

# 2SK2225-80-E

1500V - 2A - MOS FET  
High Speed Power Switching

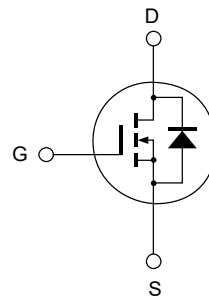
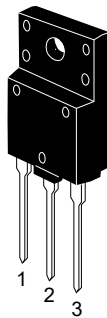
R07DS1275EJ0300  
Rev.3.00  
Dec.13.2021

## Features

- High breakdown voltage ( $V_{DSS} = 1500\text{ V}$ )
- High speed switching
- Low drive current
- Quality grade: Standard

## Outline

RENESAS Package code: PRSS0003ZP-A, PRSS0003ZD-A  
(Package name: TO-3PFP, TO-3PF)



1. Gate
2. Drain
3. Source

## Absolute Maximum Ratings

( $T_a = 25\text{ }^\circ\text{C}$ )

Item	Symbol	Value	Unit
Drain to source voltage	$V_{DSS}$	1500	V
Gate to source voltage	$V_{GSS}$	$\pm 20$	V
Drain current	$I_D$	2	A
Drain peak current	$I_{D(pulse)}$ <sup>Notes1</sup>	7	A
Body to drain diode reverse drain current	$I_{DR}$	2	A
Channel dissipation	$P_{ch}$ <sup>Notes2</sup>	50	W
Channel temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

Note: Continuous heavy condition (e.g. high temperature/voltage/current or high variation of temperature) may affect a reliability even if it is within the absolute maximum ratings. Please consider derating condition for appropriate reliability in reference Renesas Semiconductor Reliability Handbook (Recommendation for Handling and Usage of Semiconductor Devices) and individual reliability data.

- Notes: 1.  $PW \leq 10\ \mu\text{s}$ , duty cycle  $\leq 1\ \%$   
2. Value at  $T_c = 25\text{ }^\circ\text{C}$

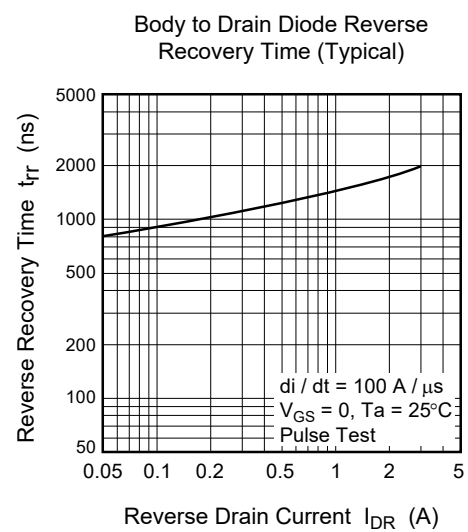
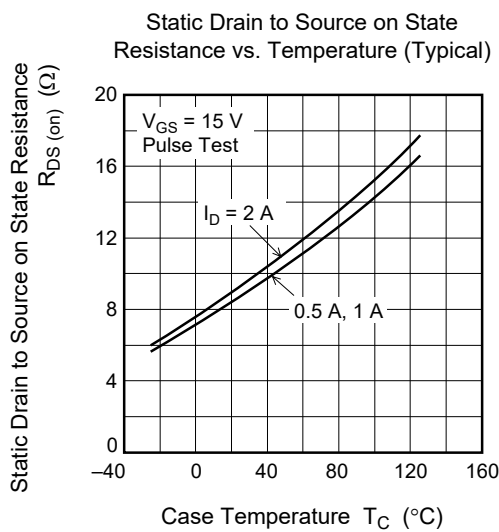
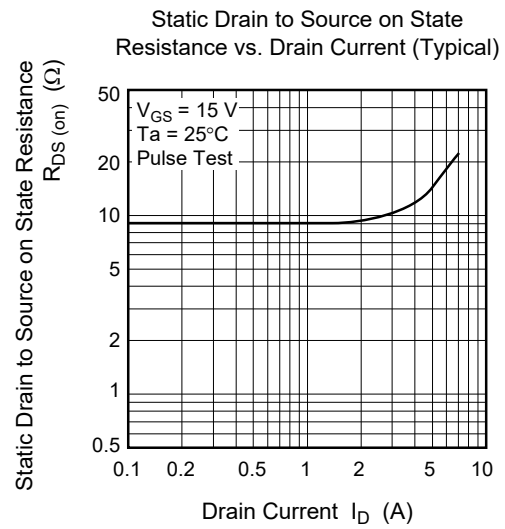
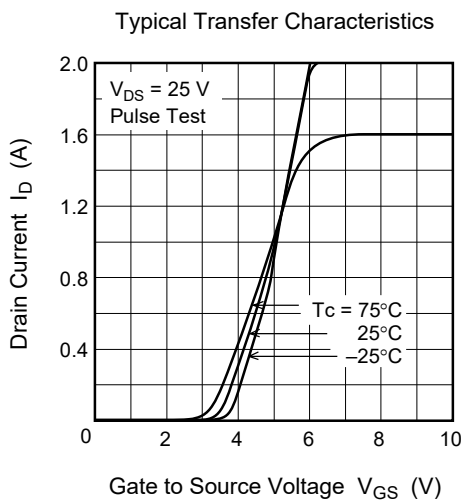
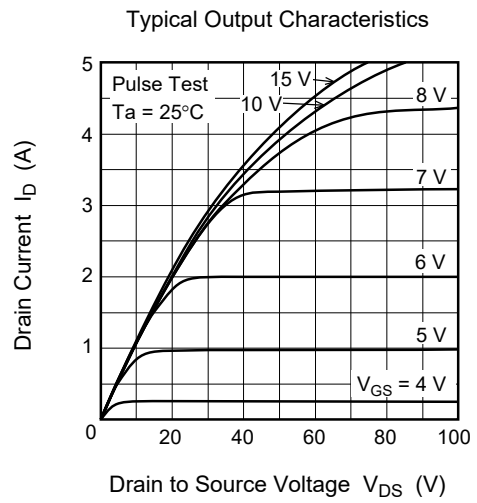
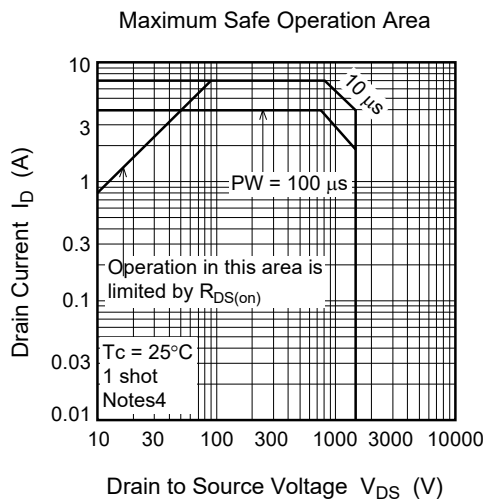
## Electrical Characteristics

(Ta = 25 °C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	1500	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 1$	$\mu\text{A}$	$V_{GS} = \pm 20 \text{ V}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	500	$\mu\text{A}$	$V_{DS} = 1200 \text{ V}$ , $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	—	4.0	V	$I_D = 1 \text{ mA}$ , $V_{DS} = 10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	9	12	$\Omega$	$I_D = 1 \text{ A}$ , $V_{GS} = 15 \text{ V}$ <sup>Notes3</sup>
Forward transfer admittance	$ y_{fs} $	0.45	0.75	—	S	$I_D = 1 \text{ A}$ , $V_{DS} = 20 \text{ V}$ <sup>Notes3</sup>
Input capacitance	$C_{iss}$	—	990	—	pF	$V_{DS} = 10 \text{ V}$ , $V_{GS} = 0$ , $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	125	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	60	—	pF	
Turn-on delay time	$t_{d(on)}$	—	17	—	ns	$I_D = 1 \text{ A}$ , $V_{GS} = 10 \text{ V}$ , $R_L = 30 \Omega$
Rise time	$t_r$	—	50	—	ns	
Turn-off delay time	$t_{d(off)}$	—	150	—	ns	
Fall time	$t_f$	—	50	—	ns	
Body-drain diode forward voltage	$V_{DF}$	—	0.9	—	V	$I_F = 2 \text{ A}$ , $V_{GS} = 0$
Body-drain diode reverse recovery time	$t_{rr}$	—	1750	—	ns	$I_F = 2 \text{ A}$ , $V_{GS} = 0$ , $di_F / dt = 100 \text{ A} / \mu\text{s}$

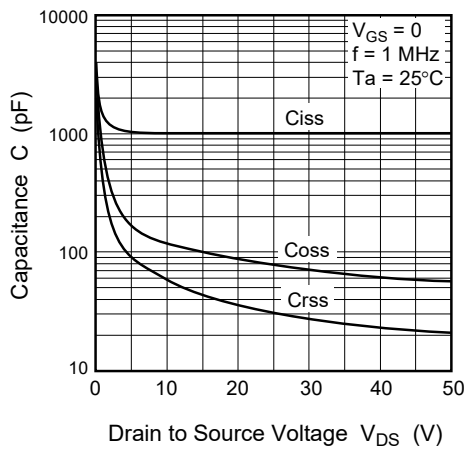
Notes: 3. Pulse Test

## Main Characteristics

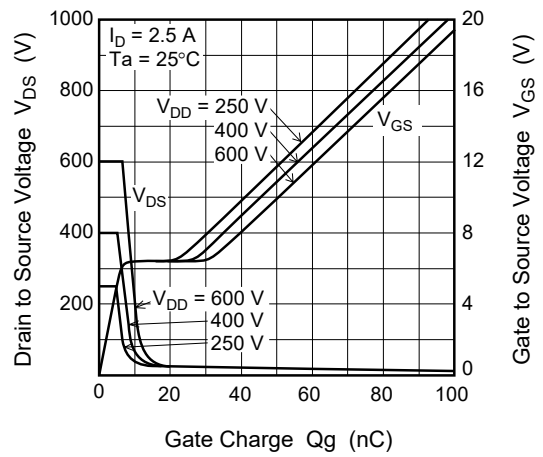


Notes: 4. Designed target value on Renesas measurement condition. (Not tested)  
 Renesas recommends that operating conditions are designed according to a document "Power MOS FET - IGBT Attention of Handling Semiconductor Devices".

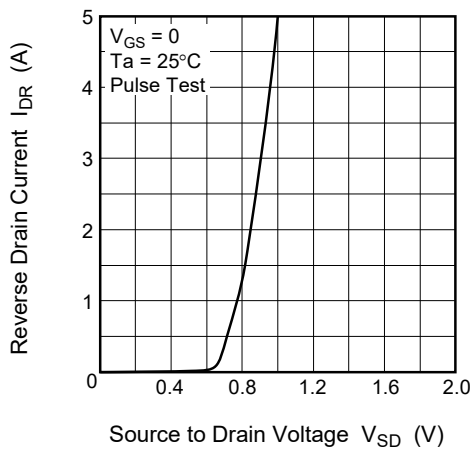
Typical Capacitance vs. Drain to Source Voltage

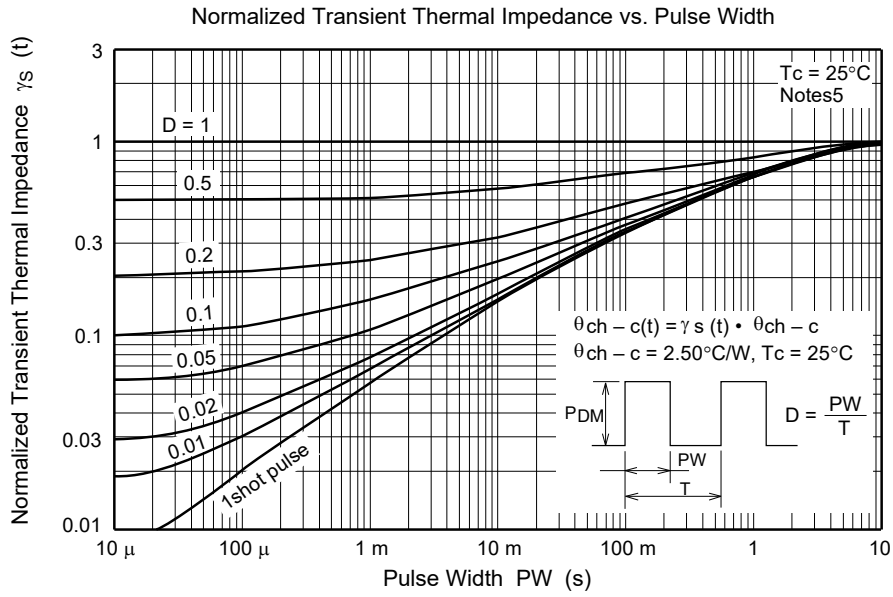


Dynamic Input Characteristics (Typical)

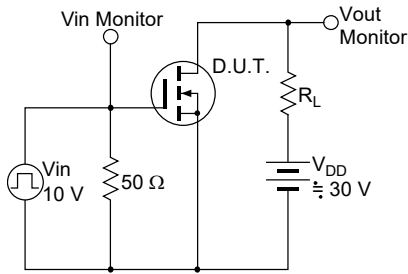


Reverse Drain Current vs. Source to Drain Voltage (Typical)

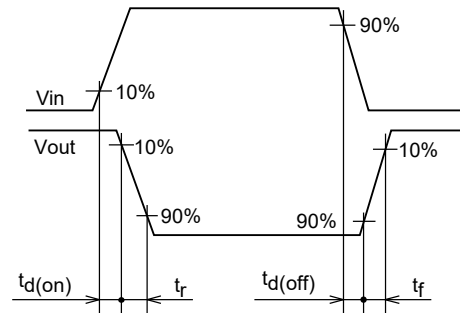




Switching Time Test Circuit



Waveforms



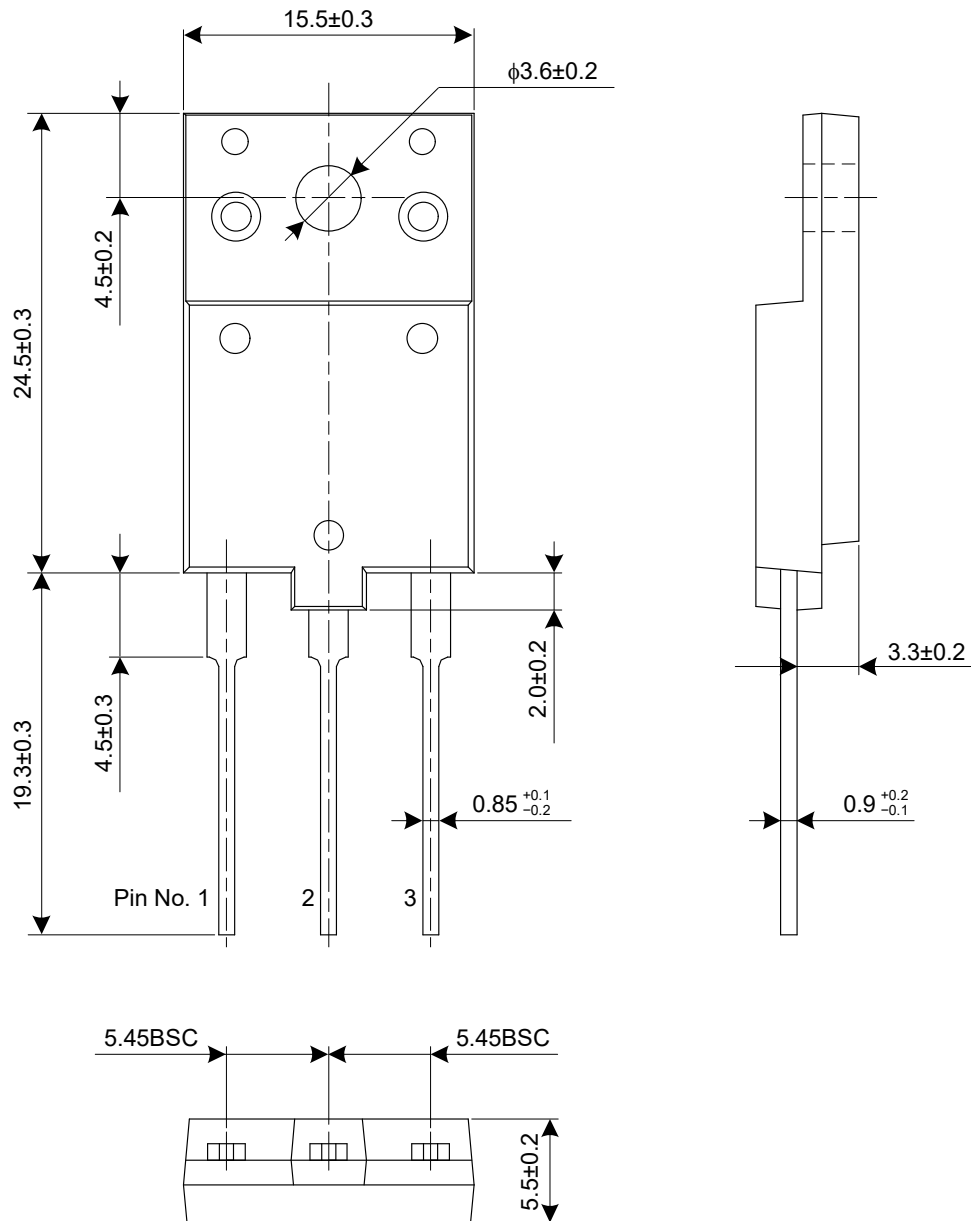
Notes: 5. Designed target value on Renesas measurement condition. (Not tested)

# Package Dimensions

ASSEMBLED IN CHINA

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS (Typ) [g]
TO-3PFP	—	PRSS0003ZP-A	TO-3PFP	6.2

Unit: mm

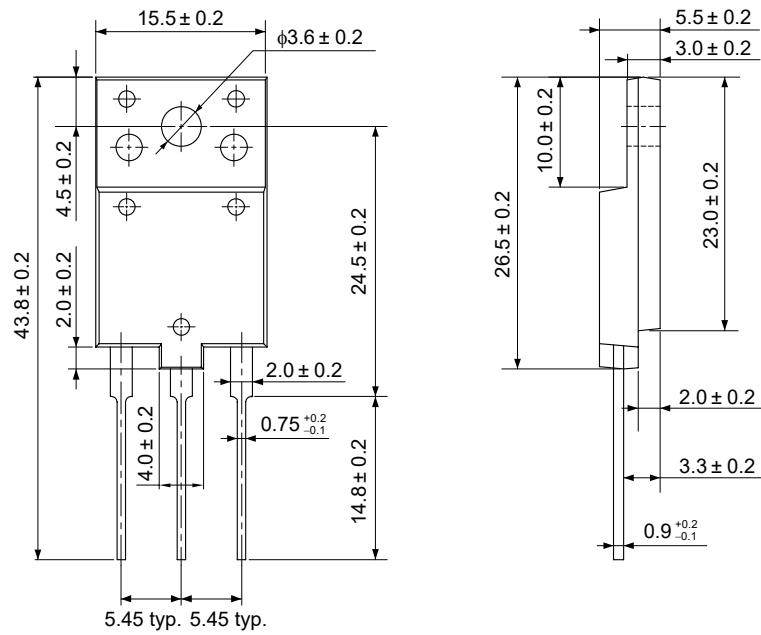


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## ASSEMBLED IN KOREA

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-3PF	—	PRSS0003ZD-A	TO-3PFS	5.5g

Unit: mm



## Ordering Information

Orderable Part No.	Quantity	Shipping Container
2SK2225-80-E#T2 (ASSEMBLED IN CHINA)	25 pcs	Tube
2SK2225-80-E#T2 (ASSEMBLED IN KOREA)	30 pcs	Tube

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