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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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2SK3234

Silicon N Channel MOS FET
High Speed Power Switching

RENESAS

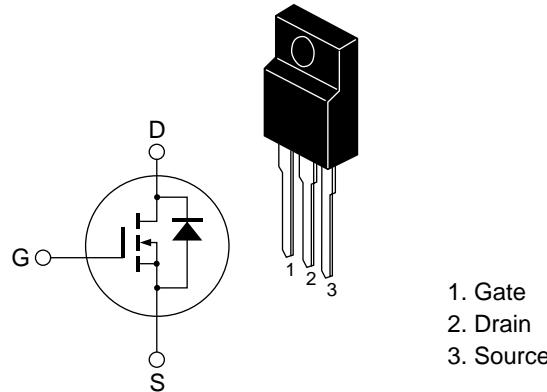
ADE-208-1370 (Z)
1st. Edition
Mar. 2001

Features

- Low on-resistance: $R_{DS(on)} = 0.65 \Omega$ typ.
- Low leakage current: $IDSS = 1 \mu\text{A}$ max (at $VDS = 500 \text{ V}$)
- High speed switching: $tf = 25 \text{ ns}$ typ (at $VGS = 10 \text{ V}$, $VDD = 250 \text{ V}$, $ID = 4 \text{ A}$)
- Low gate charge: $Qg = 25 \text{ nC}$ typ (at $VDD = 400 \text{ V}$, $VGS = 10 \text{ V}$, $ID = 8 \text{ A}$)
- Avalanche ratings

Outline

TO-220CFM



Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V _{DSS}	500	V
Gate to source voltage	V _{GSS}	±30	V
Drain current	I _D	8	A
Drain peak current	I _D ^{Note1} _(pulse)	32	A
Body-drain diode reverse drain current	I _{DR}	8	A
Body-drain diode reverse drain peak current	I _{DR} ^{Note1} _(pulse)	32	A
Avalanche current	I _{AP} ^{Note3}	8	A
Channel dissipation	P _{ch} ^{Note2}	35	W
Channel to case Thermal Impedance	θ _{ch-c}	3.57	°C/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°C

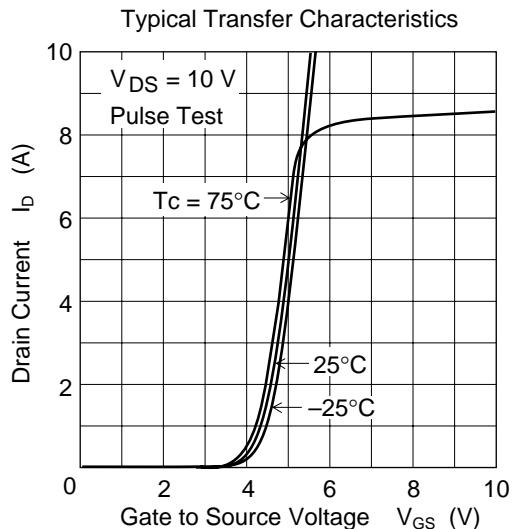
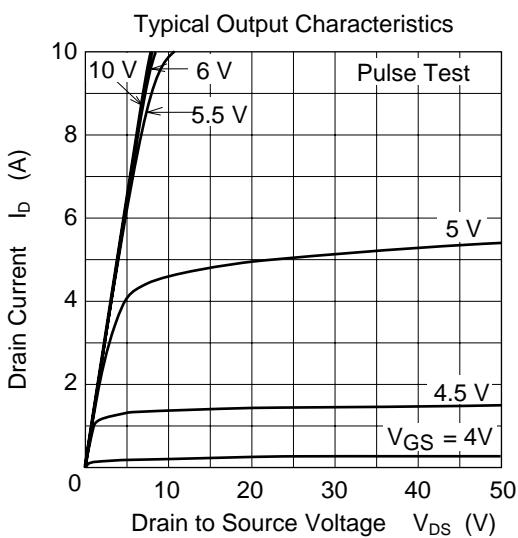
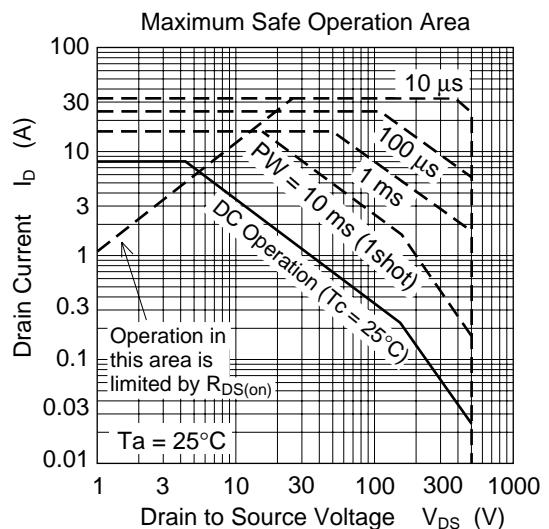
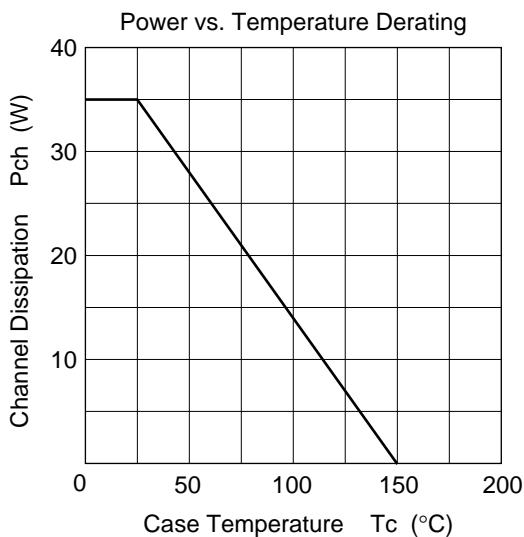
3. T_{ch} ≤ 150°C

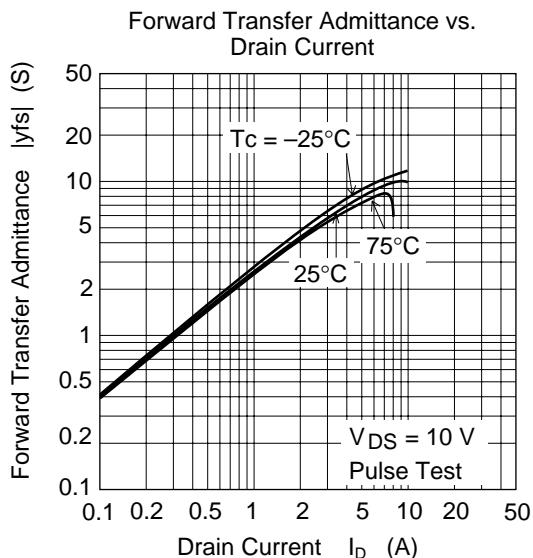
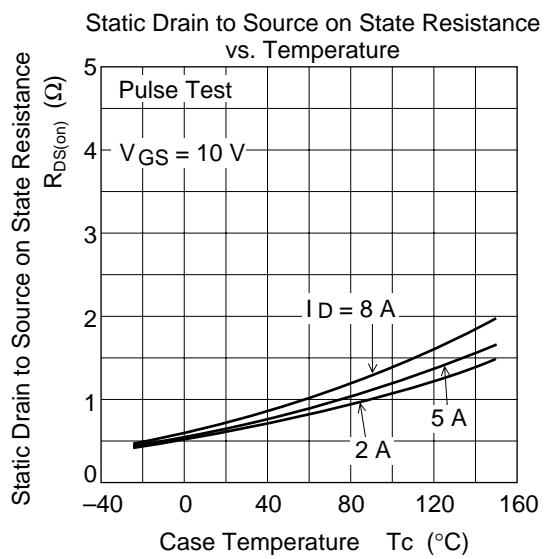
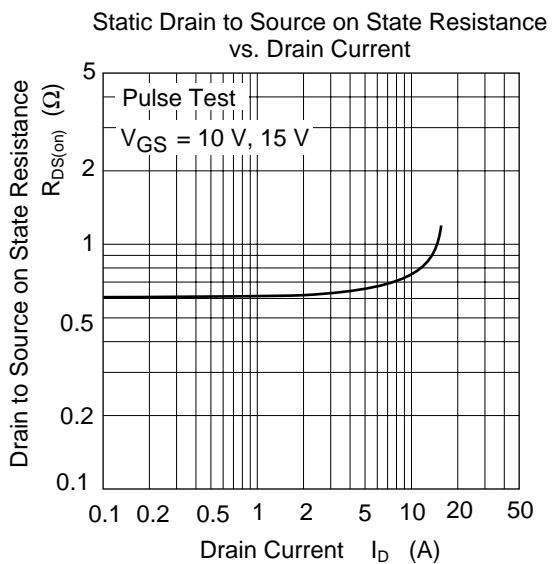
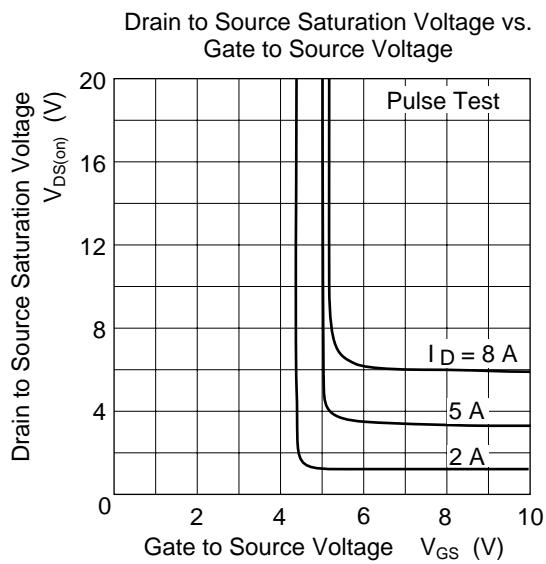
Electrical Characteristics (Ta = 25°C)

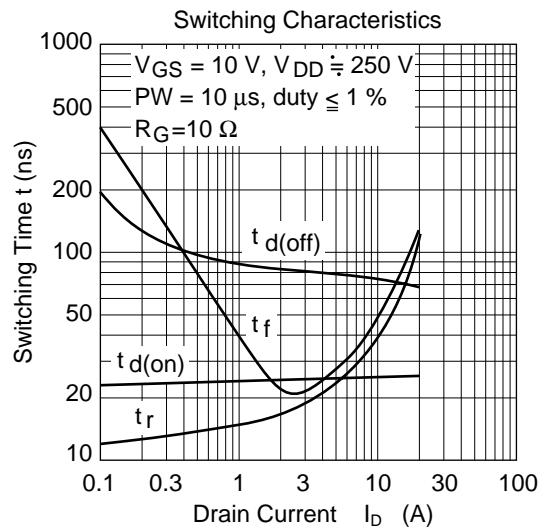
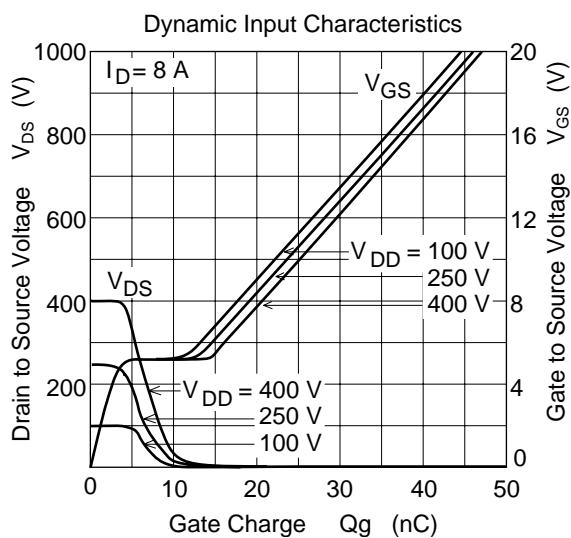
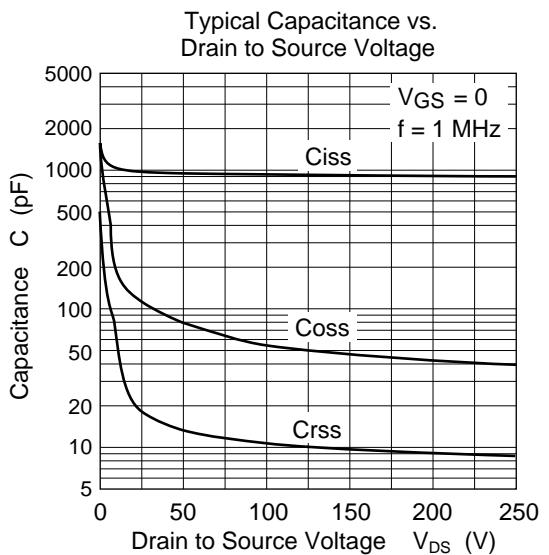
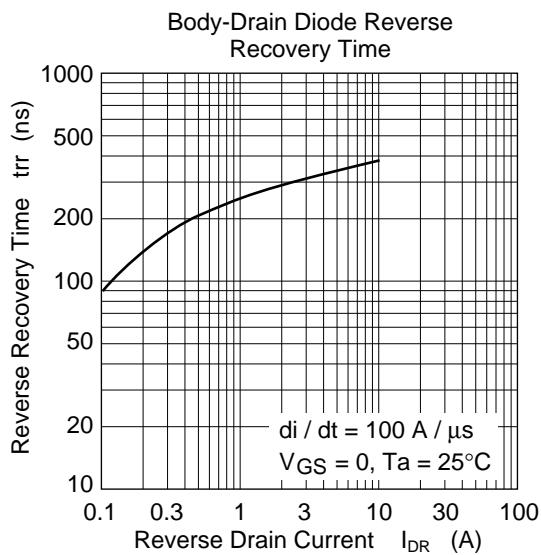
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V _{(BR)DSS}	500	—	—	V	I _D = 10 mA, V _{GS} = 0
Gate to source leak current	I _{GSS}	—	—	±0.1	µA	V _{GS} = ±30 V, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	1	µA	V _{DS} = 500 V, V _{GS} = 0
Gate to source cutoff voltage	V _{GS(off)}	3.0	—	4.0	V	V _{DS} = 10 V, I _D = 1 mA
Static drain to source on state resistance	R _{DSS(on)}	—	0.65	0.85	Ω	I _D = 4 A, V _{GS} = 10 V ^{Note4}
Forward transfer admittance	y _{fs}	4.0	7.0	—	S	I _D = 4 A, V _{DS} = 10 V ^{Note4}
Input capacitance	C _{iss}	—	970	—	pF	V _{DS} = 25 V
Output capacitance	C _{oss}	—	110	—	pF	V _{GS} = 0
Reverse transfer capacitance	C _{rss}	—	18	—	pF	f = 1 MHz
Turn-on delay time	td(on)	—	25	—	ns	I _D = 4 A
Rise time	tr	—	21	—	ns	V _{GS} = 10 V
Turn-off delay time	td(off)	—	80	—	ns	R _L = 62.5 Ω
Fall time	tf	—	25	—	ns	R _g = 10 Ω
Total gate charge	Q _g	—	25	—	nC	V _{DD} = 400 V
Gate to source charge	Q _{gs}	—	4	—	nC	V _{GS} = 10 V
Gate to drain charge	Q _{gd}	—	11	—	nC	I _D = 8 A
Body-drain diode forward voltage	V _{DF}	—	0.9	1.35	V	I _F = 8 A, V _{GS} = 0
Body-drain diode reverse recovery time	trr	—	360	—	ns	I _F = 8 A, V _{GS} = 0
Body-drain diode reverse recovery charge	Qrr	—	1.7	—	µC	dI _F /dt = 100 A/µs

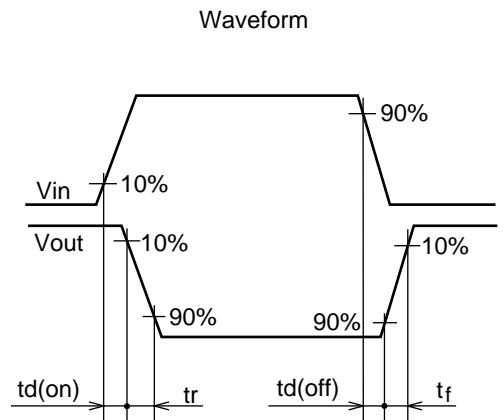
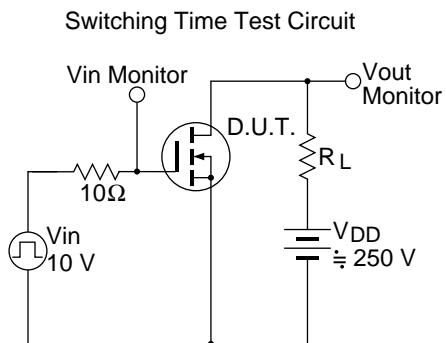
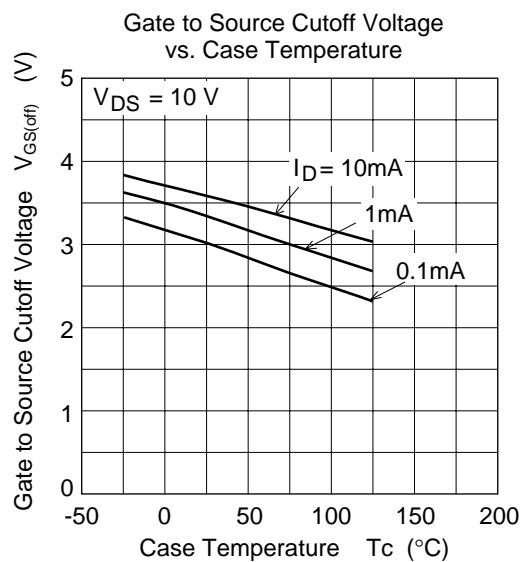
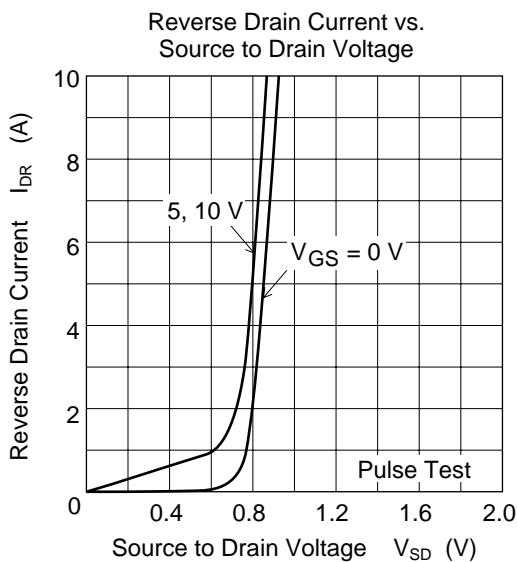
Note: 4. Pulse test

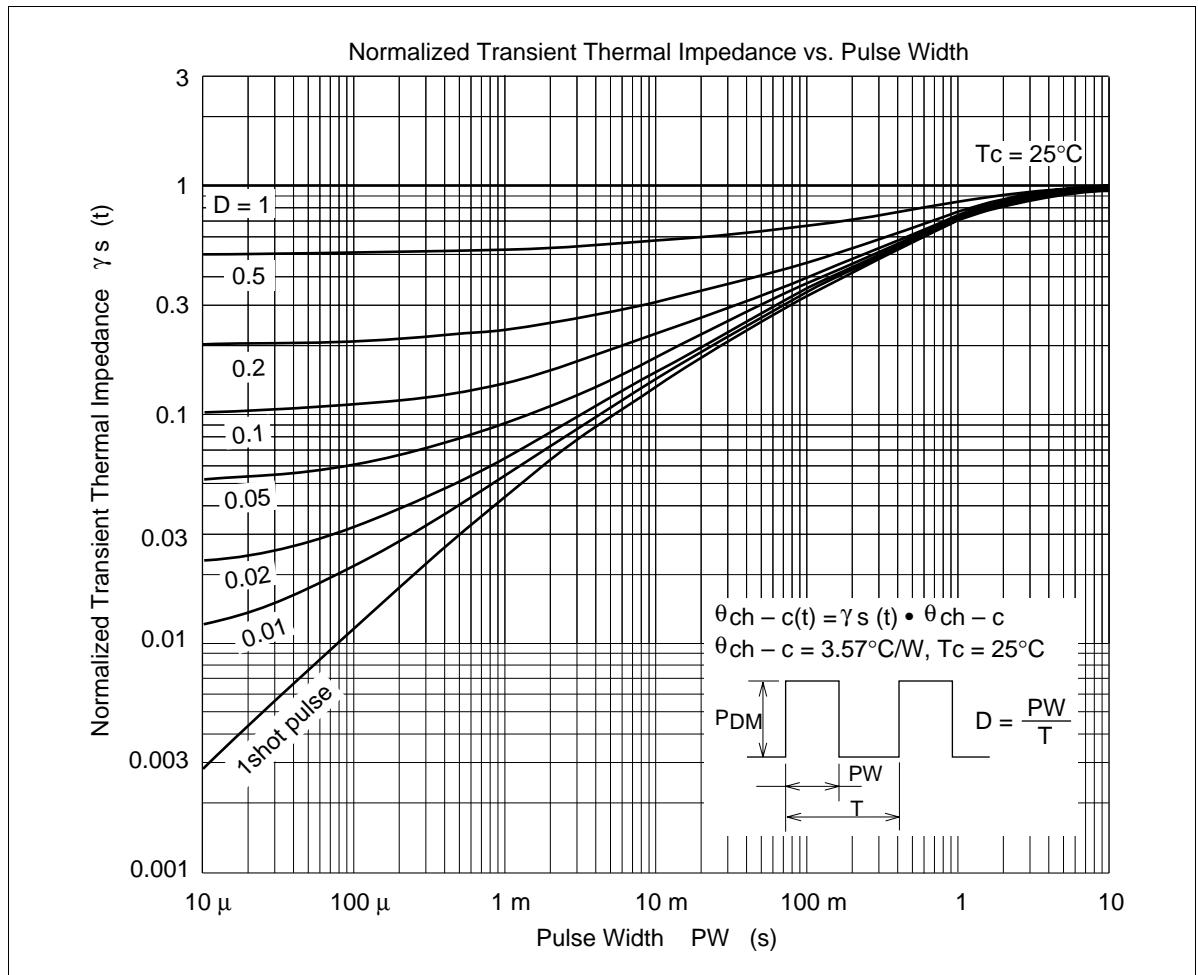
Main Characteristics



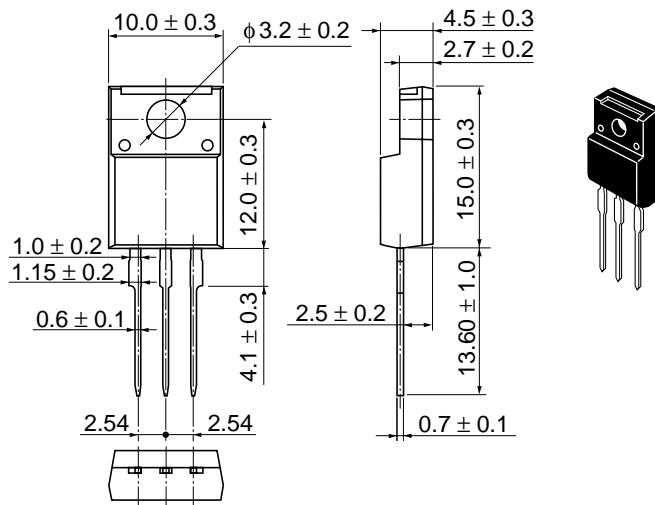








Package Dimensions

As of January, 2001
Unit: mm

Hitachi Code	TO-220CFM
JEDEC	—
EIAJ	—
Mass (reference value)	1.9 g

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