

To our customers,

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## Old Company Name in Catalogs and Other Documents

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

April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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## 2SK2725

Silicon N Channel MOS FET  
High Speed Power Switching

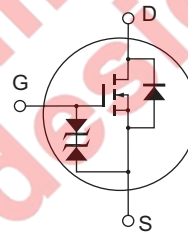
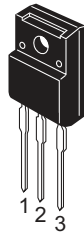
REJ03G1023-0400  
(Previous: ADE-208-452B)  
Rev.4.00  
Sep 07, 2005

### Features

- Low on-resistance
- High speed switching
- Low drive current
- No secondary breakdown
- Avalanche ratings

### Outline

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



1. Gate
2. Drain
3. Source

Not recommended  
for new design

## Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V <sub>DSS</sub>	500	V
Gate to source voltage	V <sub>GSS</sub>	±30	V
Drain current	I <sub>D</sub>	5	A
Drain peak current	I <sub>D(pulse)</sub> * <sup>1</sup>	20	A
Body to drain diode reverse drain current	I <sub>DR</sub>	5	A
Avalanche current	I <sub>AP</sub> * <sup>3</sup>	5	A
Avalanche energy	E <sub>AR</sub> * <sup>3</sup>	1.38	mJ
Channel dissipation	P <sub>ch</sub> * <sup>2</sup>	30	W
Channel temperature	T <sub>ch</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

- Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1 %  
 2. Value at Tc = 25°C  
 3. Value at Tch = 25°C, Rg ≥ 50 Ω

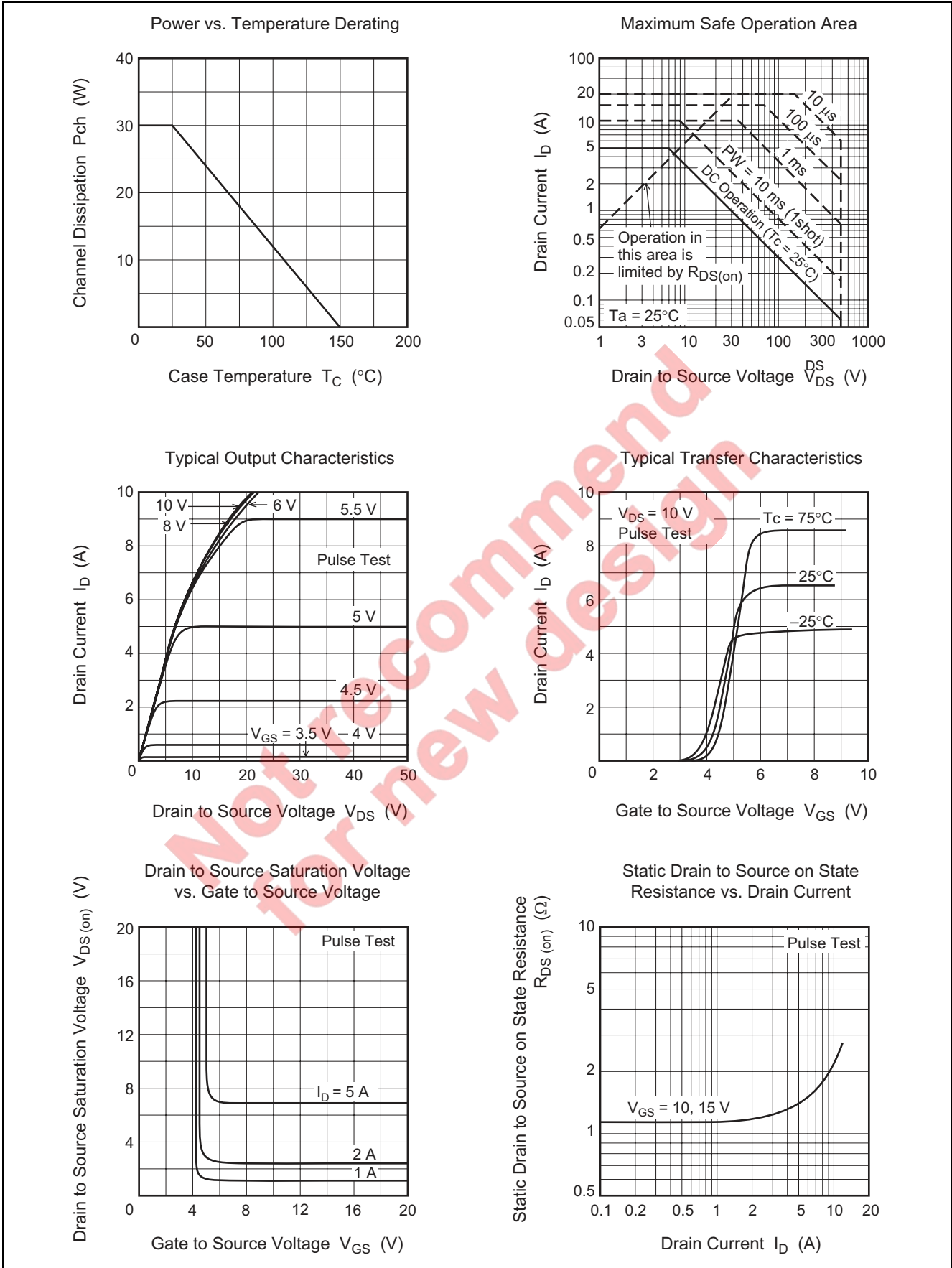
## Electrical Characteristics

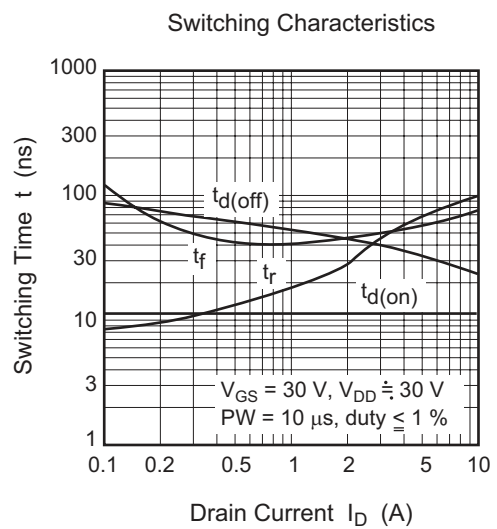
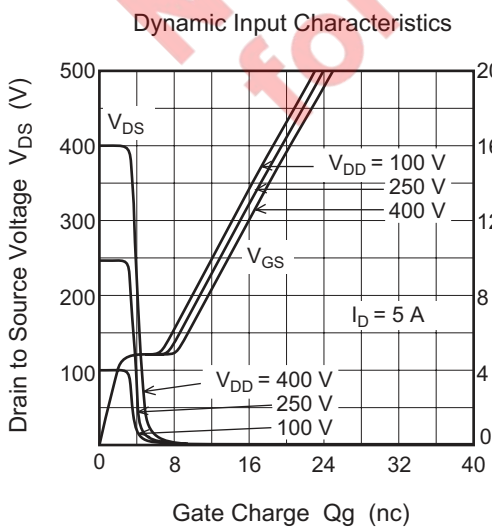
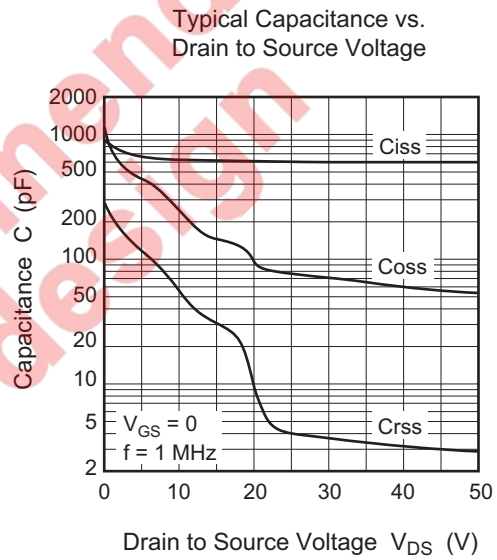
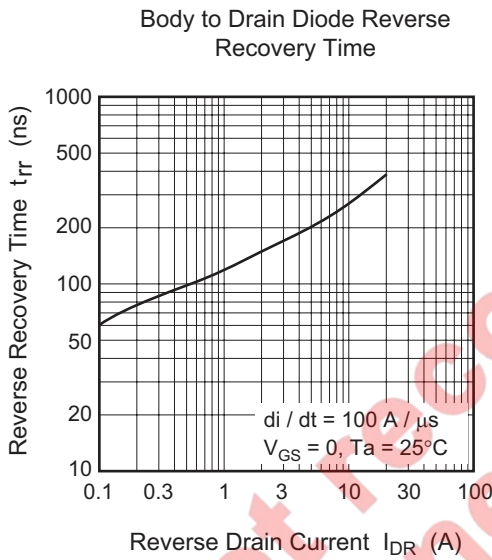
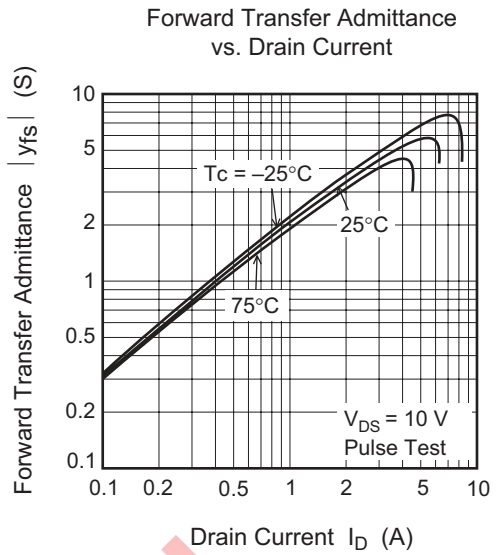
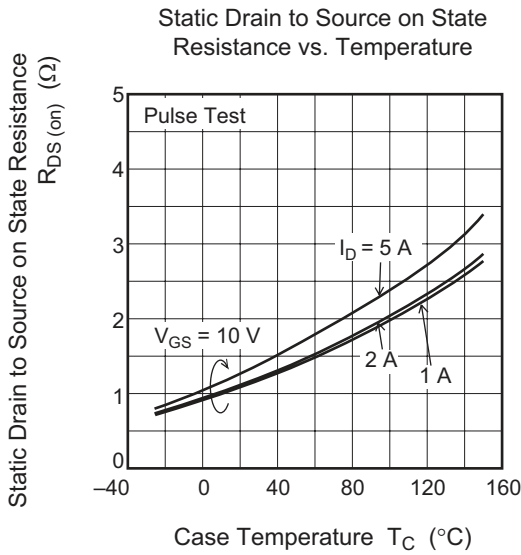
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V <sub>(BR)DSS</sub>	500	—	—	V	I <sub>D</sub> = 10 mA, V <sub>GS</sub> = 0
Gate to source breakdown voltage	V <sub>(BR)GSS</sub>	±30	—	—	V	I <sub>G</sub> = ±100 μA, V <sub>DS</sub> = 0
Gate to source leak current	I <sub>GSS</sub>	—	—	±10	μA	V <sub>GS</sub> = ±25 V, V <sub>DS</sub> = 0
Zero gate voltage drain current	I <sub>DSS</sub>	—	—	10	μA	V <sub>DS</sub> = 500 V, V <sub>GS</sub> = 0
Gate to source cutoff voltage	V <sub>GS(off)</sub>	2.5	—	3.5	V	I <sub>D</sub> = 1 mA, V <sub>DS</sub> = 10 V* <sup>4</sup>
Static drain to source on state resistance	R <sub>DS(on)</sub>	—	1.2	1.6	Ω	I <sub>D</sub> = 3 A, V <sub>GS</sub> = 10 V* <sup>4</sup>
Forward transfer admittance	y <sub>fs</sub>	2.5	4.5	—	S	I <sub>D</sub> = 3 A, V <sub>DS</sub> = 10 V* <sup>4</sup>
Input capacitance	C <sub>iss</sub>	—	630	—	pF	V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 0, f = 1 MHz
Output capacitance	C <sub>oss</sub>	—	250	—	pF	
Reverse transfer capacitance	C <sub>rss</sub>	—	55	—	pF	
Total gate charge	Q <sub>g</sub>	—	13.5	—	nc	V <sub>DD</sub> = 400 V, V <sub>GS</sub> = 10 V, I <sub>D</sub> = 5 A
Gate to source charge	Q <sub>gs</sub>	—	3.5	—	nc	
Gate to drain charge	Q <sub>gd</sub>	—	5.0	—	nc	
Turn-on delay time	t <sub>d(on)</sub>	—	11	—	ns	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 3 A, R <sub>L</sub> = 10 Ω
Rise time	t <sub>r</sub>	—	45	—	ns	
Turn-off delay time	t <sub>d(off)</sub>	—	40	—	ns	
Fall time	t <sub>f</sub>	—	50	—	ns	
Body to drain diode forward voltage	V <sub>DF</sub>	—	0.95	—	V	I <sub>D</sub> = 5 A, V <sub>GS</sub> = 0
Body to drain diode reverse recovery time	t <sub>rr</sub>	—	200	—	ns	I <sub>F</sub> = 5 A, V <sub>GS</sub> = 0 diF/dt = 100 A/μs

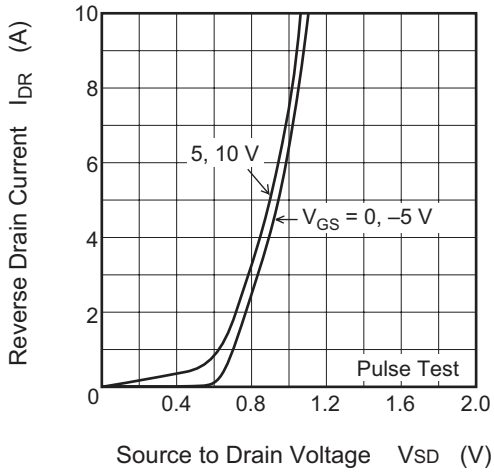
- Note: 4. Pulse test

Main Characteristics

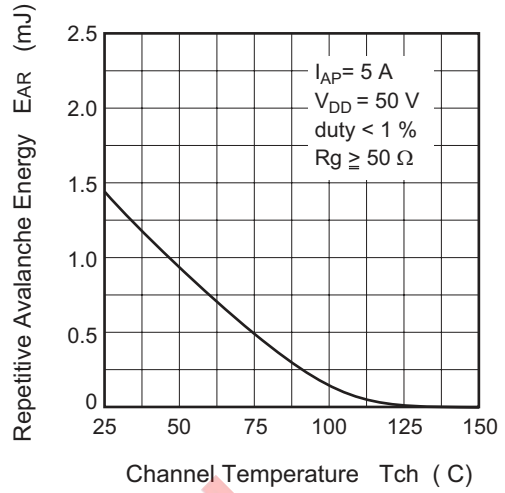




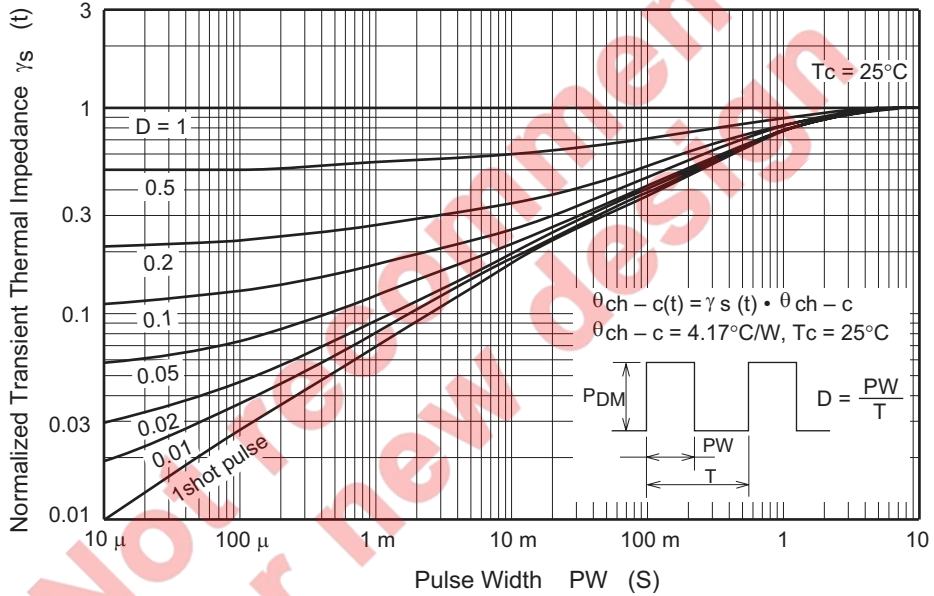
Reverse Drain Current vs. Source to Drain Voltage



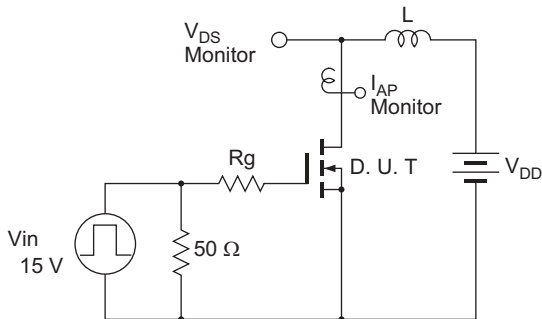
Maximum Avalanche Energy vs. Channel Temperature Derating



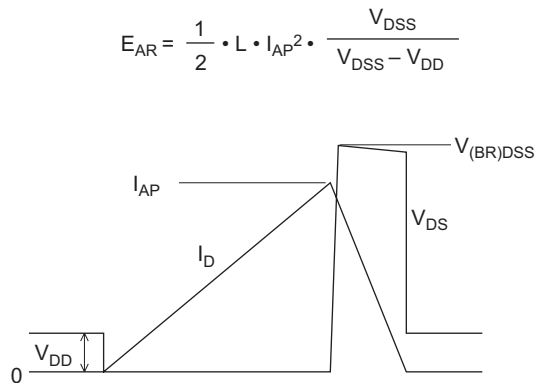
Normalized Transient Thermal Impedance vs. Pulse Width

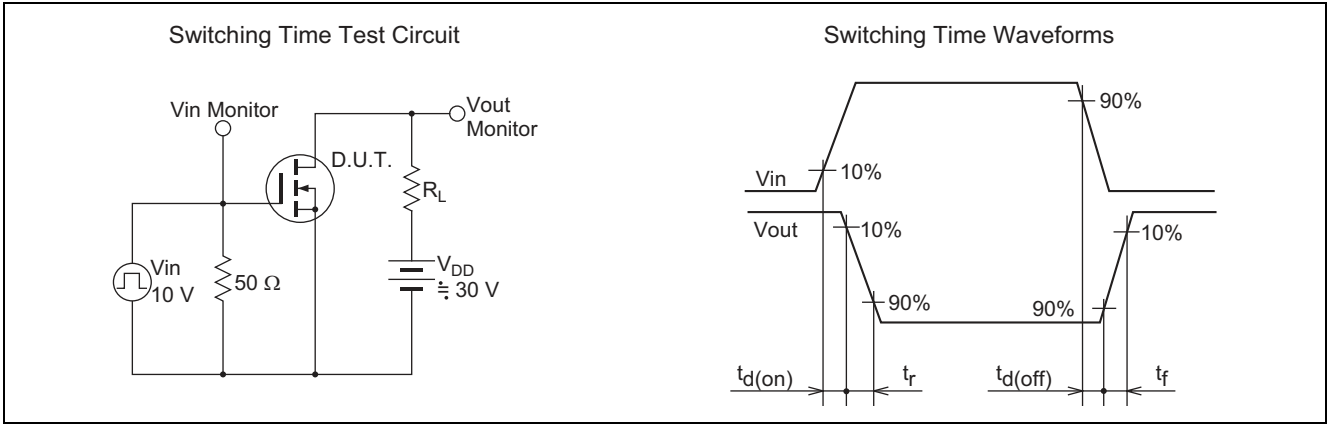


Avalanche Test Circuit



Avalanche Waveform

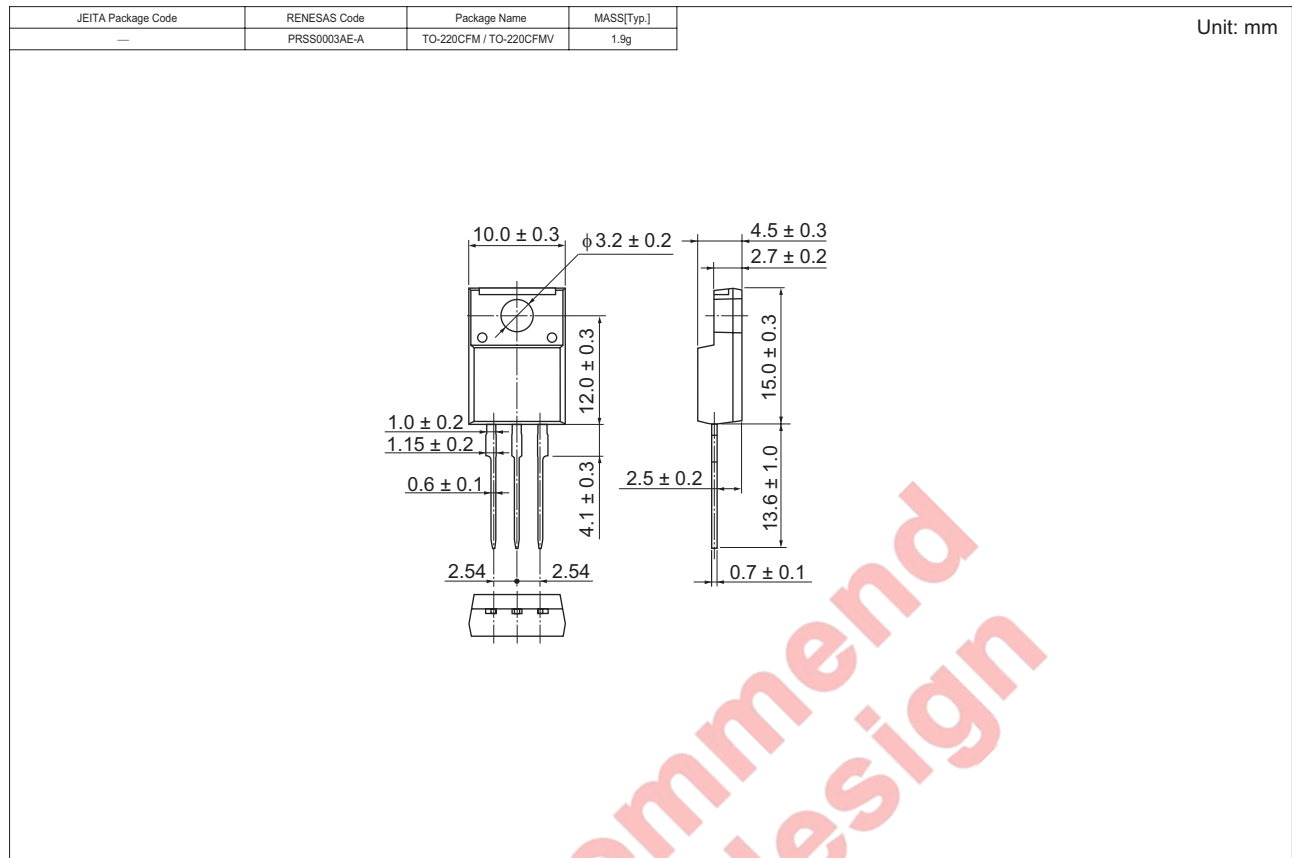




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## Package Dimensions



## Ordering Information

Part Name	Quantity	Shipping Container
2SK2725-E	600 pcs	Box (Tube)

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