

## 2SK2554

### Silicon N Channel MOS FET

REJ03G1016-0600  
(Previous: ADE-208-359D)  
Rev.6.00  
Sep 07, 2005

#### Application

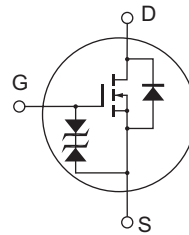
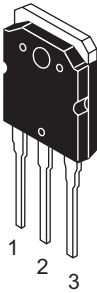
High speed power switching

#### Features

- Low on-resistance
- $R_{DS(on)} = 4.5 \text{ m}\Omega$  typ.
- High speed switching
- 4 V gate drive device can be driven from 5 V source

#### Outline

RENESAS Package code: PRSS0004ZE-A  
(Package name: TO-3P)



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

## Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DS}$	60	V
Gate to source voltage	$V_{GS}$	±20	V
Drain current	$I_D$	75	A
Drain peak current	$I_{D(pulse)}^{*1}$	300	A
Body to drain diode reverse drain current	$I_{DR}^{*2}$	75	A
Avalanche current	$I_{AP}^{*3}$	50	A
Avalanche energy	$E_{AR}^{*3}$	214	mJ
Channel dissipation	$P_{ch}^{*2}$	150	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  $T_{ch} = 25^\circ C$ ,  $R_g \geq 50 \Omega$

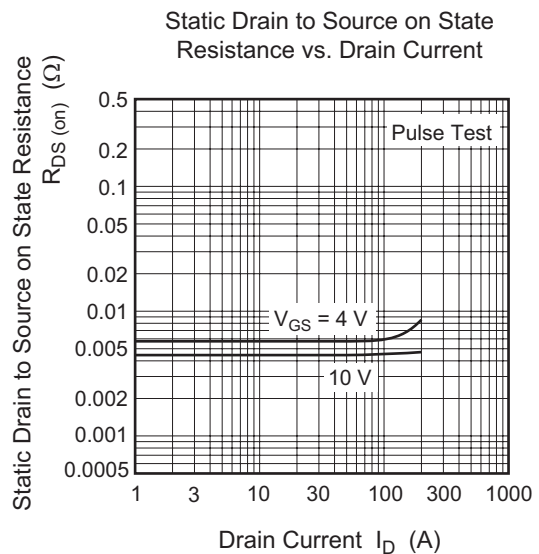
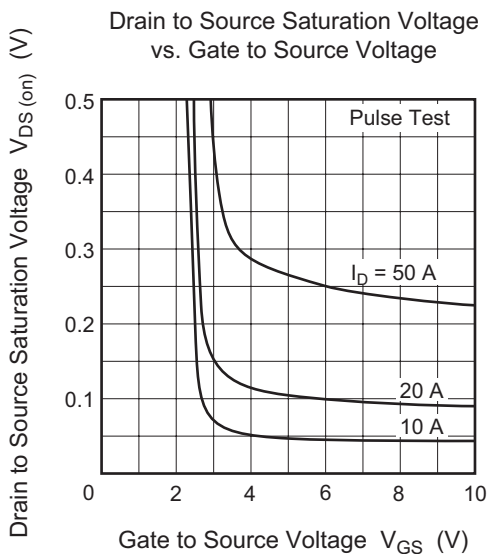
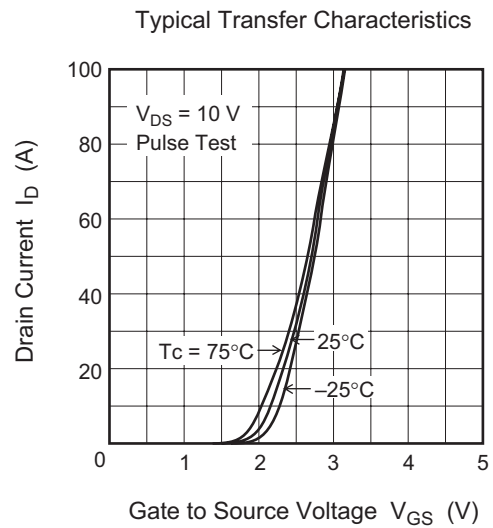
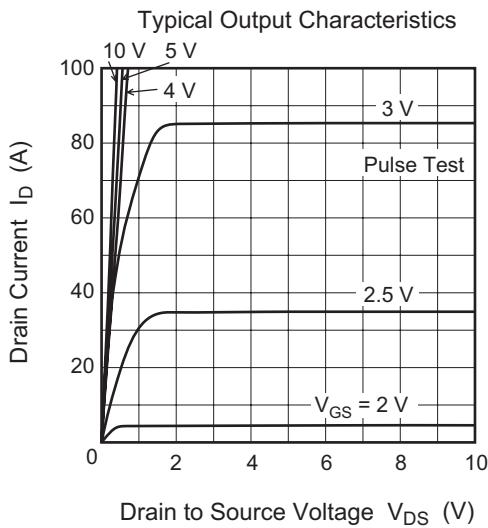
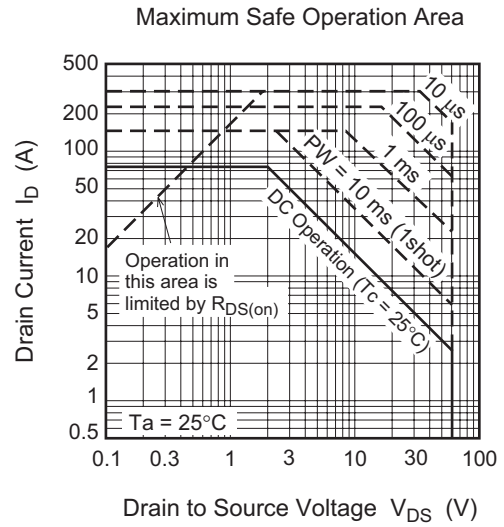
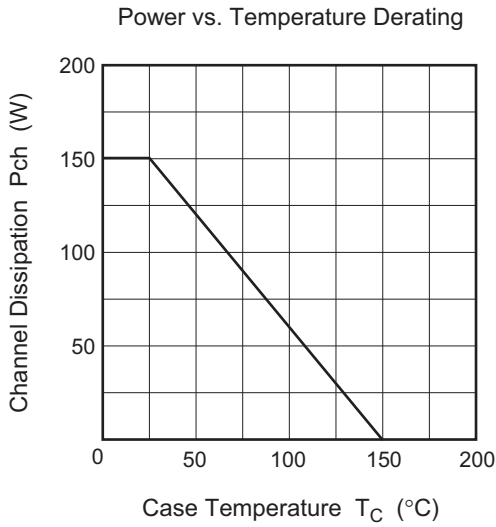
## Electrical Characteristics

(Ta = 25°C)

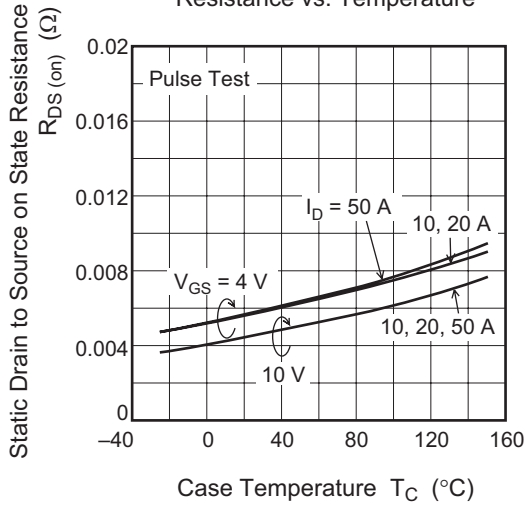
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	60	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	—	—	V	$I_G = \pm 100 \mu A$ , $V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	±10	μA	$V_{GS} = \pm 16 \text{ V}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	100	μA	$V_{DS} = 60 \text{ V}$ , $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.0	V	$I_D = 1 \text{ mA}$ , $V_{DS} = 10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	4.5	6	mΩ	$I_D = 40 \text{ A}$ , $V_{GS} = 10 \text{ V}^{*4}$
		—	5.8	10	mΩ	$I_D = 40 \text{ A}$ , $V_{GS} = 4 \text{ V}^{*4}$
Forward transfer admittance	$ y_{fs} $	50	80	—	S	$I_D = 40 \text{ A}$ , $V_{DS} = 10 \text{ V}^{*4}$
Input capacitance	$C_{iss}$	—	7700	—	pF	$V_{DS} = 10 \text{ V}$ , $V_{GS} = 0$ , $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	4100	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	760	—	pF	
Turn-on delay time	$t_{d(on)}$	—	60	—	ns	
Rise time	$t_r$	—	420	—	ns	$I_D = 40 \text{ A}$ , $V_{GS} = 10 \text{ V}$ , $R_L = 0.75 \Omega$
Turn-off delay time	$t_{d(off)}$	—	1200	—	ns	
Fall time	$t_f$	—	900	—	ns	
Body to drain diode forward voltage	$V_{DF}$	—	0.95	—	V	$I_F = 75 \text{ A}$ , $V_{GS} = 0$
Body to drain diode reverse recovery time	$t_{rr}$	—	105	—	ns	$I_F = 75 \text{ A}$ , $V_{GS} = 0$ $di_F / dt = 50 \text{ A} / \mu s$

Note: 4. Pulse Test

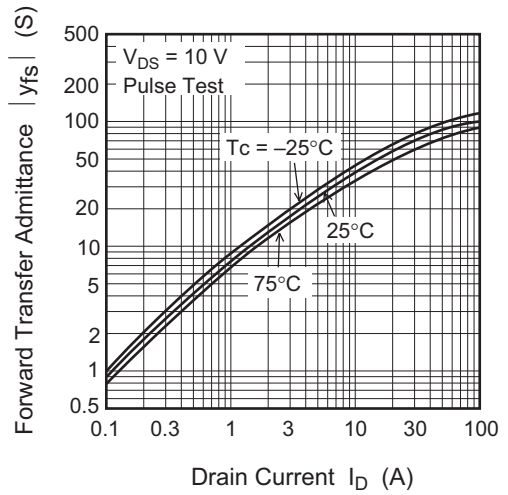
Main Characteristics



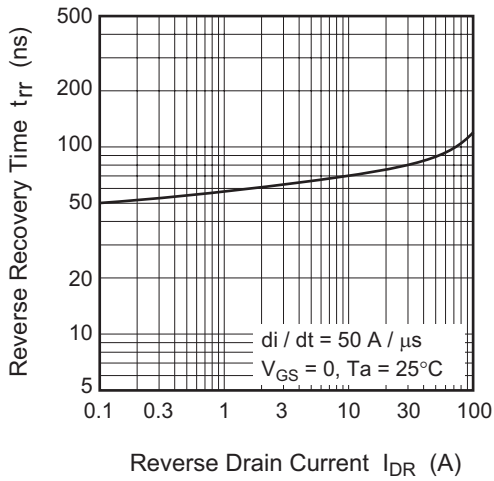
Static Drain to Source on State Resistance vs. Temperature



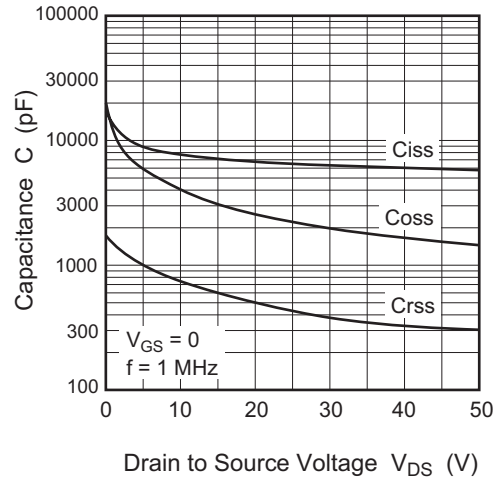
Forward Transfer Admittance vs. Drain Current



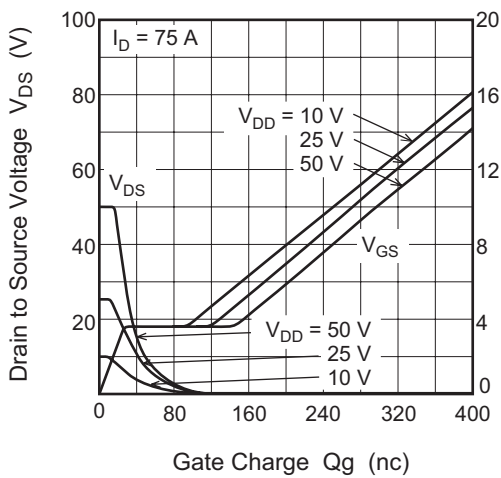
Body to Drain Diode Reverse Recovery Time



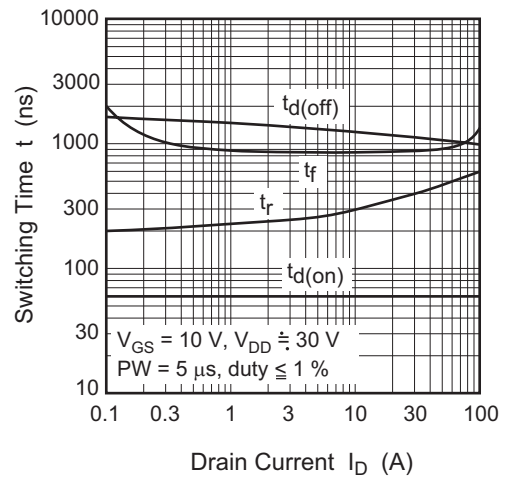
Typical Capacitance vs. Drain to Source Voltage

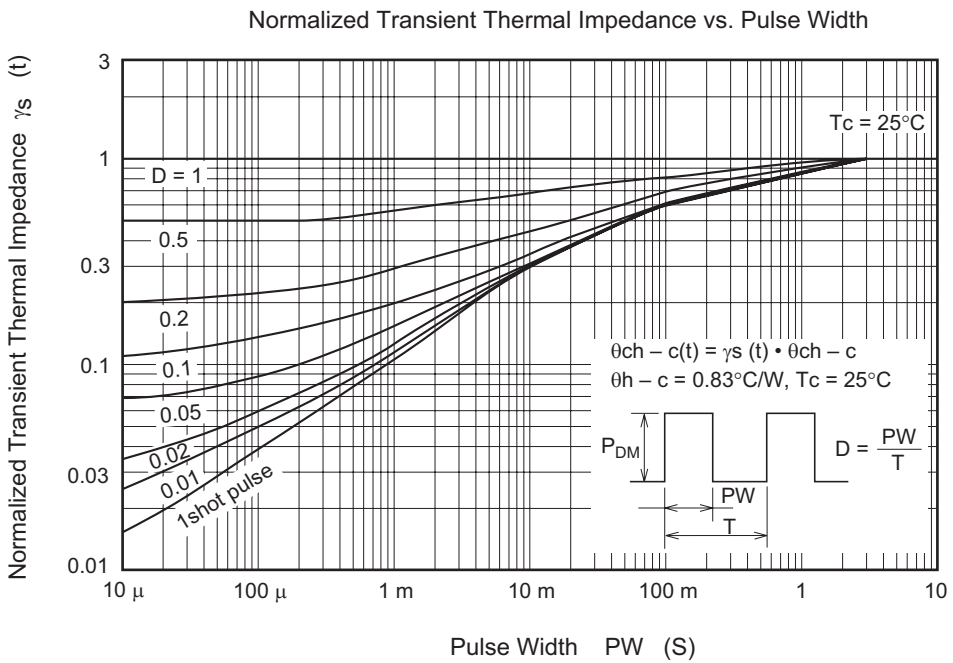
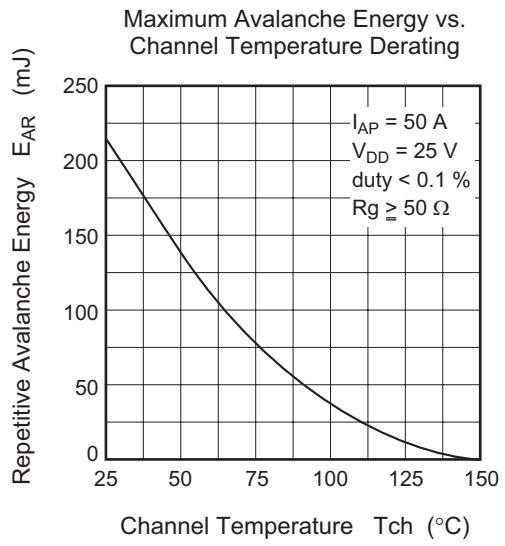
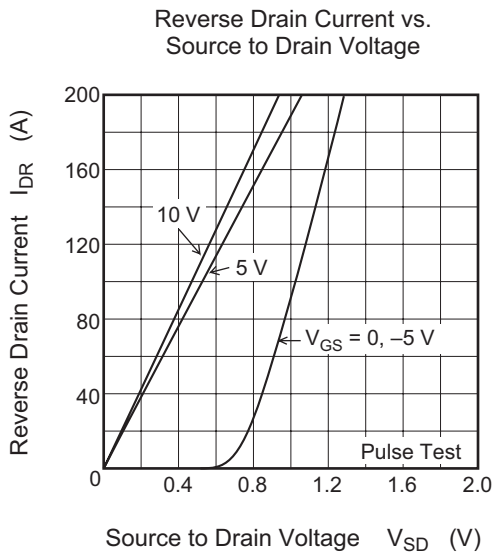


Dynamic Input Characteristics

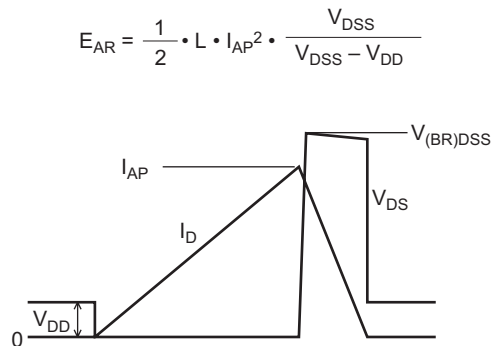
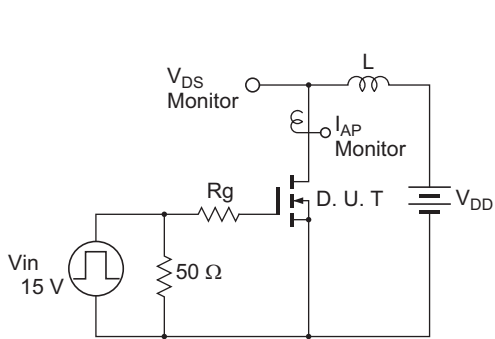


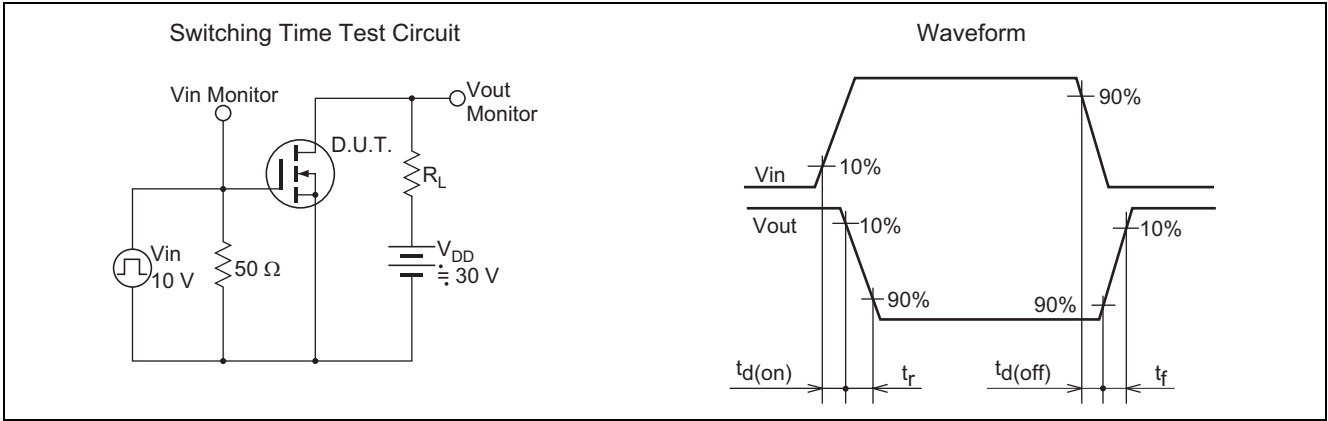
Switching Characteristics



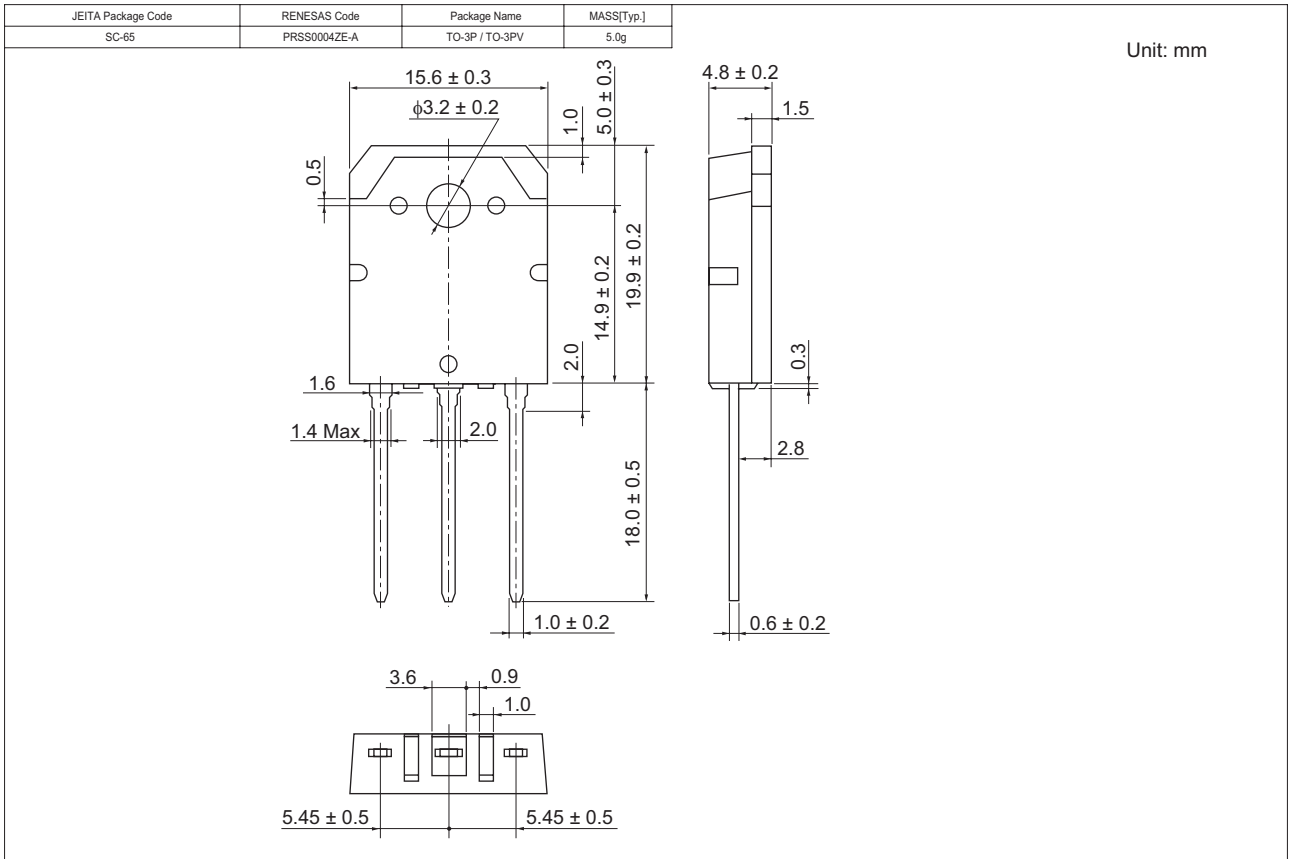


Avalanche Test Circuit and Waveform





### Package Dimensions



### Ordering Information

Part Name	Quantity	Shipping Container
2SK2554-E	30 pcs	Plastic magazine

Note: For some grades, production may be terminated. Please contact the Renesas sales office to check the state of production before ordering the product.

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