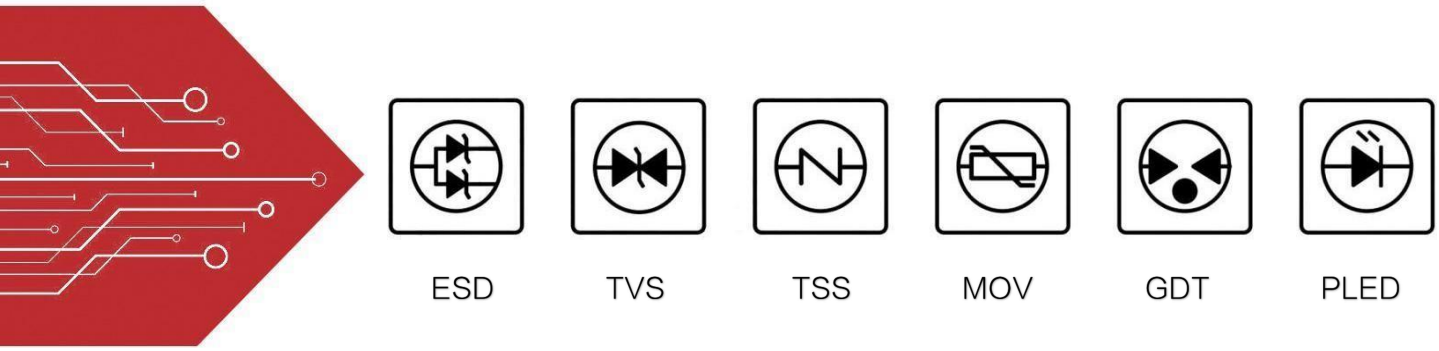
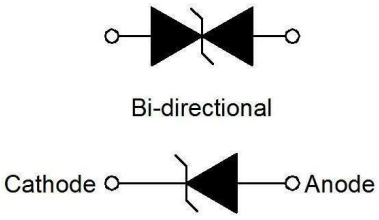
MSKSEMI
SEMICONDUCTOR



Product data sheet

SMA



Description

TVS diodes can be used in a wide range of applications which like consumer electronic products, automotive industries, munitions, telecommunications, aerospace industries, and intelligent control systems.

Mechanical Characteristics

Package: SMA/DO-214AC

- Case Material: “Green” MoldingCompound.
- UL Flammability Classification Rating 94V-0
- Polarity: Color band denotes cathodeexcept bi-directional models
- Weight: 0.07g
- Terminal Connections: See Diagram Below
- Marking Information: See Below

Features

- Glass passivated or planar junction
- Excellent clamping capability
- Repetition rate (duty cycle): 0.01%
- Low profile package and low inductance
- Fast response time: typically less than 1.0ps from 0V to V_{BR}min.
- High temperature soldering: 260℃/10s atterminals.
- For surface mounted applications in ordertooptimize board space.
- UL Certificate #E504113

Applications

- I/O Interface.
- Power lines
- Automotive andTelecommunication

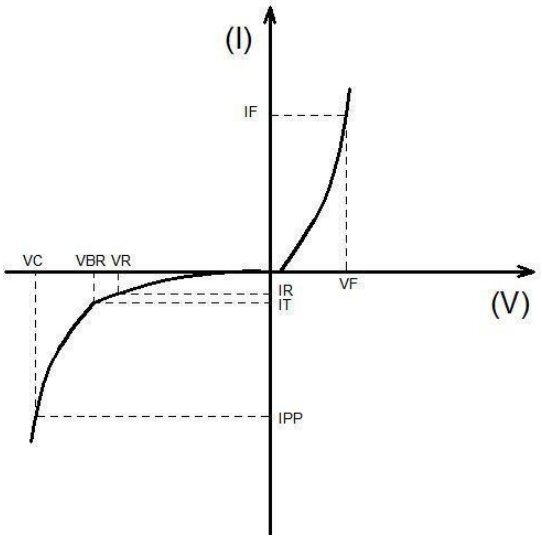
Industrial Electronics

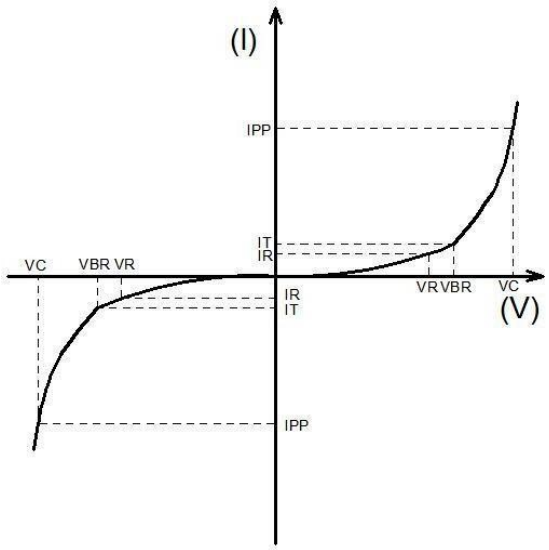
Absolute Maximum Ratings(T=25ºC, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power dissipation on 10/1000μs waveform	P_{PP}	400	W
Steady state power dissipation at T_L=75℃	$P_{M(AV)}$	1.0	W
Operating junction temperature range	T_j	-55 to +125	℃
Storage temperature range	T_{stg}	-55 to +150	℃

Ratings And V-I Characteristics Curves (T=25ºC, unless otherwise noted)

FIG1：V-I cure characteristics





Symbol	Parameter
I_F	Mean Forward Current
V_F	Maximum Forward Voltage @I_F
V_R	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ V_R
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}

Electrical Characteristics (T=25℃)

Part Number		Marking		V_R	I_R@V_R	V_{BR}@I_T		I_T	V_C@I_{PP}	I_{PP}①
Uni-Polar	Bi-Polar	Uni	Bi	V	μA	min(V)	max(V)	mA	max(V)	A
SMAJ3.3A	/	SMAJ3.3A	/	3.3	200	5.2	6	10	8.0	50.00
SMAJ5.0A	SMAJ5.0CA	SMAJ5.0A	SMAJ5.0CA	5.0	800	6.40	7.00	10	9.2	43.48
SMAJ6.0A	SMAJ6.0CA	SMAJ6.0A	SMAJ6.0CA	6.0	800	6.67	7.37	10	10.3	38.84
SMAJ6.5A	SMAJ6.5CA	SMAJ6.5A	SMAJ6.5CA	6.5	500	7.22	7.98	10	11.2	35.72
SMAJ7.0A	SMAJ7.0CA	SMAJ7.0A	SMAJ7.0CA	7.0	200	7.78	8.60	10	12.0	33.34
SMAJ7.5A	SMAJ7.5CA	SMAJ7.5A	SMAJ7.5CA	7.5	100	8.33	9.21	1	12.9	31.01
SMAJ8.0A	SMAJ8.0CA	SMAJ8.0A	SMAJ8.0CA	8.0	50	8.89	9.83	1	13.6	29.42
SMAJ8.5A	SMAJ8.5CA	SMAJ8.5A	SMAJ8.5CA	8.5	20	9.44	10.40	1	14.4	27.78
SMAJ9.0A	SMAJ9.0CA	SMAJ9.0A	SMAJ9.0CA	9.0	10	10.00	11.10	1	15.4	25.98
SMAJ10A	SMAJ10CA	SMAJ10A	SMAJ10CA	10.0	5	11.10	12.30	1	17.0	23.53
SMAJ11A	SMAJ11CA	SMAJ11A	SMAJ11CA	11.0	1	12.20	13.50	1	18.2	21.98
SMAJ12A	SMAJ12CA	SMAJ12A	SMAJ12CA	12.0	1	13.30	14.70	1	19.9	20.11
SMAJ13A	SMAJ13CA	SMAJ13A	SMAJ13CA	13.0	1	14.40	15.90	1	21.5	18.61
SMAJ14A	SMAJ14CA	SMAJ14A	SMAJ14CA	14.0	1	15.60	17.20	1	23.2	17.25
SMAJ15A	SMAJ15CA	SMAJ15A	SMAJ15CA	15.0	1	16.70	18.50	1	24.4	16.40
SMAJ16A	SMAJ16CA	SMAJ16A	SMAJ16CA	16.0	1	17.80	19.70	1	26.0	15.39
SMAJ17A	SMAJ17CA	SMAJ17A	SMAJ17CA	17.0	1	18.90	20.90	1	27.6	14.50
SMAJ18A	SMAJ18CA	SMAJ18A	SMAJ18CA	18.0	1	20.00	22.10	1	29.2	13.70
SMAJ20A	SMAJ20CA	SMAJ20A	SMAJ20CA	20.0	1	22.20	24.50	1	32.4	12.35
SMAJ22A	SMAJ22CA	SMAJ22A	SMAJ22CA	22.0	1	24.40	26.90	1	35.5	11.27
SMAJ24A	SMAJ24CA	SMAJ24A	SMAJ24CA	24.0	1	26.70	29.50	1	38.9	10.29
SMAJ26A	SMAJ26CA	SMAJ26A	SMAJ26CA	26.0	1	28.90	31.90	1	42.1	9.51
SMAJ28A	SMAJ28CA	SMAJ28A	SMAJ28CA	28.0	1	31.10	34.40	1	45.4	8.82
SMAJ30A	SMAJ30CA	SMAJ30A	SMAJ30CA	30.0	1	33.30	36.80	1	48.4	8.27
SMAJ33A	SMAJ33CA	SMAJ33A	SMAJ33CA	33.0	1	36.70	40.60	1	53.3	7.51
SMAJ36A	SMAJ36CA	SMAJ36A	SMAJ36CA	36.0	1	40.00	44.20	1	58.1	6.89
SMAJ40A	SMAJ40CA	SMAJ40A	SMAJ40CA	40.0	1	44.40	49.10	1	64.5	6.21
SMAJ43A	SMAJ43CA	SMAJ43A	SMAJ43CA	43.0	1	47.80	52.80	1	69.4	5.77
SMAJ45A	SMAJ45CA	SMAJ45A	SMAJ45CA	45.0	1	50.00	55.30	1	72.7	5.51
SMAJ48A	SMAJ48CA	SMAJ48A	SMAJ48CA	48.0	1	53.30	58.90	1	77.4	5.17
SMAJ51A	SMAJ51CA	SMAJ51A	SMAJ51CA	51.0	1	56.70	62.70	1	82.4	4.86
SMAJ54A	SMAJ54CA	SMAJ54A	SMAJ54CA	54.0	1	60.00	66.30	1	87.1	4.60
SMAJ58A	SMAJ58CA	SMAJ58A	SMAJ58CA	58.0	1	64.40	71.20	1	93.6	4.28
SMAJ60A	SMAJ60CA	SMAJ60A	SMAJ60CA	60.0	1	66.70	73.70	1	96.8	4.14
SMAJ64A	SMAJ64CA	SMAJ64A	SMAJ64CA	64.0	1	71.10	78.60	1	103.0	3.89

Electrical Characteristics (T=25℃)

Part Number		Marking		V_R	I_R@V_R	V_{BR}@I_T		I_T	V_C@I_{PP}	I_{PP}①
Uni-Polar	Bi-Polar	Uni	Bi	V	μA	min(V)	max(V)	mA	max(V)	A
SMAJ70A	SMAJ70CA	SMAJ70A	SMAJ70CA	70.0	1	77.80	86.00	1	113.0	3.54
SMAJ75A	SMAJ75CA	SMAJ75A	SMAJ75CA	75.0	1	83.30	92.10	1	121.0	3.31
SMAJ78A	SMAJ78CA	SMAJ78A	SMAJ78CA	78.0	1	86.70	95.80	1	126.0	3.18
SMAJ85A	SMAJ85CA	SMAJ85A	SMAJ85CA	85.0	1	94.40	104.0	1	137.0	2.92
SMAJ90A	SMAJ90CA	SMAJ90A	SMAJ90CA	90.0	1	100.0	111.0	1	146.0	2.74
SMAJ100A	SMAJ100CA	SMAJ100A	SMAJ100CA	100.0	1	111.0	123.0	1	162.0	2.47
SMAJ110A	SMAJ110CA	SMAJ110A	SMAJ110CA	110.0	1	122.0	135.0	1	177.0	2.26
SMAJ120A	SMAJ120CA	SMAJ120A	SMAJ120CA	120.0	1	133.0	147.0	1	193.0	2.08
SMAJ130A	SMAJ130CA	SMAJ130A	SMAJ130CA	130.0	1	144.0	159.0	1	209.0	1.92
SMAJ150A	SMAJ150CA	SMAJ150A	SMAJ150CA	150.0	1	167.0	185.0	1	243.0	1.65
SMAJ160A	SMAJ160CA	SMAJ160A	SMAJ160CA	160.0	1	178.0	197.0	1	259.0	1.55
SMAJ170A	SMAJ170CA	SMAJ170A	SMAJ170CA	170.0	1	189.0	209.0	1	275.0	1.46
SMAJ180A	SMAJ180CA	SMAJ180A	SMAJ180CA	180.0	1	201.0	222.0	1	292.0	1.37
SMAJ190A	SMAJ190CA	SMAJ190A	SMAJ190CA	190.0	1	209.0	233.0	1	308.0	1.30
SMAJ200A	SMAJ200CA	SMAJ200A	SMAJ200CA	200.0	1	224.0	247.0	1	324.0	1.24
SMAJ210A	SMAJ210CA	SMAJ210A	SMAJ210CA	210.0	1	237.0	263.0	1	340.0	1.18
SMAJ220A	SMAJ220CA	SMAJ220A	SMAJ220CA	220.0	1	246.0	272.0	1	356.0	1.13
SMAJ250A	SMAJ250CA	SMAJ250A	SMAJ250CA	250.0	1	279.0	309.0	1	405.0	0.99
SMAJ300A	SMAJ300CA	SMAJ300A	SMAJ300CA	300.0	1	335.0	371.0	1	486.0	0.83
SMAJ350A	SMAJ350CA	SMAJ350A	SMAJ350CA	350.0	1	391.0	432.0	1	567.0	0.71
SMAJ400A	SMAJ400CA	SMAJ400A	SMAJ400CA	400.0	1	447.0	494.0	1	648.0	0.62
SMAJ440A	SMAJ440CA	SMAJ440A	SMAJ440CA	440.0	1	492.0	543.0	1	713.0	0.57
SMAJ550A	SMAJ550CA	SMAJ550A	SMAJ550CA	550.0	1	614.7	679.4	1	972.0	0.42

① Surge waveform: 10/1000μs

V_R : Stand-off Voltage -- Maximum voltage that can be applied

V_{BR}: Breakdown Voltage

V_C: Clamping Voltage -- Peak voltage measured across the suppressor at a specified Ipp

I_R: Reverse Leakage Current

FIG2：Pulse Derating Curve

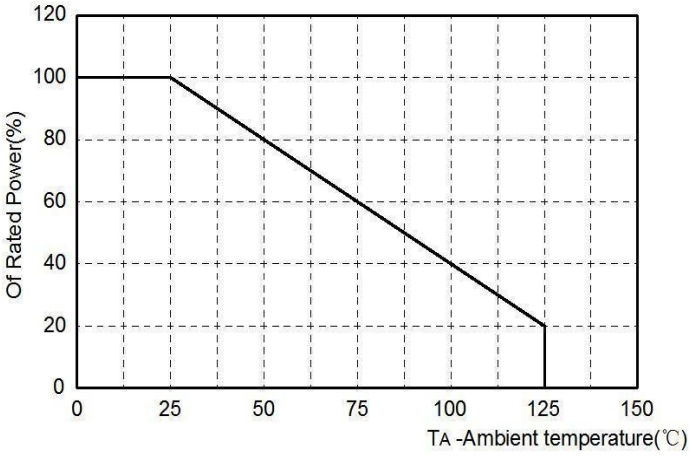


FIG3：Pulse Waveform

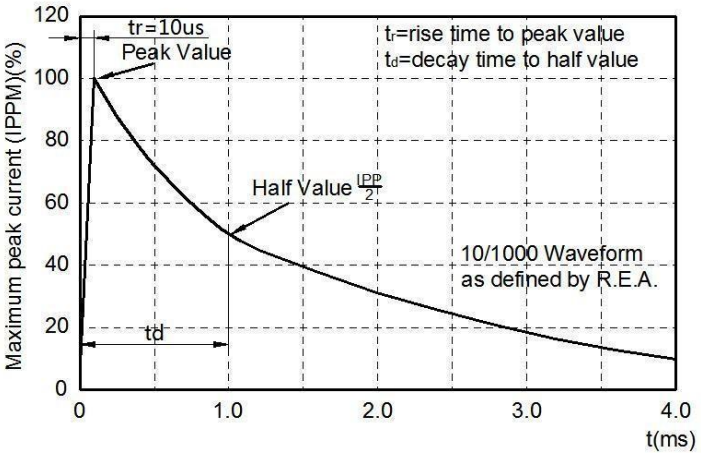


FIG4：Peak Pulse Power Rating Curve

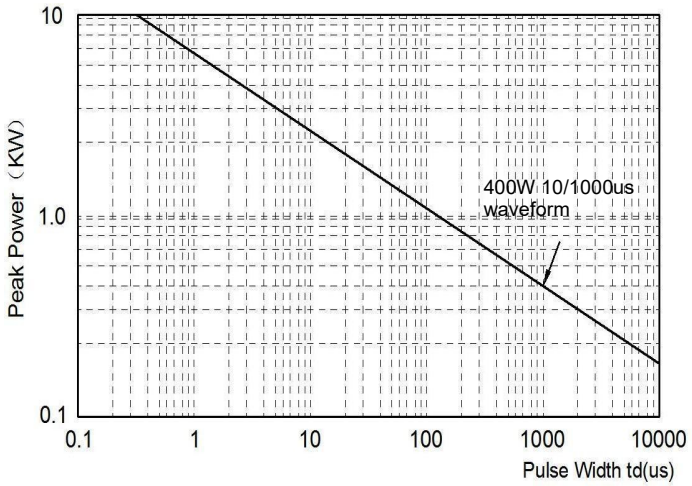
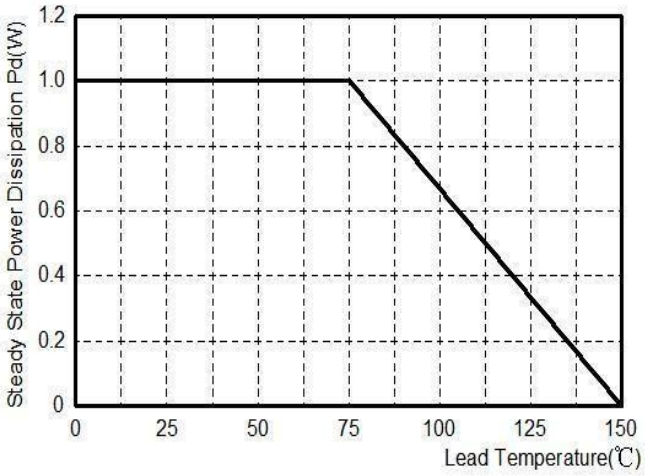
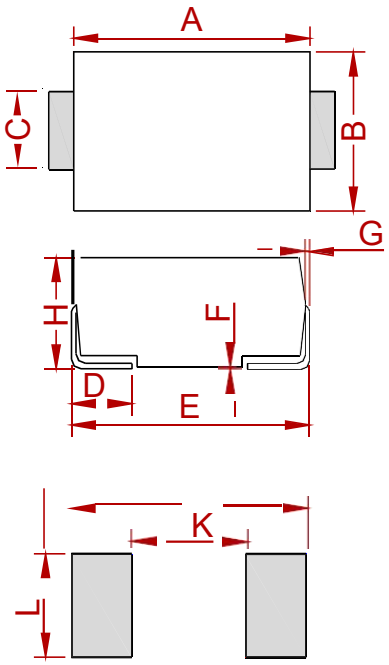


FIG5：Steady State Power Dissipation



PACKAGE MECHANICAL DATA



DO-214AC (SMA)

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.25	4.65	0.167	0.183
B	2.50	2.90	0.098	0.114
C	1.35	1.65	0.053	0.065
D	0.76	1.52	0.030	0.060
E	4.93	5.28	0.194	0.208
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	1.98	2.41	0.078	0.095
J	6.50		0.256	
K		2.30		0.090
L	1.70		0.067	

REEL SPECIFICATION

P/N	PKG	QTY
SMAJXXXA(CA)	SMA	2000

Attention

■ Any and all MSKSEMI Semiconductor products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your MSKSEMI Semiconductor representative nearest you before using any MSKSEMI Semiconductor products described or contained herein in such applications.

■ MSKSEMI Semiconductor assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specificationsof any andall MSKSEMI Semiconductor products described orcontained herein.

■ Specifications of any and all MSKSEMI Semiconductor products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer’s products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer’sproducts orequipment.

■ MSKSEMI Semiconductor. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with someprobability. It is possiblethat these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits anderror prevention circuitsfor safedesign, redundant design, and structural design.

■ In the event that any or all MSKSEMI Semiconductor products(including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from theauthorities concerned in accordance with the above law.

■ No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of MSKSEMI Semiconductor.

■ Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. MSKSEMI Semiconductor believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringementsof intellectual property rights or other rightsof third parties.

■ Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. Whendesigning equipment, referto the "Delivery Specification" for the MSKSEMI Semiconductor productthat you intend to use.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for ESD Suppressors / TVS Diodes ***category:***

Click to view products by MSKSEMI ***manufacturer:***

Other Similar products are found below :

60KS200C D18V0L1B2LP-7B D5V0F4U5P5-7 NTE4902 P4KE27CA P6KE11CA P6KE39CA-TP P6KE8.2A JANTX1N6053A SA110CA SA60CA SA64CA SMBJ12CATR SMBJ33CATR SMBJ8.0A ESD101-B1-02ELS E6327 ESD105-B1-02EL E6327 ESD112-B1-02EL E6327 ESD119B1W01005E6327XTSA1 ESD5V0L1B02VH6327XTSA1 ESD7451N2T5G 19180-510 CPDT-5V0USP-HF 3.0SMCJ33CA-F 3.0SMCJ36A-F HSPC16701B02TP JANTX1N6126A JANTX1N6462 JANTX1N6465 USB50805e3/TR7 D3V3Q1B2DLP3-7 D55V0M1B2WS-7 DRTR5V0U4SL-7 SCM1293A-04SO ESD200-B1-CSP0201 E6327 SM12-7 SM1605E3/TR13 SMLJ45CA-TP CEN955 W/DATA 82350120560 VESD12A1A-HD1-GS08 CPDUR5V0R-HF CPDQC5V0U-HF CPDQC5V0USP-HF CPDQC5V0-HF D1213A-01LP4-7B ESD101-B1-02EL E6327 824500181 MMAD1108/TR13 5KP100A