

2SK2738

Silicon N Channel MOS FET
High Speed Power Switching

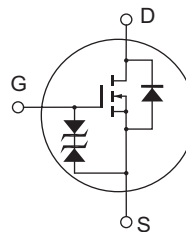
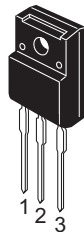
REJ03G1032-0200
(Previous: ADE-208-483)
Rev.2.00
Sep 07, 2005

Features

- Low on-resistance
 $R_{DS} = 15 \text{ m}\Omega$ typ
- High speed switching
- 4 V gate drive device can be driven from 5 V source

Outline

RENESAS Package code: PRSS0003AE-A
(Package name: TO-220C•FM)



1. Gate
2. Drain
3. Source

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	60	V
Gate to source voltage	V_{GSS}	±20	V
Drain current	I_D	40	A
Drain peak current	$I_{D(pulse)}^{*1}$	160	A
Body to drain diode reverse drain current	I_{DR}	40	A
Avalanche current	I_{AP}^{*3}	40	A
Avalanche Energy	E_{AR}^{*3}	137	mJ
Channel dissipation	P_{ch}^{*2}	30	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

Notes: 1. $PW \leq 10 \mu s$, duty cycle $\leq 1 \%$
 2. Value at $T_c = 25^\circ C$
 3. Value at $T_{ch} = 25^\circ C$, $R_g \geq 50 \Omega$

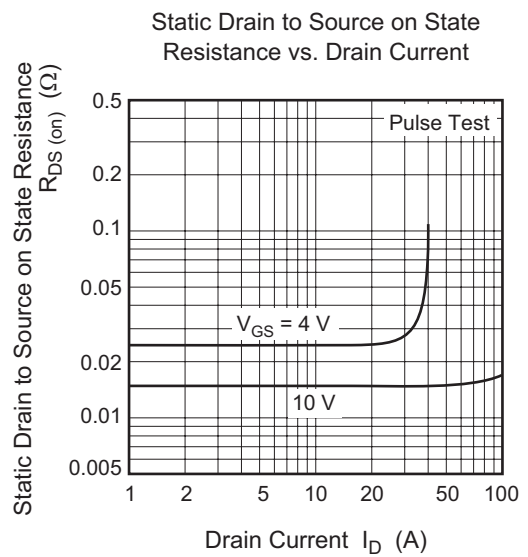
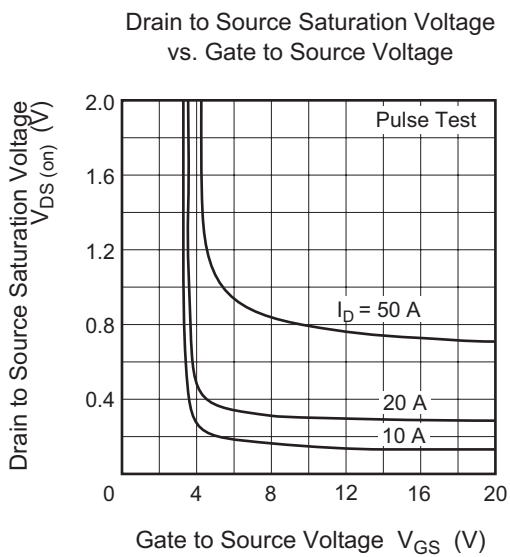
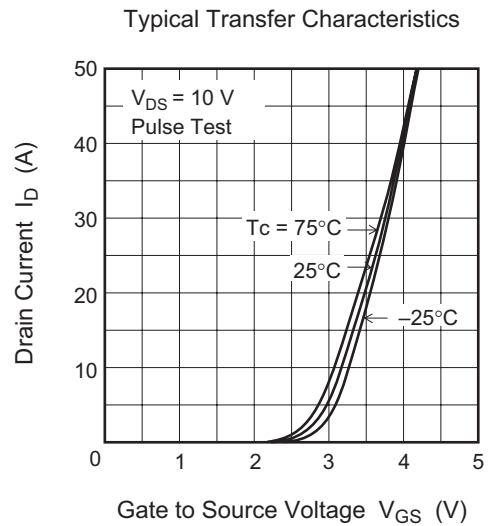
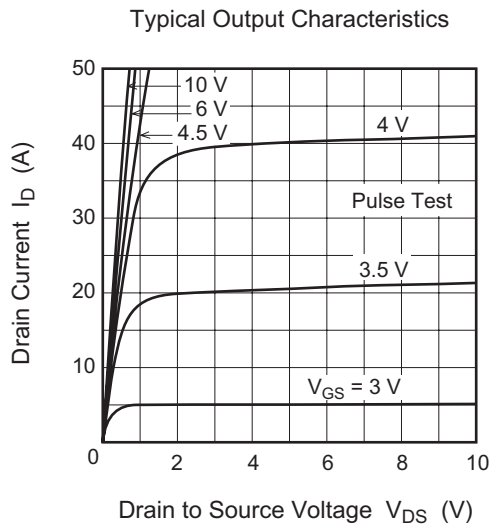
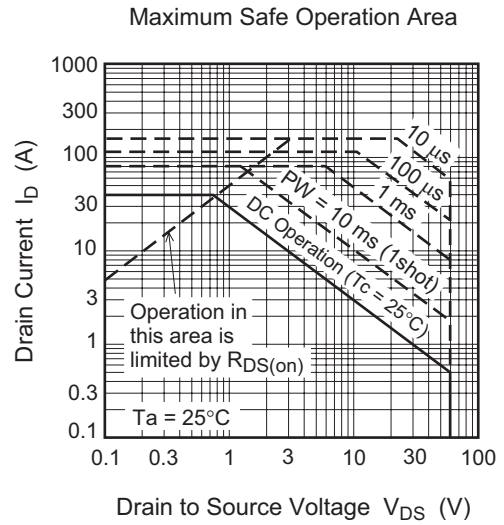
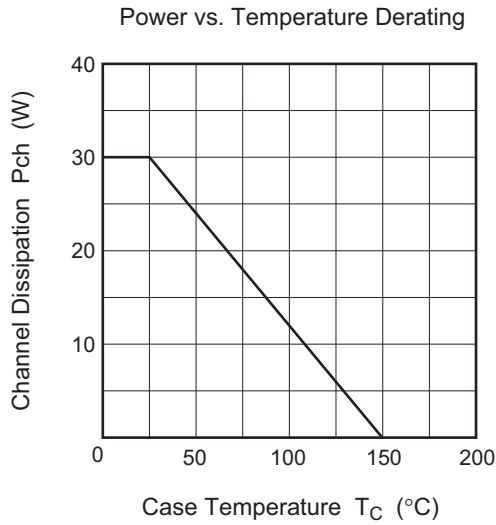
Electrical Characteristics

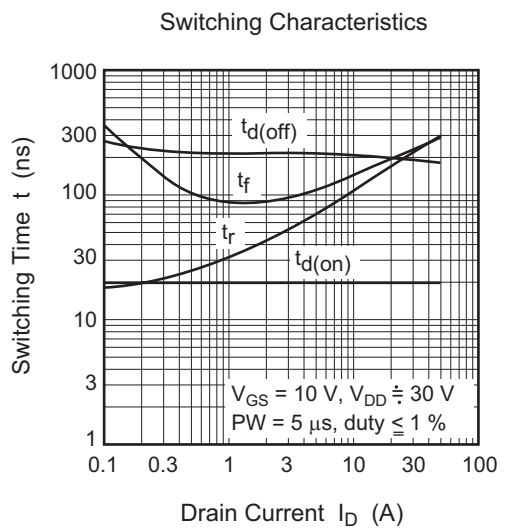
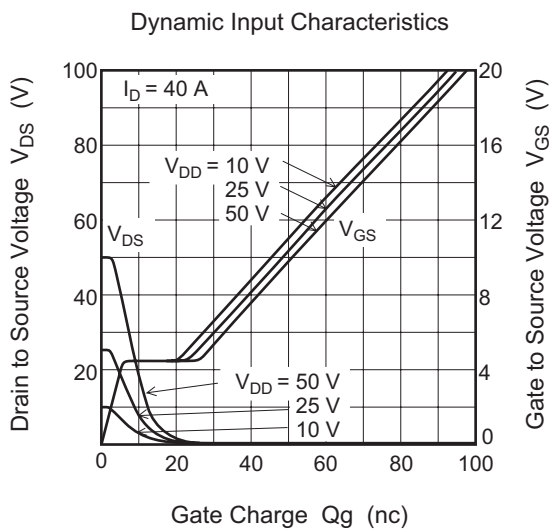
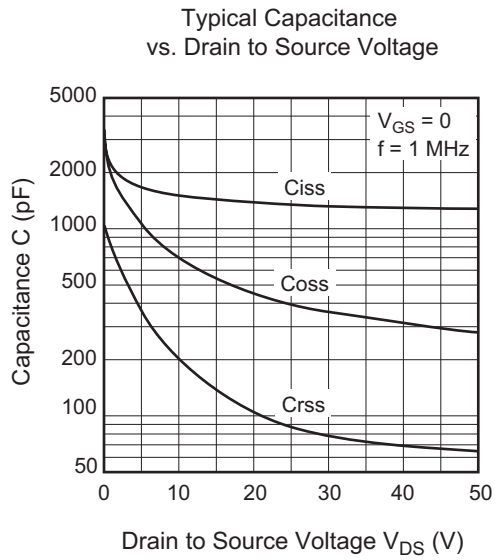
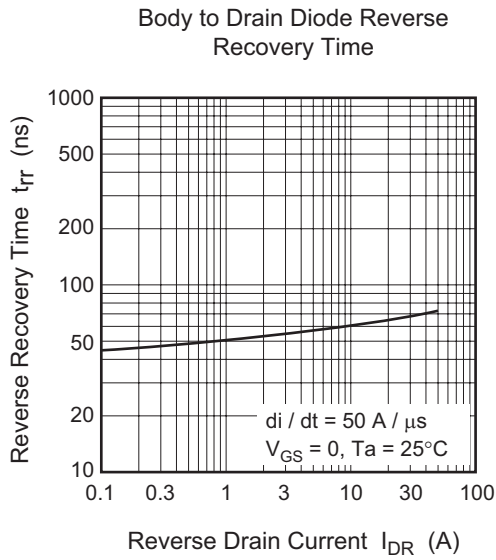
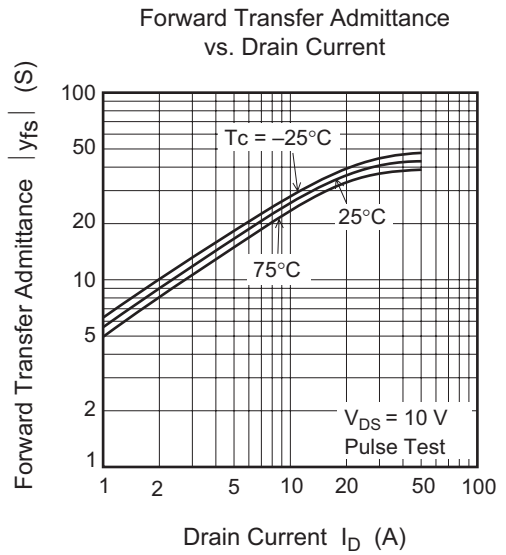
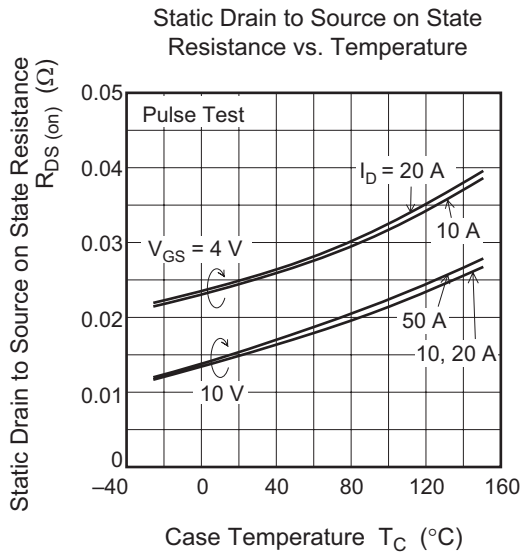
(Ta = 25°C)

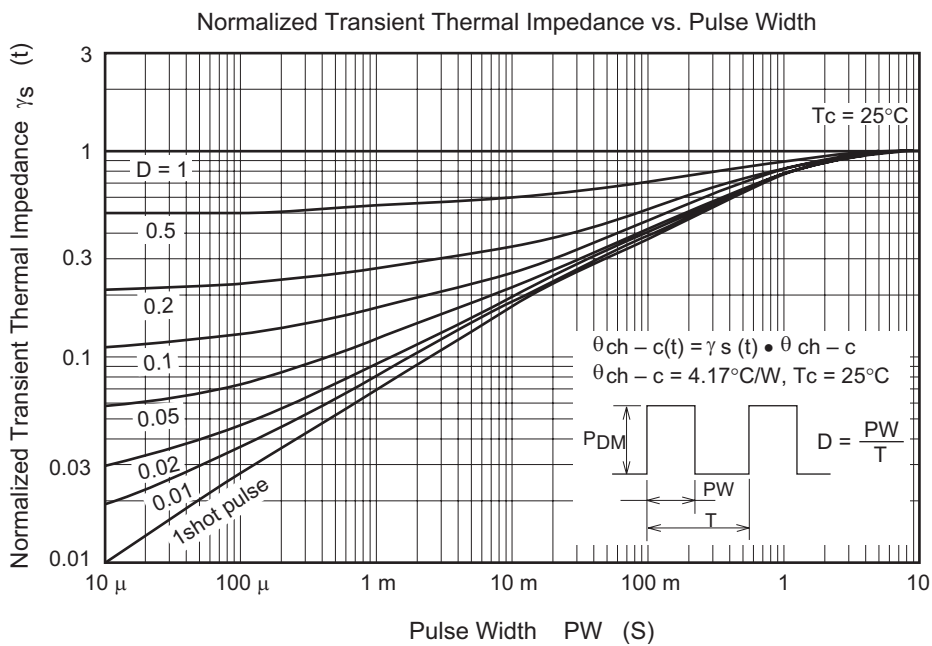
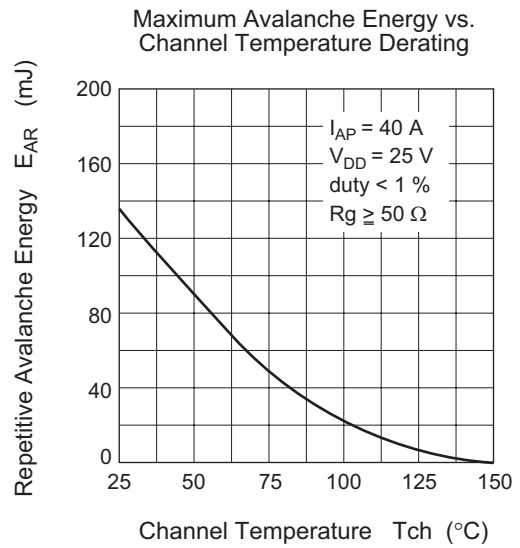
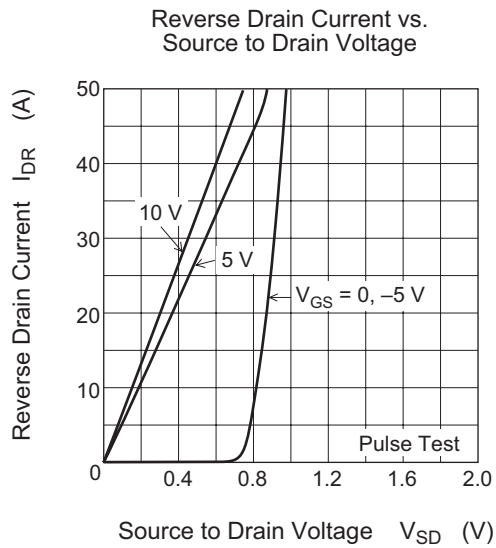
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	60	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	—	—	V	$I_G = \pm 100 \mu A$, $V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	±10	μA	$V_{GS} = \pm 16 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	10	μA	$V_{DS} = 60 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.5	—	2.5	V	$I_D = 1 \text{ mA}$, $V_{DS} = 10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	15	20	mΩ	$I_D = 20 \text{ A}$, $V_{GS} = 10 \text{ V}^{*4}$
	$R_{DS(on)}$	—	25	40	mΩ	$I_D = 20 \text{ A}$, $V_{GS} = 4 \text{ V}^{*4}$
Forward transfer admittance	$ y_{fs} $	20	35	—	S	$I_D = 20 \text{ A}$, $V_{DS} = 10 \text{ V}^{*4}$
Input capacitance	C_{iss}	—	1500	—	pF	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0$,
Output capacitance	C_{oss}	—	720	—	pF	$f = 1 \text{ MHz}$
Reverse transfer capacitance	C_{rss}	—	200	—	pF	
Turn-on delay time	$t_{d(on)}$	—	20	—	ns	$I_D = 20 \text{ A}$, $V_{GS} = 10 \text{ V}$, $R_L = 1.5 \Omega$
Rise time	t_r	—	180	—	ns	
Turn-off delay time	$t_{d(off)}$	—	200	—	ns	
Fall time	t_f	—	200	—	ns	
Body to drain diode forward voltage	V_{DF}	—	0.95	—	V	$I_F = 40 \text{ A}$, $V_{GS} = 0$
Body to drain diode reverse recovery time	t_{rr}	—	70	—	V	$I_F = 40 \text{ A}$, $V_{GS} = 0$ $di_F/dt = 50 \text{ A}/\mu s$

Note: 4. Pulse test

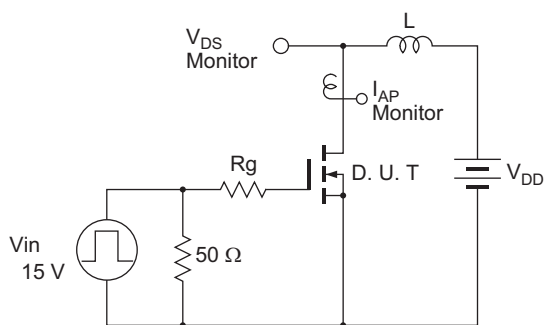
Main Characteristics



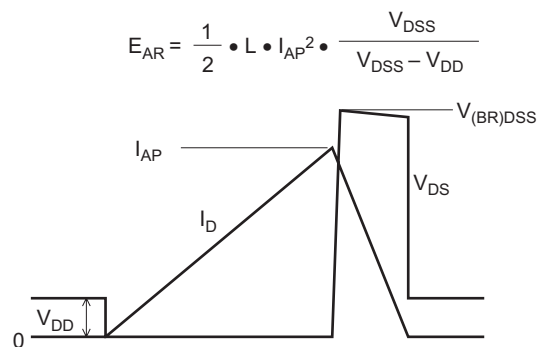


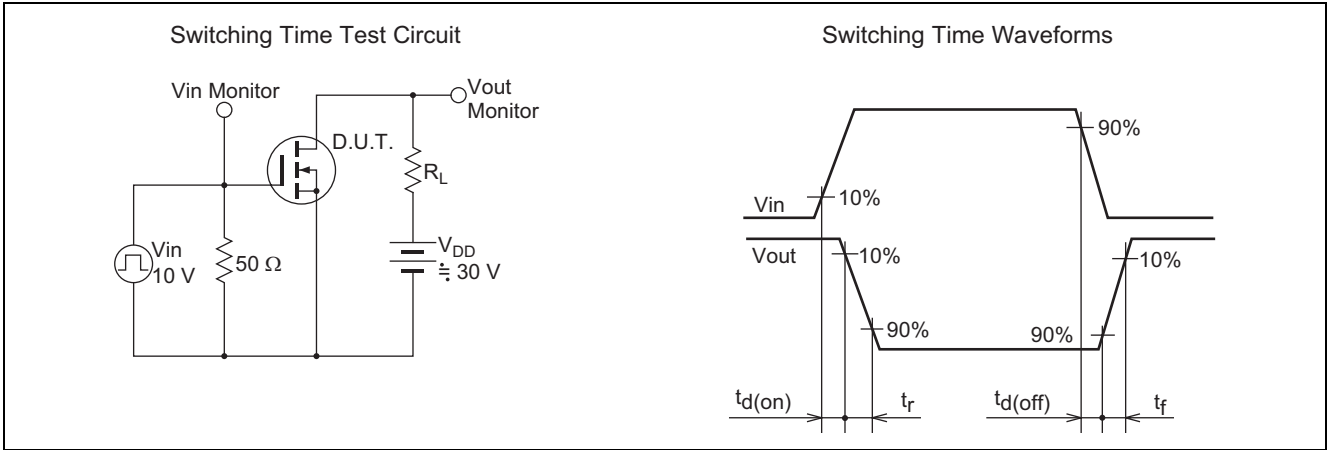


Avalanche Test Circuit

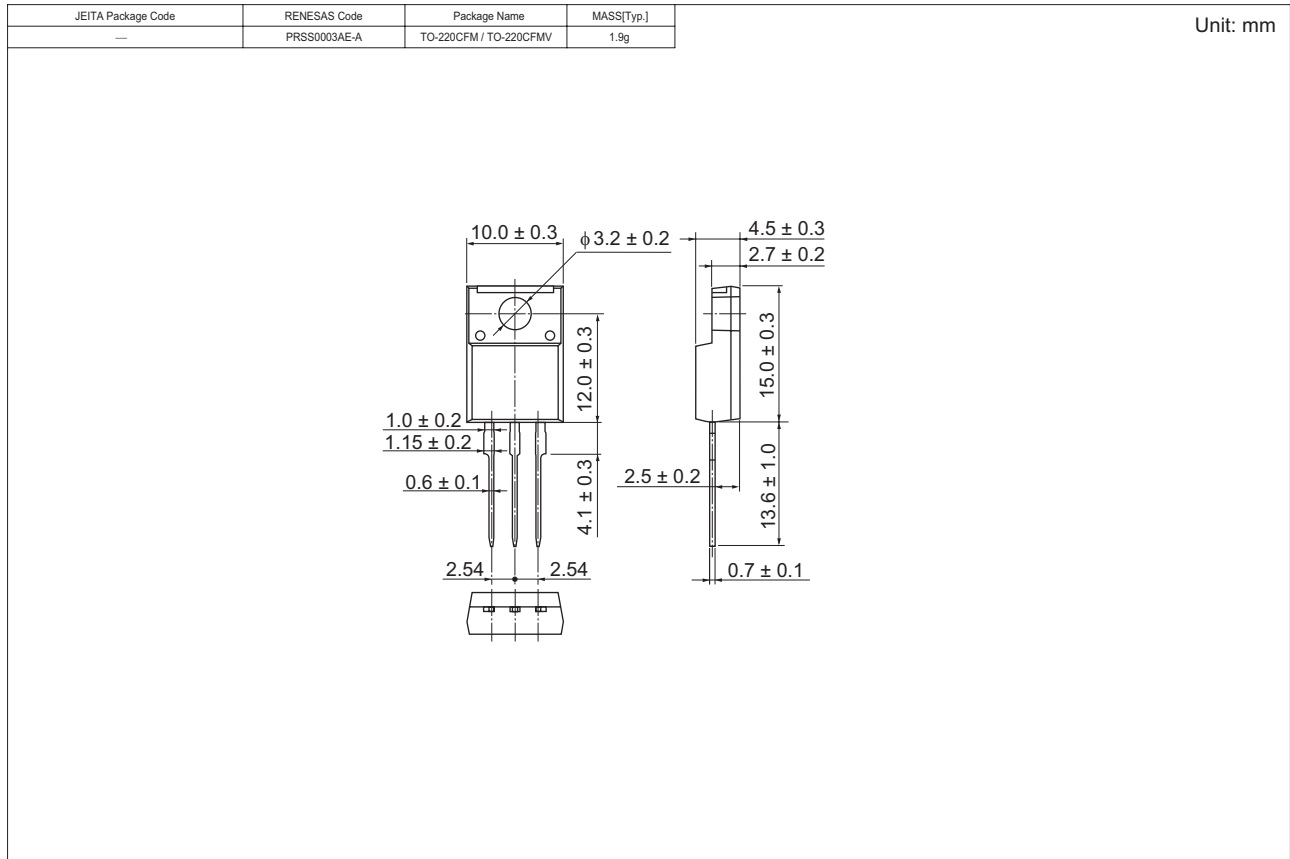


Avalanche Waveform





Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
2SK2738-E	50 pcs	Plastic magazine

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