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Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

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

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2SJ540

Silicon P Channel MOS FET

REJ03G0887-0400

Rev.4.00

Jun 05, 2006

Description

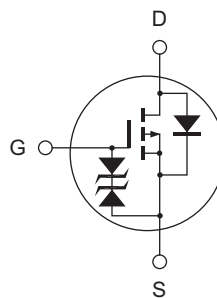
High speed power switching

Features

- Low on-resistance
 $R_{DS(on)} = 0.11 \Omega$ 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	-12	A
Drain peak current	I _{D (pulse)} ^{Note 1}	-48	A
Body to drain diode reverse drain current	I _{DR}	-12	A
Avalanche current	I _{AP} ^{Note 3}	-12	A
Avalanche energy	E _{AR} ^{Note 3}	12	mJ
Channel dissipation	P _{ch} ^{Note 2}	50	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

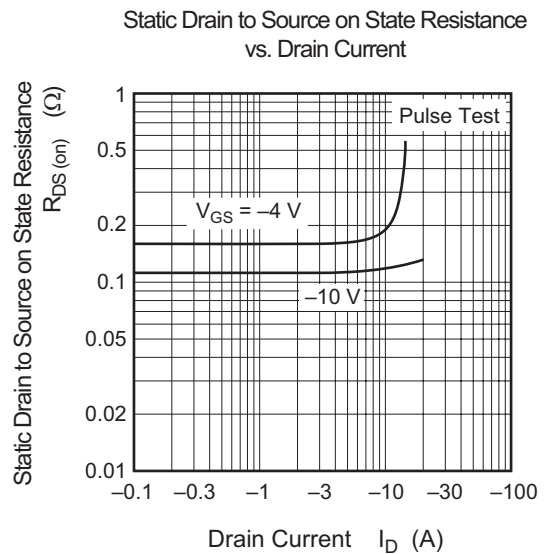
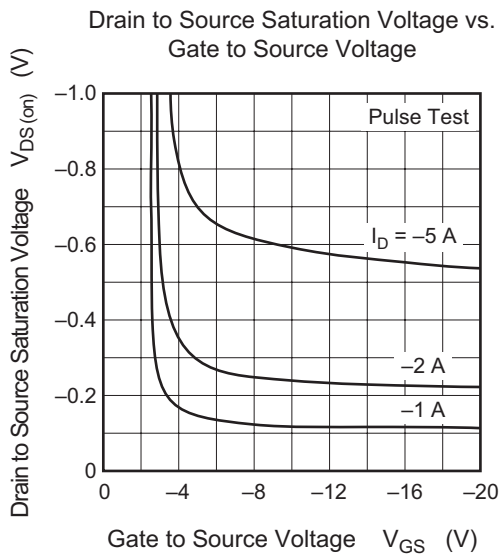
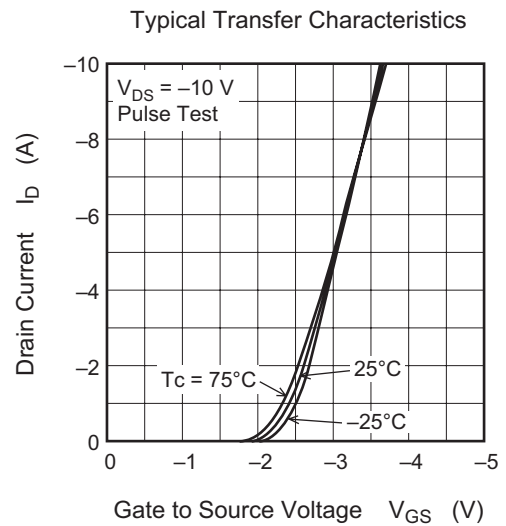
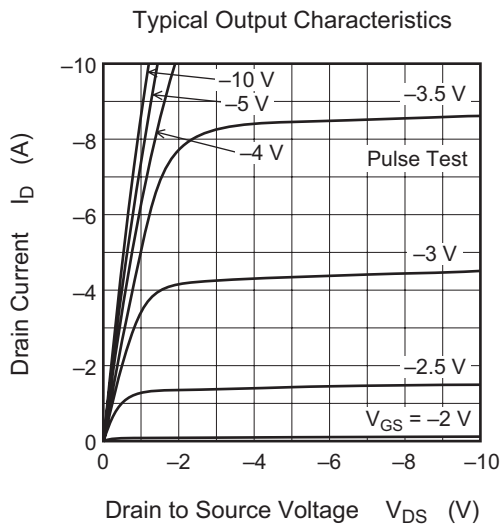
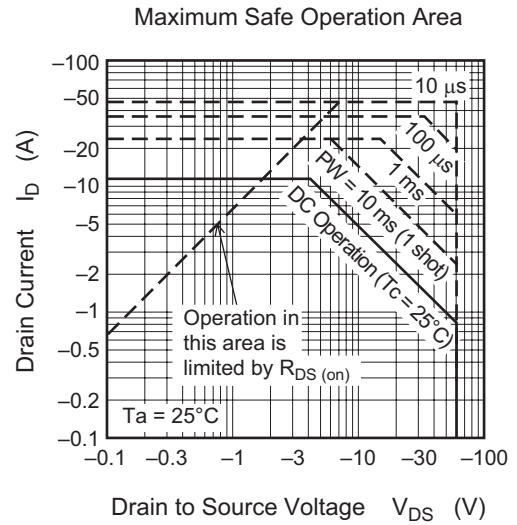
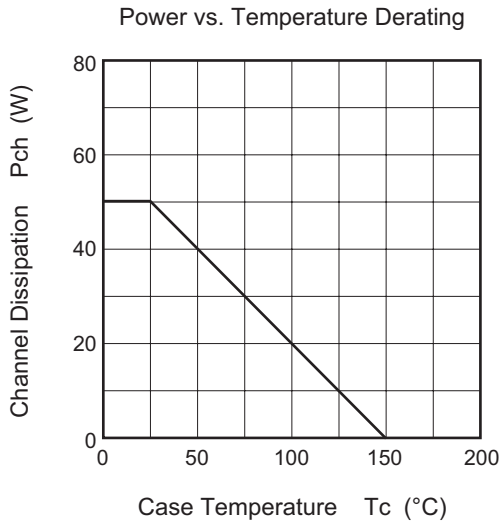
Electrical Characteristics

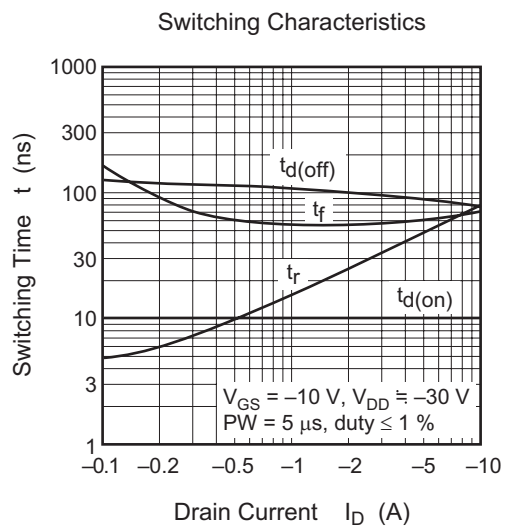
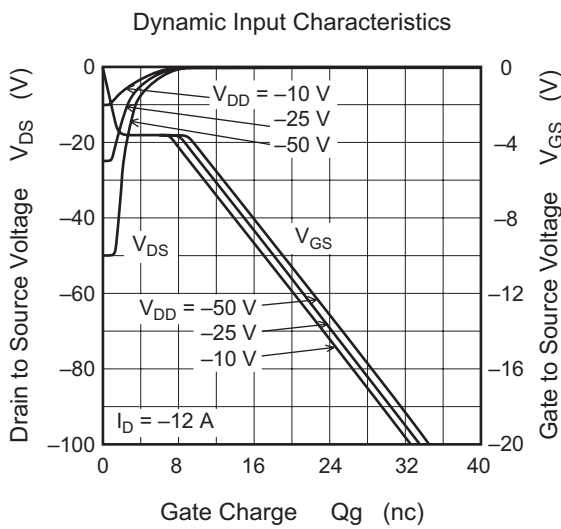
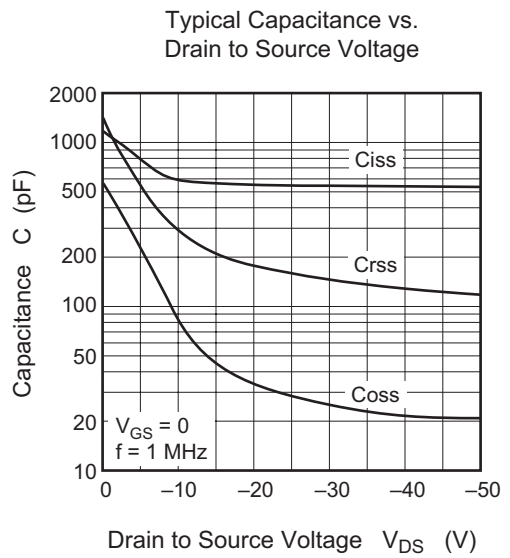
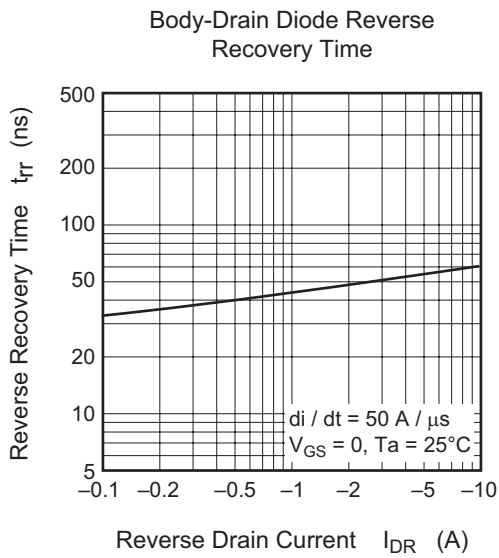
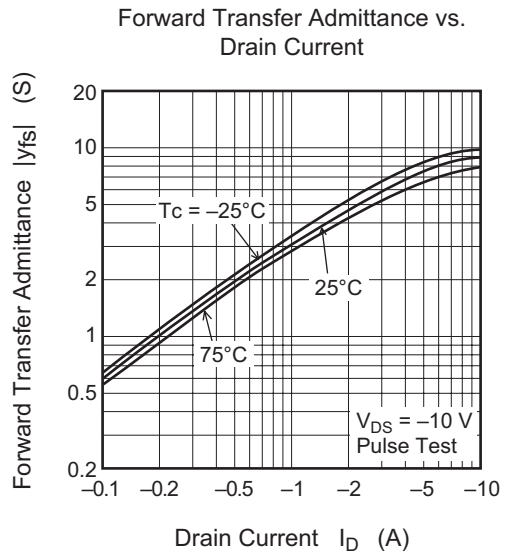
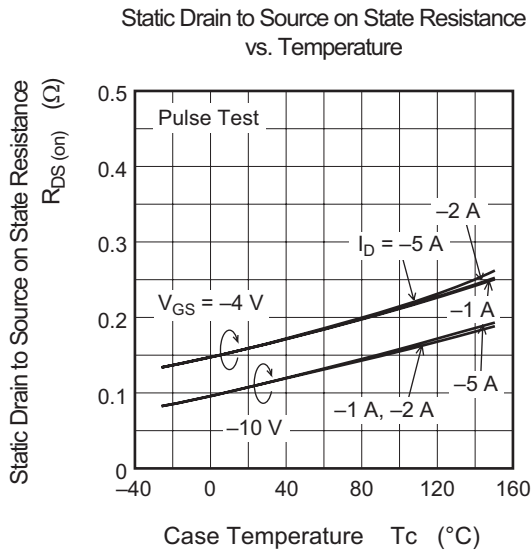
(Ta = 25°C)

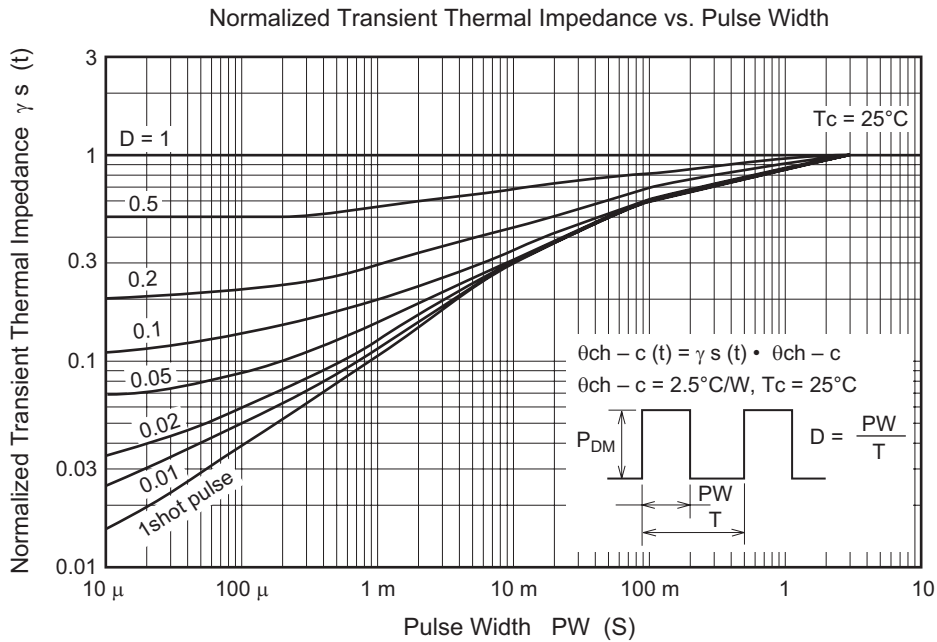
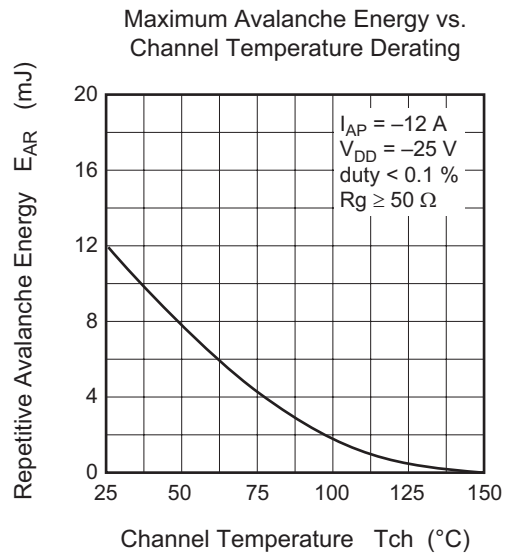
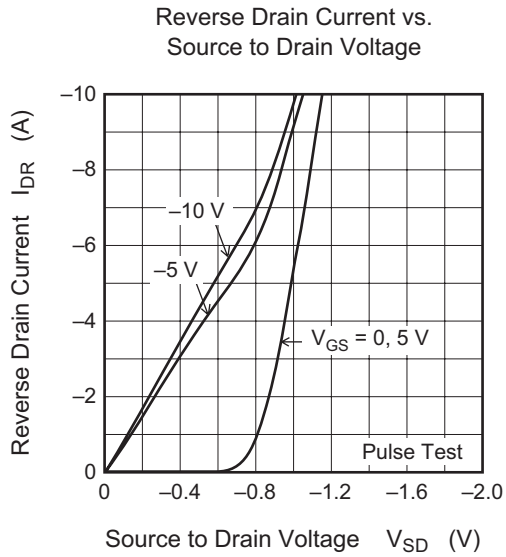
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V _{(BR) DSS}	-60	—	—	V	I _D = -10 mA, V _{GS} = 0
Gate to source breakdown voltage	V _{(BR) GSS}	±20	—	—	V	I _G = ±100 μA, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	-10	μA	V _{DS} = -60 V, V _{GS} = 0
Gate 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)}	—	0.11	0.15	Ω	I _D = -6 A, V _{GS} = -10 V ^{Note 4}
	R _{DS (on)}	—	0.16	0.23	Ω	I _D = -6 A, V _{GS} = -4 V ^{Note 4}
Forward transfer admittance	y _{fs}	5	8	—	S	I _D = -6 A, V _{DS} = -10 V ^{Note 4}
Input capacitance	C _{iss}	—	580	—	pF	V _{DS} = -10 V
Output capacitance	C _{oss}	—	300	—	pF	V _{GS} = 0
Reverse transfer capacitance	C _{rss}	—	85	—	pF	f = 1 MHz
Turn-on delay time	t _{d (on)}	—	10	—	ns	V _{GS} = -10 V
Rise time	t _r	—	55	—	ns	I _D = -6 A
Turn-off delay time	t _{d (off)}	—	85	—	ns	R _L = 6 Ω
Fall time	t _f	—	60	—	ns	
Body to drain diode forward voltage	V _{DF}	—	-1.2	—	V	I _F = -12 A, V _{GS} = 0
Body to drain diode reverse recovery time	t _{rr}	—	60	—	ns	I _F = -12 A, V _{GS} = 0 di _F /dt = 50 A/μs

- Note: 4. Pulse test

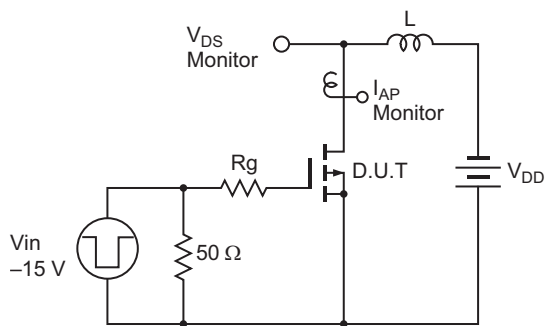
Main Characteristics





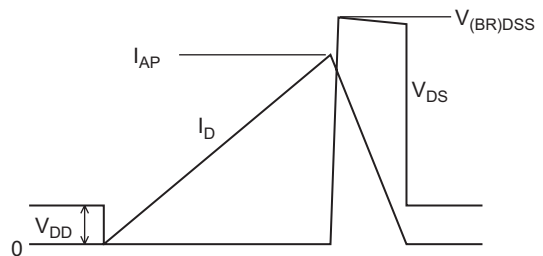


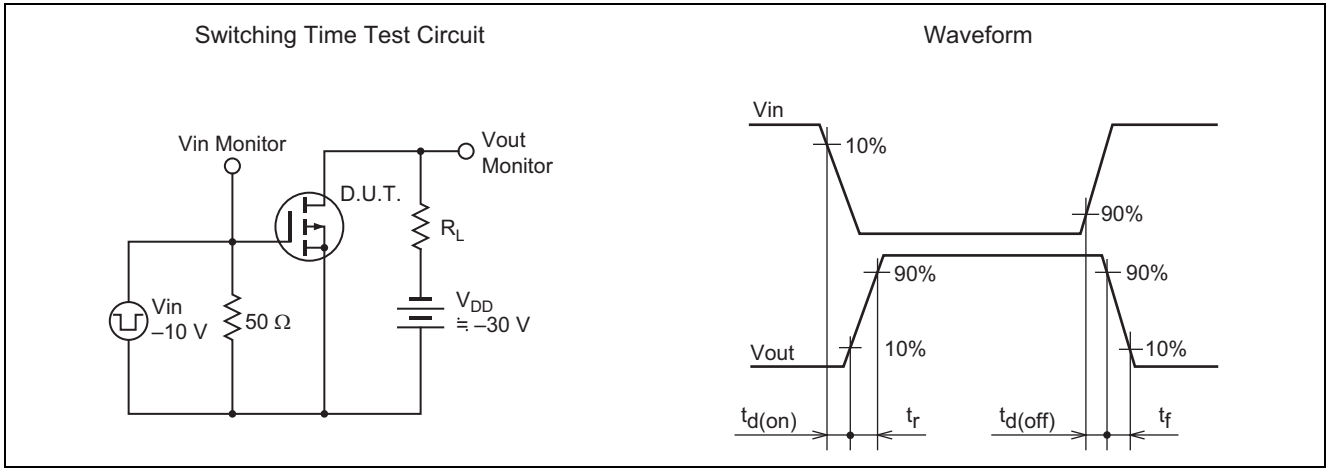
Avalanche Test Circuit



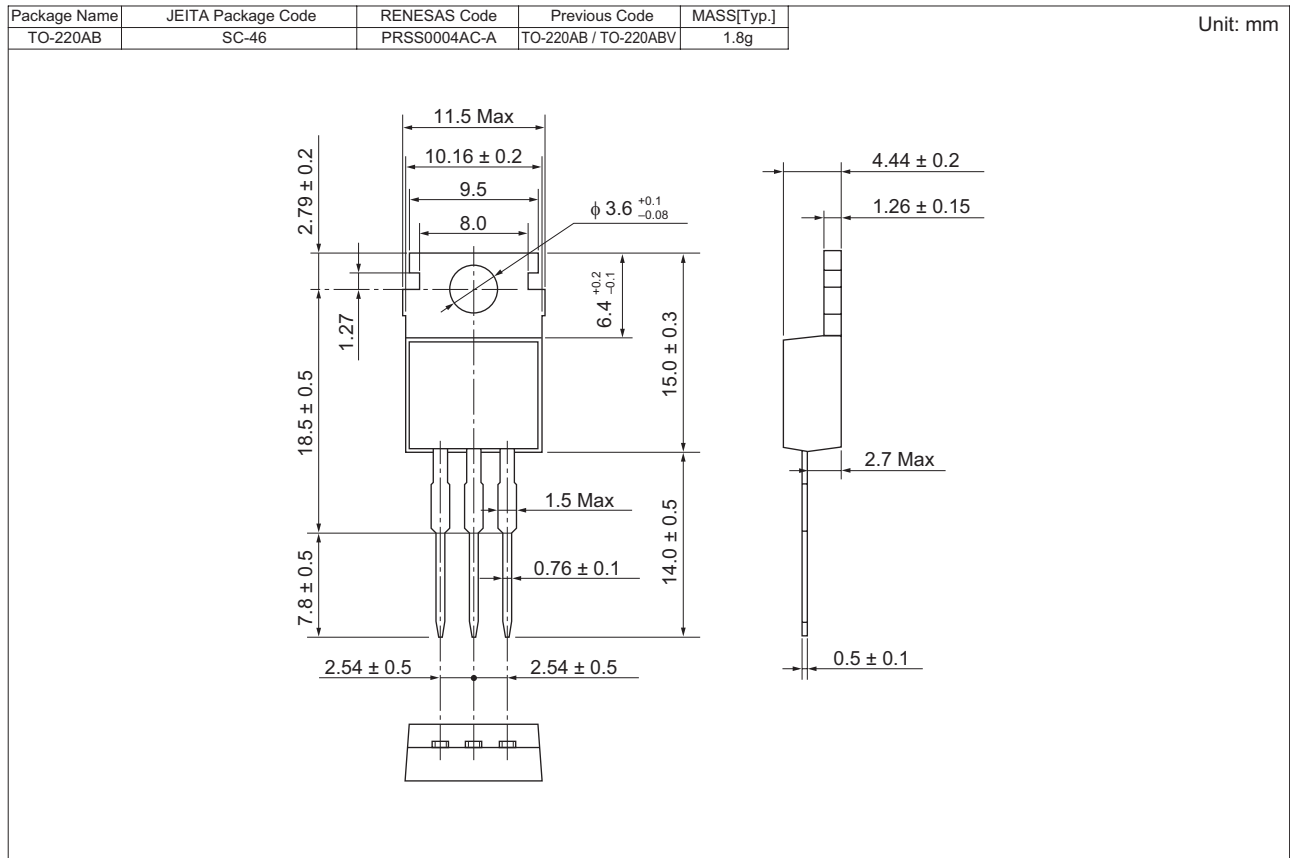
Avalanche Waveform

$$E_{AR} = \frac{1}{2} \cdot L \cdot I_{AP}^2 \cdot \frac{V_{DSS}}{V_{DSS} - V_{DD}}$$





Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
2SJ540-E	500 pcs	Box (Sack)

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