To all our customers

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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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   Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of nonflammable material or (iii) prevention against any malfunction or mishap.

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2SK3447

Silicon N Channel Power MOS FET
Power Switching

ADE-208-1567E (Z)

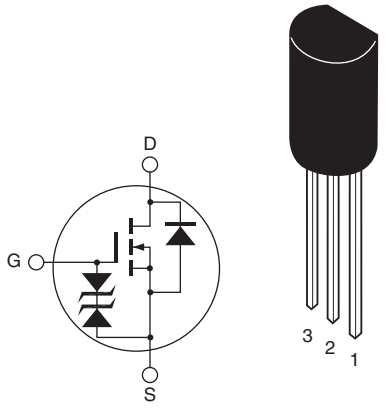
6th. Edition
Dec. 2002

Features

- Capable of 4 V gate drive
- Low drive current
- Low on-resistance
- $R_{DS(on)}$=1.5 Ω typ. (at V_{GS} = 10 V)

Outline

TO-92MOD.



1. Source
2. Drain
3. Gate

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	150	V
Gate to source voltage	V_{GSS}	±20	V
Drain current	I_D	1	A
Drain peak current	$I_{D(pulse)}$ Note1	4	A
Body-drain diode reverse drain current	I_{DR}	1	A
Channel dissipation	Pch Note2	0.9	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

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

Electrical Characteristics

(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	150	—	—	V	I_D = 10mA, V_{GS} = 0
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	—	—	V	I_G = ±100µA, V_{DS} = 0
Gate to source leak current	I_{GSS}	—	—	±10	µA	V_{GS} = ±16V, V_{DS} = 0
Zero gate voltage drain current	I_{DSS}	—	—	1	µA	V_{DS} = 150 V, V_{GS} = 0
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.5	V	V_{DS} = 10V, I_D = 1mA
Static drain to source on state resistance	$R_{DS(on)}$	—	1.5	1.95	Ω	I_D = 0.5 A, V_{GS} = 10V [Note3]
	$R_{DS(on)}$	—	1.9	2.5	Ω	I_D = 0.5 A, V_{GS} = 4V [Note3]
Forward transfer admittance	$\|y_{fs}\|$	0.5	0.9	—	S	I_D = 0.5 A, V_{DS} = 10V [Note3]
Input capacitance	Ciss	—	85	—	pF	V_{DS} = 10V
Output capacitance	Coss	—	36	—	pF	V_{GS} = 0
Reverse transfer capacitance	Crss	—	18	—	pF	f = 1MHz
Total gate charge	Qg	—	4.5	—	nC	V_{DD} = 100V
Gate to source charge	Qgs	—	0.8	—	nC	V_{GS} = 10V
Gate to drain charge	Qgd	—	1.6	—	nC	I_D = 1 A
Turn-on delay time	$t_{d(on)}$	—	7	—	ns	V_{GS} = 10V, I_D = 0.5A
Rise time	t_r	—	6	—	ns	R_L = 60Ω
Turn-off delay time	$t_{d(off)}$	—	21	—	ns	
Fall time	t_f	—	10	—	ns	
Body–drain diode forward voltage	V_{DF}	—	1.0	1.5	V	IF = 1 A, V_{GS} = 0 [Note3]
Body–drain diode reverse recovery time	t_{rr}	—	60	—	ns	IF = 1 A, V_{GS} = 0 diF/ dt =100A/µs

Notes: 3. Pulse test

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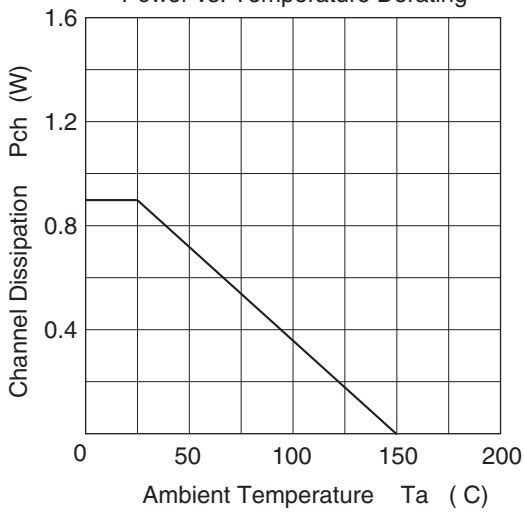
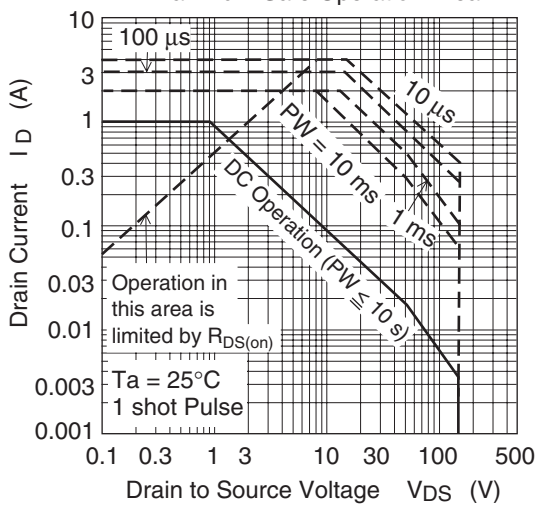
Main Characteristics

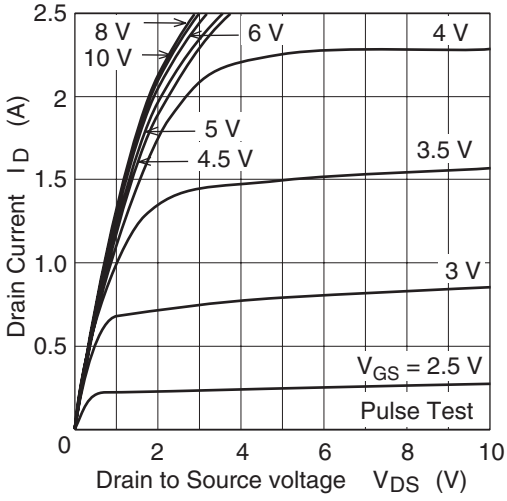
Power vs. Temperature Derating



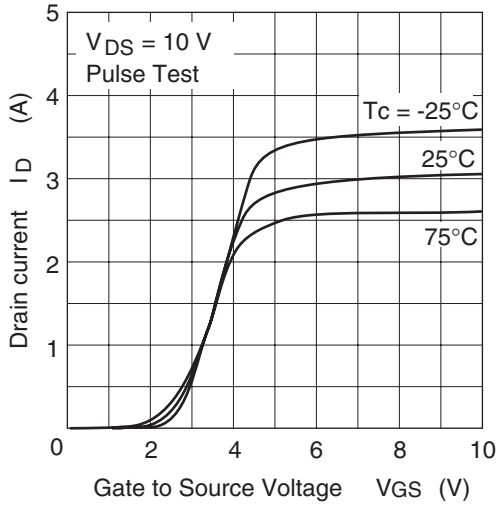
Maximum Safe Operation Area



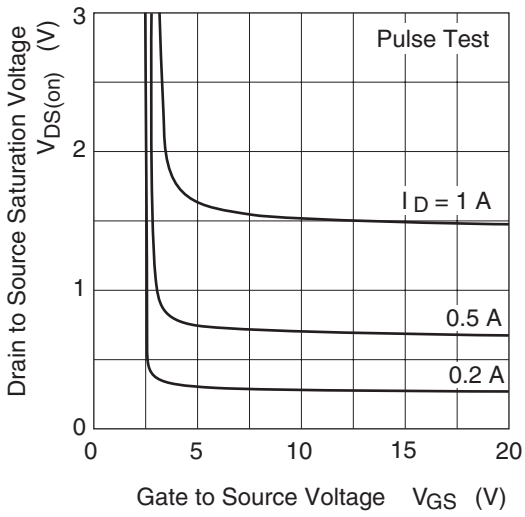
Typical Output Characteristics



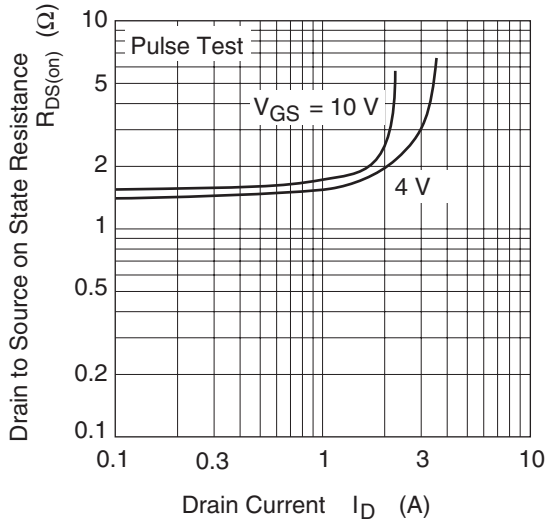
Typical Transfer Characteristics



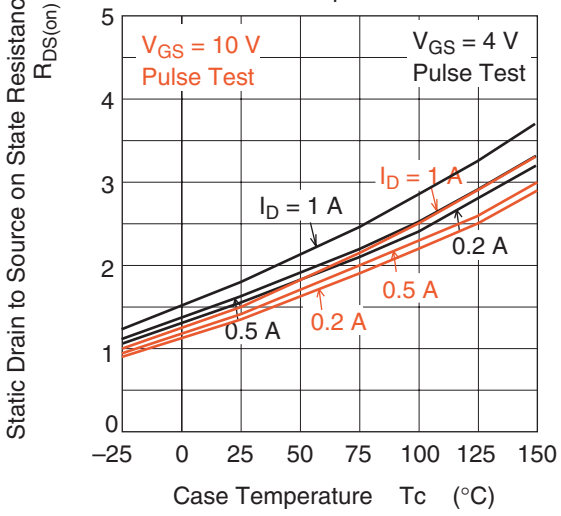
Drain to Source Saturation Voltage vs. Gate to Source Voltage



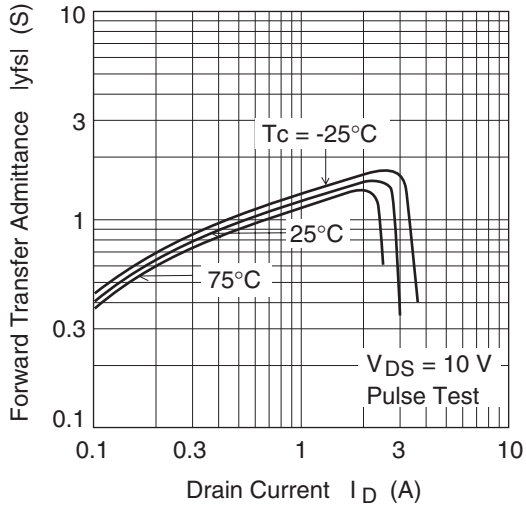
Static Drain to Source on State Resistance vs. Drain Current



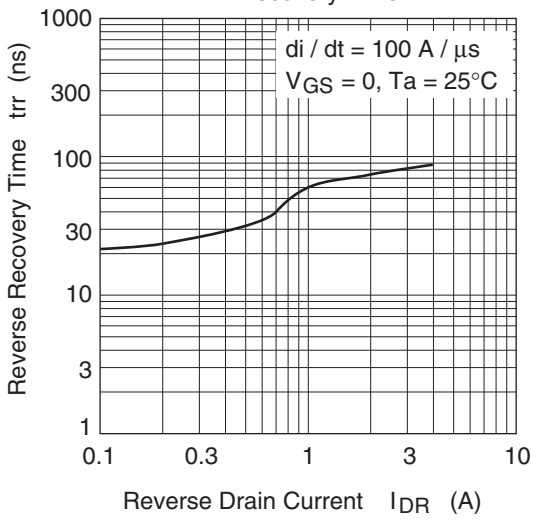
Static Drain to Source on State Resistance vs. Temperature



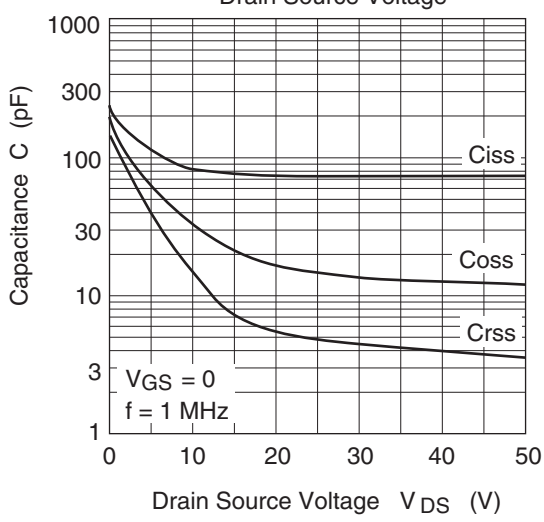
Forward Transfer Admittance vs. Drain Current



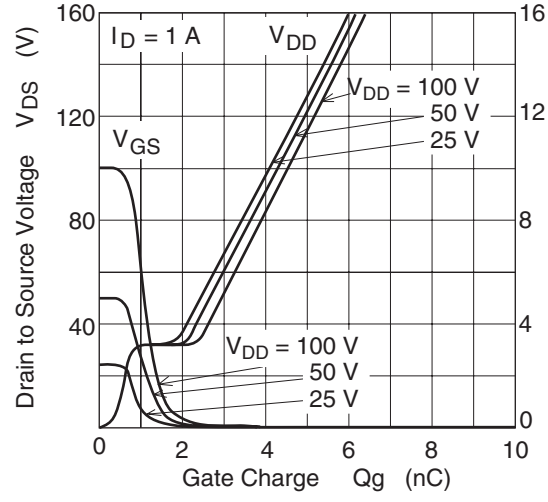
Body-Drain Diode Reverse Recovery Time



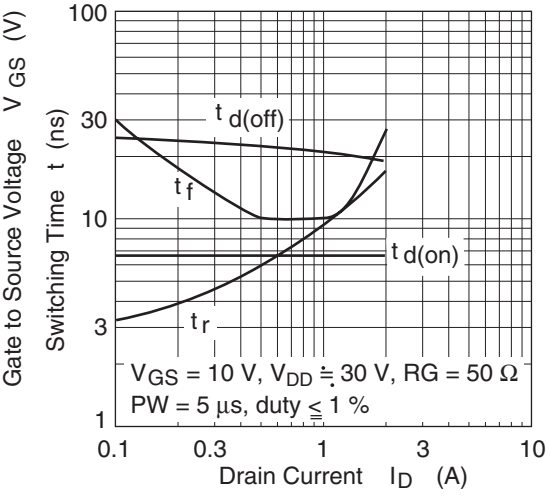
Typical Capacitance vs. Drain Source Voltage



Dynamic Input Characteristics



Switching Characteristics



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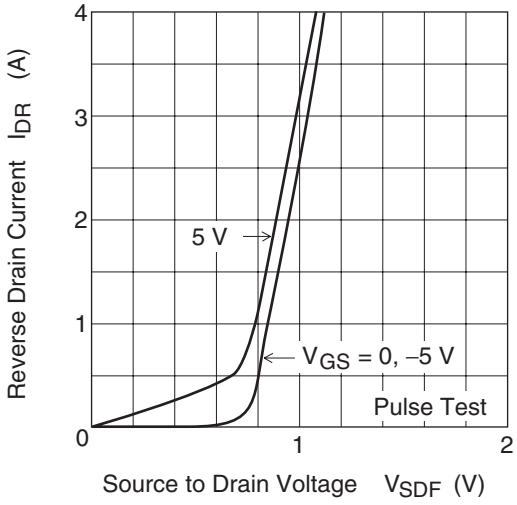
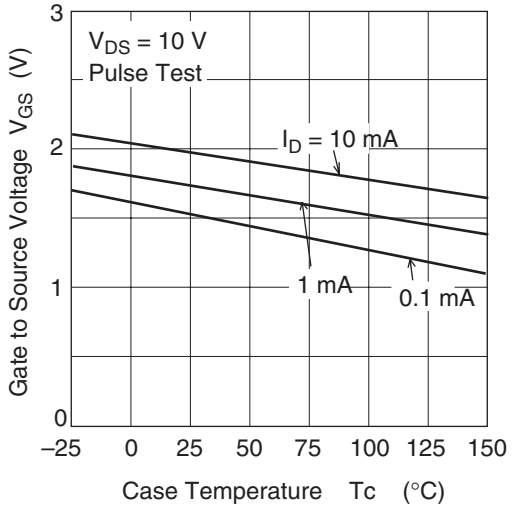
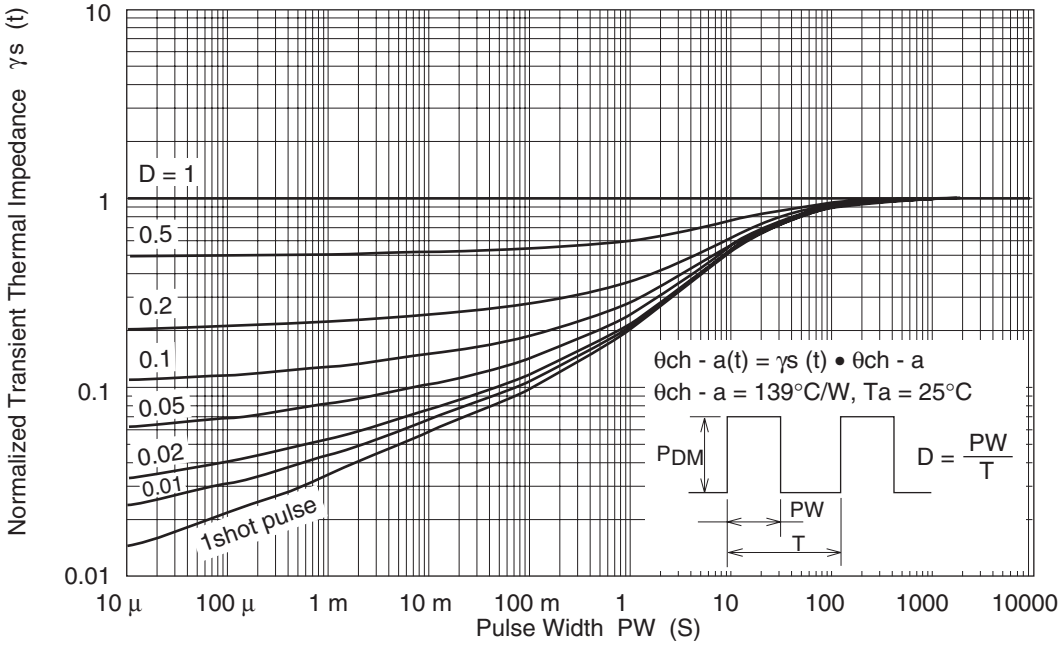
Reverse Drain Current vs. Source to Drain Voltage



Gate to Source Voltage vs. Temperature



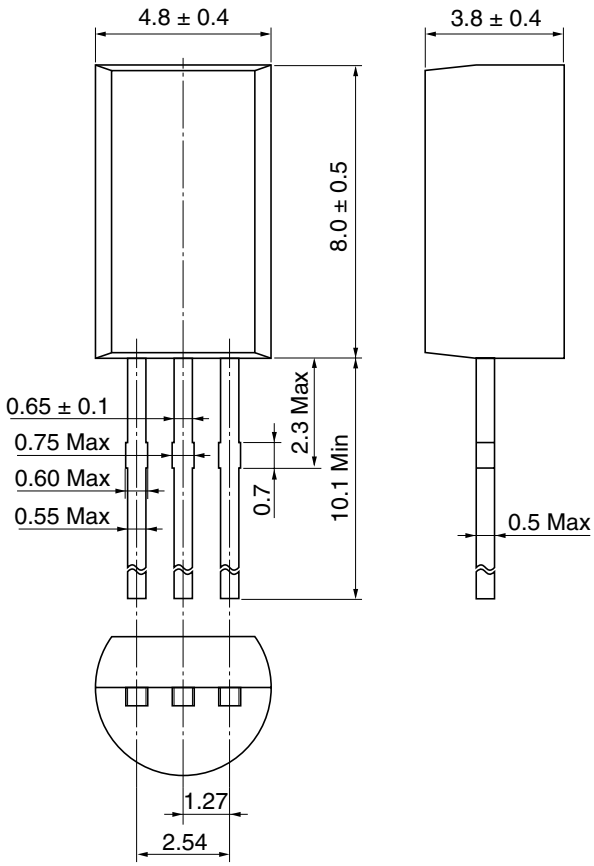
Normalized Transient Thermal Impedance vs. Pulse Width



Package Dimensions

As of July, 2002

Unit: mm



Hitachi Code	TO-92 Mod
JEDEC	—
JEITA	Conforms
Mass (reference value)	0.35 g

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