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April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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2SJ542

Silicon P Channel MOS FET

REJ03G0889-0400
(Previous: ADE-208-591B)
Rev.4.00
Sep 07, 2005

Description

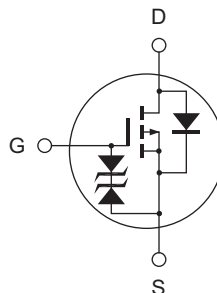
High speed power switching

Features

- Low on-resistance
 $R_{DS(on)} = 0.050 \Omega$ typ.
- Low drive current.
- 4 V gate drive devices.
- High speed switching.

Outline

RENESAS Package code: PRSS0004AC-A
(Package name: TO-220AB)



1. Gate
2. Drain (Flange)
3. Source

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Value	Unit
Drain to source voltage	V _{DSS}	-60	V
Gate to source voltage	V _{GSS}	±20	V
Drain current	I _D	-18	A
Drain peak current	I _{D (pulse)} ^{Note 1}	-72	A
Body to drain diode reverse drain current	I _{DR}	-18	A
Avalanche current	I _{AP} ^{Note 3}	-18	A
Avalanche energy	E _{AR} ^{Note 3}	27	mJ
Channel dissipation	P _{ch} ^{Note 2}	60	W
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

- Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%
 2. Value at T_c = 25°C
 3. Value at T_{ch} = 25°C, R_g ≥ 50 Ω

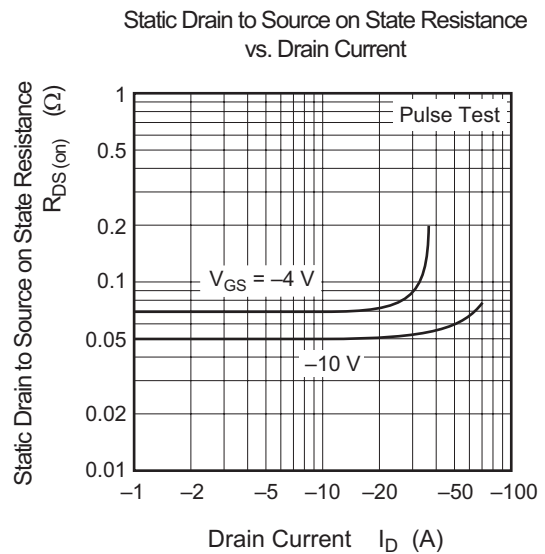
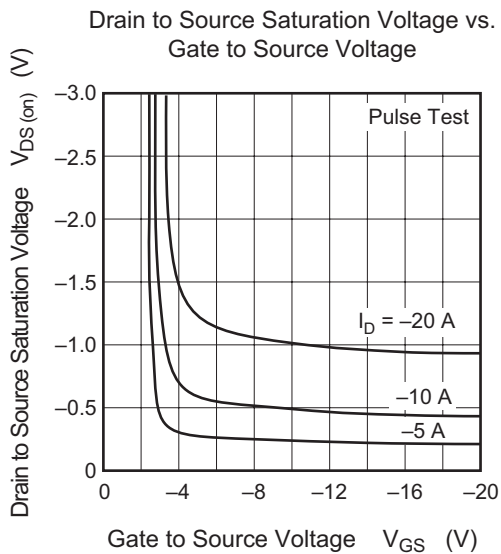
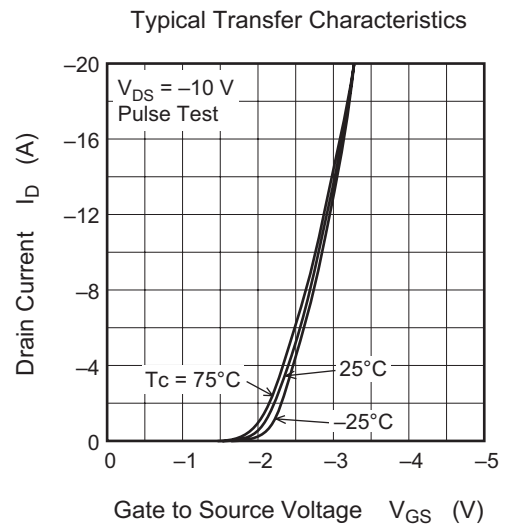
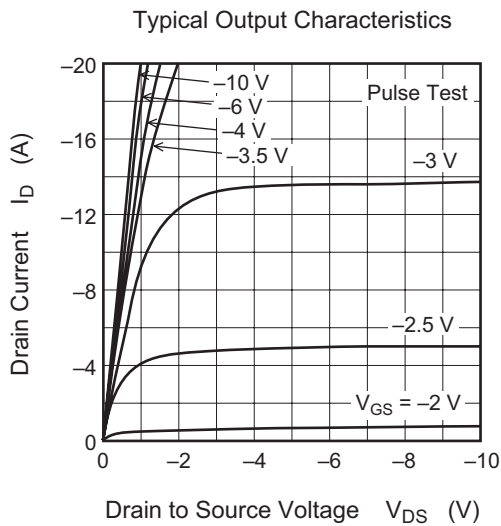
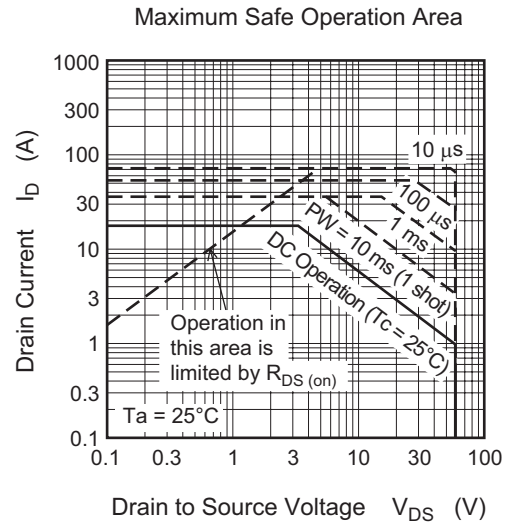
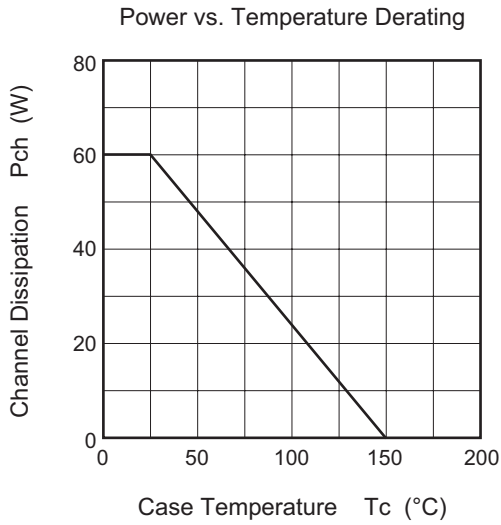
Electrical Characteristics

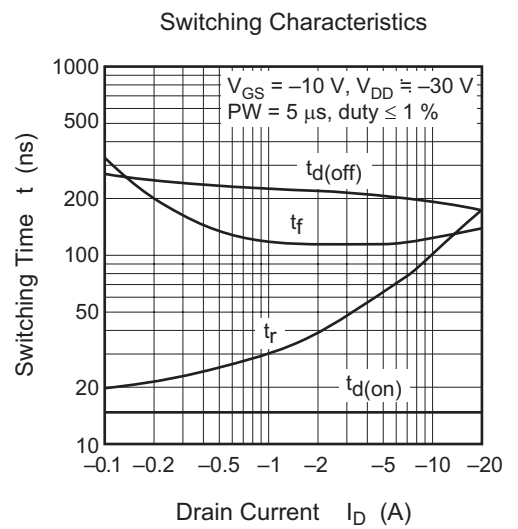
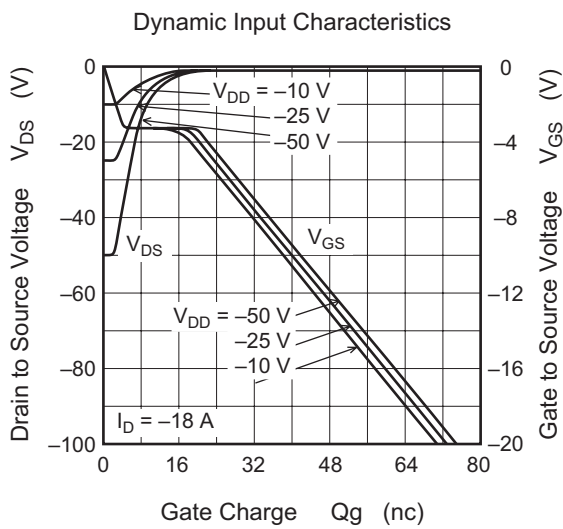
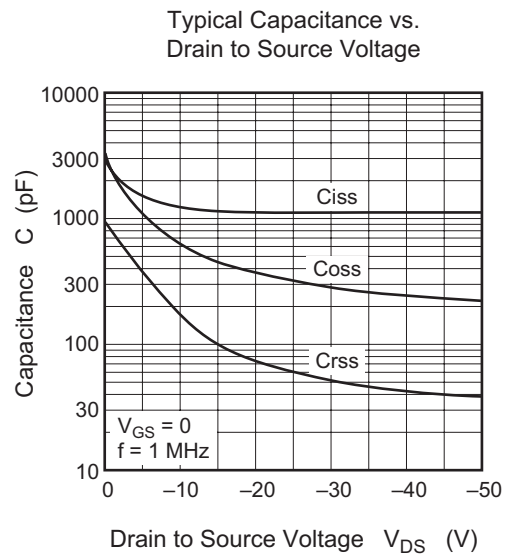
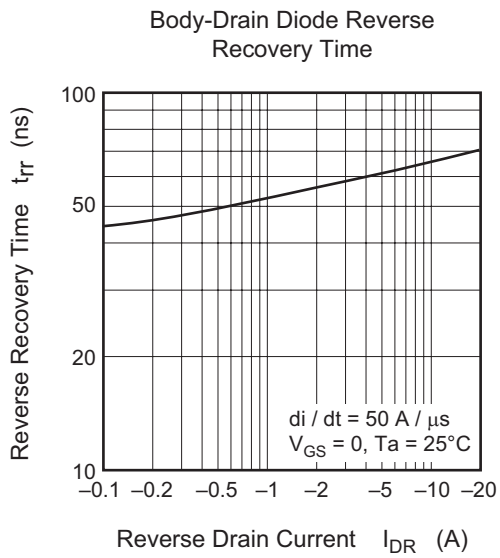
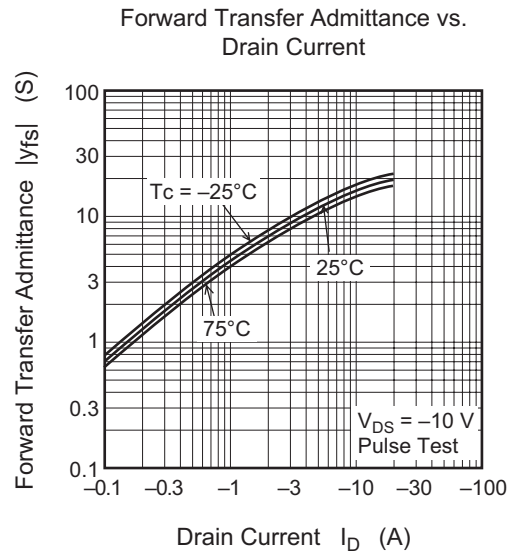
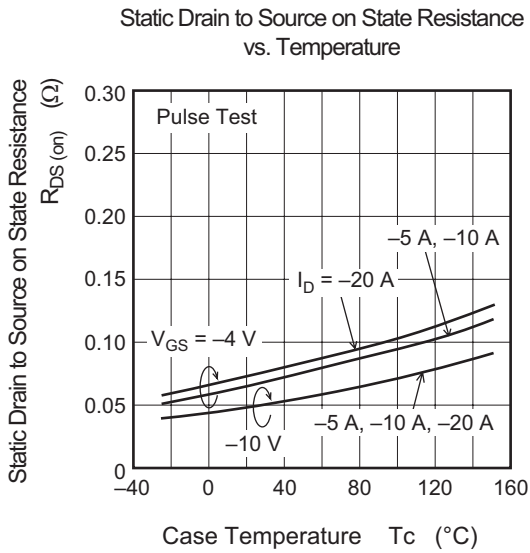
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V _{(BR) DSS}	-60	—	—	V	I _D = -10 mA, V _{GS} = 0
Gate to source breakdown voltage	V _{(BR) GSS}	±20	—	—	V	I _G = ±100 μA, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	-10	μA	V _{DS} = -60 V, V _{GS} = 0
Gate to source leak current	I _{GSS}	—	—	±10	μA	V _{GS} = ±16 V, V _{DS} = 0
Gate to source cutoff voltage	V _{GS (off)}	-1.0	—	-2.0	V	I _D = -1 mA, V _{DS} = -10 V
Static drain to source on state resistance	R _{DS (on)}	—	0.050	0.065	Ω	I _D = -9 A, V _{GS} = -10 V ^{Note 4}
	R _{DS (on)}	—	0.070	0.110	Ω	I _D = -9 A, V _{GS} = -4 V ^{Note 4}
Forward transfer admittance	y _{fs}	10	16	—	S	I _D = -9 A, V _{DS} = -10 V ^{Note 4}
Input capacitance	C _{iss}	—	1300	—	pF	V _{DS} = -10 V
Output capacitance	C _{oss}	—	650	—	pF	V _{GS} = 0
Reverse transfer capacitance	C _{rss}	—	180	—	pF	f = 1 MHz
Turn-on delay time	t _{d (on)}	—	14	—	ns	V _{GS} = -10 V
Rise time	t _r	—	95	—	ns	I _D = -9 A
Turn-off delay time	t _{d (off)}	—	190	—	ns	R _L = 3.33 Ω
Fall time	t _f	—	135	—	ns	
Body to drain diode forward voltage	V _{DF}	—	-1.0	—	V	I _F = -18 A, V _{GS} = 0
Body to drain diode reverse recovery time	t _{rr}	—	70	—	ns	I _F = -18 A, V _{GS} = 0 di _F /dt = 50 A/μs

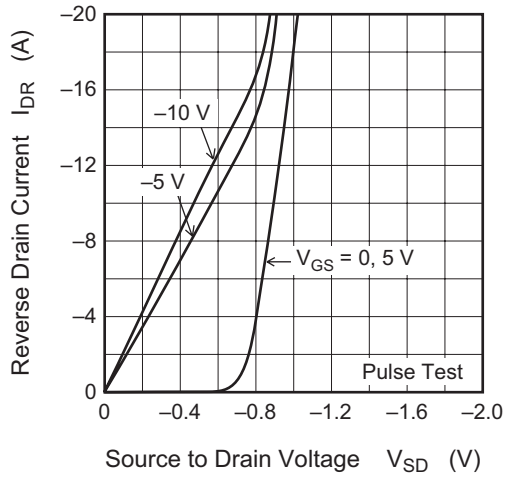
- Note: 4. Pulse test

Main Characteristics

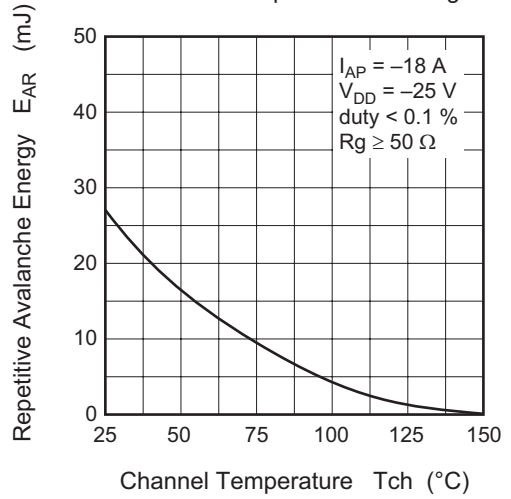




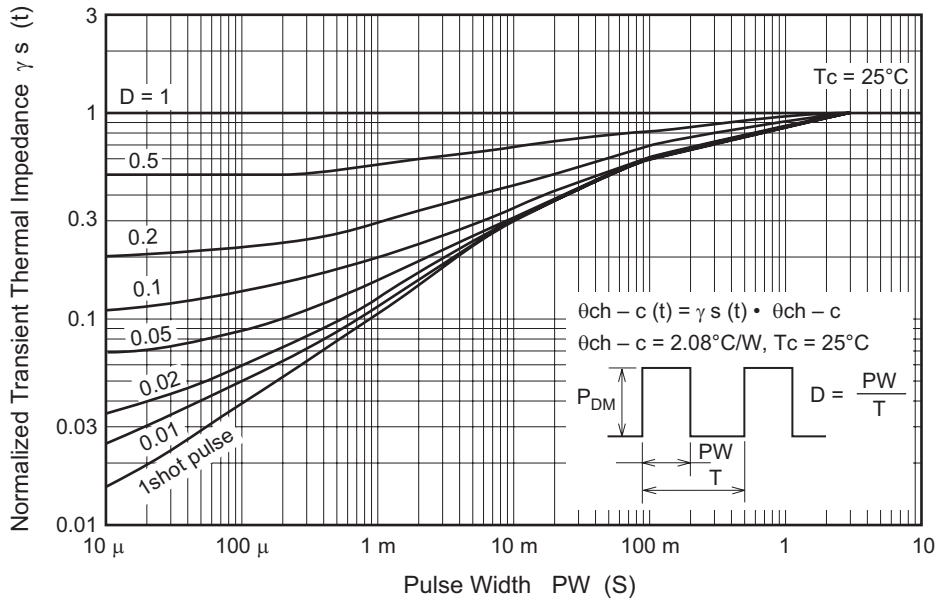
Reverse Drain Current vs. Source to Drain Voltage



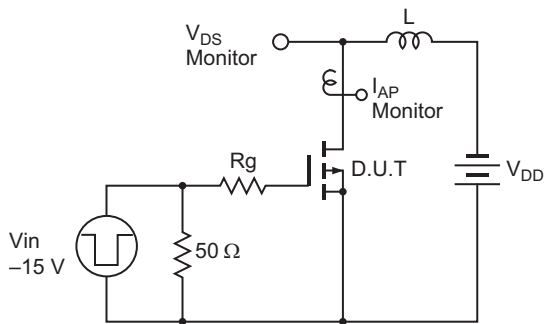
Maximum Avalanche Energy vs. Channel Temperature Derating



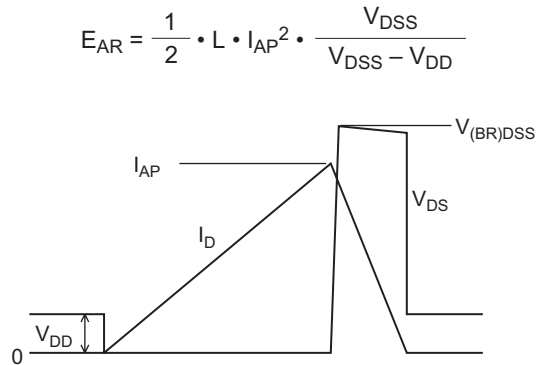
Normalized Transient Thermal Impedance vs. Pulse Width

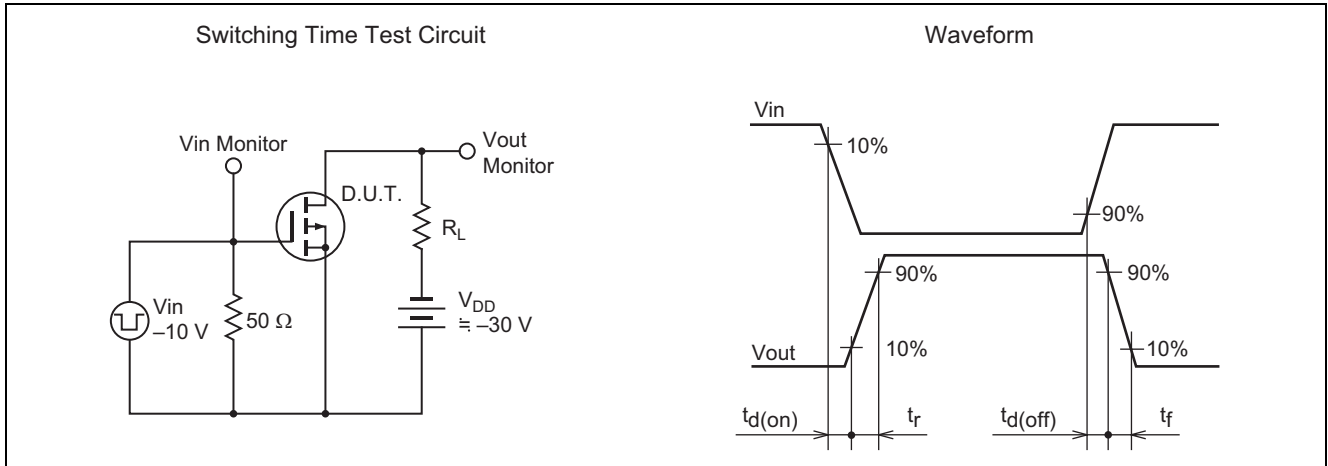


Avalanche Test Circuit

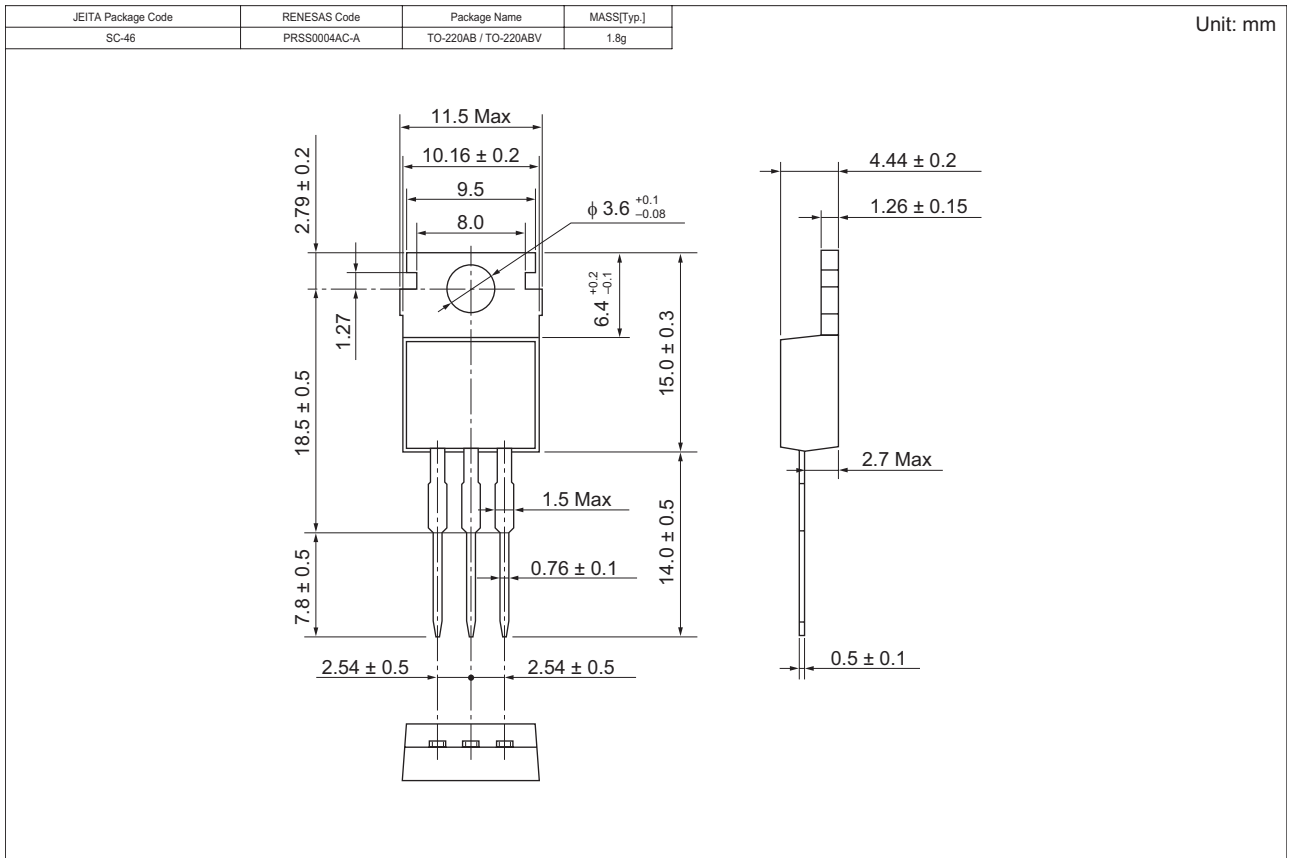


Avalanche Waveform





Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
2SJ542-E	500 pcs	Box (Sack)

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