

To all our customers

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Renesas Technology Corp.  
Customer Support Dept.  
April 1, 2003

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# 2SK2225

Silicon N-Channel MOS FET

**RENESAS**

ADE-208-140 (Z)  
1st. Edition  
Aug. 1993

## Application

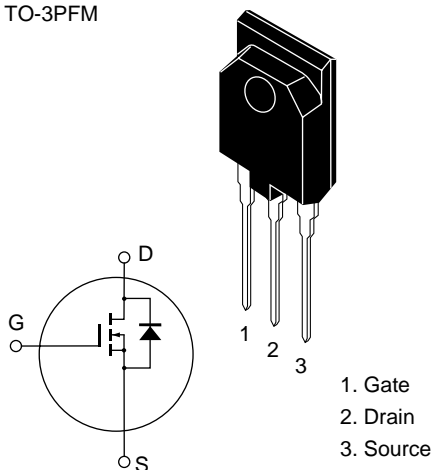
High speed power switching

## Features

- High breakdown voltage ( $V_{DSS} = 1500\text{ V}$ )
- High speed switching
- Low drive current
- No Secondary Breakdown
- Suitable for Switching regulator, DC-DC converter

## Outline

TO-3PFM



## Absolute Maximum Ratings (Ta = 25°C)

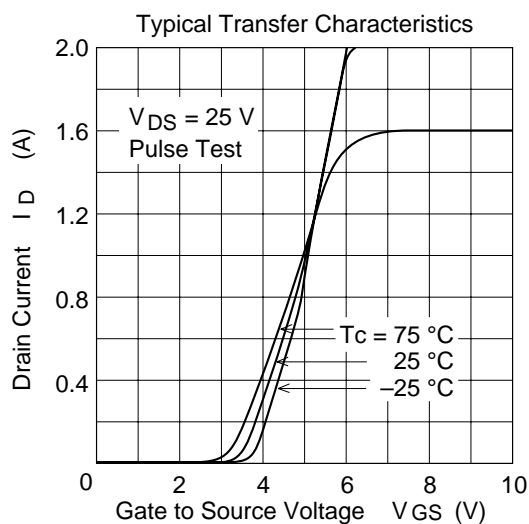
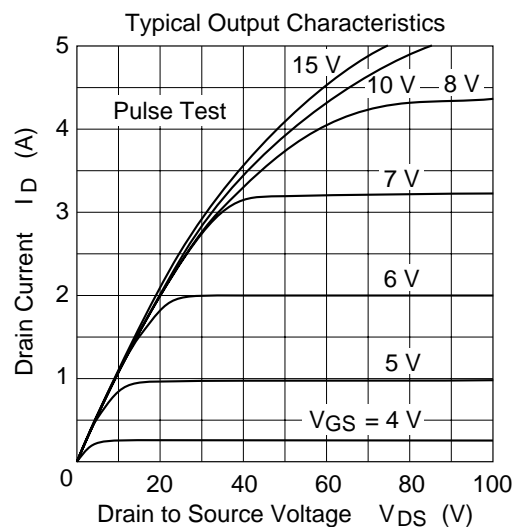
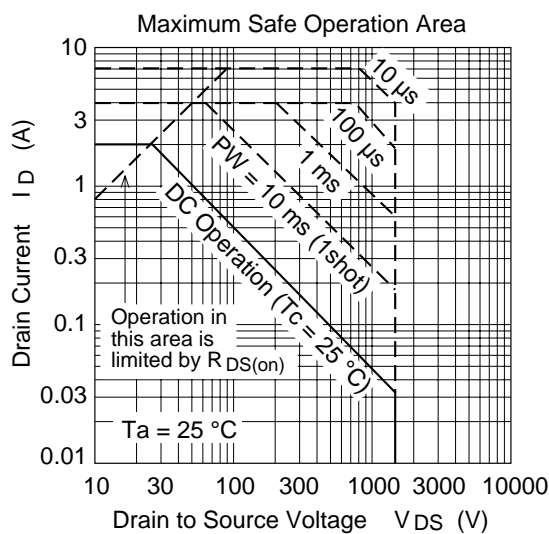
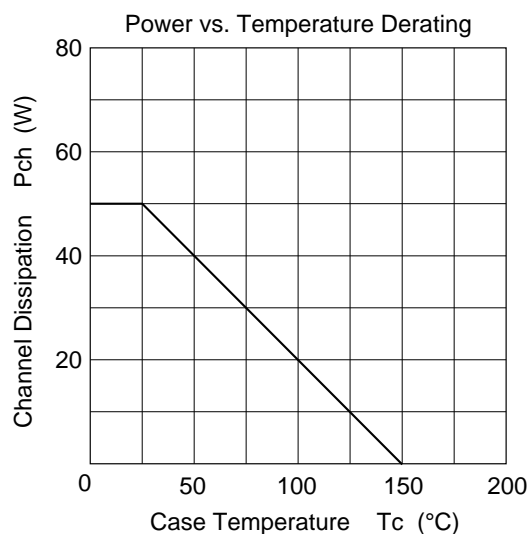
Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	1500	V
Gate to source voltage	$V_{GSS}$	±20	V
Drain current	$I_D$	2	A
Drain peak current	$I_{D(pulse)}^{*1}$	7	A
Body to drain diode reverse drain current	$I_{DR}$	2	A
Channel dissipation	Pch <sup>*2</sup>	50	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	−55 to +150	°C

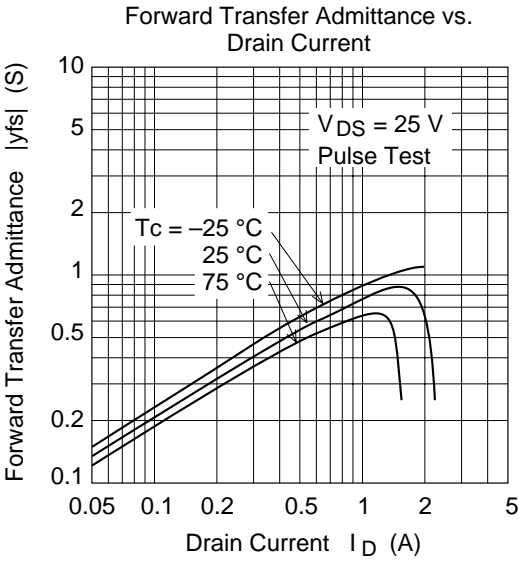
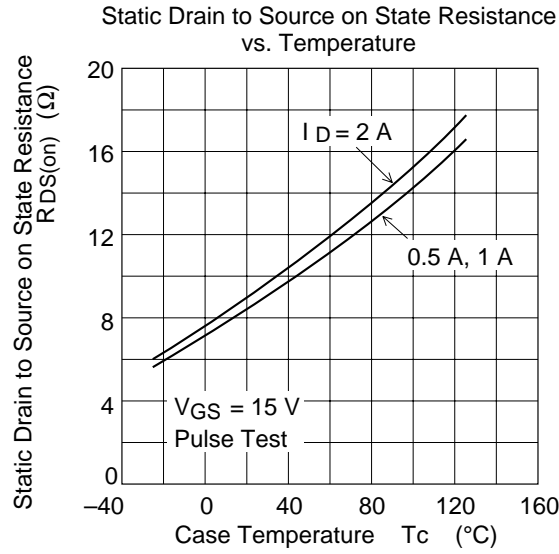
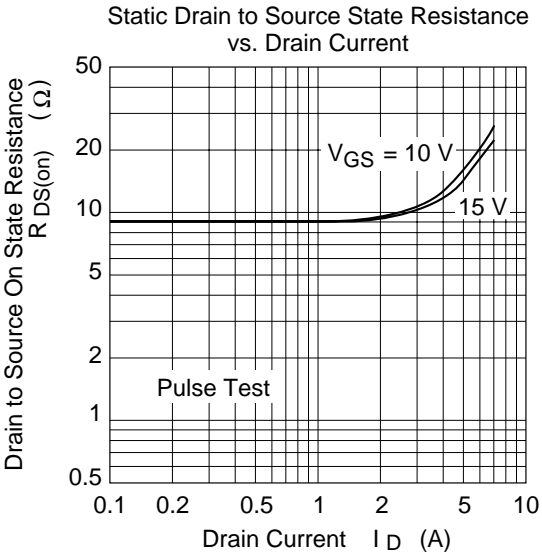
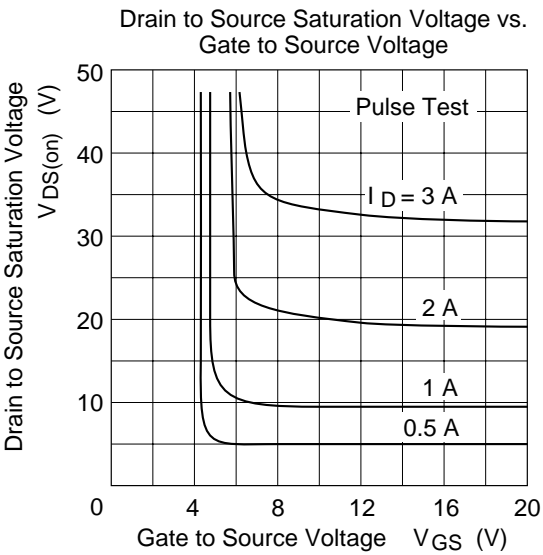
Notes 1. PW 10 μs, duty cycle 1 %  
2. Value at Tc = 25 °C

## Electrical Characteristics (Ta = 25°C)

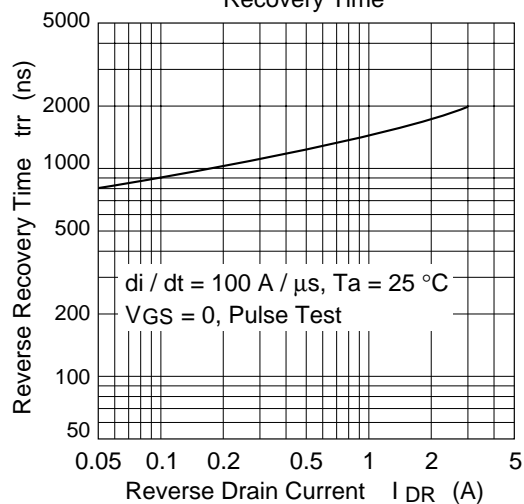
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	1500	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	±1	μA	$V_{GS} = \pm 20 \text{ V}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	500	μA	$V_{DS} = 1200 \text{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

Note 1. Pulse Test

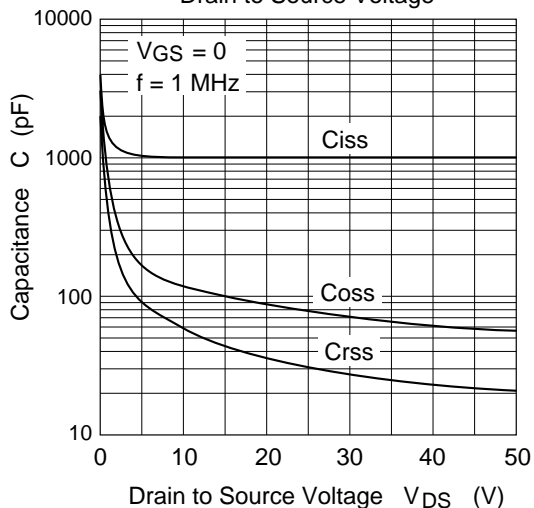




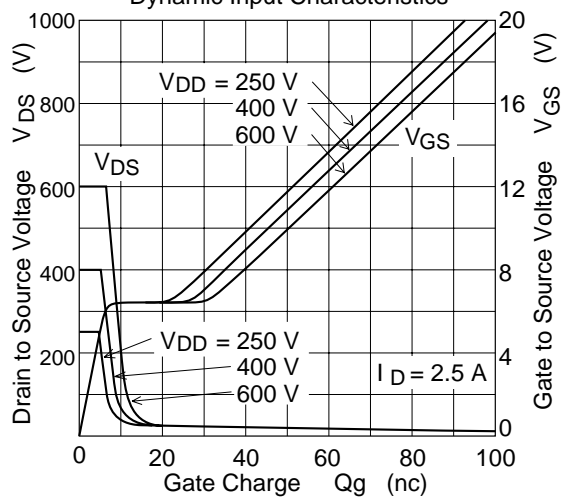
Body to Drain Diode Reverse Recovery Time



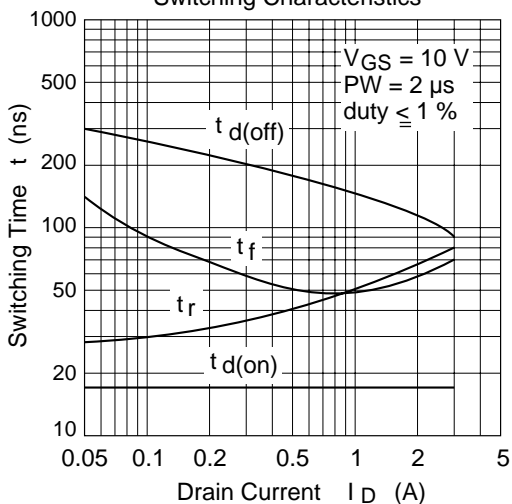
Typical Capacitance vs. Drain to Source Voltage

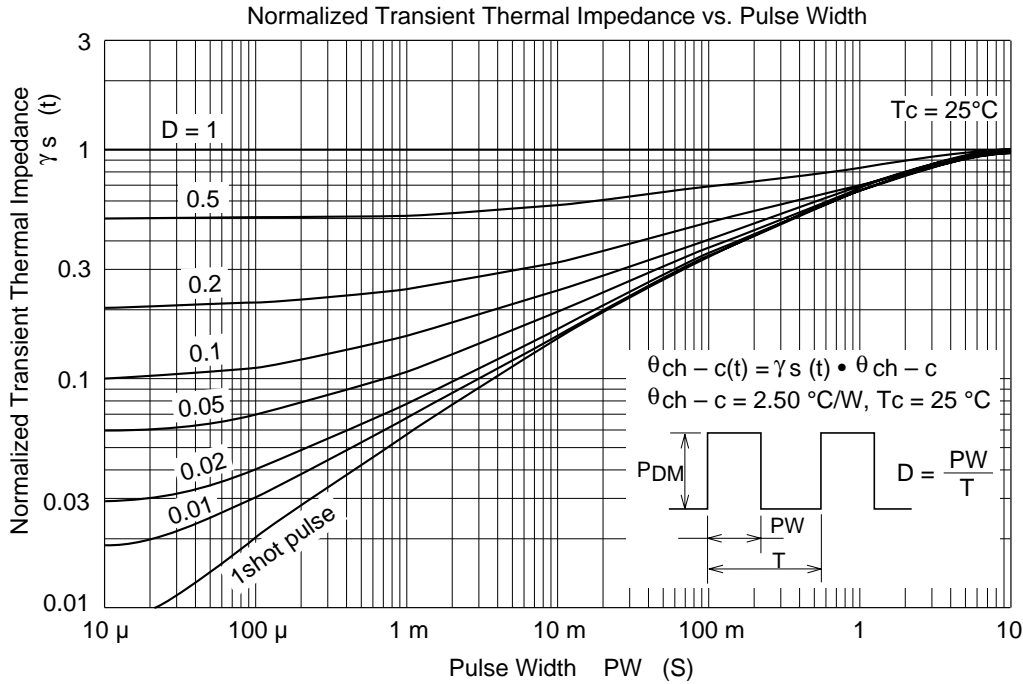
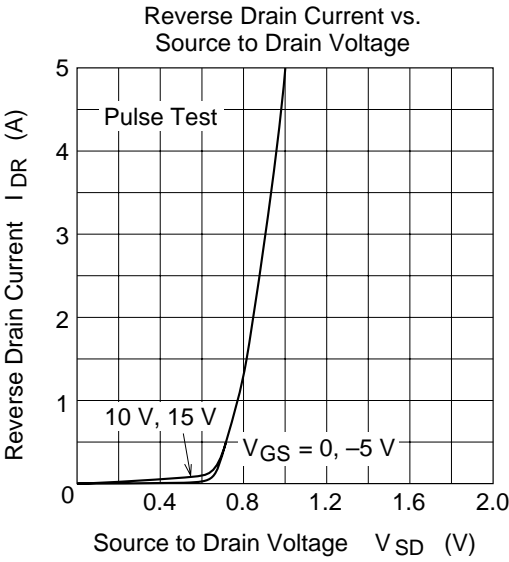


Dynamic Input Characteristics



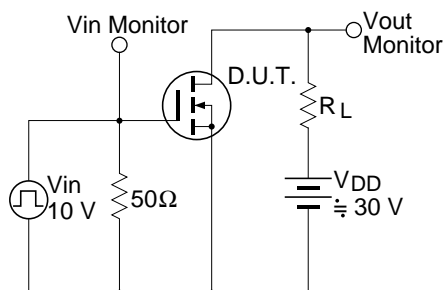
Switching Characteristics



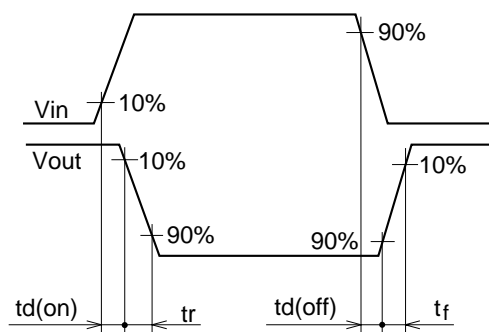




Switching Time Test Circuit

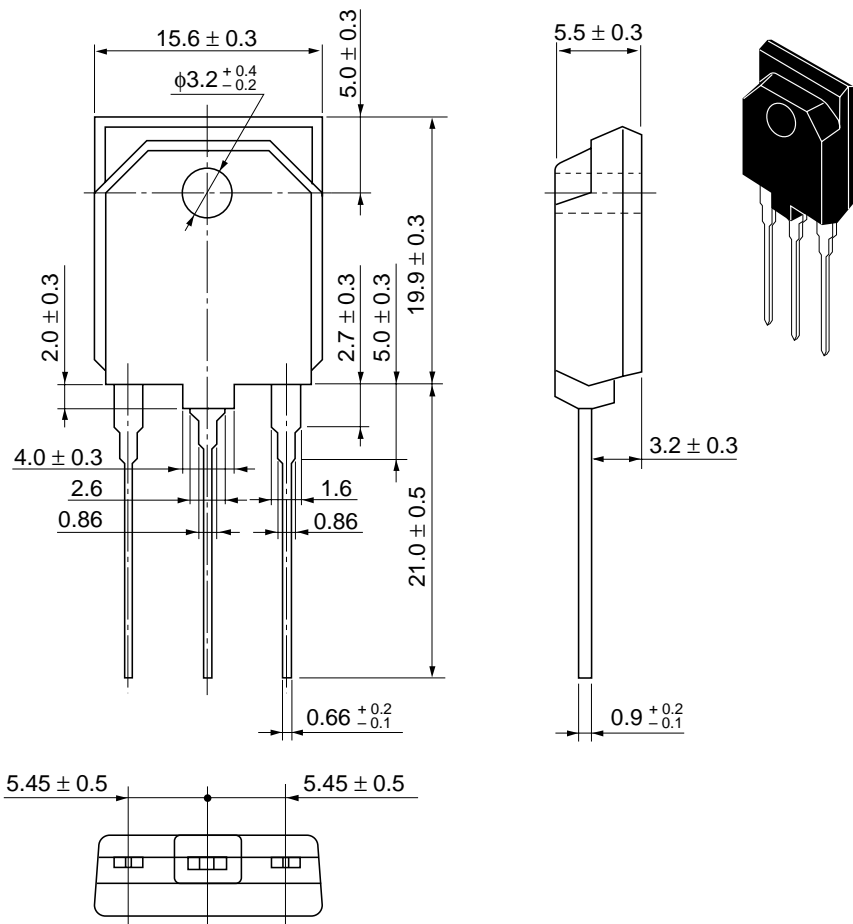


Waveform



Package Dimensions

As of January, 2001  
Unit: mm



Hitachi Code	TO-3PFM
JEDEC	—
EIAJ	—
Mass (reference value)	5.2 g



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