2.2			S3L60					
			3	S3L20U	S3L40U	S3K60					

Single

Surface Mount															
JEDEC Code JEITA Code House Name	Package	Fig.	Type No.	Absolute Maximum Ratings				Electrical Characteristics				Based on AEC-Q101	Automotive	Series	
				VRRM [V]	If (AV) [A]	Conditions Tc [°C]	IfSM [A]	Tj [°C]	Vf (max) [V]	Conditions If [A]	Ir (max) Vr=VRRM [μA]				trr (max) [ns]
DO-219AA similar M1F	B2		M1FK60	600	1	116 *1	15	150	1.5	1	10	75	—	○	K series
			M1FL20U	200	1.1	25 *2	30	150	0.98	1.1	10	35	○	○	—
			M1FL40U	400	1.5	139	30	175	1.2	1	10	25	■	○	—
DO-214AC 1F	B3-1		D1FK60	600	0.8	29 *2	20	150	1.3	0.8	10	75	○	○	K series
			D1FK70	700	0.8	32 *2	25	150	1.3	0.8	10	400	○	○	—
			D1FK100	1000	1	97 *1	20	150	2.1	1	10	75	○	○	K series
			N D1FK120P	1200	1	79 *1	18	-55 to 150	3.0	1	10	85	○	■	K series
			D1FK120	1200	1	75 *1	20	150	3.0	1	10	120	—	■	K series
			D1FL20U	200	1.1	25 *2	20	150	0.98	1.1	10	35	○	○	—
			D1FL40U	400	1.5	103 *1	30	150	1.2	1	10	25	○	○	—
SC-110B CE	B5-1		D3CE20LUS	200	3	105 *1	60	-55 to 150	0.98	3	10	25	○	○	—
			D3CE60K	600	3	78 *1	50	150	1.45	3	10	80	○	○	K series
DO-214AA similar M2F	B6		M2FL20U	200	1.5	31 *2	50	150	0.92	1.5	10	35	—	○	—
			M3FL20U	200	3	75 *1	75	150	0.95	3	10	35	○	○	—
SC-63 E-pack	B9-1	2F	D2FL40	400	1.3	25 *2	40	150	1.3	1.3	10	50	—	—	—
			D2FL20U	200	1.5	25 *2	50	150	0.98	1.5	10	35	○	○	—
			D2FK60	600	1.5	101 *1	40	150	1.3	1.5	10	75	—	○	K series
SC-63 E-pack	G1-5		D3FK60	600	2.1	93 *1	120	150	1.2	2.1	10	75	—	○	K series
			DE3L20UA	200	3	137	60	150	0.98	3	10	35	—	■	—
			DE5L60U	600	5	91	60	150	3.0	5	25	25	—	—	—
TO-277A similar FY	G4		DE5L60A	600	5	119	60	150	2.0	5	10	50	—	■	—
			D5FY60K	600	5	130 *1	200	-55 to 150	1.25	5	10	95	—	■	K series
SC-83 similar STO-220	H1-2		DF8L60US	600	8	66	60	150	3.6	8	50	25	—	—	US series
			DF10L60	600	10	105	100	150	1.9	10	10	50	—	—	—
			DF20L60	600	20	84	170	150	1.9	20	25	70	—	—	—
			DF20L60U	600	20	93	160	150	3.0	20	25	35	—	—	—
TO-252AA similar FR	G5		D10FR60LA	600	10	110	140	-55 to 150	2.1	10	10	28	○	○	A series
			D15FR60LA	600	15	95	220	-55 to 150	2.1	15	10	30	○	○	A series
SC-83 similar FD	H2-1		D8FD60LUS	600	8	120	60	175	3.6	8	50	25	—	○	US series
			D20FD60LU	600	20	93	160	150	3.0	20	25	35	○	○	—
			D30FD60K	600	30	102	300	150	1.7	30	10	95	—	■	K series









N : New product *1 : Tl *2 : Ta ■ : Please contact us.

Axial															
JEDEC Code JEITA Code House Name	Package	Fig.	Type No.	Absolute Maximum Ratings				Electrical Characteristics				Based on AEC-Q101	Automotive	Series	
				VRRM [V]	If (AV) [A]	Conditions Ta [°C]	IfSM [A]	Tj [°C]	Vf (max) [V]	Conditions If [A]	Ir (max) Vr=VRRM [μA]				trr (max) [ns]
AX057		A1	D1NF60	600	0.8	25	50	150	1.3	0.8	10	400	—	—	—
			D1NK60	600	0.8	26	35	150	1.3	0.8	10	75	—	—	K series
			D1NL20U	200	1	25	25	150	0.98	1	10	35	—	—	—
			D1NL40U	400	1	137 *1	50	150	1.25	1	10	25	—	—	—
			D1NK100	1000	1	127 *1	30	150	2.1	1	10	75	—	—	K series
AX078		A4-1	D2L20U	200	1.5	125 *1	40	150	0.98	1.5	10	35	—	—	—
			D2L40U	400	2	108 *1	80	150	1.25	2	10	35	—	—	—
AX10		A5-1	S2L20U	200	1.5	25 *1	50	150	0.98	1.5	10	35	—	—	—
			S2L60	600	1.5	125 *1	50	150	1.5	1.5	10	50	—	—	—
			S2L40U	400	2	120 *1	100	150	1.25	2	10	35	—	—	—
			S2K100	1000	2	91 *1	65	150	2.1	2	10	75	—	—	K series
AX14		A7	S3L60	600	2.2	132 *1	60	150	1.5	2.2	10	50	—	—	—
			S3L20U	200	3	128 *1	60	150	0.98	2.1	10	35	—	—	—
			S3L40U	400	3	126 *1	150	150	1.25	3	10	35	—	—	—
			S3K60	600	3	123 *1	120	150	1.3	3	10	100	—	—	K series



*1 : Tl

FAST RECOVERY DIODES




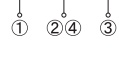


Single

Two Terminal Type							
Package	JEDEC Code JEITA Code House Name	Fig.	IF (AV) [A]	VRRM[V]			Remarks
				200	400	600	
 28.5 × 10.0 × 4.5(mm)	SC-91A FTO-220	J1	3			SF3L60U	
			5			SF5L60U	
			10			SF10L60U	
			20			SF20L60U	
 28.5 × 10.0 × 4.5(mm)	SC-91 FTO-220AG	J3	3			SF3K60M	
			5		SF5L40UM	SF5K60M	
			8			SF8K60USM SF8K60M	
			10			SF10K60M SF10L60MVM SF10L60MSM	
			20			SF20K60M SF20L60MVM SF20L60MSM	
			20				
 28.5 × 10.0 × 4.5(mm)	SC-91 FTO-220G	J4	5			SG5L20USM	
			10			SG10L20USM	
 41.0 × 16.0 × 5.0(mm)	TO-247AD MTO-3PT	K2	20			S20K60T	
			30			S30K60T	

Three Terminal Type

Package	JEDEC Code JEITA Code House Name	Fig.	IF (AV) [A]	VRRM[V]			Remarks
				600	1000	1200	
 41.0 × 16.0 × 5.0(mm)	TO-247AD MTO-3PV	K6	20			S20K100V	
			30	S30K60V	S30K100V		

Center Tap, Common Cathode

Surface Mount								
Package	JEDEC Code JEITA Code House Name	Fig.	IF (AV) [A]	VRRM[V]				Remarks
				200	300	400	600	
 9.5 × 6.6 × 2.65(mm)	SC-63 E-pack	G1-1	5				DE5LC20U	
			10	DF10LC20U	DF10LC30			
 13.2 × 10.2 × 4.7(mm)	SC-83 similar STO-220	H1-1	20	DF20LC20US	DF20LC30			
			20	D20FDC20L D20FDC20LUS				
 13.2 × 10.2 × 4.6(mm)	SC-83 similar FD	H2-2	20					
			20					

Single

Two Terminal Type														
Package		Type No.	Absolute Maximum Ratings					Electrical Characteristics				Based on AEC-Q101	Automotive	Series
JEDEC Code JEITA Code House Name	Fig.		VRRM [V]	IF (AV) [A]	Conditions Tc [°C]	IFSM [A]	Tj [°C]	Vf (max) [V]	Conditions IF [A]	Ir (max) Vr=VRRM [μA]	trr (max) [ns]			
SC-91A FTO-220	J1	SF3L60U	600	3	115	40	150	3.00	3	25	20	-	-	-
		SF5L60U	600	5	96	60	150	3.00	5	25	25	-	-	-
		SF10L60U	600	10	85	120	150	3.00	10	25	25	-	■	-
		SF20L60U	600	20	68	180	150	3.00	20	25	35	-	■	-
SC-91 FTO-220AG	J3	SF3K60M	600	3	132	90	150	1.45	3	10	80	-	-	K series
		SF5L40UM	400	5	121	100	150	1.25	5	10	30	-	■	-
		SF5K60M	600	5	119	120	150	1.50	5	10	85	-	■	K series
		SF8K60USM	600	8	70	60	150	3.60	8	50	25	-	-	US series
		SF8K60M	600	8	108	150	150	1.50	8	10	90	-	■	K series
		SF10K60M	600	10	106	180	150	1.50	10	10	95	-	-	K series
		SF10L60MVM	600	10	119	200	150	1.10	10	10	115	-	-	ML series
		SF10L60MSM	600	10	110	160	150	1.37	10	10	60	-	-	ML series
		SF20K60M	600	20	96	240	150	1.50	20	10	95	-	-	K series
		SF20L60MVM	600	20	106	250	150	1.10	20	10	130	-	-	ML series
SF20L60MSM	600	20	96	220	150	1.37	20	10	70	-	-	ML series		
SC-91 FTO-220G	J4	SG5L20USM	200	5	125	90	150	0.96	5	10	25	-	-	-
		SG10L20USM	200	10	101	200	150	0.96	10	10	25	-	-	-
TO-247AD MTO-3PT	K2	S20K60T	600	20	121	300	150	1.50	20	10	95	-	-	K series
		S30K60T	600	30	123	450	150	1.50	30	10	100	-	-	K series

■ : Please contact us.

Three Terminal Type

Three Terminal Type														
Package		Type No.	Absolute Maximum Ratings					Electrical Characteristics				Based on AEC-Q101	Automotive	Series
JEDEC Code JEITA Code House Name	Fig.		VRRM [V]	IF (AV) [A]	Conditions Tc [°C]	IFSM [A]	Tj [°C]	Vf (max) [V]	Conditions IF [A]	Ir (max) Vr=VRRM [μA]	trr (max) [ns]			
TO-247AD MTO-3PV	K6	S20K100V	1000	20	127	550	150	2.10	20	10	120	-	○	K series
		S30K60V	600	30	108	450	150	1.50	30	10	100	-	○	K series
		S30K100V	1000	30	116	600	150	2.10	30	10	120	-	○	K series


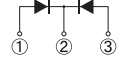


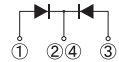

Center Tap, Common Cathode

Surface Mount														
Package		Type No.	Absolute Maximum Ratings					Electrical Characteristics				Based on AEC-Q101	Automotive	Series
JEDEC Code JEITA Code House Name	Fig.		VRRM [V]	IF (AV) [A]	Conditions Tc [°C]	IFSM [A]	Tj [°C]	Vf (max) [V]	Conditions IF [A]	Ir (max) Vr=VRRM [μA]	trr (max) [ns]			
SC-63 E-pack	G1-1	DE5LC20U	200	5	81	50	150	0.98	2.5	10	35	-	■	-
		DF10LC20U	200	10	127	80	150	0.98	5	10	35	-	-	-
SC-83 similar STO-220	H1-1	DF10LC30	300	10	124	80	150	1.30	5	25	30	-	-	-
		DF20LC20US	200	20	125	180	150	0.96	10	10	25	-	-	-
		DF20LC30	300	20	124	180	150	1.30	10	10	25	30	-	-
SC-83 similar FD	H2-2	D20FDC20L	200	20	113	100	175	1.20	10	10	30	○	○	-
		D20FDC20LUS	200	20	125	180	150	0.96	10	10	25	-	○	-

■ : Please contact us.

FAST RECOVERY DIODES

Center Tap, Common Cathode

Three Terminal Type								
Package	JEDEC Code JEITA Code House Name	Fig.	IF (AV) [A]	VRRM [V]				Remarks
				200	300	400	600	
 28.5 × 10.0 × 4.5(mm)	SC-91 FTO-220AG	J8-1	5			SF5LC40UM		
			10			SF10LC40UM	SF10KC60M	
			20		SF20LC30M		SF20KC60M	
 28.5 × 10.0 × 4.5(mm)	SC-91 FTO-220G	J9	5	SG5LC20USM				
			10	SG10LC20USM				
			20	SG20LC20USM				
 41.0 × 16.0 × 5.0(mm)	TO-247AD MTO-3PT	K5-2	20	S20LC20UST	S20LC30T	S20LC40UT	S20LC60UST	
 41.0 × 16.0 × 5.0(mm)	TO-247AD MTO-3PV	K7-1	20			S20LC40UV	S20LC60USV	

Center Tap, Common Cathode

Three Terminal Type														
Package		Type No.	Absolute Maximum Ratings					Electrical Characteristics				Based on AEC-Q101	Automotive	Series
JEDEC Code JEITA Code House Name	Fig.		VRRM [V]	IF (AV) [A]	Conditions Tc [°C]	IFSM [A]	Tj [°C]	Vf (max) [V]	Conditions IF [A]	Ir (max) Vr=VRRM [μA]	trr (max) [ns]			
SC-91 FTO-220AG	J8-1	SF5LC40UM	400	5	132	80	150	1.25	2.5	10	30	-	-	-
		SF10LC40UM	400	10	120	100	150	1.25	5	10	30	-	-	-
		SF10KC60M	600	10	109	120	150	1.50	5	10	85	-	■	K series
		SF20LC30M	300	20	107	250	150	1.30	10	25	30	-	-	-
		SF20KC60M	600	20	97	180	150	1.50	10	10	95	-	■	K series
SC-91 FTO-220G	J9	SG5LC20USM	200	5	133	70	150	0.96	2.5	10	25	-	-	-
		SG10LC20USM	200	10	122	90	150	0.96	5	10	25	-	-	-
		SG20LC20USM	200	20	95	150	150	0.96	10	10	25	-	-	-
TO-247AD MTO-3PT	K5-2	S20LC20UST	200	20	126	120	150	0.96	10	10	25	-	-	-
		S20LC30T	300	20	124	220	150	1.30	10	25	30	-	-	-
		S20LC40UT	400	20	123	130	150	1.25	10	10	30	-	-	-
		S20LC60UST	600	20	63	60	150	3.60	10	50	25	-	-	-
TO-247AD MTO-3PV	K7-1	S20LC40UV	400	20	123	200	150	1.25	10	10	30	-	○	-
		S20LC60USV	600	20	65	60	150	3.60	10	50	25	-	○	-

■ : Please contact us.





THYRISTORS

The Thyristor, in its normal state, will block an applied voltage in either direction, but when an appropriate current pulse is applied to the gate, current will flow through the anode to the cathode thus turning on power to the load circuit.

The Thyristor has a planar passivation, and is available in both the general reverse-blocking type and the type without reverse voltage.



The Thyristor without reverse voltage is suitable for a circuit limiting inrush current.


Thyristors

Package	 10.0 × 6.6 × 2.3(mm)	 28.5 × 10.0 × 4.5(mm)		
JEDEC Code JEITA Code House Name	TO-252AA - FB	- SC-91 FTO-220AG		
Fig.	G2-2	J8-5		
Internal Circuit				
$I_T(AV)$ [A]	3	5	5	8
V_{DRM} [V]	400 600 800	KC3FB40H KC5FB60H KC5FB60HR KC5FB60HRT	KC55F60HRT	KC85F80

 : New product

Thyristors

Package		Type No.	Absolute Maximum Ratings						Electrical Characteristics					Based on AEC-Q101	Automotive
JEDEC Code JEITA Code House Name	Fig.		V_{DRM} [V]	V_{RRM} [V]	$I_T(AV)$ [A]	Conditions T_C [°C]	I_{TSM} [A]	T_J [°C]	$V_{TM}(max)$ [V]	Conditions I_{TM} [A]	$V_{GT}(max)$ [V]	$I_{GT}(max)$ [μA]	$I_H(max)$ [mA]		
TO-252AA - FB	G2-2	KC3FB40H	400	400	3	111	40	-40 to 125	1.4	4	0.8	100	5	-	-
		KC5FB40H	400	400	5	101	65	-40 to 125	1.6	10	0.8	200	typ.1	-	-
		KC5FB60H	600	600	5	98	90	-40 to 125	1.8	15	0.8	100	5	-	-
		KC5FB60HR	600	-	5	98	90	-40 to 125	1.8	15	0.8	100	5	-	-
		KC5FB60HRT	600	-	5	123	90	-55 to 150	1.8	15	0.8	100	5	-	-
- SC-91 FTO-220AG	J8-5	 KC55F60HRT	600	-	5	127	82	-40 to 150	1.8	15	0.8	100	5	-	-
		 KC85F80	800	800	8	130	120	-40 to 150	1.5	20	1.0	15mA	100	-	-




 : New product

SIDACs

SIDAC series are semiconductor devices energized by the addition of a specific voltage. They are commonly used for switching devices or pulse generating devices.




Bi-directional (K1V series)

- Features**
 1. Symmetrical characteristics.
 2. Operating directly from the AC mains, and can be used in all kinds of pulse generating circuits.
 3. The glass passivation ensures high reliability.
- Applications**
 1. Pulse generation : gas igniters,HID(high intensity discharge)lamp drive circuit,etc.
 2. AC switching : drive circuit for switching power supplies,voltage detecting circuits,etc.
 3. Over voltage protection : AC line surge protection,capacitor rupture prevention,etc.

Package			
JEDEC Code JEITA Code House Name	DO-214AC — 1F	— — AX06	— — AX10
Fig.	B4-3	A2-1	A5-3 A6
Internal Circuit	①—N—②		
V _{DRM} [V]	5	K1VZL09	
	15	K1VZL20	
	90	K1V(A)10 K1V(A)11 K1V(A)12	K1V10 K1V11 K1V12
	115	K1V(A)16	K1V14
	180		K1V22 K1V24 K1V26
	270		K1V22(W) K1V24(W) K1V26(W) K1V36(W) K1V38(W)

Uni-directional (G1V series)

- Features**
 1. Uni-directional characteristics.
 2. Smaller package than bi-directional SIDAC.
 3. Switching operation from DC power for pulse generation.
 4. The glass passivation ensures high reliability.
- Applications**
 1. Pulse generation : gas igniters,negative ion generators, HID(high intensity discharge) lamp drive circuit,etc.
 2. Over voltage protection : DC line surge protection.

Package				
JEDEC Code JEITA Code House Name	DO-214AC — 1F	— — AX06	— — AX078	
Fig.	B3-3	A2-3	A4-3	
Internal Circuit	①—N—②			
V _{DRM(A)} [V]	70	G1VL8C	G1V(A)8C	
	90	G1VL10C	G1V(A)10C	
	100		G1V(A)12C	
	110		G1V(A)13C	
	115		G1V(A)15C	
	120	G1VL15C	G1V(A)14C	
	170	G1VL20C	G1V(A)20C	G1V(B)20C
	190	G1VL22C G1VL24C		G1V(B)22C
210			G1V(B)24C	

Bi-directional (K1V series)

Surface Mount		Absolute Maximum Ratings							Electrical Characteristics						Automotive
JEDEC Code JEITA Code House Name	Fig.	Type No.	V _{DRM}	I _T	Conditions T _L	T _{stg}	T _J	V _{BO}	I _{DRM} (max)	Conditions V _D	I _{BO} (max)	I _H (typ)	V _T (max)	Conditions I _T	
DO-214AC — 1F	B4-3	K1VZL09	5	0.5	110	-40 to 125	125	8 to 12	5	5	20	20	1.2	0.5	
		K1VZL20	15	0.5	110	-40 to 125	125	18 to 22	5	15	20	20	1.2	0.5	

Axial		Absolute Maximum Ratings							Electrical Characteristics						Automotive	
JEDEC Code JEITA Code House Name	Fig.	Type No.	V _{DRM}	I _T	Conditions T _L	I _{TSM}	I _{TRM}	Conditions f	dit/dt	T _J	V _{BO}	I _H (typ)	V _T (max)	Conditions I _T		R _s (min)
— — AX06	A2-1	K1V(A)10	90	1	109	16	60	60	50	125	95 to 113	50	1.6	1	0.1	
		K1V(A)11	90	1	109	16	60	60	50	125	104 to 118	50	1.6	1	0.1	
		K1V(A)12	90	1	109	16	60	60	50	125	110 to 125	50	1.6	1	0.1	
		K1V(A)16	115	1	98	16	60	60	50	125	145 to 170	50	1.6	1	0.1	
	— — AX10	A5-3	K1V10	90	1	112	20	80	60	80	125	95 to 113	50	1.5	1	0.1
			K1V11	90	1	112	20	80	60	80	125	104 to 118	50	1.5	1	0.1
			K1V12	90	1	112	20	80	60	80	125	110 to 125	50	1.5	1	0.1
			K1V14	115	1	109	20	80	60	80	125	125 to 150	30	1.5	1	0.1
			K1V22	180	1	108	20	50	60	80	125	200 to 230	20	1.5	1	0.1
			K1V24	180	1	108	20	50	60	80	125	220 to 250	20	1.5	1	0.1
		A6	K1V26	180	1	108	20	50	60	80	125	240 to 270	20	1.5	1	0.1
			K1V22(W)	180	1	91	16	50	60	80	125	200 to 230	50	3	1	0.1
K1V24(W)			180	1	91	16	50	60	80	125	220 to 250	50	3	1	0.1	
K1V26(W)			180	1	91	16	50	60	80	125	240 to 265	50	3	1	0.1	
K1V36(W)			270	1	92	13	40	60	50	125	340 to 380	50	3	1	0.1	
K1V38(W)			270	1	92	13	40	60	80	125	360 to 400	50	3	1	0.1	

Uni-directional (G1V series)

Surface Mount		Absolute Maximum Ratings							Electrical Characteristics						Automotive
JEDEC Code JEITA Code House Name	Fig.	Type No.	V _{DRM(A)}	I _T	Conditions T _L	I _{TRM}	Conditions f	dit/dt	T _J	V _{BO}	I _H (max)	V _T (max)	Conditions I _T		
DO-214AC — 1F	B3-3	G1VL8C	70	1	98	80	60	150	125	75 to 90	100	1.5	1		
		G1VL10C	90	1	98	150	60	150	125	95 to 110	100	1.5	1		
		G1VL15C	120	1	98	120	60	150	125	142 to 157	60	1.5	1		
		G1VL20C	170	1	98	120	60	150	125	190 to 210	60	1.5	1		
		G1VL22C	190	1	98	280	5	150	125	210 to 230	60	1.5	1		
		G1VL24C	190	1	98	280	5	150	150	230 to 250	60	1.5	1		

Axial		Absolute Maximum Ratings							Electrical Characteristics						Automotive
JEDEC Code JEITA Code House Name	Fig.	Type No.	V _{DRM(A)}	I _T	Conditions T _L	I _{TRM}	Conditions f	dit/dt	T _J	V _{BO}	I _H (max)	V _T (max)	Conditions I _T		
— — AX06	A2-3	G1V(A)8C	70	1	98	80	60	80	125	75 to 90	100	1.5	1		
		G1V(A)10C	90	1	98	80	60	80	125	95 to 110	60	1.5	1		
		G1V(A)12C	100	1	98	80	60	80	125	110 to 130	60	1.5	1		
		G1V(A)13C	110	1	98	80	60	80	125	120 to 138	60	1.5	1		
		G1V(A)14C	120	1	98	80	60	80	125	130 to 150	60	1.5	1		
		G1V(A)15C	115	1	98	80	60	80	125	142 to 157	60	1.5	1		
— — AX078	A4-3	G1V(B)20C	170	1	102	120	60	220	150	190 to 210	60	1.5	1		
		G1V(B)22C	190	1	98	160	60	220	125	210 to 230	60	1.5	1		
		G1V(B)24C	210	1	102	120	60	220	150	230 to 250	60	1.5	1		



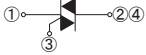
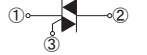








TRIACs

TRIACs are bidirectional Thyristors.

Our TRIACs are easy to use for motor and heater controls due to balanced gate sensitivity and $(di/dt)_c$.


Our lineup ranges from $V_{DRM}=600$ to 800V, $I_T(RMS)=3$ to 20A.

TRIACs (Triode for Alternating Current)








Package	 10.0 × 6.6 × 2.3(mm)	 28.5 × 10.0 × 4.5(mm)
JEDEC Code JEITA Code House Name	TO-252AA — FB	— SC-91 FTO-220AG
Fig.	G2-3	J8-4
Internal Circuit		
$V_{DRM}[V]$	600	
$I_T(RMS)[A]$	3	 KD3FB60
	5	 KD3SF60E  KD3SF60
	8	 KD5SF60
	12	 KD8SF60
	16	 KD12SF60
	20	 KD16SF60  KD20SF60

 : New product

TRIACs (Triode for Alternating Current)

Surface Mount		Type No.	Absolute Maximum Ratings			Electrical Characteristics						Based on AEC-Q101	Automotive
JEDEC Code JEITA Code House Name	Fig.		I_T (RMS) [A]	V_{DRM} [V]	T_J [°C]	V_{TM} (max) [V]	Conditions I_{TM} [A]	V_{GT} (max) (I, II, III)* [V]	I_{GT} (max) (I, II, III)* [mA]	$(dv/dt)_c$ ($T_J=150^\circ C, V_D=2/3V_{DRM}$) [V/ μs]	Conditions $(di/dt)_c$ [A/ms]		
TO-252AA — FB	G2-3	 KD3FB60	3	600	-40 to 150	1.7	4.5	1.5	15	1	-1.5	—	—

 : New product * : Operation mode IV is not guaranteed.

Two Terminal Type		Type No.	Absolute Maximum Ratings			Electrical Characteristics						Based on AEC-Q101	Automotive
JEDEC Code JEITA Code House Name	Fig.		I_T (RMS) [A]	V_{DRM} [V]	T_J [°C]	V_{TM} (max) [V]	Conditions I_{TM} [A]	V_{GT} (max) (I, II, III)* [V]	I_{GT} (max) (I, II, III)* [mA]	$(dv/dt)_c$ ($T_J=150^\circ C, V_D=2/3V_{DRM}$) [V/ μs]	Conditions $(di/dt)_c$ [A/ms]		
— SC-91 FTO-220AG	J8-4	 KD3SF60E	3	600	-40 to 150	1.5	4.5	1.5	10	—	—	—	—
		 KD3SF60	3	600	-40 to 150	1.5	4.5	1.5	20	1	-1.5	—	—
		 KD5SF60	5	600	-40 to 150	1.8	7	1.5	20	1	-2.5	—	—
		 KD8SF60	8	600	-40 to 150	1.6	12	1.5	30	1	-4.0	—	—
		 KD12SF60	12	600	-40 to 150	1.6	20	1.5	30	1	-6.0	—	—
		 KD16SF60	16	600	-40 to 150	1.5	25	1.5	30	1	-8.0	—	—
 KD20SF60	20	600	-40 to 150	1.4	30	1.5	30	1	-10.0	—	—		

 : New product * : Operation mode IV is not guaranteed.

Operation Mode	Terminal Characteristics		
	① T1	②④ T2	③ G
I	—	+	+
II	—	+	—
III	+	—	—
IV	+	—	+




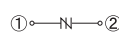
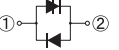
SURGE ABSORBERS

Surge Absorbers are semiconductor devices of the Thyristor type that turns on when triggered by their rated voltage. They are commonly used for lightning surge protection in communications equipment.

Thyristor Surge Suppressors

- Features
 1. Bi-directional or uni-directional characteristics.
 2. High speed response.
 3. Large surge current capacity.
 4. Repetitive use against surges is possible.



- Applications
 1. Lightning surge adsorption for communications circuits.
 2. Lightning surge adsorption for transmitters and switchboards.
 3. Surge protection for ISDN terminals.

Series	KL Series	KU Series	KP Series	
Package	 5.0 × 2.5 × 2.0(mm)	 5.1 × 3.75 × 2.0(mm)	 7.6 × 4.0 × 2.8(mm)	
JEDEC Code JEITA Code House Name	DO-214AC - 1F	DO-214AA similar - M2F	- - 2F	
Fig.	B4-3	B7 B8	B9-4	
Internal Circuit				
Off-state Voltage V _D [V]	5	KL3Z07		
	15	KL3Z18		
	58	KL3L07		
	63		KU10L08	
	70		KU4F8	
	90		KU10NU11	
	92			KP20NU11 KP40NU11
	100		KU4F12	
	115		KU10NU13	
	120	KL3N14	KU10N14 KU15N14	
	175	KL3R20		
	180			KP40RU22
	190		KU10R23NS	
	220		KU10R27NS	
250		KU10R29NS		
275		KU5S31NS KU10S31NS KU10S35NS		

Varistor

- Features
 1. Bi-directional surge absorption is possible.
 2. Low junction capacitance.

- Applications
 1. Telephone set surge absorption.
 2. Digital communications circuit surge absorption.
 3. ISDN terminal surge absorption.

Package	 5.0 × 2.5 × 2.0(mm)
JEDEC Code JEITA Code House Name	DO-214AC - 1F
Fig.	B4-1
Internal Circuit	
V _{F2} [V]	2.75 ± 0.25
	VR-61F1

Thyristor Surge Suppressors

Package		Type No.	Absolute Maximum Ratings				Electrical Characteristics			UL	Automotive
JEDEC Code JEITA Code House Name	Fig.		I _{TSM} [A]	Conditions [μs]	V _{DRM} [V]	T _J [°C]	V _{BO} (min) [V]	I _H (min) [mA]	C _t (max) [pF]		
DO-214AC - 1F	B4-3	KL3Z07	30	10/1000	5	125	5.5 *1	50	-	-	-
		KL3Z18	30	10/1000	15	125	15.5 *1	50	-	-	-
		KL3L07	30	10/1000	58	125	65	100	90	-	-
		KL3N14	30	10/1000	120	125	130	100	50	-	-
		KL3R20	30	10/1000	175	125	180	100	30	-	-
DO-214AA similar - M2F	B7	KU10L08	100	10/1000	63	125	70	100	180	UL*	-
		KU4F8	40	10/1000	70	125	75	100	100	-	-
	B8	KU10NU11	100	10/1000	60	125	100	150	-	-	-
		KU4F12	40	10/1000	100	125	110	100	100	-	-
	B7	KU10NU13	100	10/1000	60	125	120	100	-	-	-
		KU10N14	100	10/1000	120	125	125	100	140	UL*	-
		KU15N14	150	10/1000	120	125	125	100	110	UL*	-
		KU10R23NS	100	10/1000	190	125	290 *2	100	90	-	-
		KU10R27NS	100	10/1000	220	125	320 *2	100	70	UL*	-
		KU10R29NS	100	10/1000	250	125	400 *2	100	70	UL*	-
-	B9-4	KU5S31NS	50	10/1000	275	125	420 *2	150	70	-	-
		KU10S31NS	100	10/1000	275	125	420 *2	100	90	UL*	-
		KU10S35NS	100	10/1000	275	125	450 *2	100	90	-	-
		KP20NU11	325	10/700	60	125	100	150	295 *3	-	-
-	2F	KP40NU11	500	10/700	60	125	100	150	485 *3	-	-
		KP40RU22	500	10/700	60	125	195	100	285 *3	-	-

*1 : V_{BR} *2 : V_{CL}(max) *3 : typ.  : UL497B recognized (UL File No.E183905)

Varistor






Package		Type No.	Absolute Maximum Ratings			Electrical Characteristics		Automotive
JEDEC Code JEITA Code House Name	Fig.		I _{F(RMS)} [mA]	I _{FSM} [A]	T _J [°C]	V _{F1} [V]	Conditions I _F [mA]	
DO-214AC - 1F	B4-1	VR-61F1	370	7.5	150	2.3 ± 0.25	1	-

TVS (Transient Surge Suppressor)

Power Clampers

- Features
- 1.High speed response.
 - 2.Absorption energy tolerance capacity.
 - 3.Narrow clamping voltage width.
 - 4.Reverse blocking type.

- Application 1.Snubber circuit in the primary side of switch-mode power supplies.

Package	 7.6 × 4.0 × 2.8(mm)	 5.0 × φ 4.0(mm)	 7.0 × φ 4.4(mm)
JEDEC Code	—	—	—
JEITA Code	—	—	—
House Name	2F	AX078	AX10
Fig.	B9-3	A4-2	A5-2
Internal Circuit			
VBR (typ) [V]	82	ST02D-82	ST03D-82
	145	ST02D-140F2	ST03D-140
	170	ST02D-170F2	ST03D-170
	200		ST03D-200
	240		ST03DH-240
	280		★ ST02DH-280
320		★ ST02DH-320	

★ : Under development

Power Clampers

Surface Mount		Absolute Maximum Ratings					Electrical Characteristics						Automotive
Package		PrSM	Tj	V _{RM} (max)		ZD			Di				
JEDEC Code	Fig.			Type No.	[W]	[°C]	ZD	Di	V _{BR} (min)	V _{BR} (max)	Conditions I _R [mA]	I _R (max) [μA]	
—	B9-3	ST02D-140F2	200	-40 to 150	120	600	130	160	1	5	5	600	—
2F		ST02D-170F2	200	-40 to 150	145	600	155	185	1	5	5	600	—

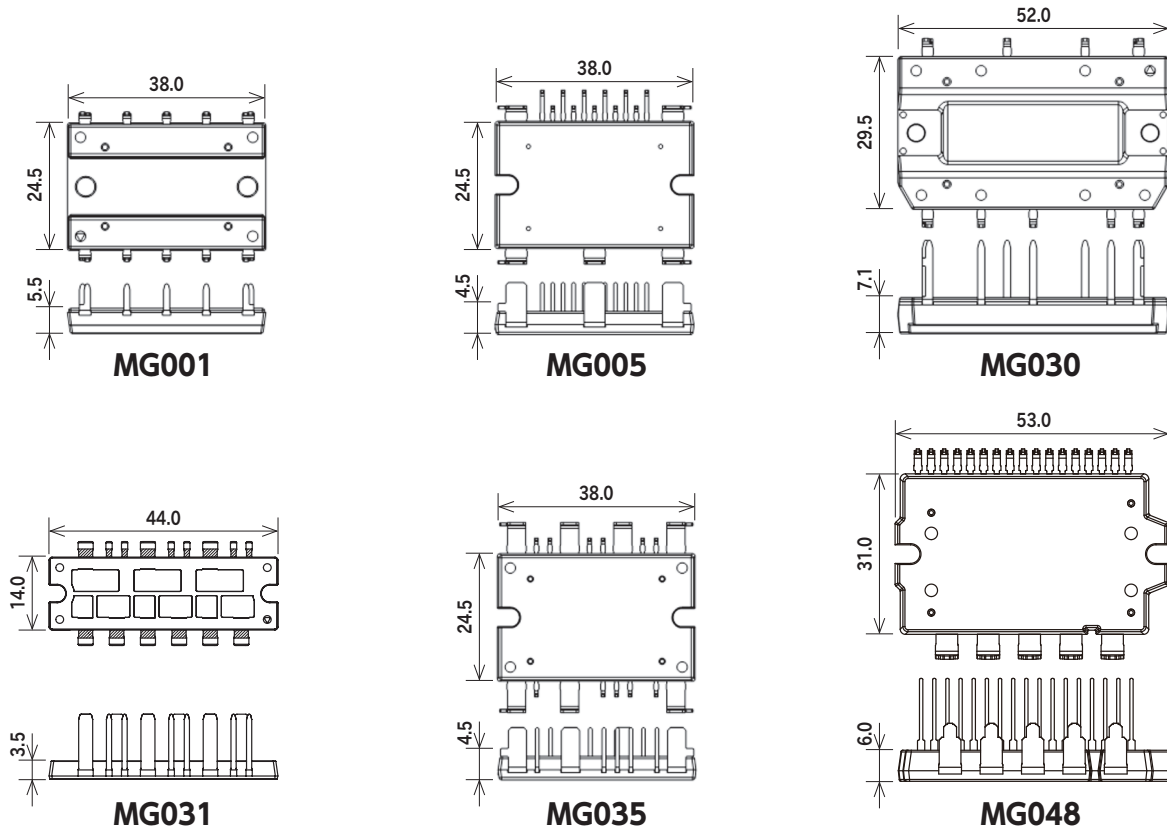
Axial		Absolute Maximum Ratings					Electrical Characteristics						Automotive
Package		PrSM	Tj	V _{RM} (max)		ZD			Di				
JEDEC Code	Fig.			Type No.	[W]	[°C]	ZD	Di	V _{BR} (min)	V _{BR} (max)	Conditions I _R [mA]	I _R (max) [μA]	
—	AX078	ST02D-82	200	-40 to 150	67	600	74	90	1	5	5	600	—
		ST02D-140	200	-40 to 150	120	600	130	160	1	5	5	600	—
		ST02D-170	200	-40 to 150	145	600	155	185	1	5	5	600	—
		ST02D-200	200	-40 to 150	170	600	185	215	1	5	5	600	—
—	AX10	ST03D-82	300	-40 to 150	67	600	74	90	1	5	5	600	—
		ST03D-140	300	-40 to 150	120	600	130	160	1	5	5	600	—
		ST03D-170	300	-40 to 150	145	600	155	185	1	5	5	600	—
		ST03D-200	300	-40 to 150	170	600	185	215	1	5	5	600	—
		ST03DH-240	300	-40 to 150	200	1000	220	250	1	5	10	1000	—
		★ ST02DH-280	300	-40 to 150	230	1000	250	300	1	5	10	1000	—
★ ST02DH-320	300	-40 to 150	260	1000	300	350	1	5	10	1000	—		

★ : Under development

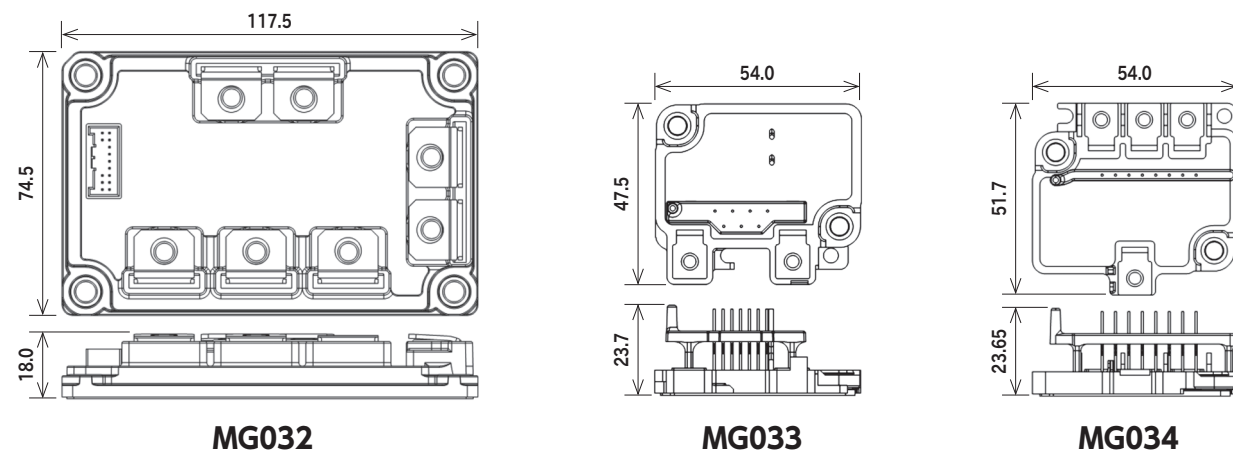
POWER MODULES

Power Modules include combinations of various power semiconductors. They are easy to design, reduce the number of components needed in the device, are suitable for device downsizing, and mitigate heat-dissipation concerns. At Shindengen, a multitude of packages allow us to meet customer needs of MOSFET, diodes, and other products. Semi customizable support and customizable package design support are available.

Transfer Type Package Sample



Potting Type Package Sample



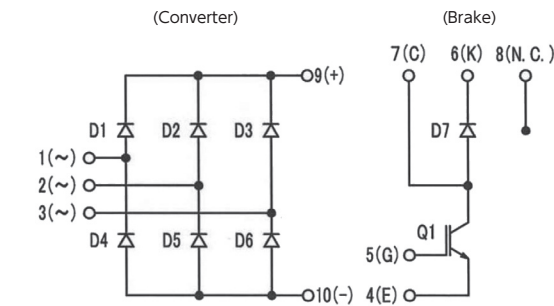
CB Module Series

Converter + Brake Modules

Type No.	Package		Converter Diode				Brake IGBT				Brake FRD				UL	Automotive			
			Absolute Maximum Ratings		Electric Characteristics		Absolute Maximum Ratings		Electric Characteristics		Absolute Maximum Ratings		Electric Characteristics						
	JEDEC Code JEITA Code House Name	Fig.	VRRM [V]	IF (AV) [A]	Conditions Tc [°C]	Vf (max) [V]	Conditions IF [A]	VCES [V]	Ic [A]	VCE (sat) (typ) [V]	Conditions Ic [A]	VRRM [V]	IF (AV) [A]	Conditions Tc [°C]			Vf (max) [V]	Conditions IF [A]	ttr (max) [ns]
MG020200	-	-	600	20.0	137	1.05	7.0	600	28.0	2.10	15.0	600	3.0	137	1.65	3.0	50	UL	-
MG020201	-	MG001	600	30.0	136	1.05	10.0	600	30.0	2.00	30.0	600	3.0	137	1.65	3.0	50	UL	-

UL: UL recognize (UL File No. E142422)

Equivalent Circuit Schematic



MG001

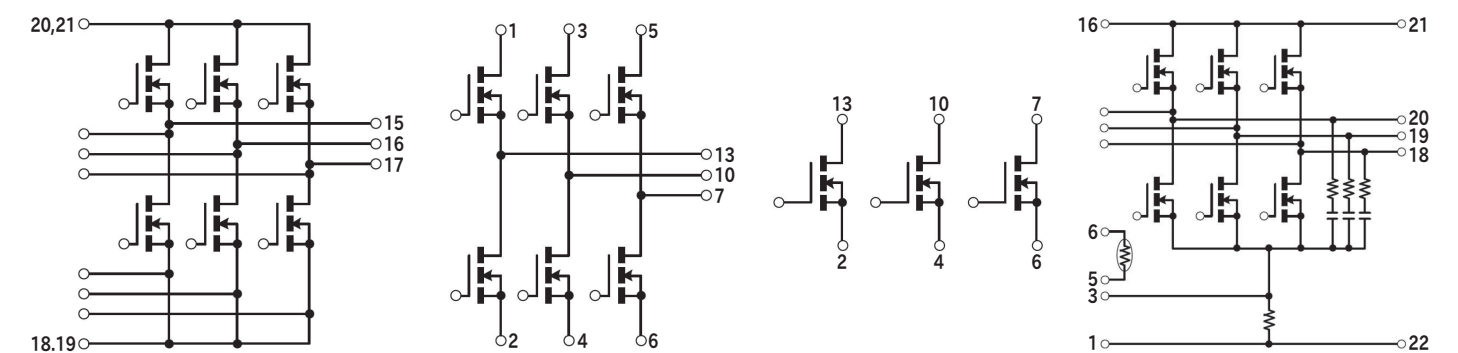
INV Module Series

Inverter Modules

Type No.	Package		Absolute Maximum Ratings					Electrical Characteristics						UL	Automotive
			Vdss [V]	Id [A]	Idp [A]	Pt [W]	Tch [°C]	Rds(ON) (typ) [mΩ] Vgs=10V	Rds(ON) (max) [mΩ] Vgs=10V	Ciss (typ) [pF]	Qg (typ) [nC]	Vth (typ) [V]	Rth(j-c) (max) [°C/W]		
MG032A4207R5A	-	-	75	420	840	500	150	-	0.98	80120	505	3.0	0.25	-	○
MG032B420010A	-	MG032	100	420	840	500	150	0.99	1.37	91800	500	3.0	0.25	-	○
MG031B090004A	-	-	40	90	360	125	175	2.34	3.20	4180	76	2.0	1.2	-	○
★ MG031E120004A	-	-	40	120	480	125	175	2.44	3.10	3540	68	3.0	1.2	-	■
★ MG031G148004A	-	-	40	148	592	154	175	1.75	2.20	5330	96	3.0	0.97	-	○
★ MG031L080006A	-	-	60	80	320	125	175	4.47	5.60	3570	65	3.0	1.2	-	■
★ MG031N110006A	-	-	60	110	440	154	175	3.0	3.8	5630	94	3.0	0.97	-	■
★ MG031MC148004A	-	MG031	40	148	592	154	175	1.75	2.20	5330	96	3.0	0.97	-	■
★ MG031MD110006A	-	-	60	110	440	154	175	3.1	3.9	5630	94	3.0	0.97	-	■
★ MG048A150004A	-	-	40	150	600	147	150	2.1	2.7	5900	111	3.0	0.85	-	■
★ MG048B100006A	-	MG048	60	100	400	147	150	2.82	3.92	8186	136	3.0	0.85	-	■

■: New product ★: Under development ■: Please contact us.

Equivalent Circuit Schematic



MG032

MG031

MG031

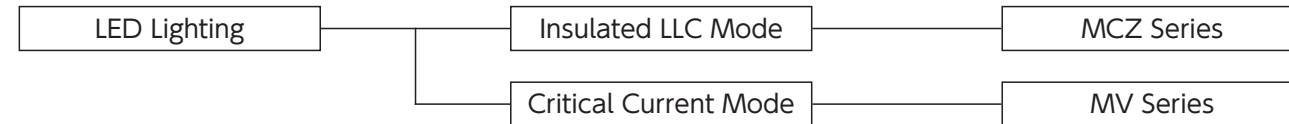
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MG048

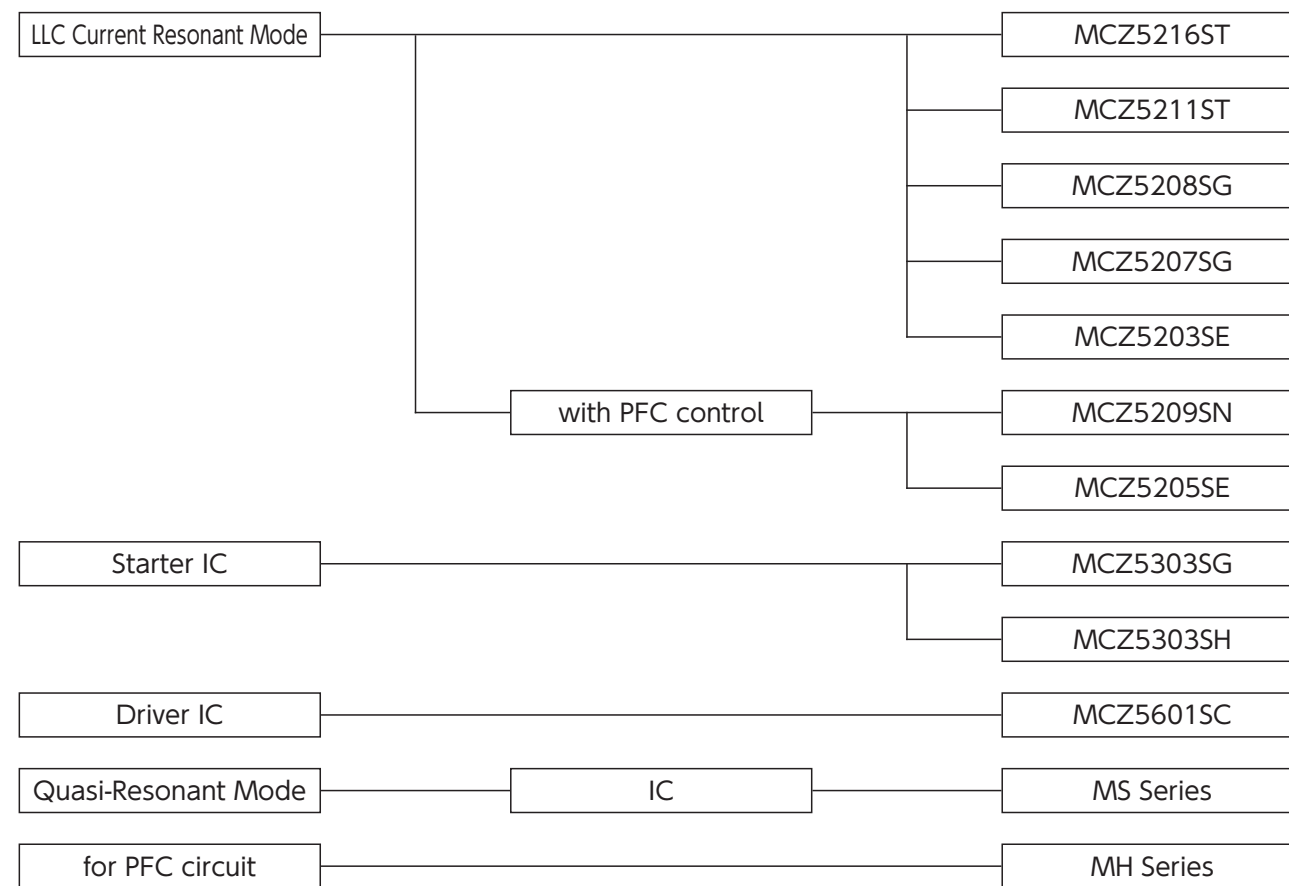
POWER ICs

Line up

IC for LED Lighting



IC for Power Supply





IC for LED Lighting

Critical Current Mode Power Supply ICs for LED Lighting : MV Series

- Outline The MV series has a specialized function for LED lighting with PWM & Linear dimming that operates Critical Current Mode without auxiliary winding. On and off width modulation function allows for smooth deep dimming of 1% or less.

MV Series

Critical Current Mode Power Supply ICs for LED Lighting

Package		Type No.	HV Startup	Vcc [V]	Output	ON/OFF	Built-in Regulator Voltage [V]	Linear Dimming	PWM Dimming	Automotive
JEDEC Code JEITA Code House Name	Fig.									
 - SOP8J	L2	MV1001SC	Yes	9 to 16	1ch	-	-	Yes	Yes	-
		MV1002SC	No							-
		MV1011SC	Yes							-
		MV1012SC	No							-
 - SOP16	L5	MV2002SG	No	10 to 16	2ch	Cont. by REF Voltage	3.3	Yes	Yes	-
		MV2052SG	No							5

POWER ICs

IC for Power Supply

LLC Current Resonant Mode Controller ICs for Bridge Converter : MCZ Series

Outline The MCZ series is an advanced symmetric LLC current resonant mode controller for bridge converters. Symmetric LLC resonant converter applications are greatly expanding due to their extremely high efficiency and low noise characteristics.

Starter ICs with Built-in Burst Function : MCZ5303

Outline A dedicated IC that provides a low power consumption start-up for circuits without an IC. Low power consumption standby is possible due to the ON/OFF Control IC with burst function. It is especially effective when used in conjunction with the LLC current resonance power supply.

High/Low Side Driving IC

Outline A driving IC for MOSFET and IGBT power devices. With built-in high-withstand voltage components, it can be used for a variety of uses such as inverter and power supply, etc.






Low Power Standby Quasi-Resonant Power Supply ICs : MS Series

Outline The MS series consumes much less power in standby mode than conventional MR series. The ICs incorporate various functions to make it more user-friendly and easier to design a power supply with fewer external components.

PFC ICs : MH Series



Outline The MH series is a PFC circuit control IC which enables multistage interleave. An efficient, high power operation is possible by utilizing a slave IC composed of multistage interleave and a master IC that can be used alone.

MCZ Series


LLC Current Resonant Mode Controller ICs for Bridge Converter																											
Package		Fig.	Type No.	Type	HV Startup	High-side Drive	Vcc (max) [V]	Vin Sensing	Burst Mode	Maximum Frequency [kHz]	X-cap. discharge	Capacitive Mode Protection	Over Voltage Protection	Over Current Protection	Automotive												
JEDEC Code	JEITA Code															House Name											
	-	L6	MCZ5216ST	LLC Current Resonant Mode	Yes	Yes	35	Yes	Yes	500	Yes	Yes	Latch	Timer Latch	-												
	-		MCZ5211ST	LLC Current Resonant Mode	Yes				Yes	500	No				-												
	-	L8	MCZ5209SN	LLC Current Resonant Mode with PFC Control	Yes				Yes	35	Yes				Yes	300	No	Yes	Latch	Timer Latch	-						
	-		SOP24																								
	-	L5	MCZ5207SG	LLC Current Resonant Mode	No										Yes	35	Yes				Yes	300	No	Yes	Latch	Timer Latch	-
	-		SOP16	MCZ5208SG	LLC Current Resonant Mode																No	Yes	500				No
	-	L7	MCZ5205SE	LLC Current Resonant Mode with PFC Control	No	Yes	35	Yes				No	300	No							Yes	Latch	Timer Latch				-
	-		SOP22																								
	-	L7	MCZ5203SE	LLC Current Resonant Mode	No				Yes	35	Yes	No	300	No				Yes	Latch	Timer Latch							-
	-		SOP22																								

 : New product

Starter ICs with Built-in Burst Function

Package		Fig.	Type No.	Vin Applied Voltage [V]	Vcc Output Voltage [V]	HV Startup	Vin Sensing	Burst Mode	Automotive
JEDEC Code	JEITA Code								
	-	L5	MCZ5303SG	95 to 450	18.5(typ)	Yes	Yes	Yes	-
	-		SOP16						
	-	L3	MCZ5303SH	95 to 450	18.5(typ)	Yes	No	No	-
	-		SOP8/7J						



High/Low Side Driver ICs

Package		Fig.	Type No.	Output	High-side Floating Supply Voltage [V]	Vcc (max) [V]	Input/Output Channel	Vcc_UVLO [V]	VBS_UVLO [V]	Typ. Output Current		Automotive
JEDEC Code	JEITA Code									House Name	Source [mA]	
	-	L2	MCZ5601SC	High-side/Low-side	600	22	2/2	8.2 to 9.0	7.2 to 8.0	400	400	-
	-		SOP8J									

 : New product

MS Series


Low Power Standby Quasi-Resonant Power Supply ICs

Package		Fig.	Type No.	Vin [V]	Vcc [V]	Over Voltage Protection	Over Current Protection	Stand-by Operation	Bottom Skip	Automotive
JEDEC Code	JEITA Code									
	-	L3	★ MS1007SH	95 to 450	11 to 21	Auto restart	Auto restart	Auto Burst Mode	1 skip	-
	-		MS1004SH		11 to 24	Vcc Latch	Timer Latch 2sec. (typ)	Auto Burst Mode/S-Stby Mode	2 skip	-
	-		MS1003SH					1 skip	-	
	-	L4	MS1006SK	95 to 450	11 to 24	Vcc Latch	Timer Latch 2sec. (typ)	Auto Burst Mode/UT-Stby Mode	2 skip	-
	-		SOP14					MS1005SK	1 skip	-



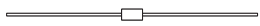




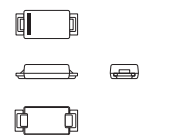
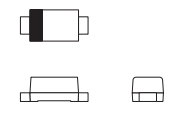
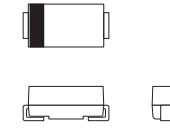
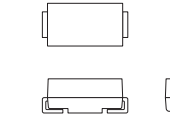
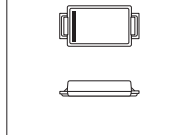
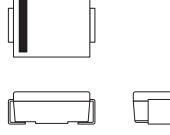
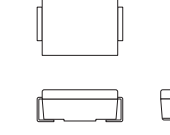
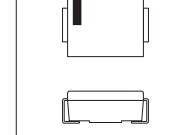
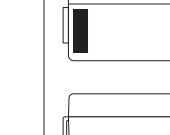
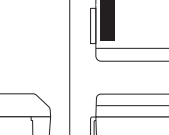
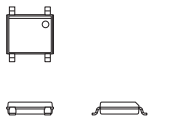
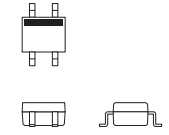
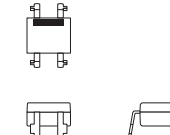
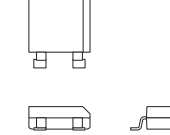
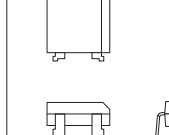
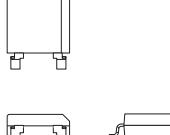
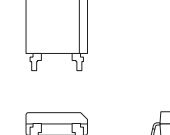
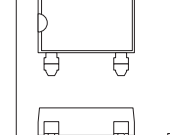
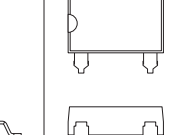
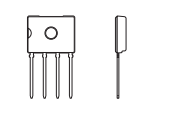
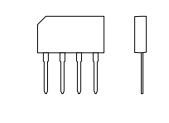
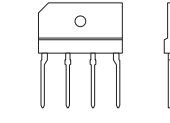
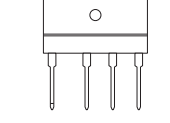
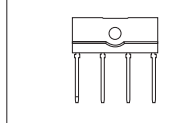
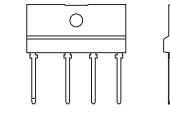
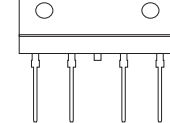
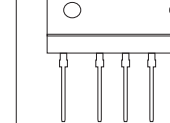
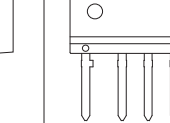
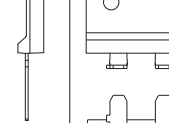
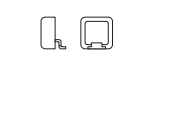
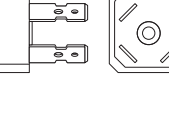
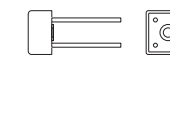
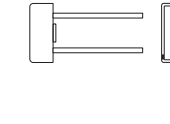
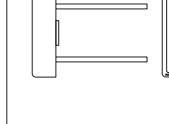

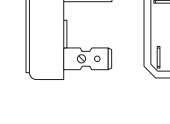
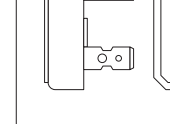
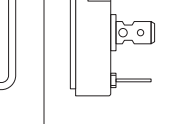
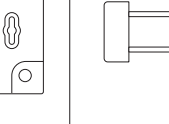
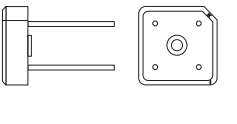
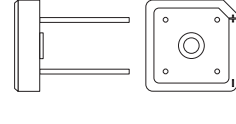
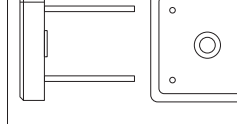
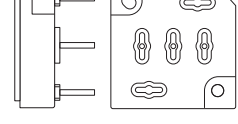
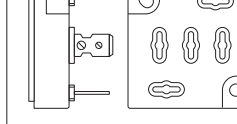
★ : Under development

MH Series

PFC ICs

Package		Fig.	Type No.	Type	Operation Mode	Vin Sensing	Vcc [V]	Zero Current Detection	Diodes Short Protection	FB Open Short Protection	Over Voltage Protection	Automotive
JEDEC Code	JEITA Code											
	-	L2	MH2501SC	Critical Current Mode	Master	Unnecessary	13 to 23	Auxiliary Winding	Yes	Yes	Yes	-
	-		SOP8J	MH2511SC	Synchronizes with Master IC		Slave	11 to 23	-	No	No	No

PACKAGE LIST

	1	2	3	4	5		6	7	8	9	10
A	A1 Package:AX057 	A2 Package:AX06 	A3 Package:AX06 	A4 Package:AX078 	A5 Package:AX10 		A6 Package:AX10 	A7 Package:AX14 			
B	B1 Package:DO-219AB similar G1E 	B2 Package:DO-219AA M1E 	B3 Package:DO-214AC 1E 	B4 Package:DO-214AC 1E 	B5 Package:SC-110B CE 		B6 Package:DO-214AA similar M2E 	B7 Package:DO-214AA similar M2E 	B8 Package:DO-214AA similar M2E 	B9 Package:2F 	B10 Package:2F 
C	C1 Package:SOPA-4 	C2 Package:TO-269AA 1Z(GSMO) 	C3 Package:1Z(DIP) 	C4 Package:1N(SMD) 	C5 Package:1N(DIP) 		C6 Package:1NA(SMD) 	C7 Package:1NA(DIP) 	C8 Package:1W(SMD) 	C9 Package:1W(DIP) 	
D	D1 Package:D3K 	D2 Package:2S 	D3 Package:3S 	D4 Package:5S 	D5 Package:JB 		D6 Package:JA 	D7 Package:TSB(4pin),JC(4pin) 	D8 Package:TSB(5pin),JC(5pin) 	D9 Package:JF 	D10 Package:JH 
E	E1 Package:MCP 	E2 Package:D30VC 	E3 Package:S2VB 	E4 Package:S4VB 	E5 Package:S5VB 		E6 Package:S10VB 	E7 Package:S15VB 	E8 Package:S25VB 	E9 Package:S50VB 	E10 Package:S3WB 
	11	12	13	14	15						
E	E11 Package:S10WB 	E12 Package:S15WB 	E13 Package:S20WB 	E14 Package:SVTA 	E15 Package:SVT 						

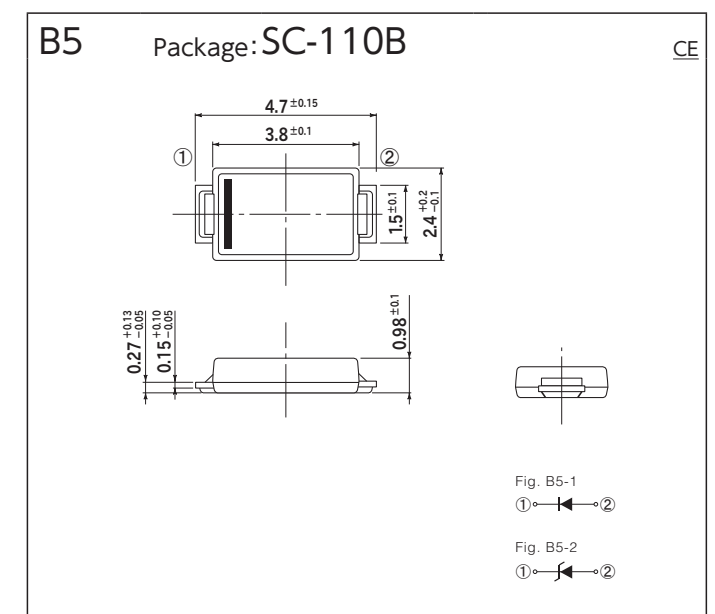
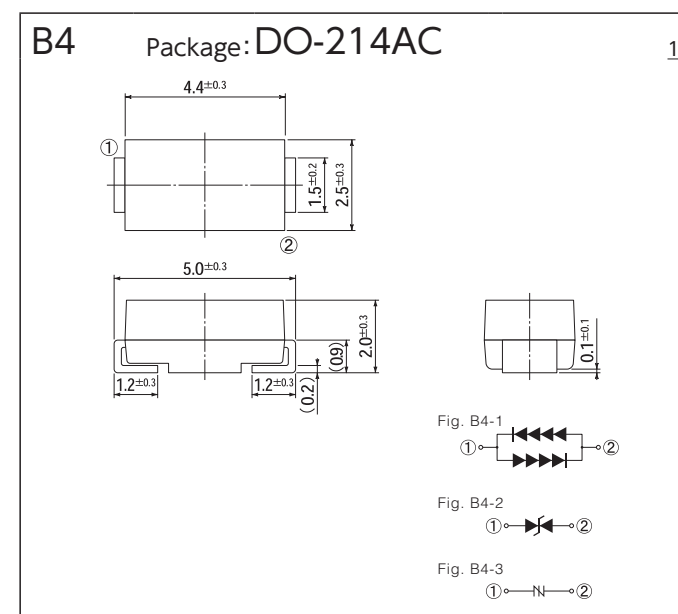
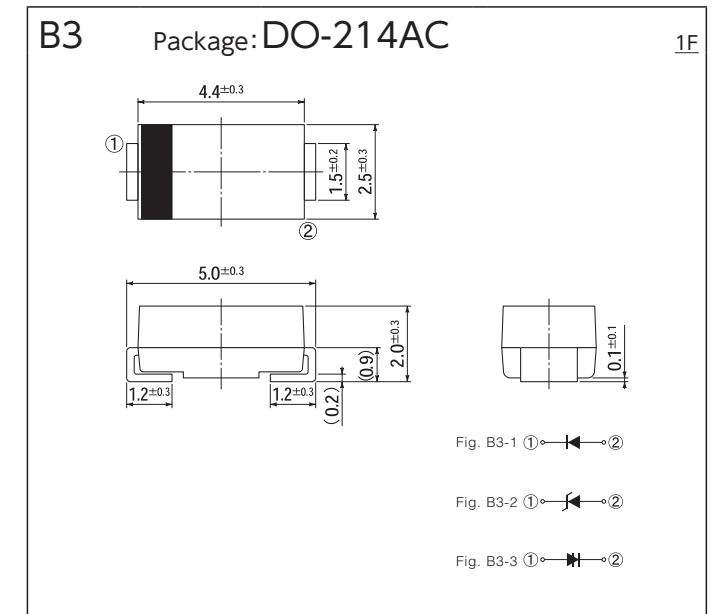
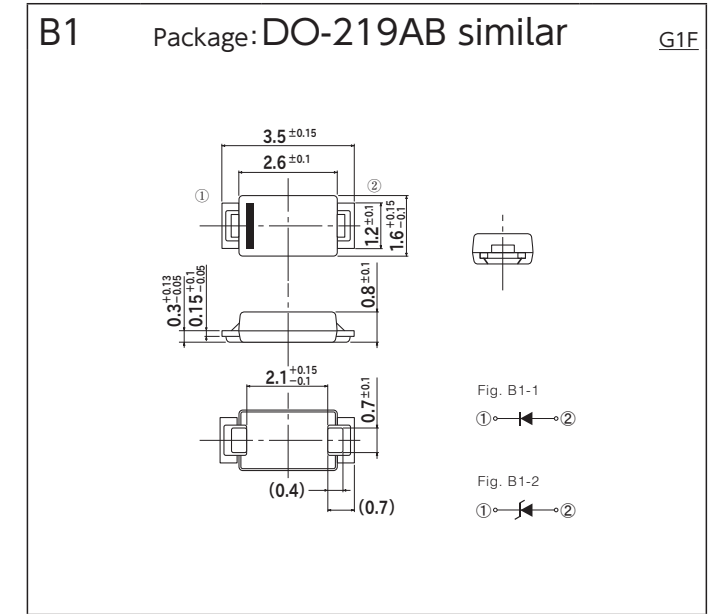
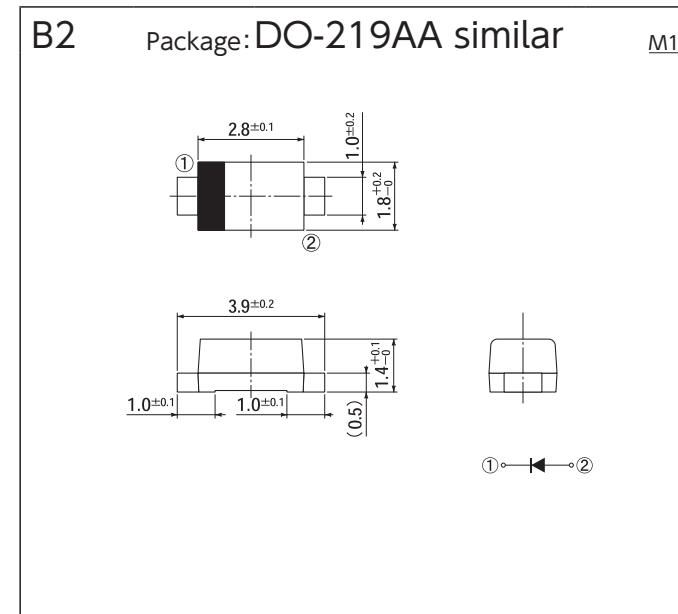
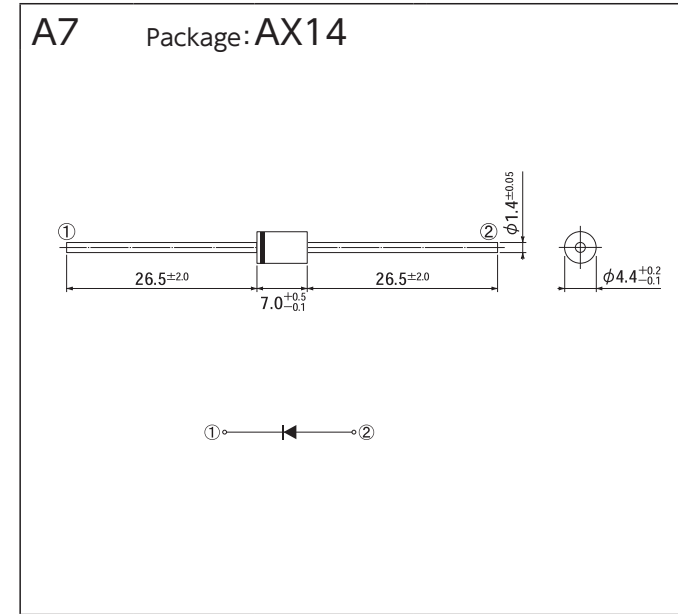
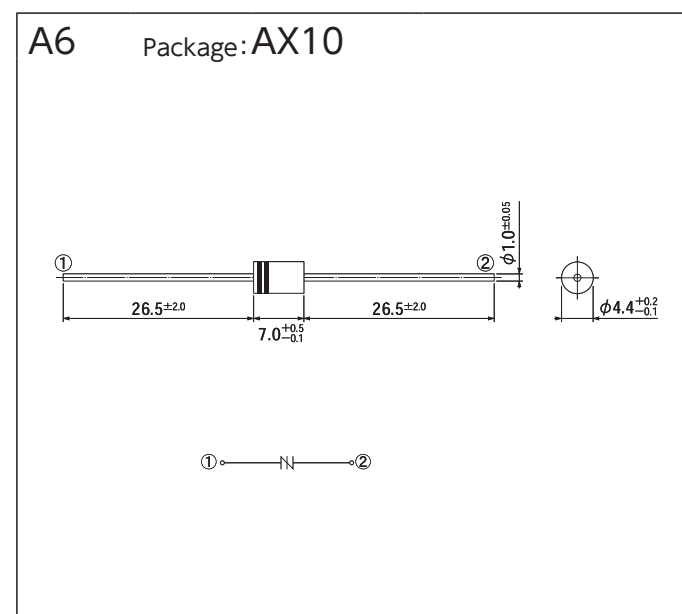
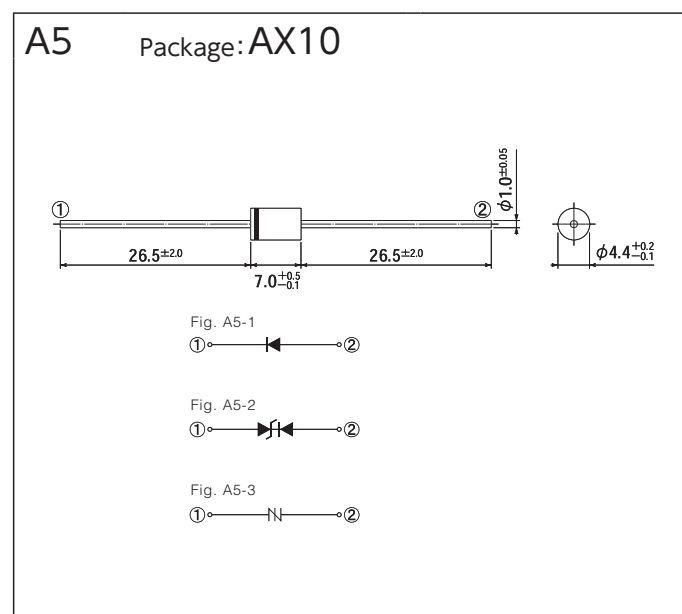
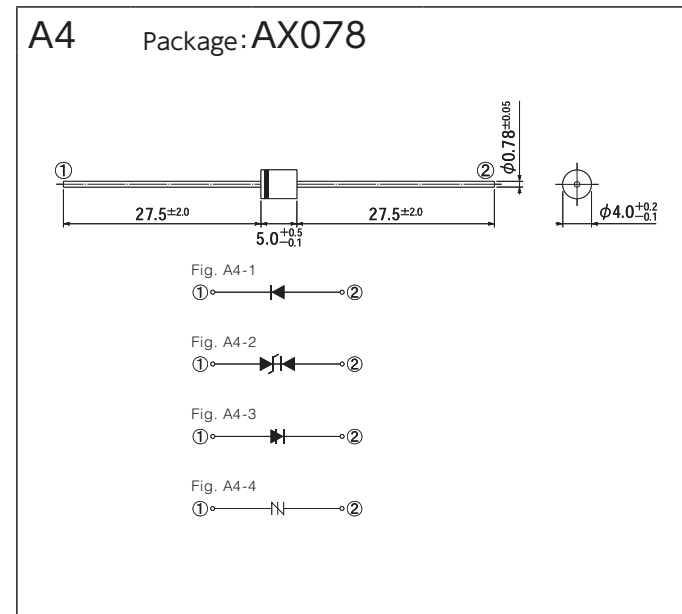
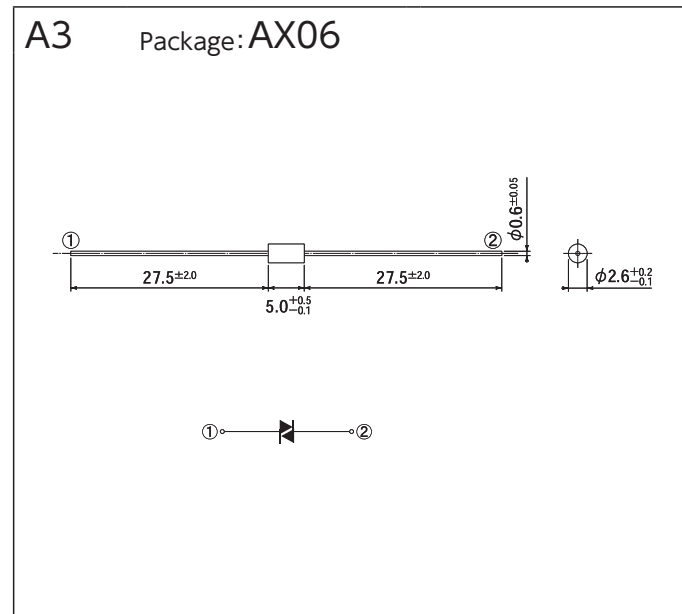
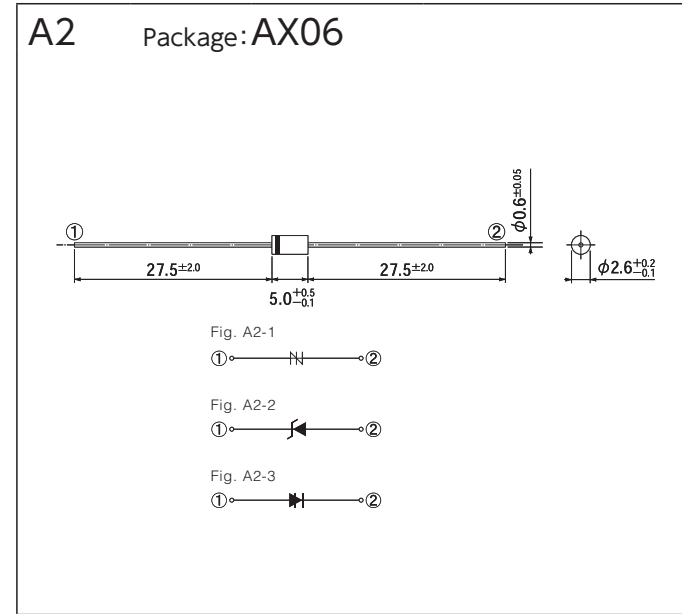
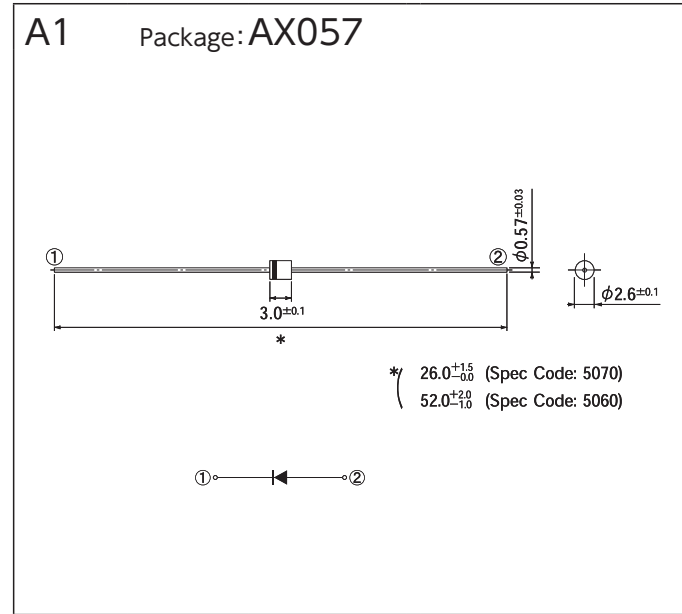
PACKAGE LIST

PACKAGE LIST

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G	G1 Package:SC-63 E-pack 	G2 Package:TO-252AA EB 	G3 Package:TO-252AB similar EB 	G4 Package:DO-277A similar EX 	G5 Package:TO-252AA similar EB 		G6 Package:LA 	G7 Package:MO-235B similar LE 			
H	H1 Package:SC-83 similar STQ-220 	H2 Package:SC-83 similar EB 	H3 Package:TO-263AB-1 EB 	H4 Package:TO-263AB ES 	H5 Package:SC-83 similar EB 		H6 Package:TO-263AB EZ 	H7 Package:TO-263-SC EZ-2p 			
J	J1 Package:SC-91A ETO-220(2pin) 	J2 Package:SC-91 ETO-220A(2pin) 	J3 Package:SC-91 ETO-220AG(2pin) 	J4 Package:SC-91 ETO-220G(2pin) 	J5 Package:TO-220AB EA 		J6 Package:SC-91A ETO-220(3pin) 	J7 Package:SC-91 ETO-220A(3pin) 	J8 Package:SC-91 ETO-220AG(3pin) 	J9 Package:SC-91 ETO-220G(3pin) 	
K	K1 Package:SC-93 ITO-3P(2pin) 	K2 Package:TO-247AD MTO-3P(2pin) 	K3 Package:SC-93 ITO-3P(3pin) 	K4 Package:TO-247AD MTO-3P(3pin) 	K5 Package:TO-247AD MTO-3P(3pin) 		K6 Package:TO-247AD MTO-3P 	K7 Package:TO-247AD MTO-3P 			
L	L1 Package:SOP8 	L2 Package:SOP8J 	L3 Package:SOP8/7J 	L4 Package:SOP14 	L5 Package:SOP16 		L6 Package:SOP18 	L7 Package:SOP22 	L8 Package:SOP24 		

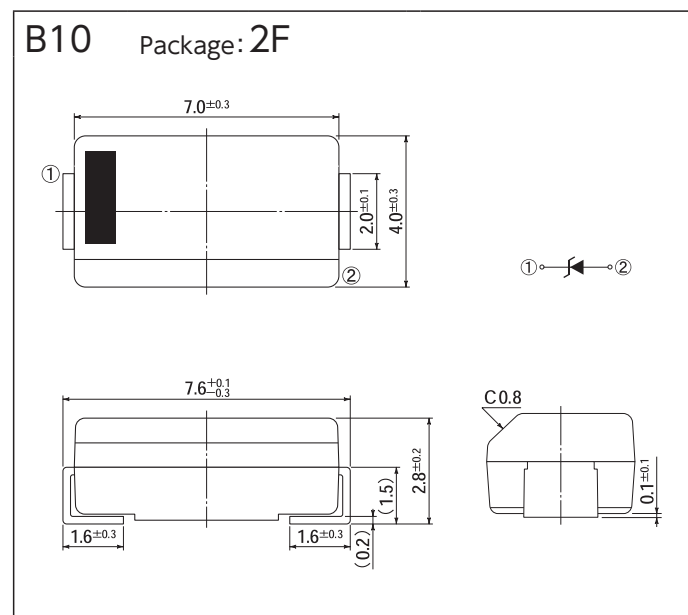
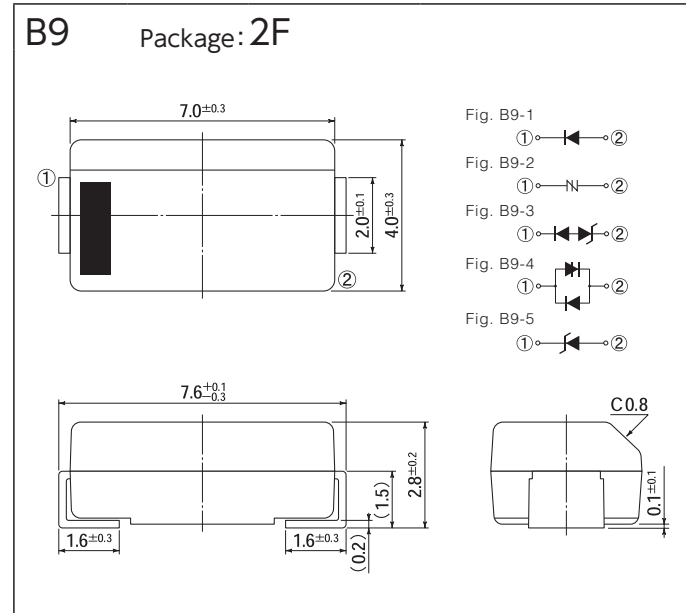
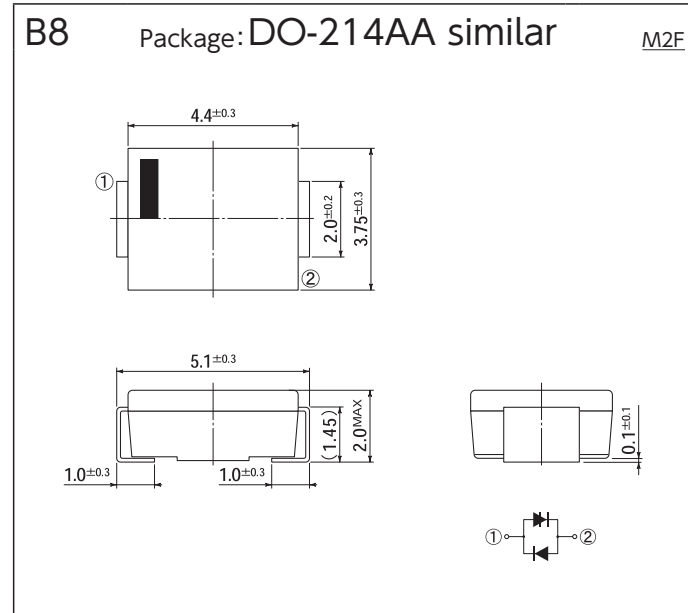
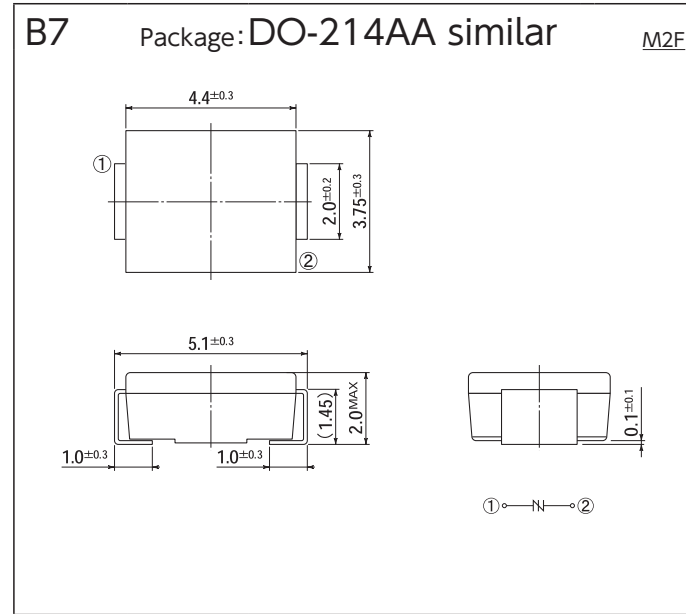
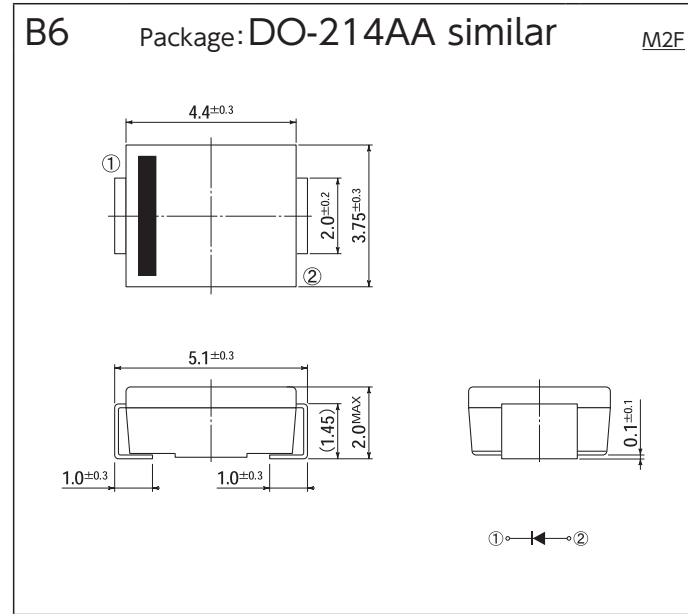
OUTLINE DIMENSIONS

[Unit:mm]

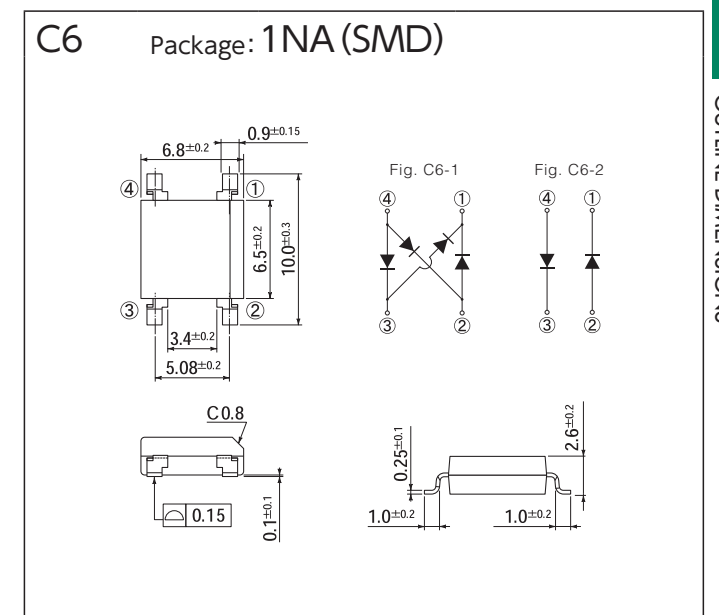
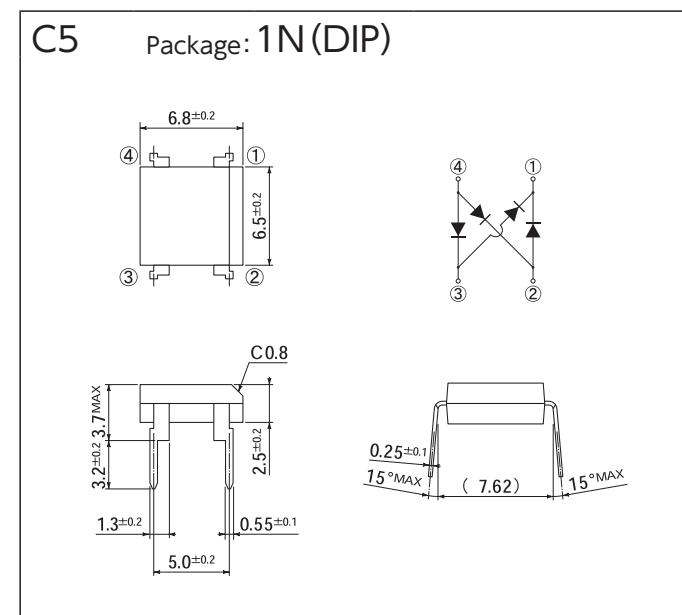
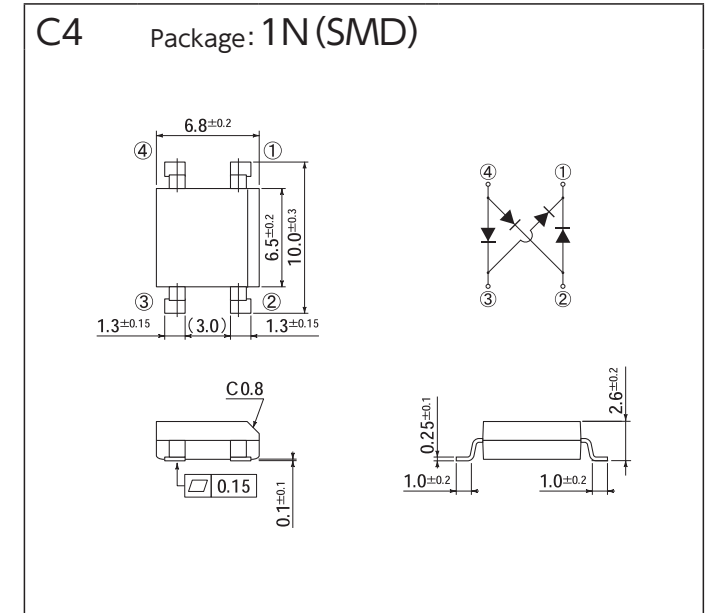
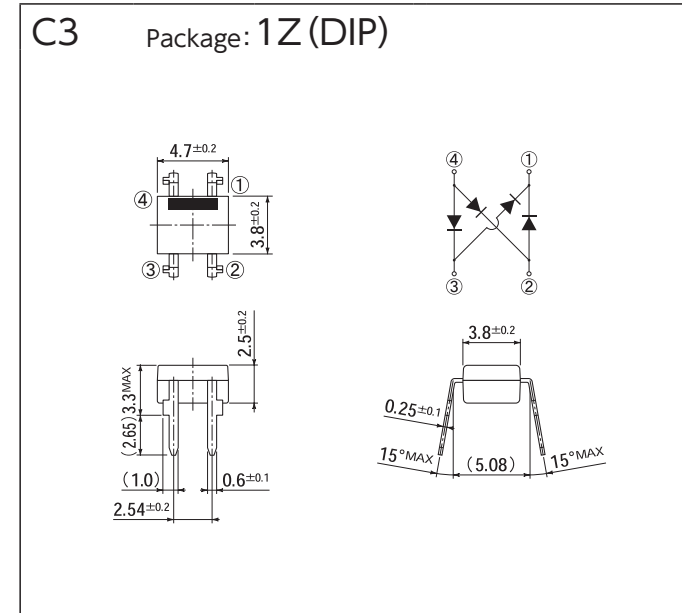
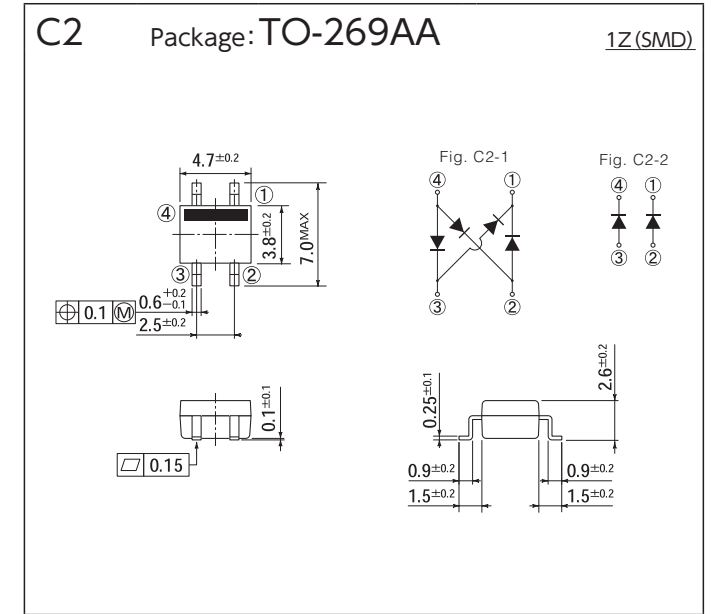
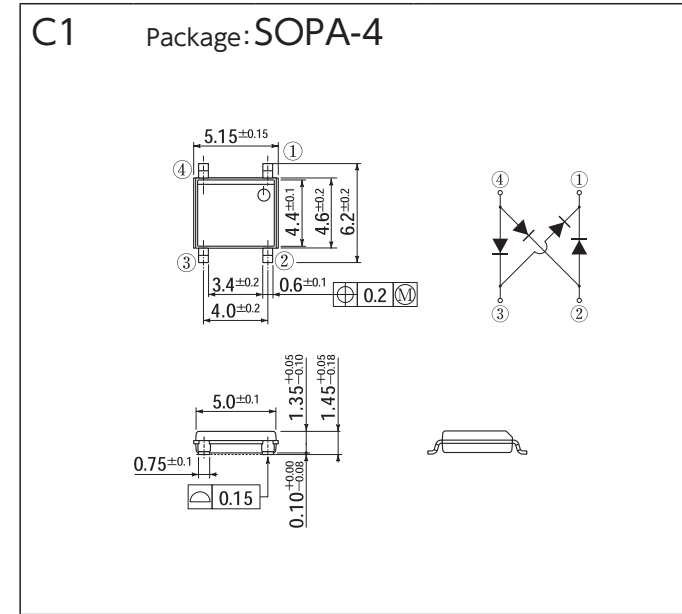


OUTLINE DIMENSIONS

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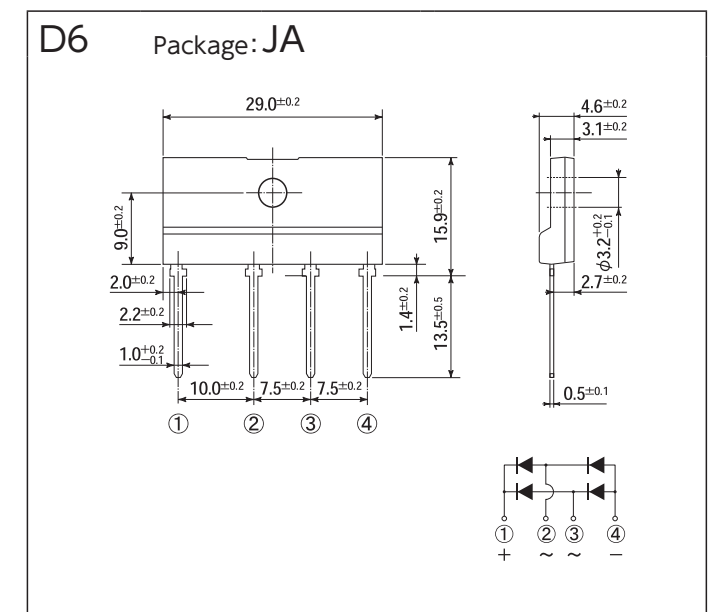
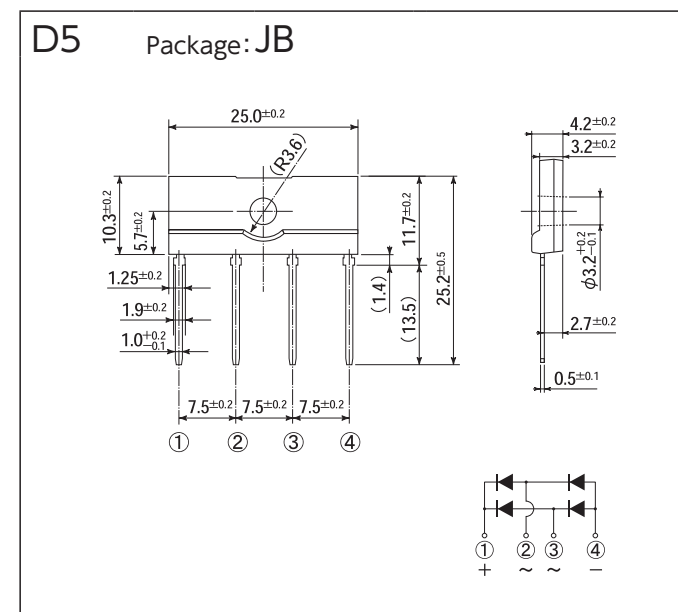
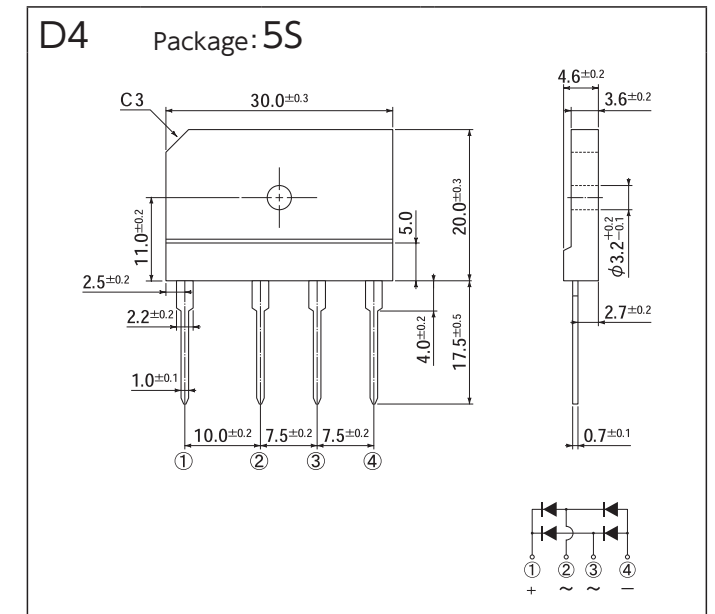
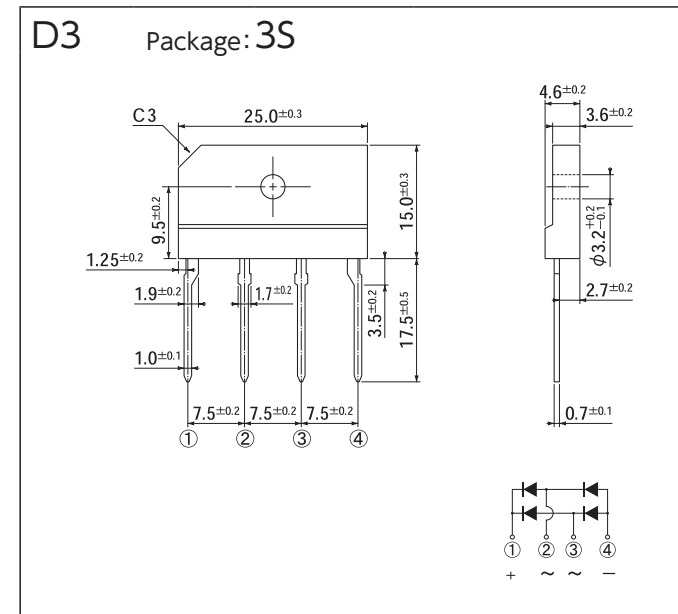
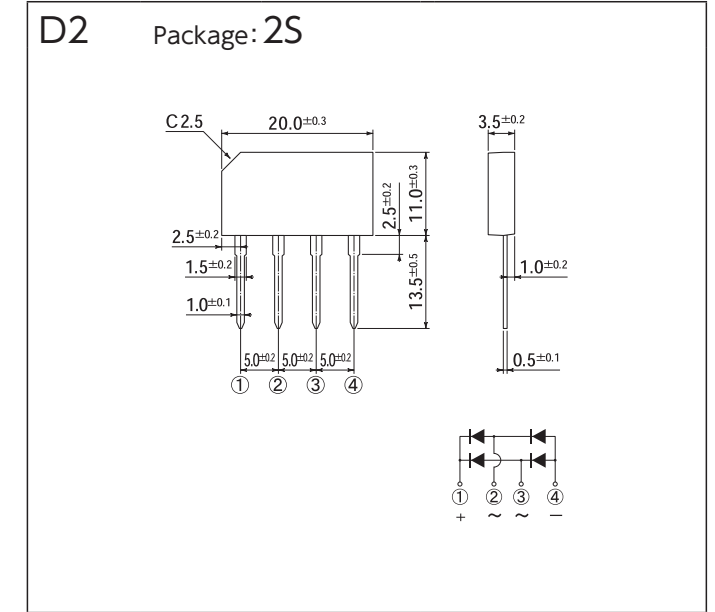
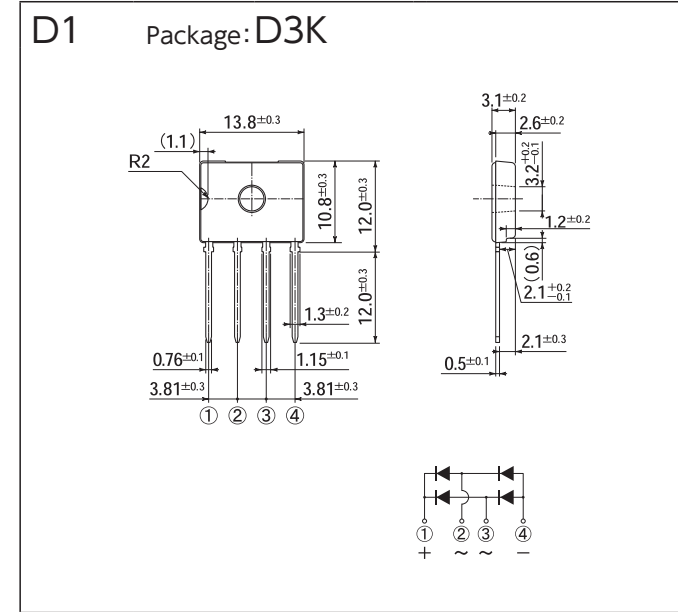
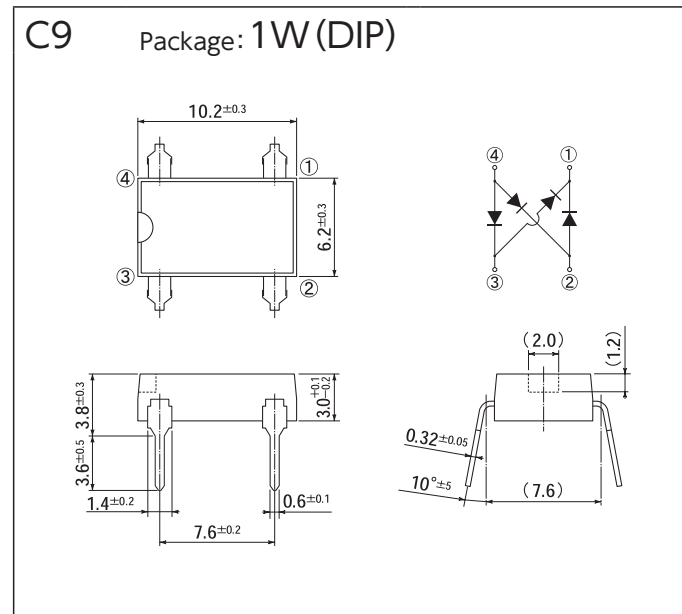
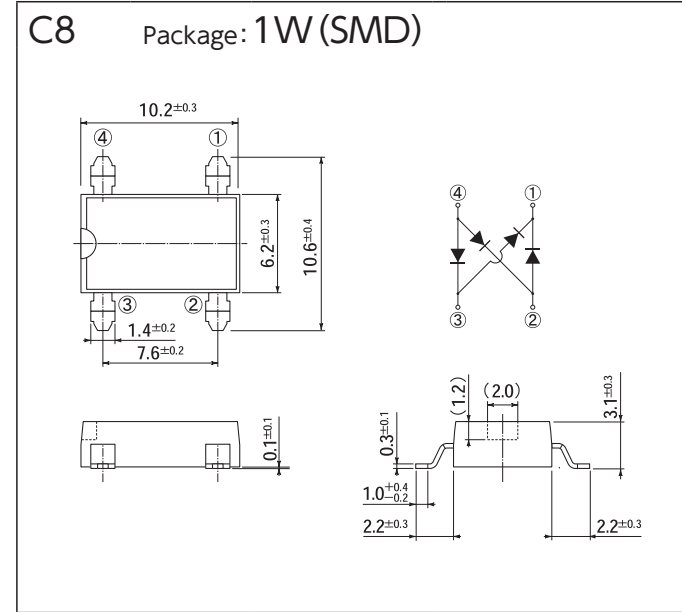
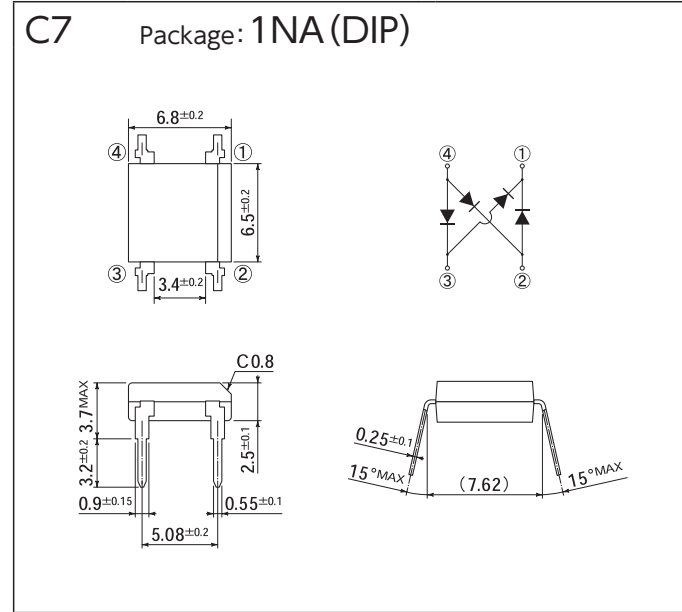


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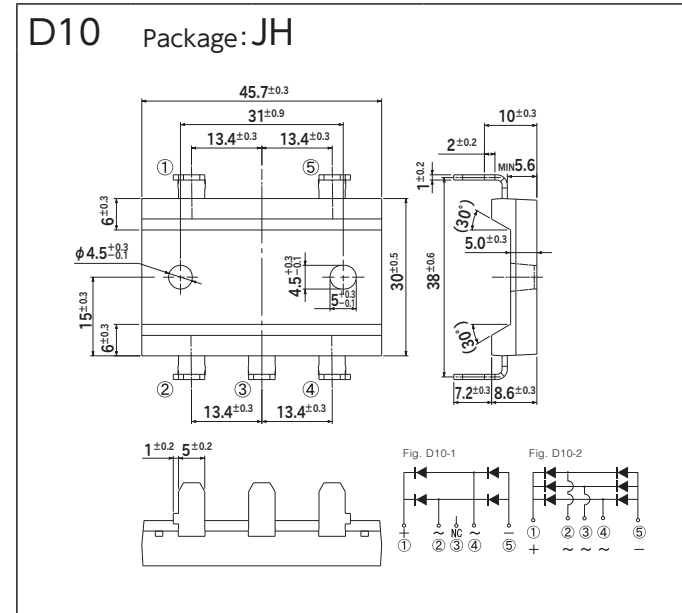
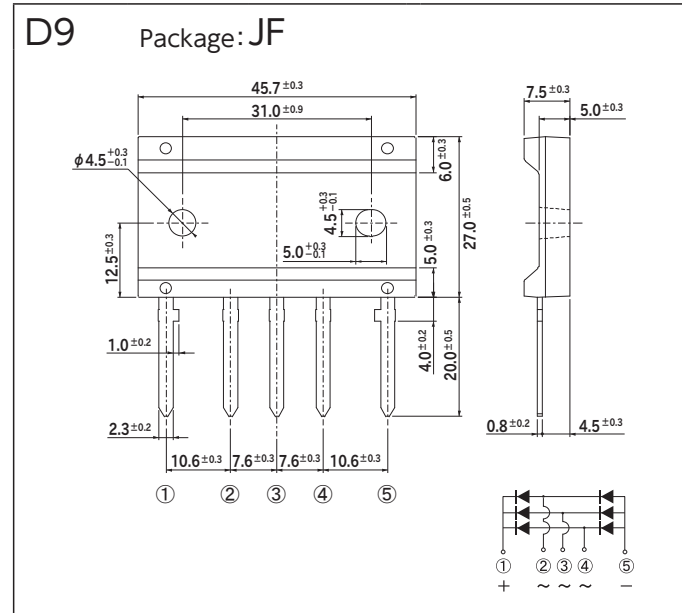
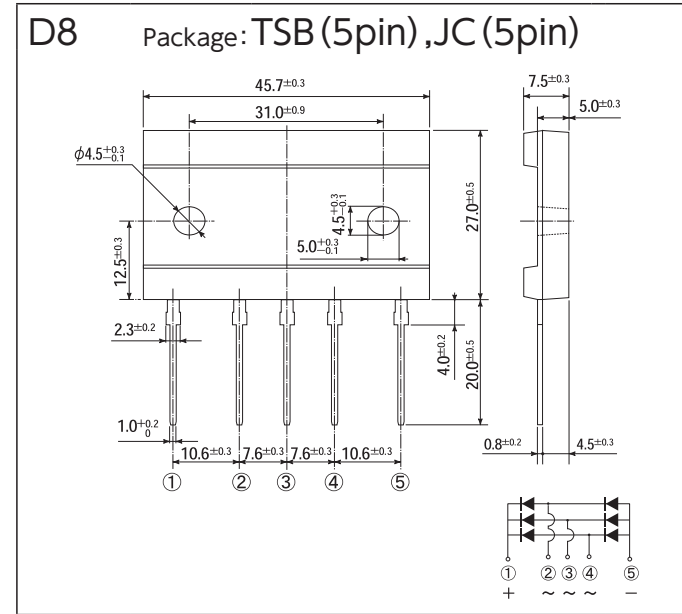
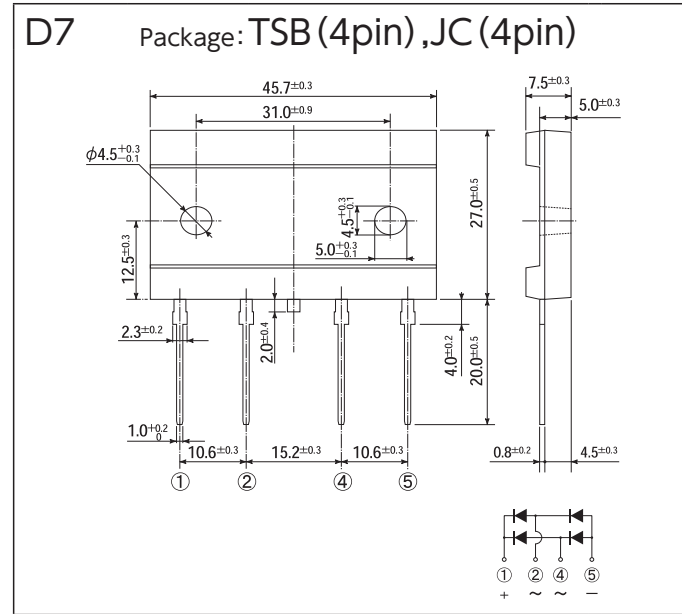
OUTLINE DIMENSIONS

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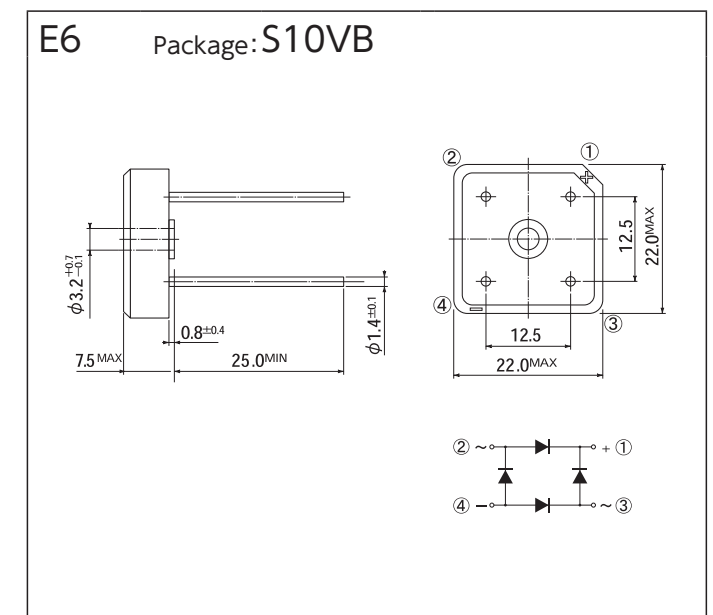
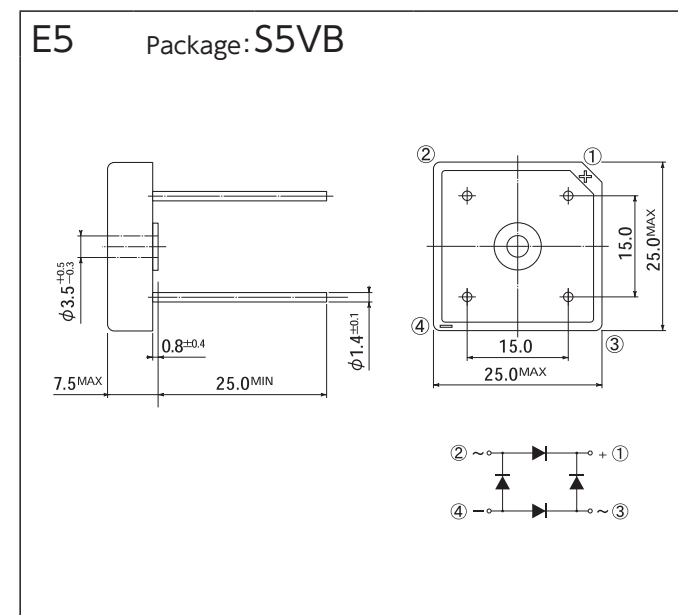
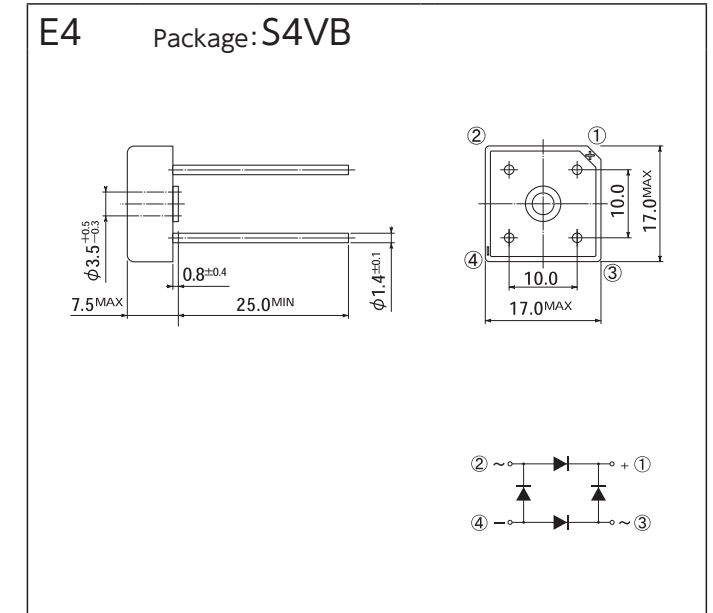
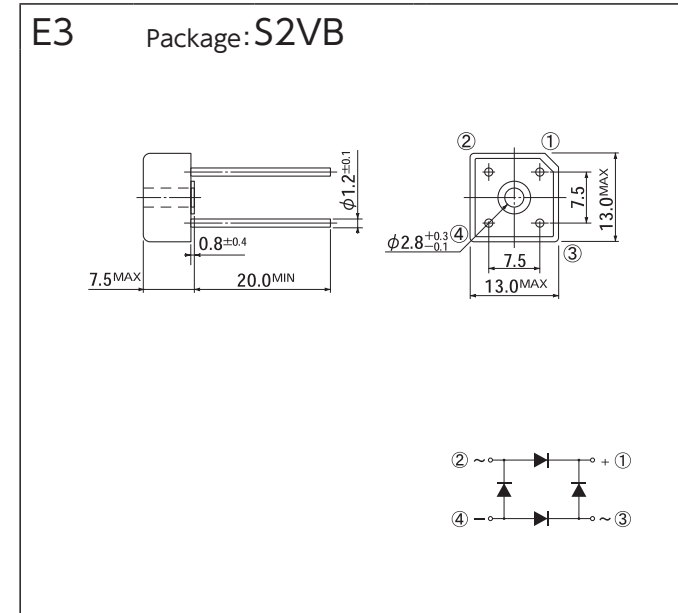
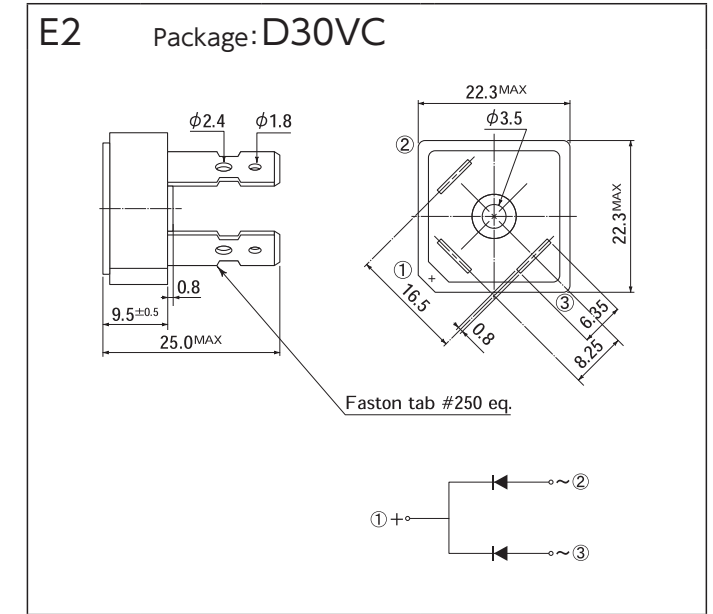
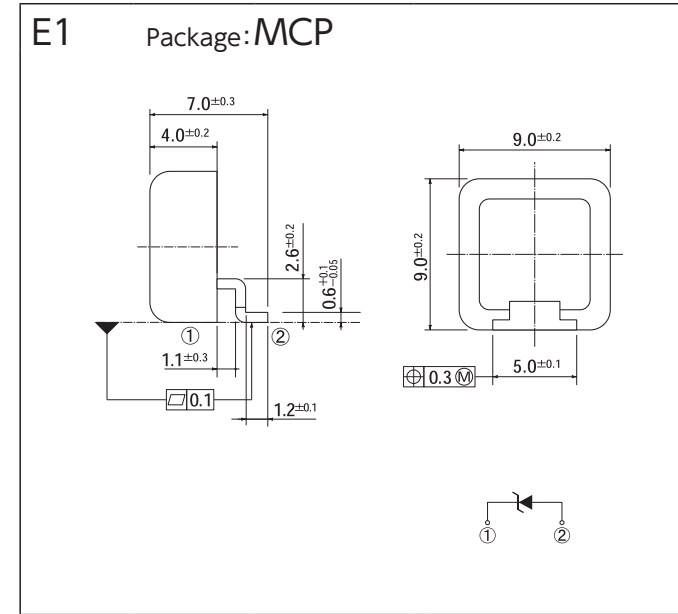


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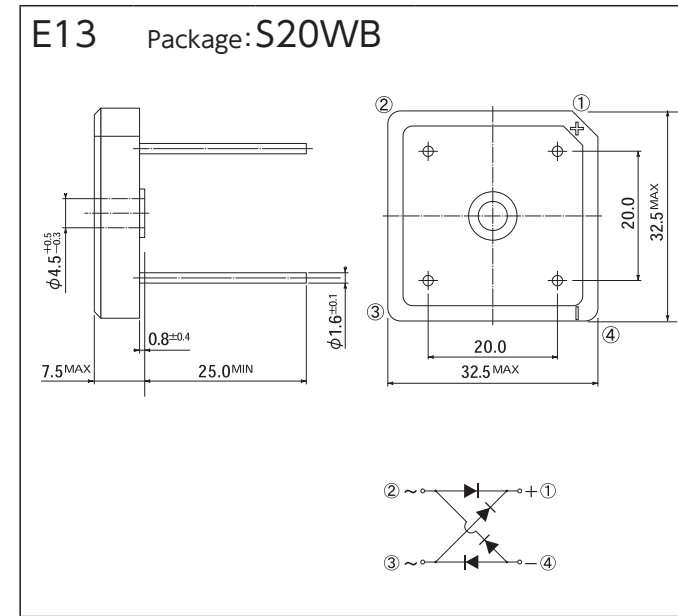
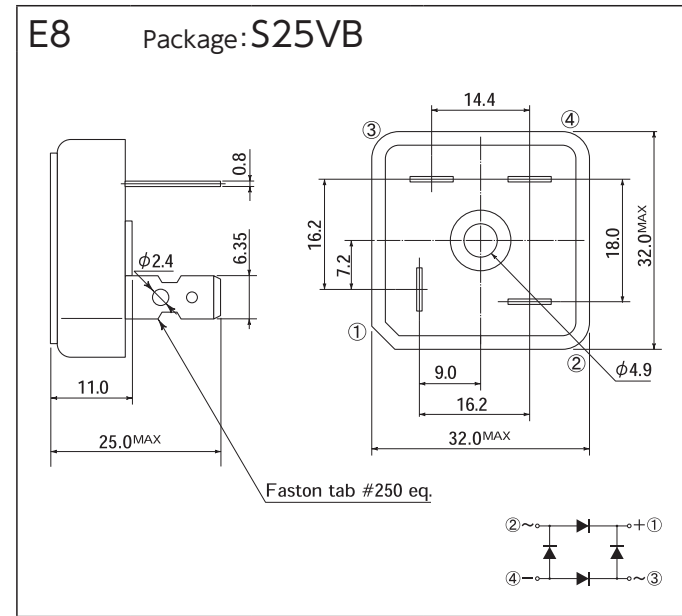
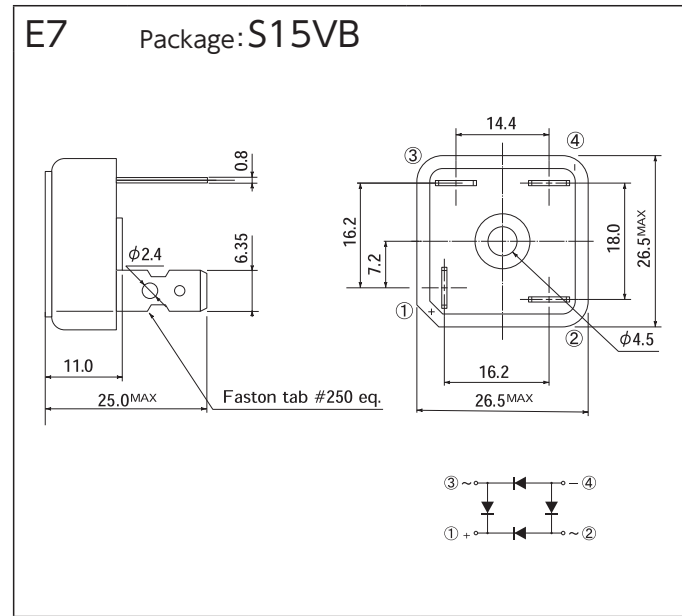


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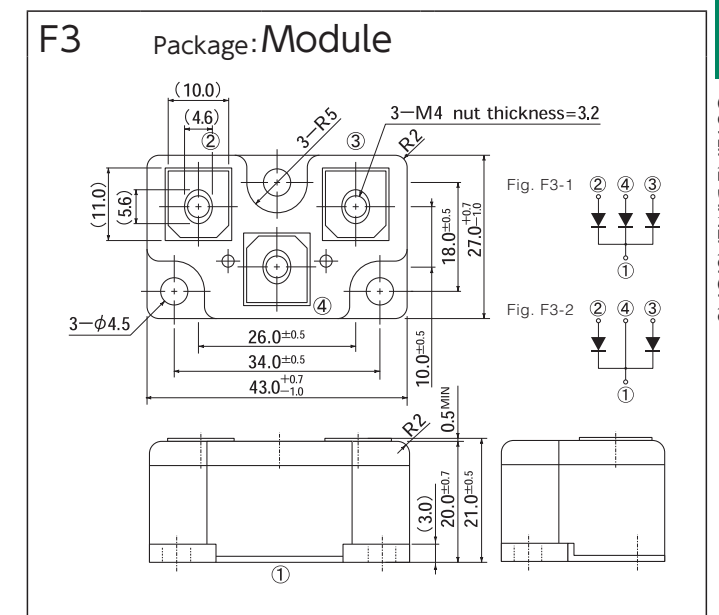
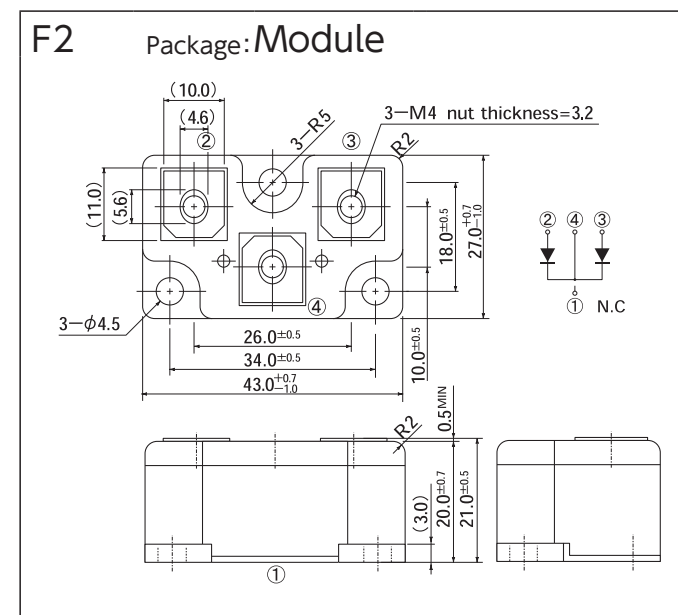
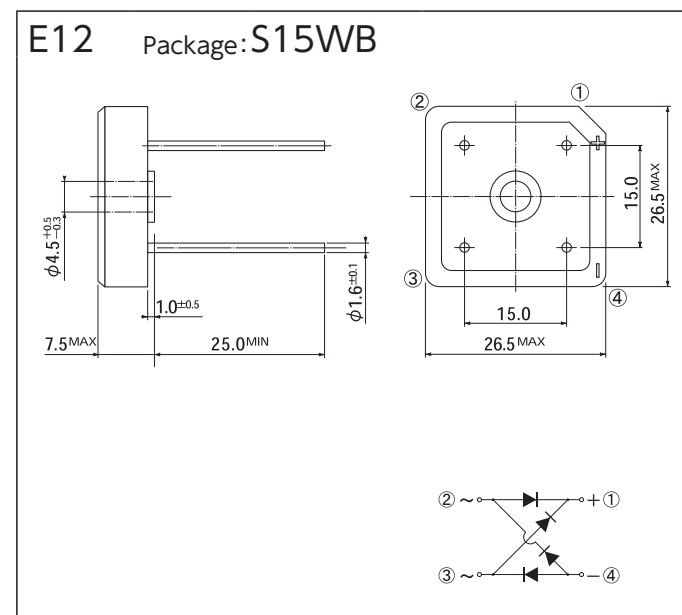
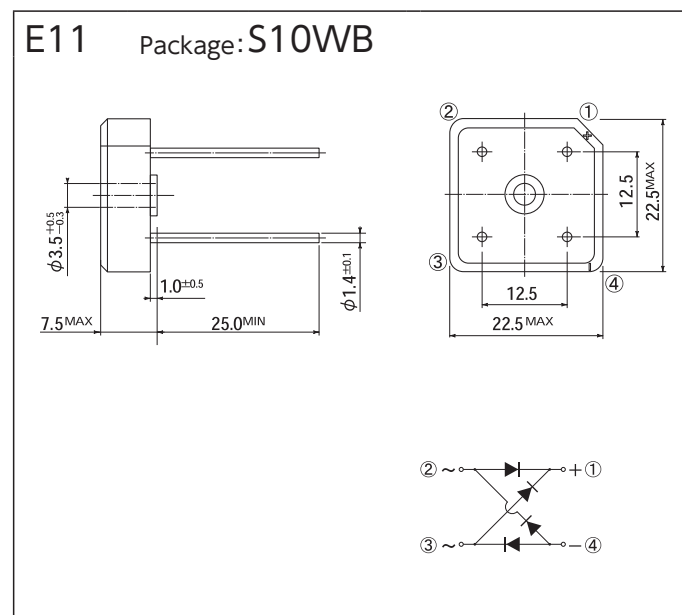
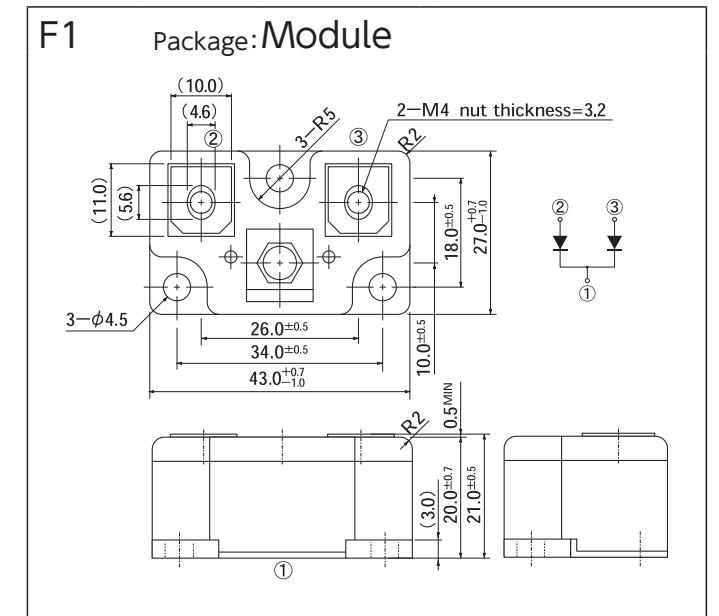
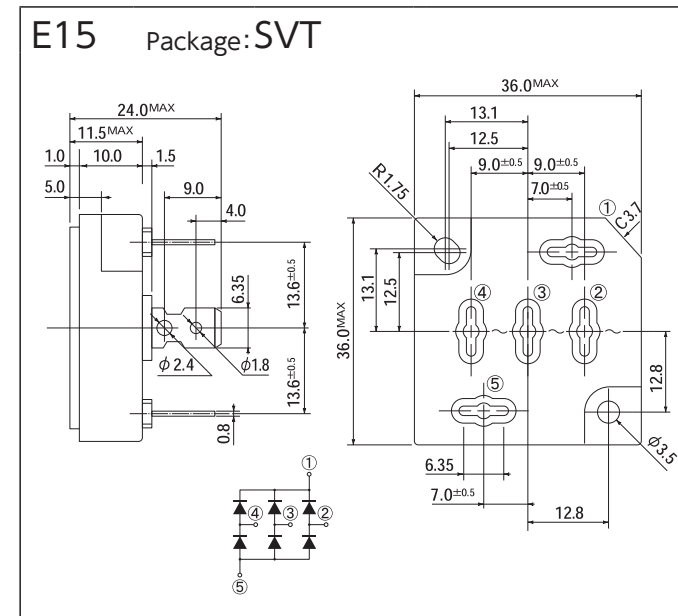
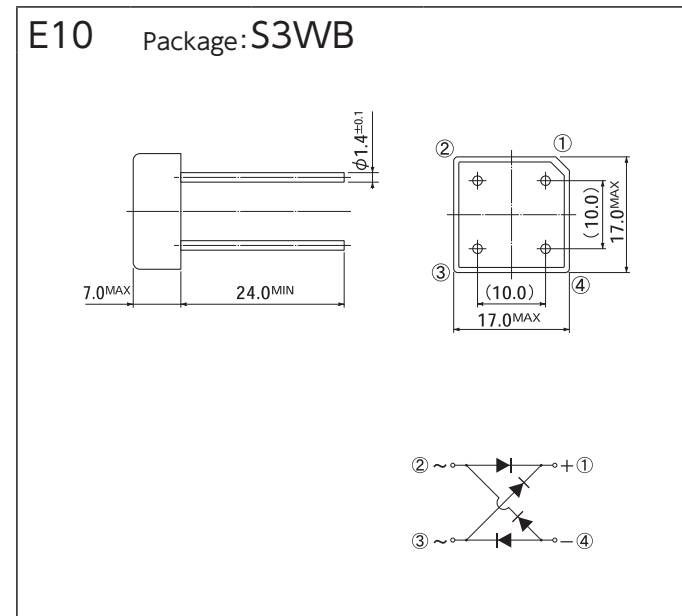
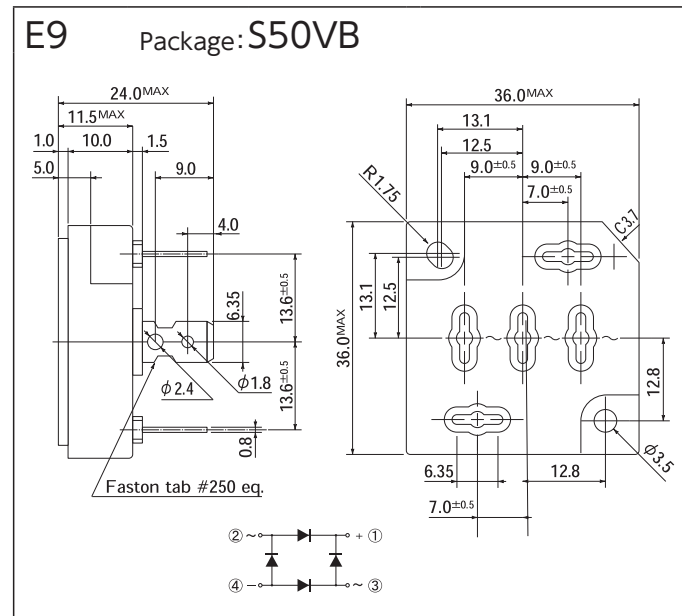
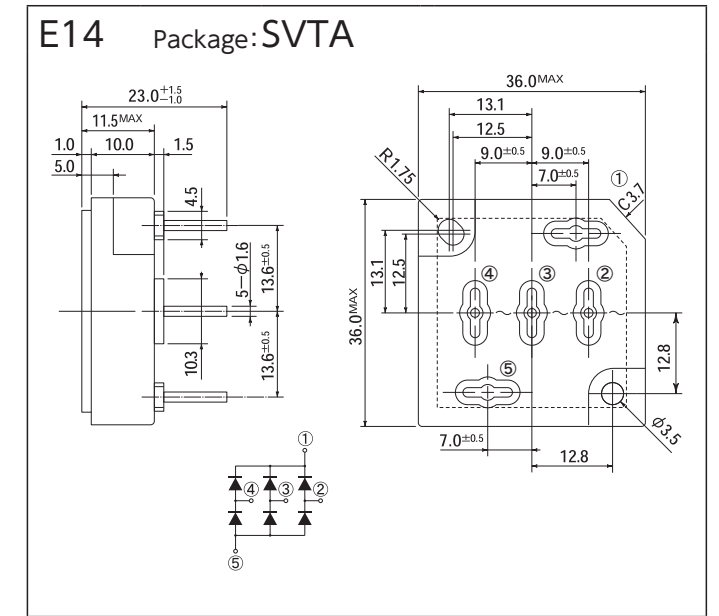


OUTLINE DIMENSIONS

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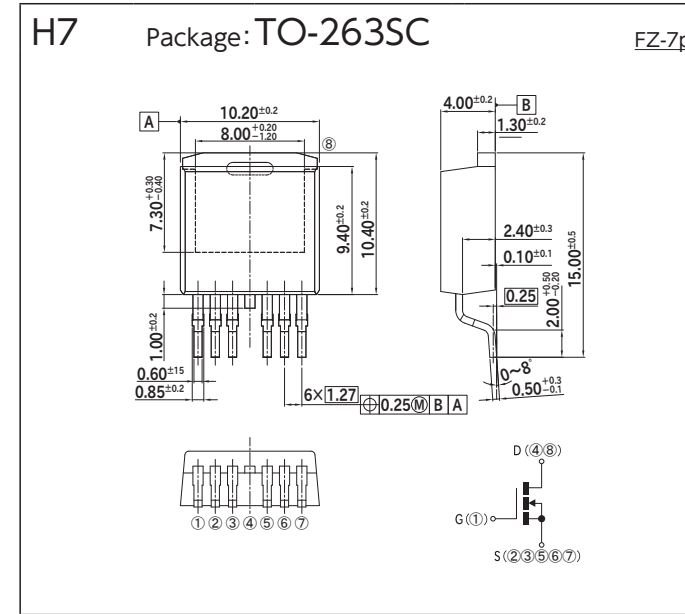
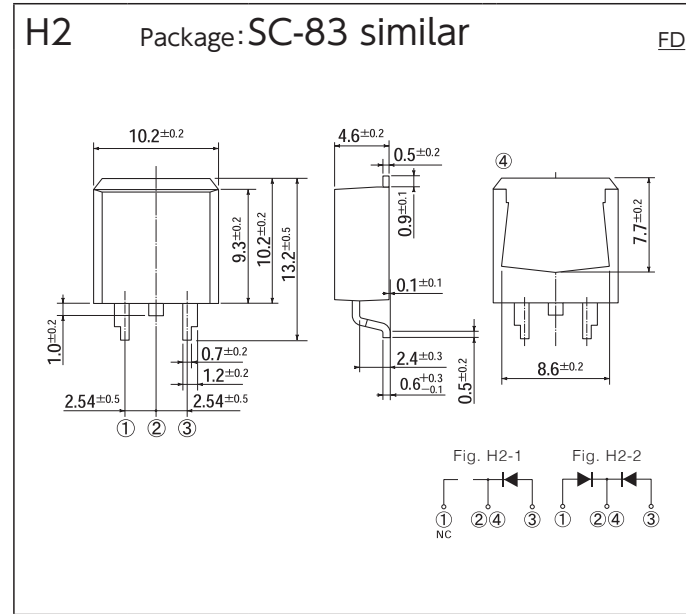
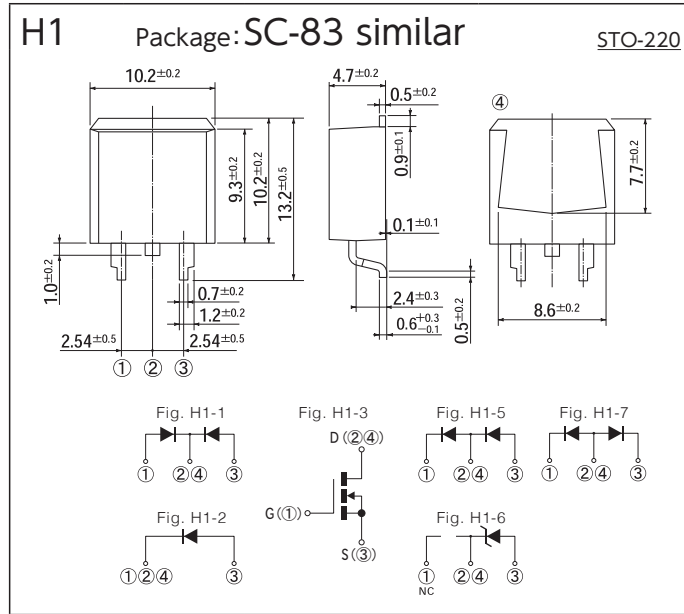


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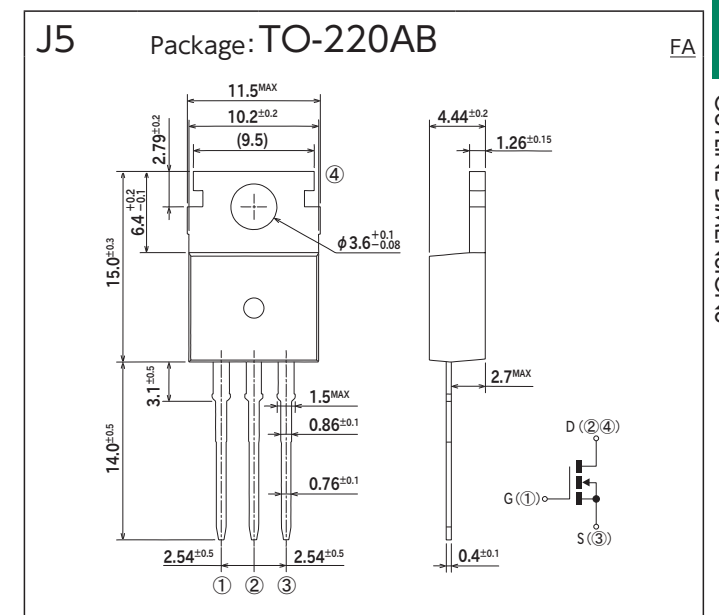
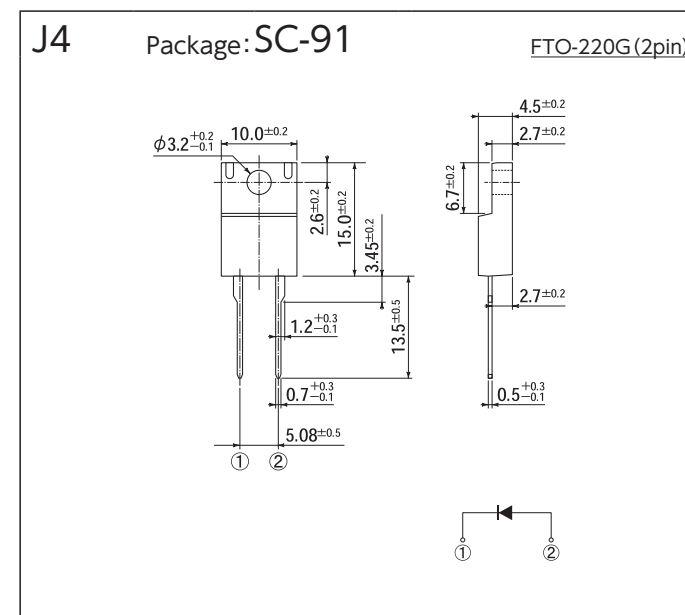
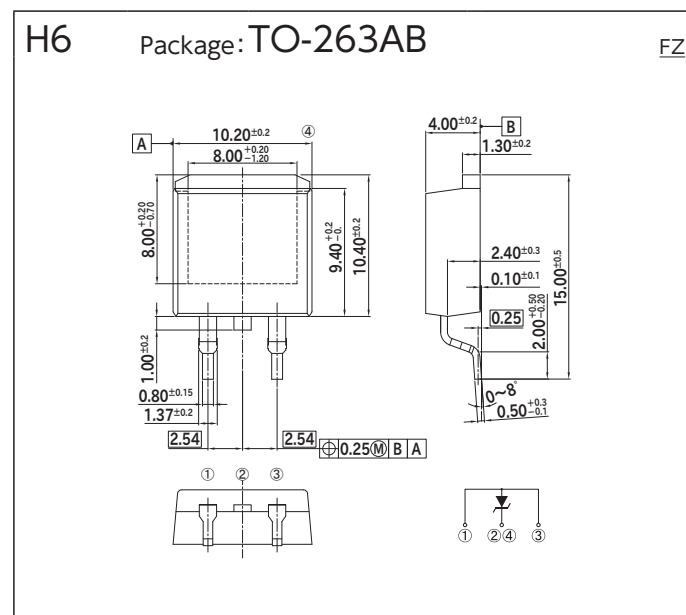
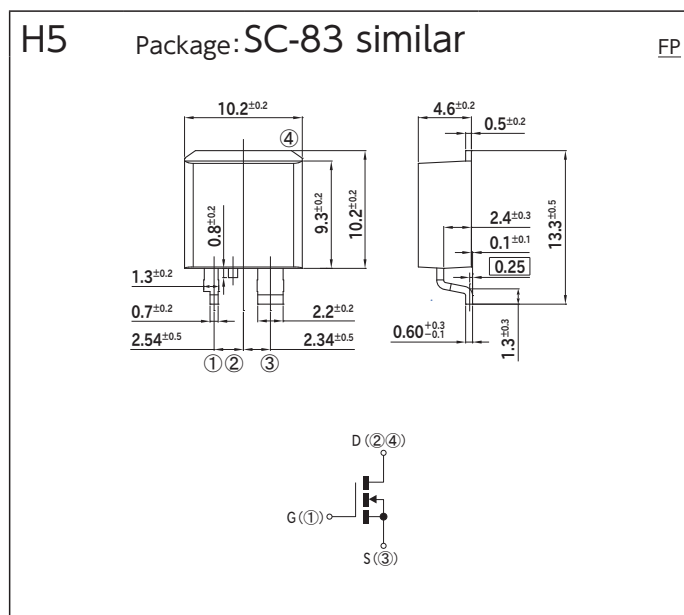
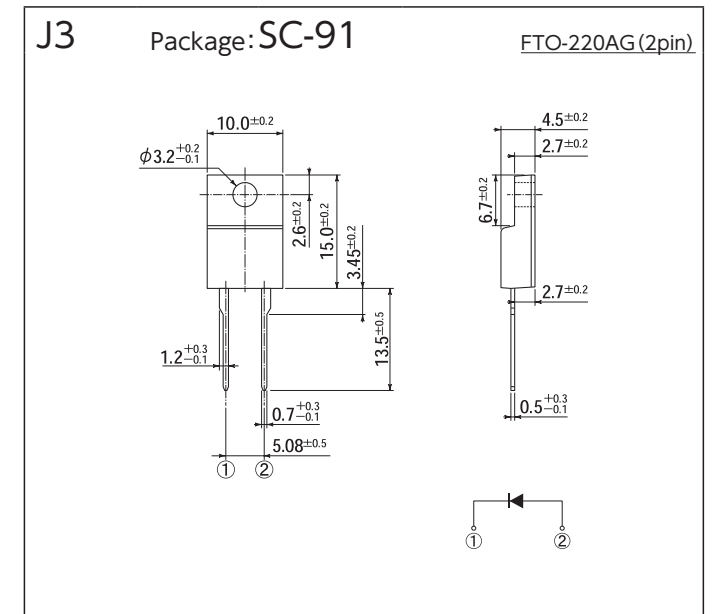
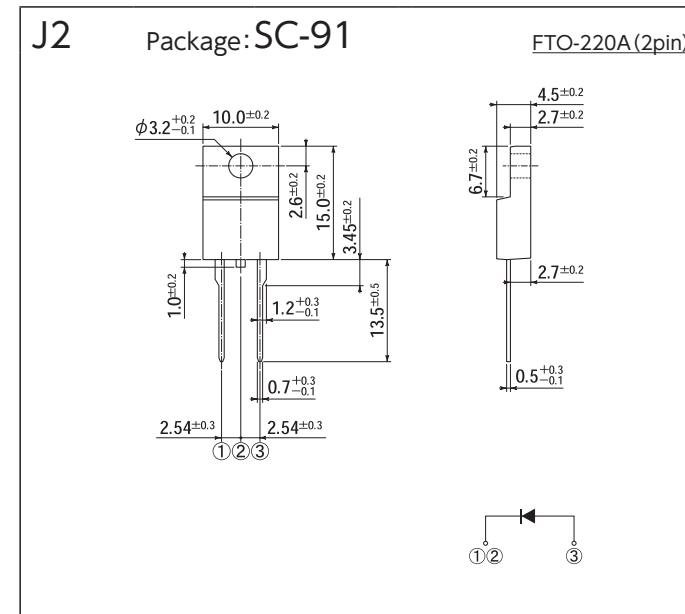
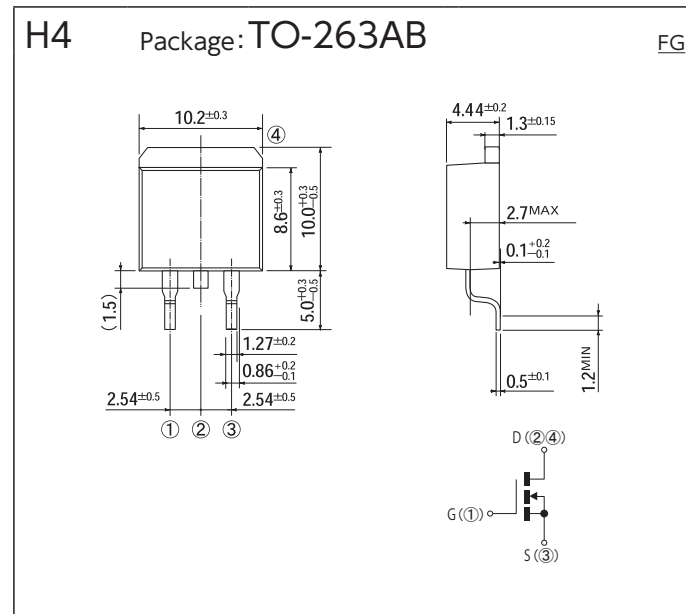
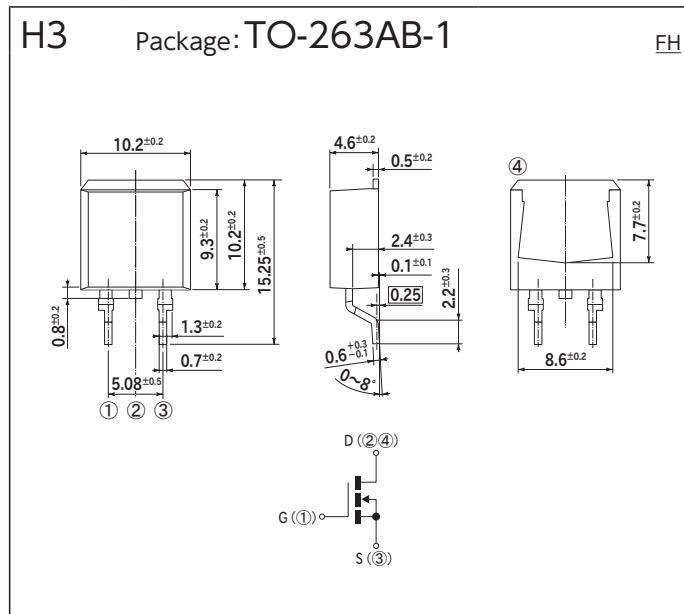
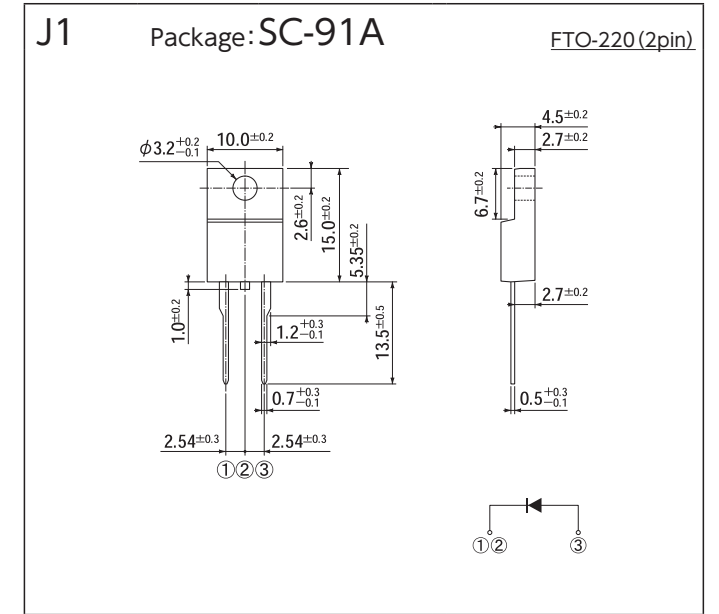


OUTLINE DIMENSIONS

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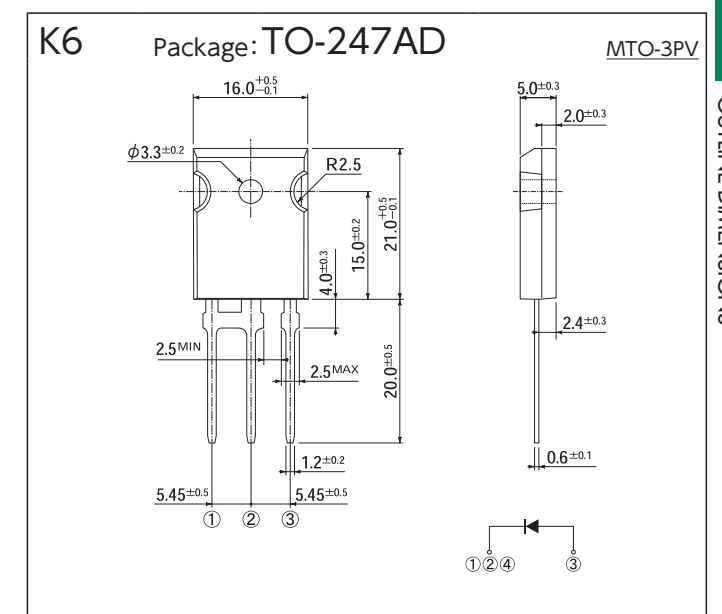
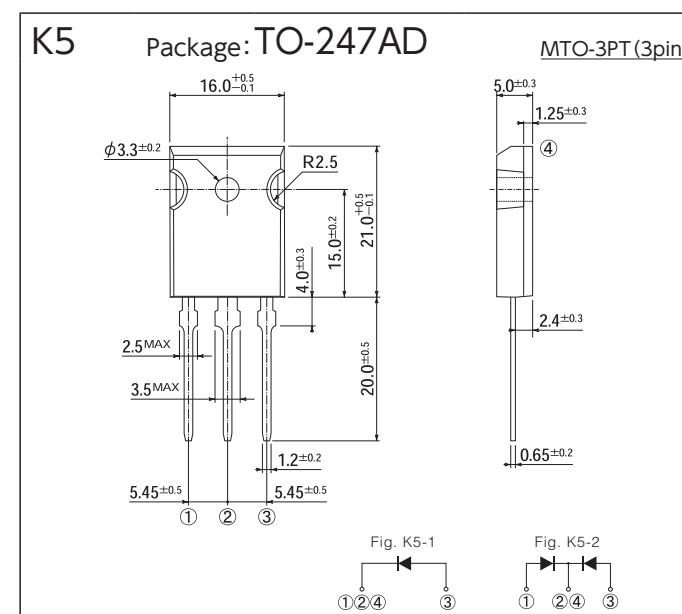
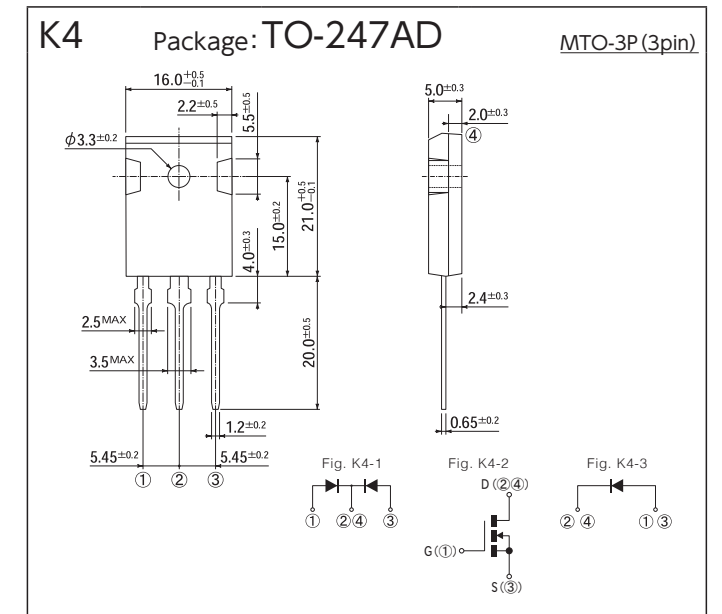
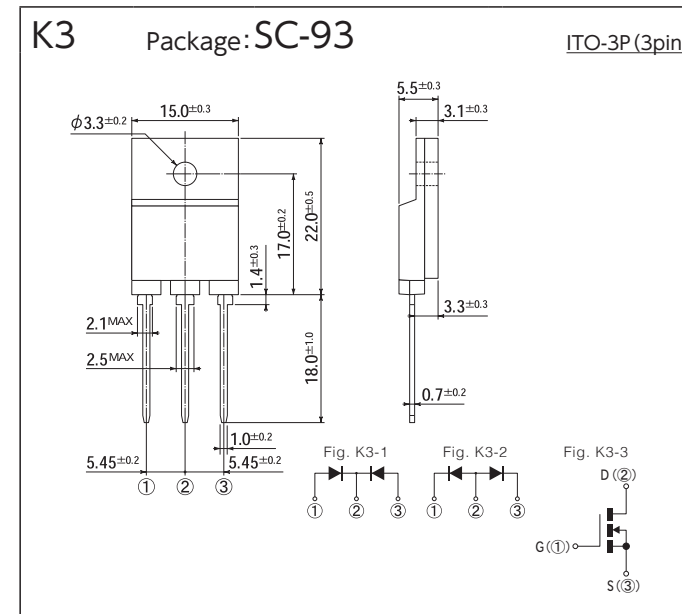
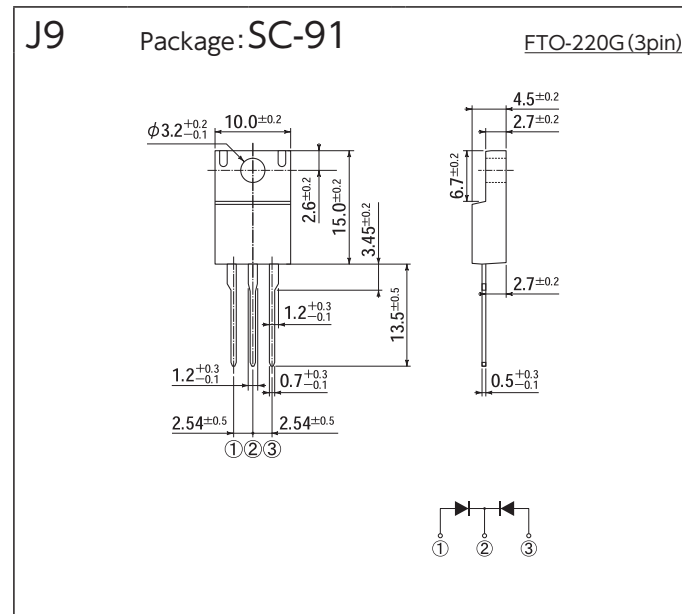
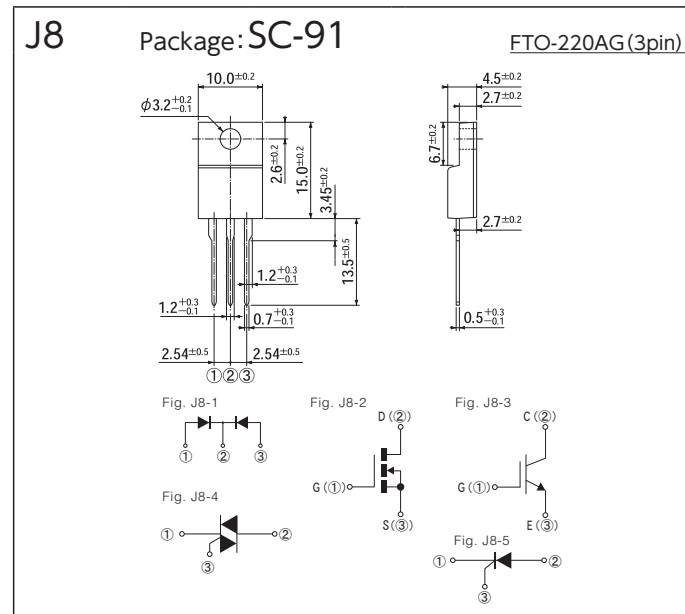
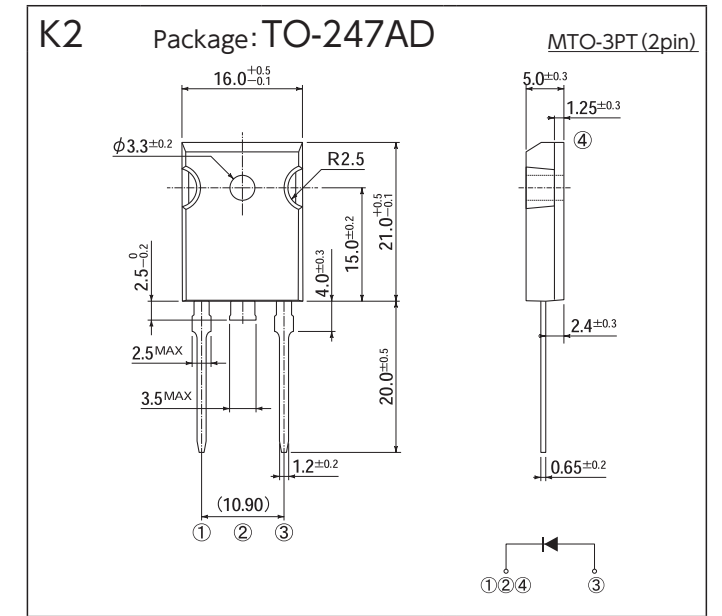
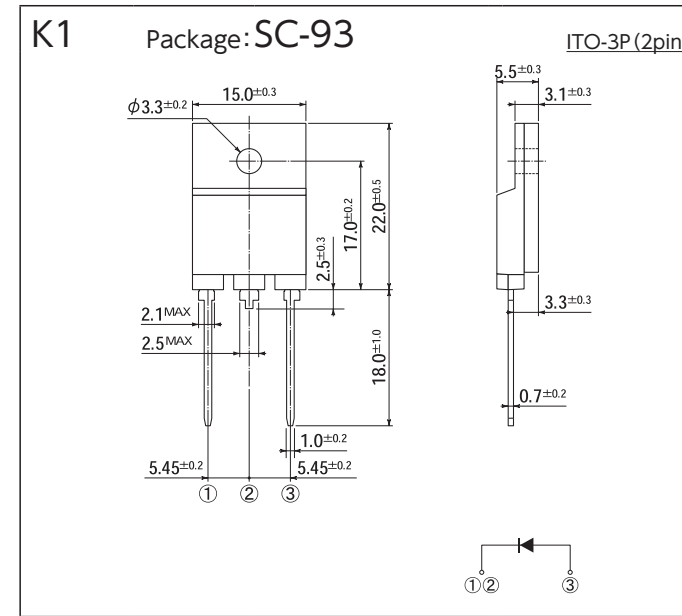
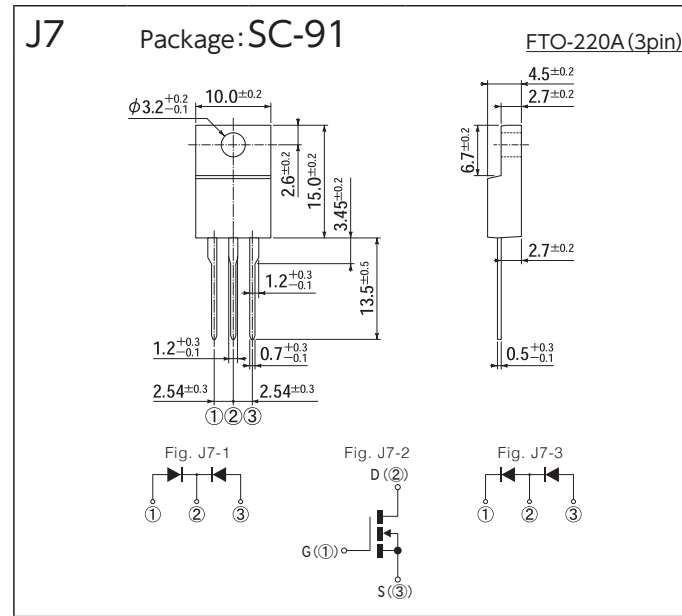
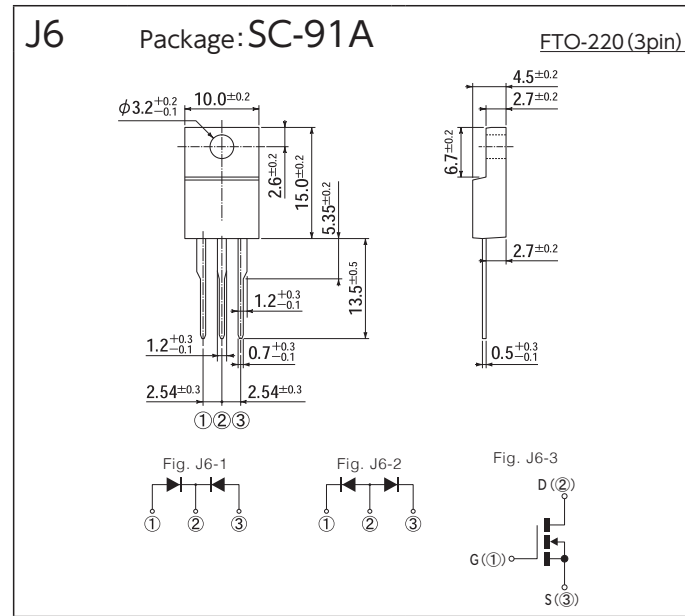


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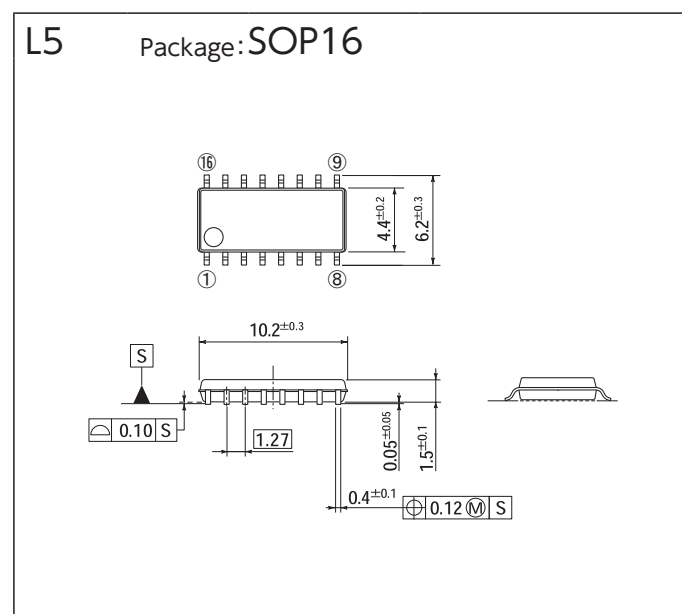
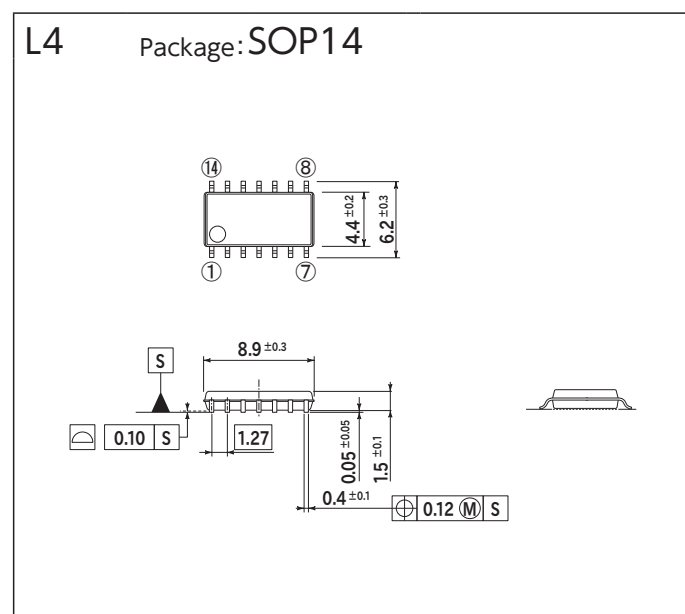
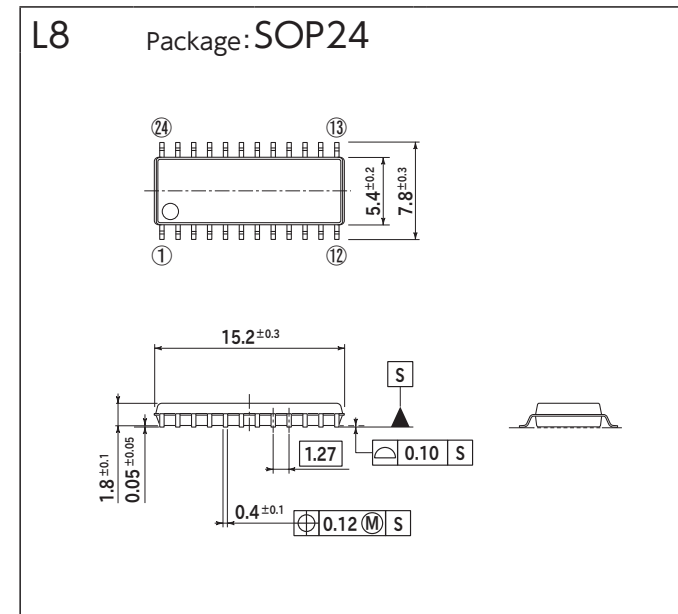
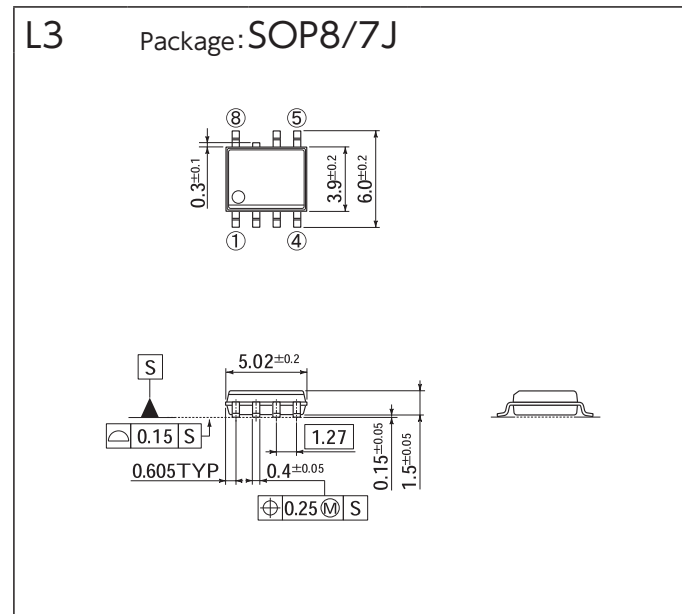
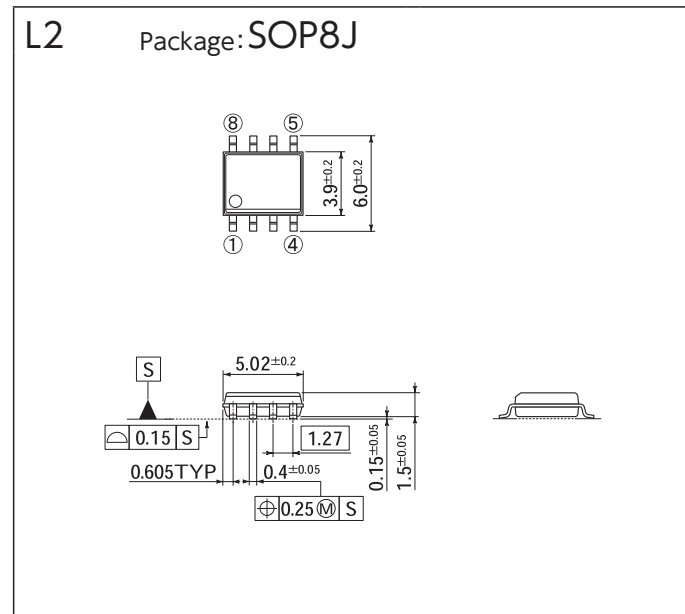
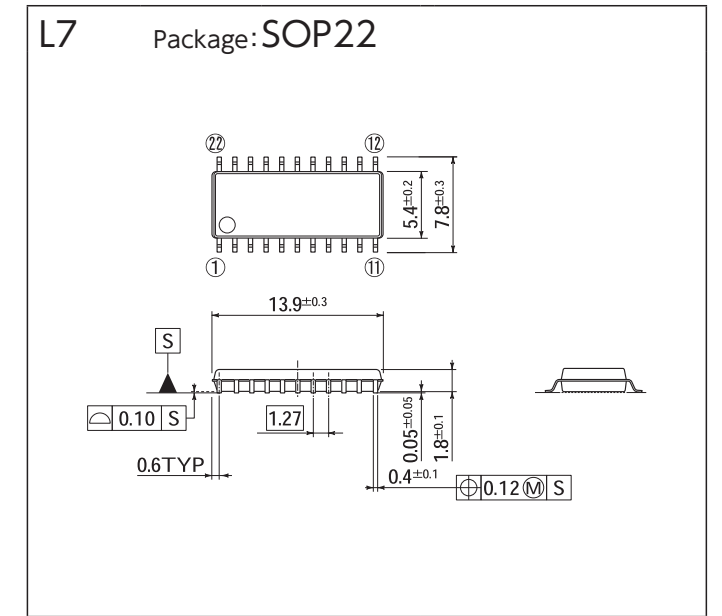
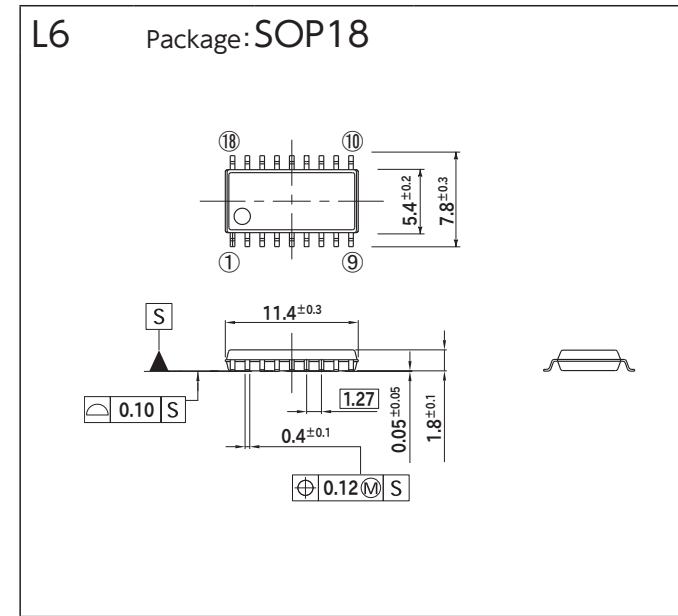
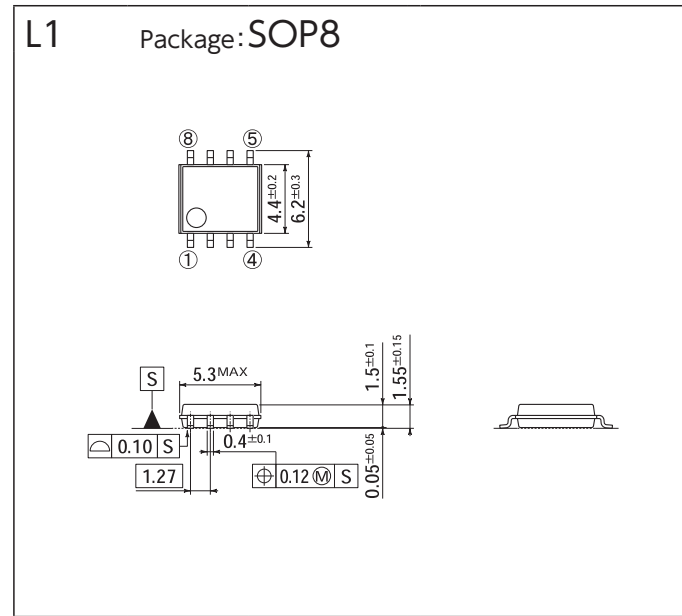
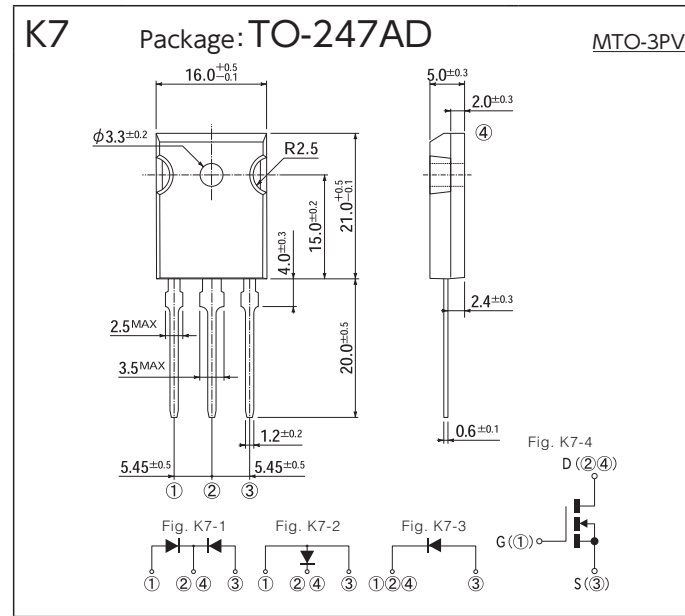
OUTLINE DIMENSIONS

[Unit:mm]



OUTLINE DIMENSIONS

[Unit:mm]



OUTLINE DIMENSIONS

NOTES

How to Order

1. Indication of Spec. Code when ordering

Please specify the Spec. Code when ordering semiconductors.
For the Spec. Code, Please refer to as follows and "PACKING SPECIFICATION".

Example Ordering THD type of S1ZB60
S1ZB60-7101

2. Spec Code

The code specifies each packing form, lead forming and terminal plate material.
Please refer to "PACKING SPECIFICATION".

Example 5 0 0 0

- Terminal forming
 - 0 : Straight terminal
 - 1 to 9 : Each number shows type of form
- Packing form
 - 0 : Standard
 - In case of surface mounting devices
 - 5, 6 : Small reel
 - 7 : Large reel
 - In case of axial device
 - 6 : Lead length 52mm (T52)
 - 7 : Lead length 26mm (T26)
- Minimum packing unit
 - 0 : Bulk, tray or taping
 - 1 : Magazine
 - 5 : Tray
 - 6 : Packed (FTO-220 Package)
- Terminal plate material
 - 3 : Ni/Pd/Au, Sn-Ag
 - 4 : Ni, Ag
 - 5 : Sn-Ag-Cu, Sn, Ag, Sn-Cu
 - 6 : Sn
 - 7 : Sn-Bi

Outline of Packing Form

1. Minimum packing unit

- Bulk : The form in which parts are inserted into plastic bags or cardboard boxes.
- Tray : The form in which parts are inserted in to containers made of resin.



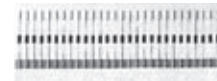
- Magazine : The form in which parts are inserted into resin cartridges designated for automatic inserters.



- Taping
 - Reel (Surface mounting devices)

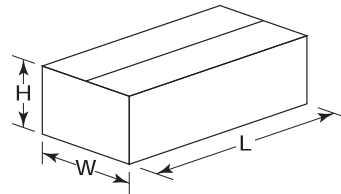


- Box (Axial devices)



2. Packing Box Dimensions

See the following pages for the dimensions of each cardboard box.



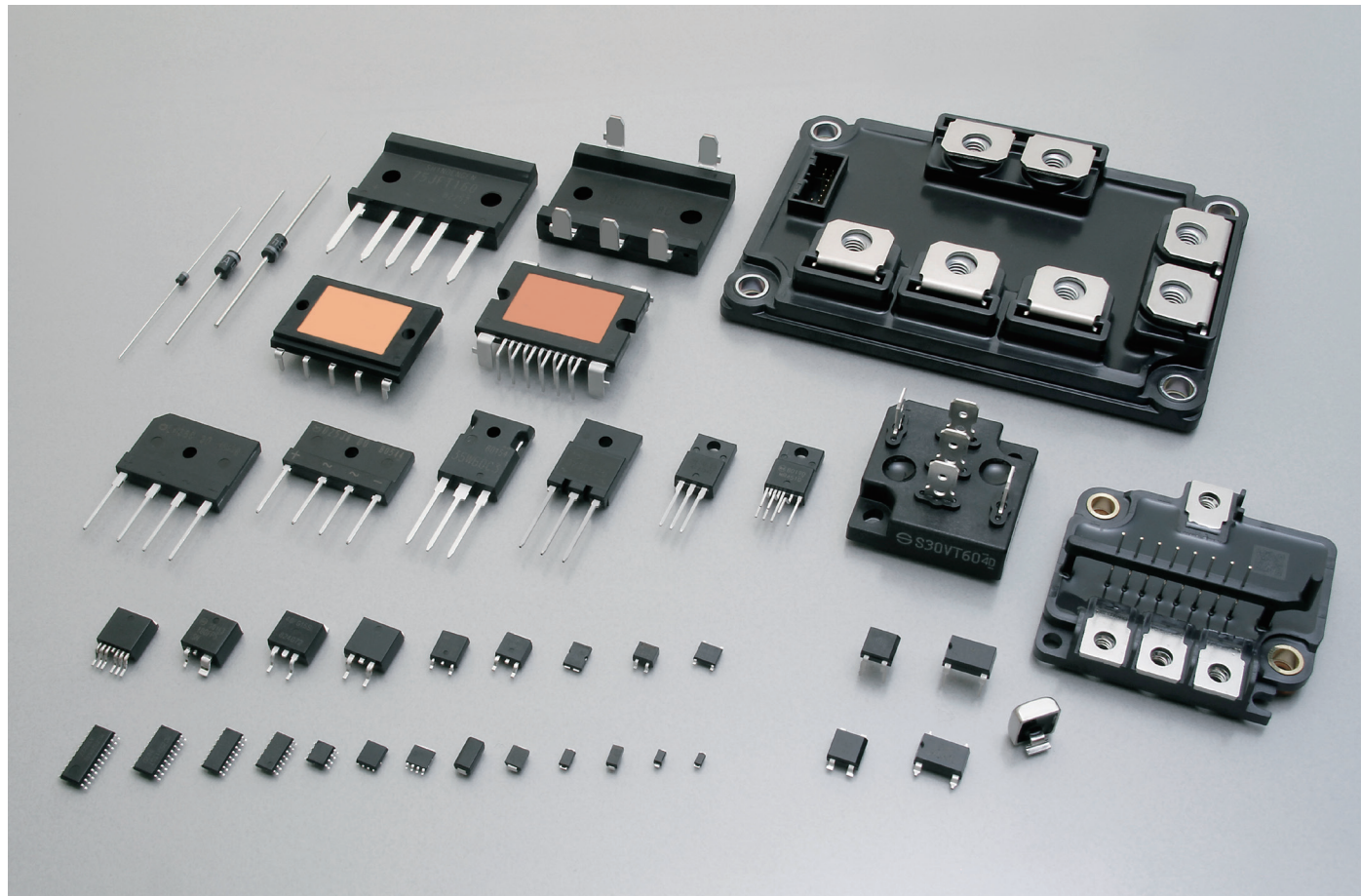
About AEC-Q101 & Automotive Grade

1. AEC-Q101

These products are AEC-Q101 compliant.

2. Automotive Grade

These products are produced on a designated production line qualified for internal automotive standards.



Notes

- ⚠ If you wish to use any such product, please be sure to refer to the specifications issued by Shindengen.
- ⚠ All products described or contained herein are designed with a quality level intended for use in standard applications requiring an ordinary level of reliability. If these products are to be used in equipment or devices for special or specific applications requiring an extremely high grade of quality or reliability in which failures or malfunctions of products may directly affect human life or health, a local Shindengen office must be contacted in advance to confirm that the intended use of the product is appropriate. Shindengen products are grouped into the following three applications according to the quality grade.
 - Standard applications
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 - Special applications
Transportation equipment (vehicles, ships, etc.), trunk-line communication equipment, traffic signal control systems, anti-disaster/crime systems, safety equipment, medical equipment, etc.
 - Specific applications
Nuclear reactor control systems, aircraft, aerospace equipment, submarine repeaters, life support equipment and systems, etc.
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SALES OFFICES

U.S.A.

Shindengen America, Inc. www.shindengen.com/

2333 Waukegan Road Suite250, Bannockburn, IL.60015. U.S.A
Phone:+1-847-444-1363 FAX:+1-847-444-0654

Europe

Shindengen UK Ltd. www.shindengen.co.eu/

Head Office
Unit 1, 1 Tapper Walk, King's Cross, London, N1C 4AQ U.K.
Phone:+44-20-3829-6980 FAX:+44-20-3725-6855

German Branch
Prinzenallee 1, 40549 Düsseldorf, Germany
Phone:+49-211-5206-590 FAX:+49-211-4986-499

Asia

Shindengen Singapore PTE Ltd.

750d, Chai Chee Road, #05-01,
Viva Business Park, Singapore 469004
Phone:+65-6445-0082 FAX:+65-6445-6089

Shindengen (H.K.) Co., Ltd.

Head Office
Suite 2006B, 20/F., Exchange Tower, 33 Wang Chiu Road,
Kowloon Bay, HK
Phone:+852-2317-1884 FAX:+852-2314-8561

Taiwan Representative Office
20Fl, No.85, Sec.1, Jhongsiao E. Road, Taipei, 10049,
Taiwan, R.O.C.
Phone:+886-2-2321-3990 FAX:+886-2-2358-3991

Shindengen (SHANGHAI) Electric Co., Ltd.

Room1506, Sheng Gaolnt'l Building, 137 Xian Xia Road,
Chang Ning, Shanghai, China
Phone:+86-21-6270-8000 FAX:+86-21-6270-0419

Shindengen Electric Mfg. Co., Ltd.

Seoul Office
B701-4. 230, Simin-daero, Dongan-gu, Anyang-si,
Gyeonggi-do, 14067 Korea
Phone:+82-31-385-1431 FAX:+82-31-385-1430

- All specifications are subject to change without notice.
- Please consult us for the latest specifications before you order.
- Please use this products after reading manual well.

• Printed January 2020

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Japan

Shindengen Electric MFG. Co., Ltd. www.shindengen.co.jp/

Head Office
New-Ohtemachi Bldg., 2-2-1, Ohtemachi, Chiyoda-ku,
Tokyo 100-0004, Japan
Phone:+81-3-3279-4431 FAX:+81-3-3279-6478

Osaka Branch Office
Minami Senba Heart Bldg., 2-3-2, Minami-Senba,
Chuo-ku, Osaka City, Osaka 542-0081, Japan
Phone:+81-6-6264-7770 FAX:+81-6-6260-1222

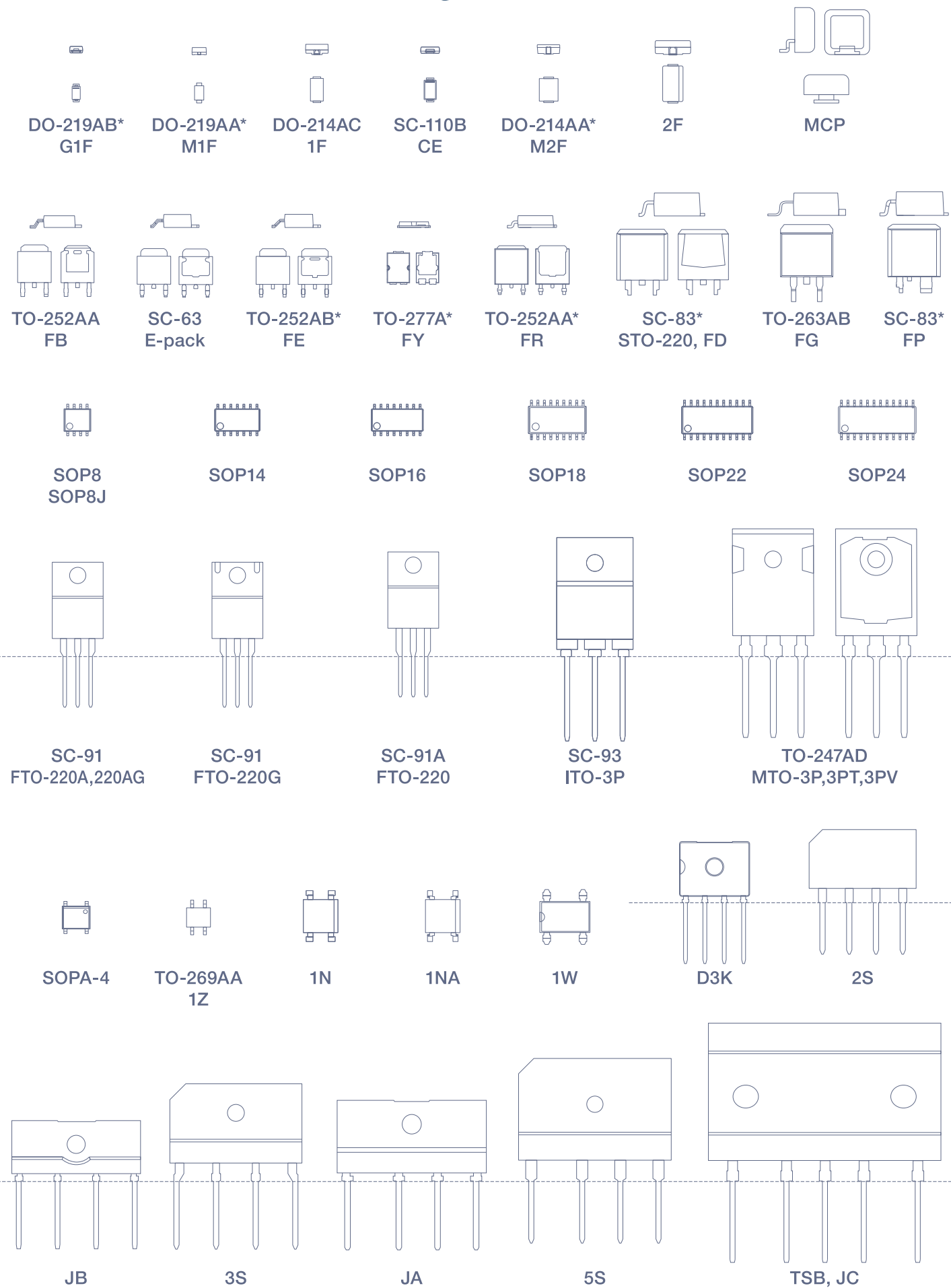
Nagoya Branch Office
Nagoya Daiichi Bldg., 1-19-24, Nishiki, Naka-ku,
Nagoya City, Aichi 460-0003, Japan
Phone:+81-52-221-1361 FAX:+81-52-201-4780

Hamamatsu branch
Hamamatsu Daiichi Seimei Nittsu Bldg., 110-5, Itaya-cho,
Naka-ku, Hamamatsu City, Shizuoka 430-0928, Japan
Phone:+81-53-450-3800 FAX:+81-53-450-3801

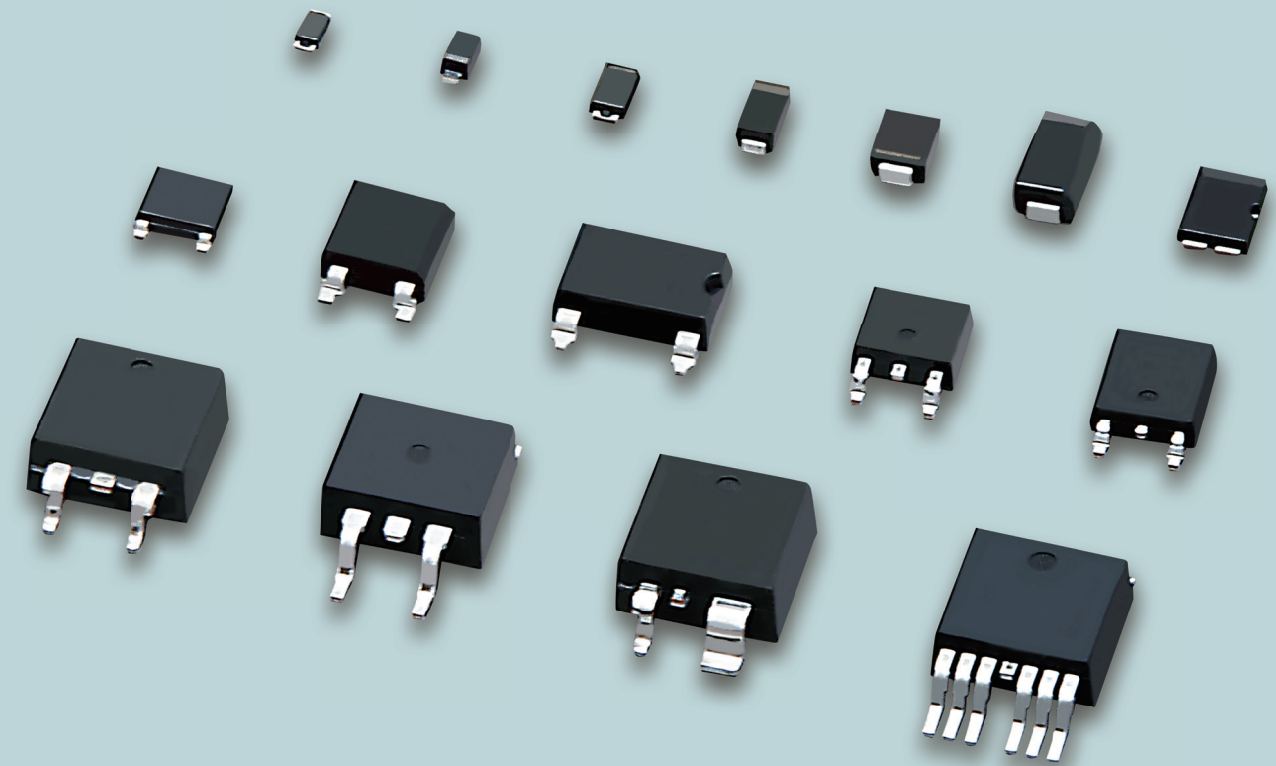
Utsunomiya Sales Office
Flora Bldg., 1-9-15 Higashi Syukugou Utsunomiya City,
Tochigi 321-0953, Japan
Phone:+81-28-637-3615 FAX:+81-28-637-3115

Package Outline

* = Similar Package



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[60KS200C](#) [D18V0L1B2LP-7B](#) [D5V0F4U5P5-7](#) [NTE4902](#) [P4KE27CA](#) [P6KE11CA](#) [P6KE8.2A](#) [SA60CA](#) [SA64CA](#) [SMBJ12CATR](#)
[SMBJ33CATR](#) [SMBJ6.5A](#) [SMBJ8.0A](#) [ESD101-B1-02ELS E6327](#) [ESD112-B1-02EL E6327](#) [ESD7451N2T5G](#) [19180-510](#) [CPDT-5V0USP-](#)
[HF](#) [3.0SMCJ33CA-F](#) [3.0SMCJ36A-F](#) [HSPC16701B02TP](#) [JANTX1N6126A](#) [D3V3Q1B2DLP3-7](#) [D55V0M1B2WS-7](#) [SCM1293A-04SO](#)
[ESD200-B1-CSP0201 E6327](#) [SM12-7](#) [CEN955 W/DATA](#) [VESD12A1A-HD1-GS08](#) [CPDQC5V0-HF](#) [D1213A-01LP4-7B](#) [ESD101-B1-02EL](#)
[E6327](#) [AOZ8808DI-03](#) [5KP15A](#) [5KP48A](#) [5KP90A](#) [ESD3V3D7-TP](#) [15KPA36A-LF](#) [P4KE56CA](#) [P4KE68A](#) [P4KE91CATR](#) [P6KE120A](#)
[P6KE13CA](#) [P6KE43CA](#) [P6KE6.8CA](#) [P6KE8.2](#) [P6SMBJ20CA](#) [JANTX1N6072A](#) [SR2835ESKG](#) [SA90CA](#)