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

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Keep safety first in your circuit designs!

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2SK1167, 2SK1168

Silicon N-Channel MOS FET

RENESAS

ADE-208-1253 (Z)

1st. Edition

Mar. 2001

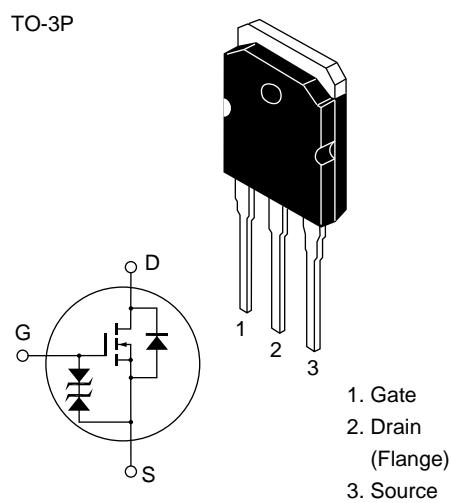
Application

High speed power switching

Features

- Low on-resistance
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for switching regulator and DC-DC converter

Outline



Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage 2SK1167	V_{DSS}	450	V
		500	
Gate to source voltage	V_{GSS}	± 30	V
Drain current	I_D	15	A
Drain peak current	$I_{D(pulse)}$ ^{*1}	60	A
Body to drain diode reverse drain current	I_{DR}	15	A
Channel dissipation	P_{ch} ^{*2}	100	W
Channel temperature	T_{ch}	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

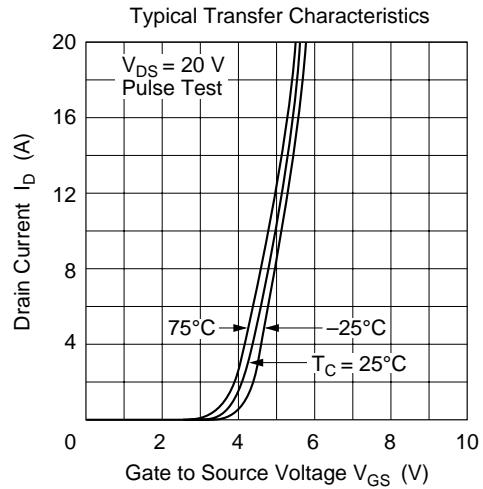
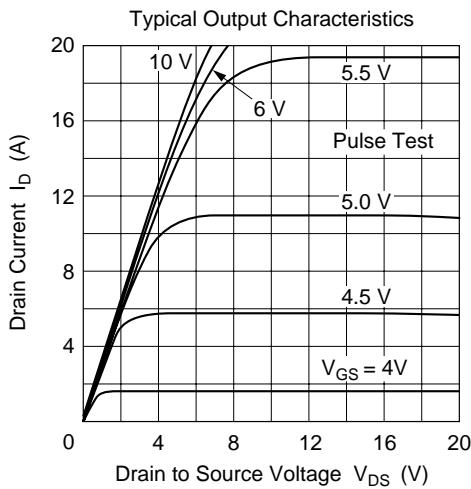
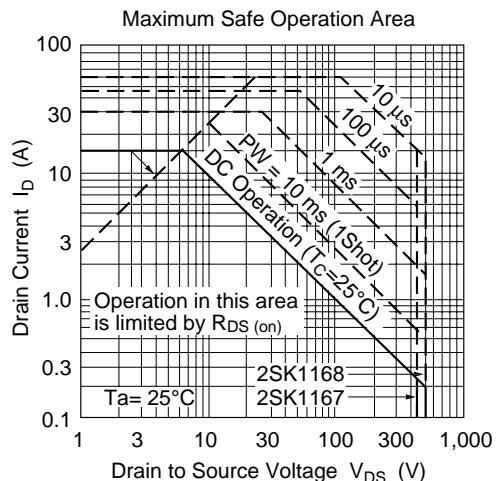
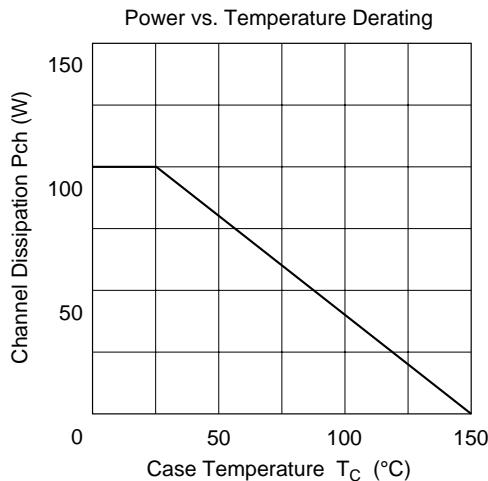
Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

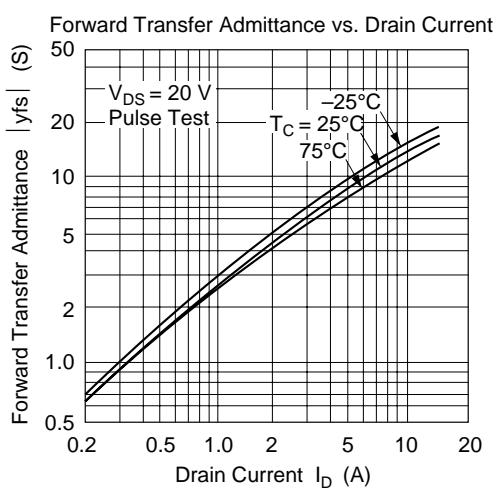
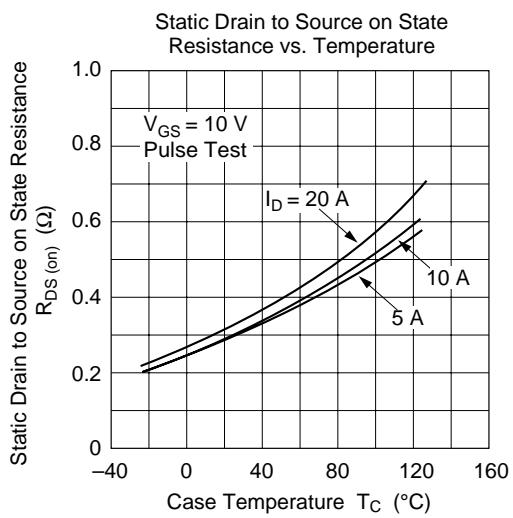
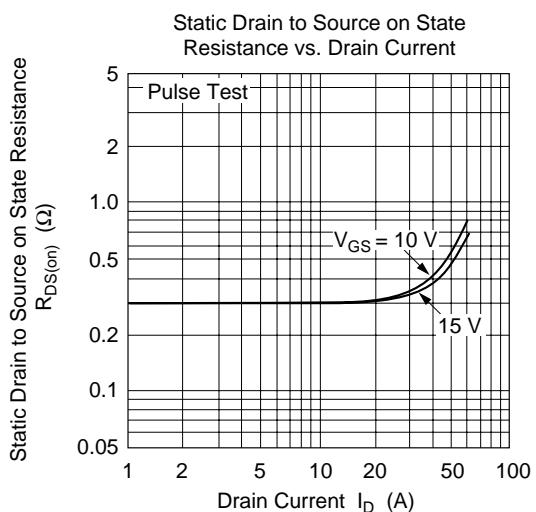
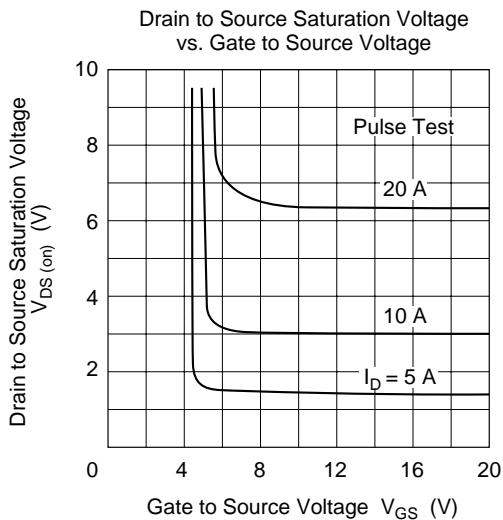
2. Value at $T_c = 25^\circ\text{C}$

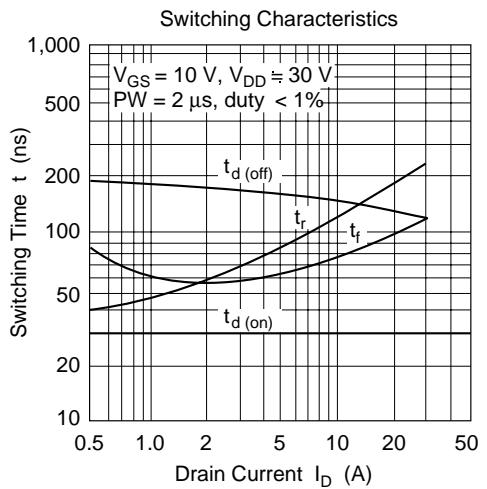
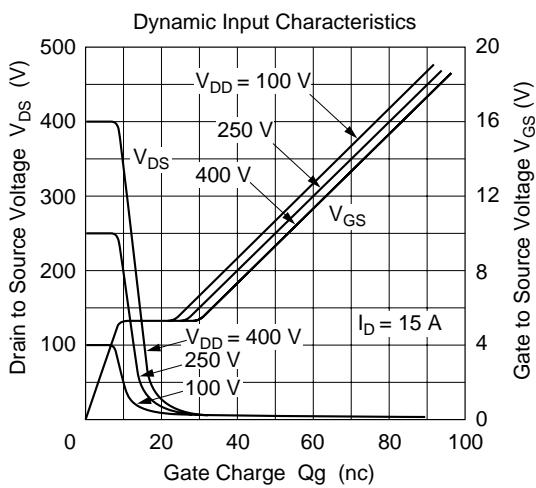
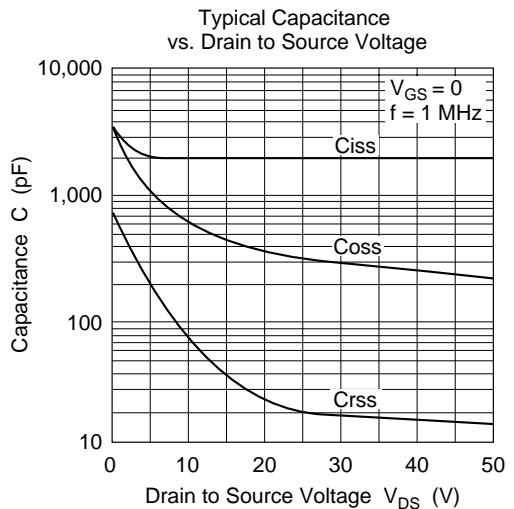
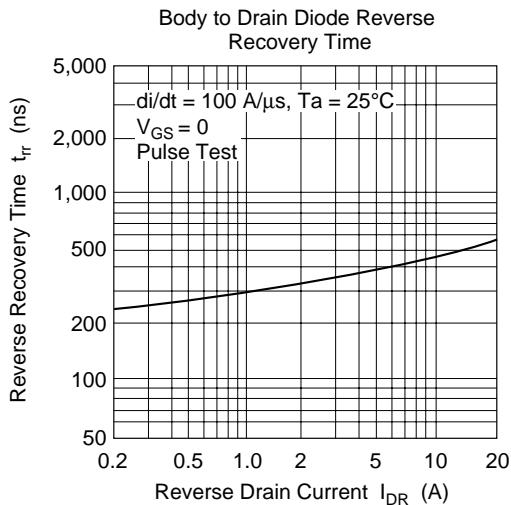
Electrical Characteristics (Ta = 25°C)

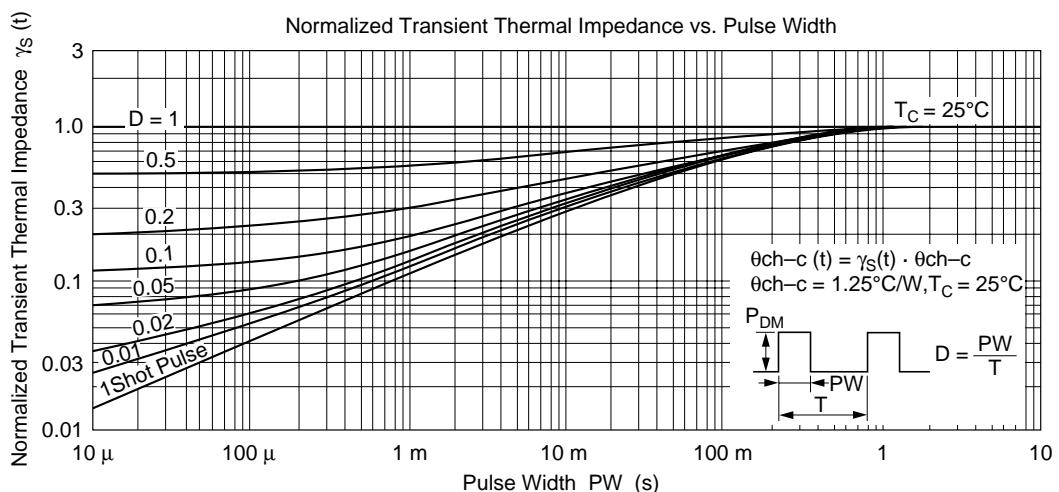
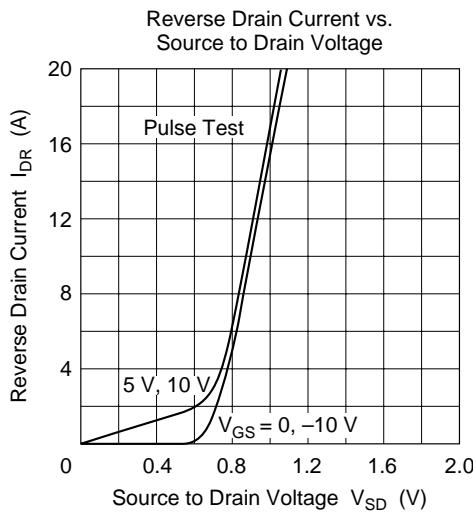
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	2SK1167 2SK1168	V _{(BR)DSS}	450 500	—	—	V
Gate to source breakdown voltage	V _{(BR)GSS}	±30	—	—	V	I _G = ±100 μA, V _{DS} = 0
Gate to source leak current	I _{GSS}	—	—	±10	μA	V _{GS} = ±25 V, V _{DS} = 0
Zero gate voltage drain current	2SK1167 2SK1168	I _{DSS}	—	—	250	μA
					V _{DS} = 360 V, V _{GS} = 0	V _{DS} = 400 V, V _{GS} = 0
Gate to source cutoff voltage	V _{GS(off)}	2.0	—	3.0	V	I _D = 1 mA, V _{DS} = 10 V
Static Drain to source on state resistance	2SK1167 2SK1168	R _{DS(on)}	—	0.25 0.30	0.36 0.40	Ω
Forward transfer admittance	y _{fs}	8	13	—	S	I _D = 8 A, V _{DS} = 10 V * ¹
Input capacitance	C _{iss}	—	2050	—	pF	V _{DS} = 10 V, V _{GS} = 0,
Output capacitance	C _{oss}	—	600	—	pF	f = 1 MHz
Reverse transfer capacitance	C _{rss}	—	75	—	pF	
Turn-on delay time	t _{d(on)}	—	30	—	ns	I _D = 8 A, V _{GS} = 10 V,
Rise time	t _r	—	110	—	ns	R _L = 3.75 Ω
Turn-off delay time	t _{d(off)}	—	150	—	ns	
Fall time	t _f	—	70	—	ns	
Body to drain diode forward voltage	V _{DF}	—	1.0	—	V	I _F = 15 A, V _{GS} = 0
Body to drain diode reverse recovery time	t _{rr}	—	500	—	ns	I _F = 15 A, V _{GS} = 0, dI _F /dt = 100 A/μs

Note: 1. Pulse test

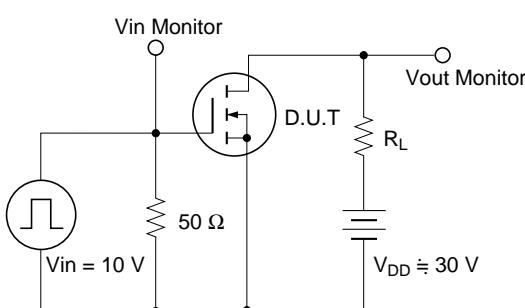




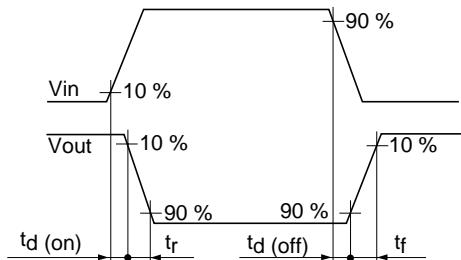


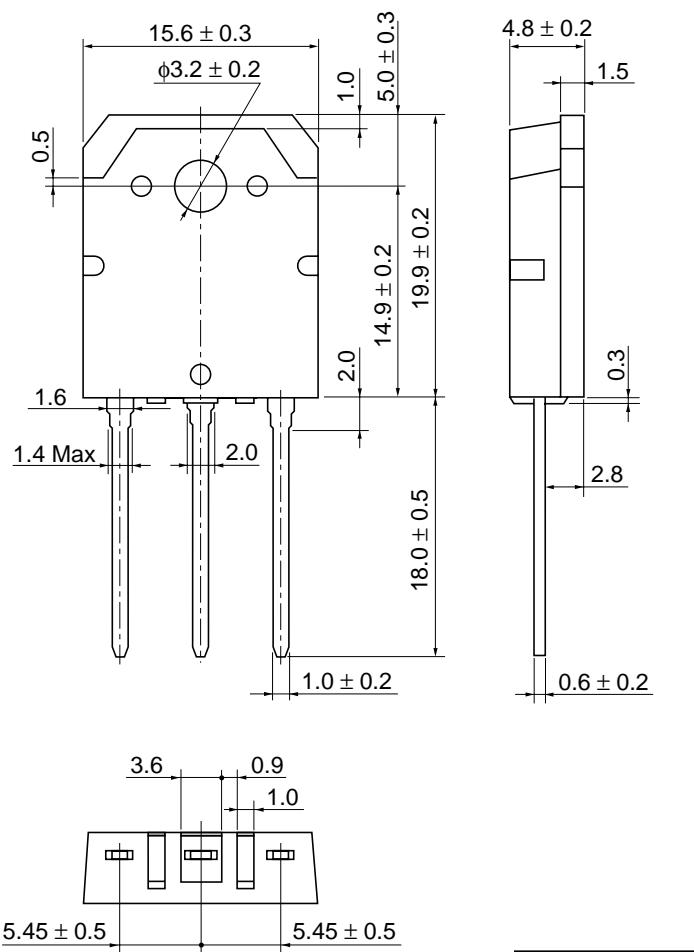


Switching Time Test Circuit



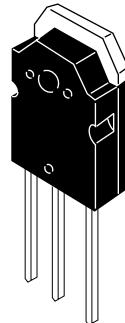
Wavewforms



Package Dimensions

As of January, 2001

Unit: mm



Hitachi Code	TO-3P
JEDEC	—
EIAJ	Conforms
Mass (reference value)	5.0 g

Cautions

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