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

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2SK1957

Silicon N-Channel MOS FET

RENESAS

ADE-208-1336 (Z)

1st. Edition

Mar. 2001

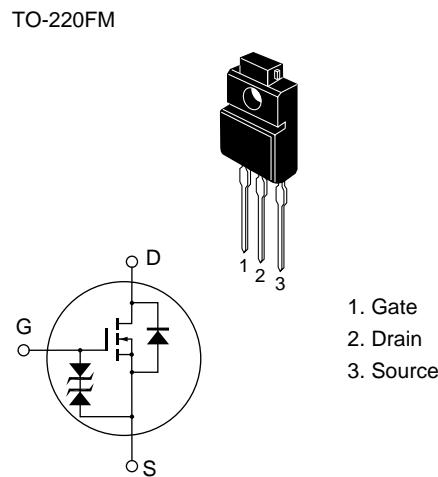
Application

High speed power switching

Features

- Low on-resistance
- High speed switching
- Low drive current
- No Secondary Breakdown
- Suitable for Switching regulator, DC - DC converter, Motor Control

Outline



Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V _{DSS}	200	V
Gate to source voltage	V _{GSS}	±20	V
Drain current	I _D	7	A
Drain peak current	I _{D(pulse)} ^{*1}	28	A
Body to drain diode reverse drain current	I _{DR}	7	A
Channel dissipation	Pch ^{*2}	30	W
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	−55 to +150	°C

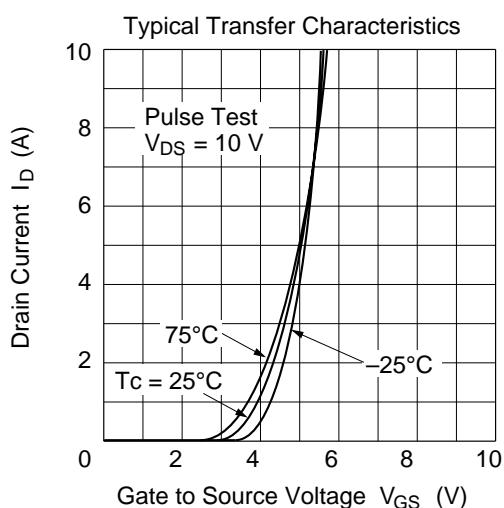
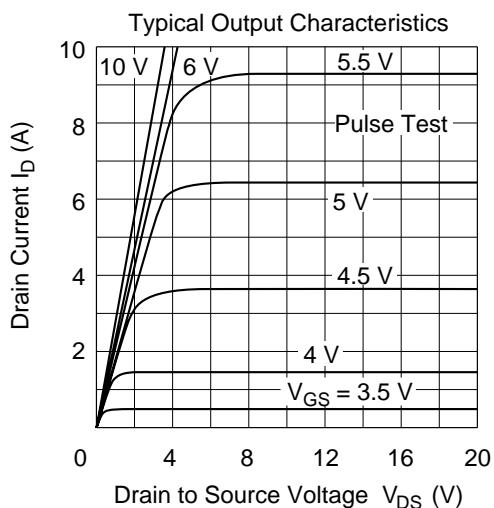
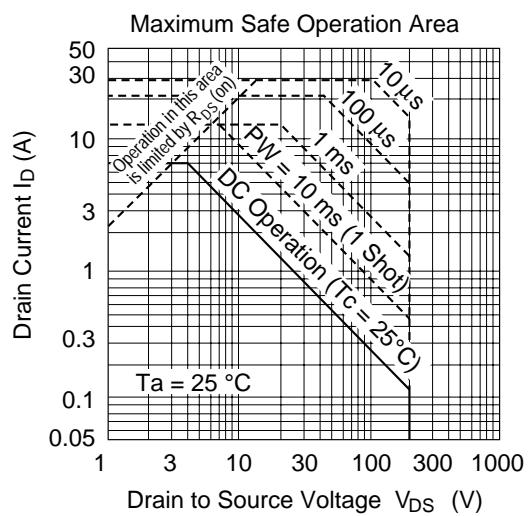
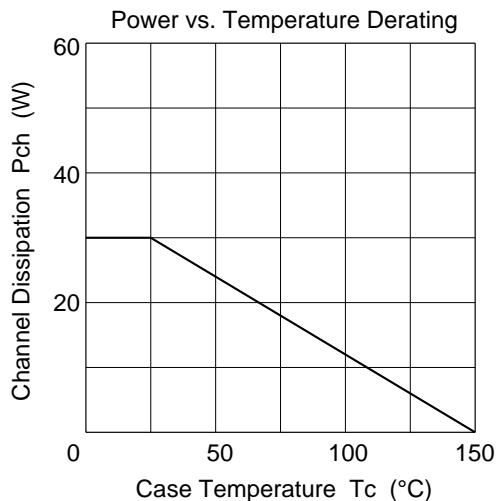
Notes 1. PW 10 µs, duty cycle 1 %

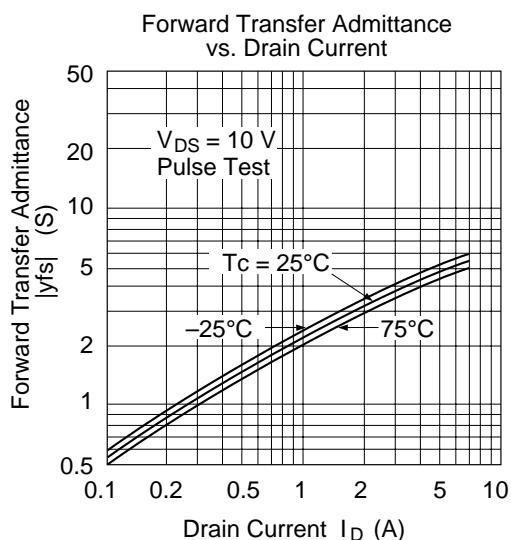
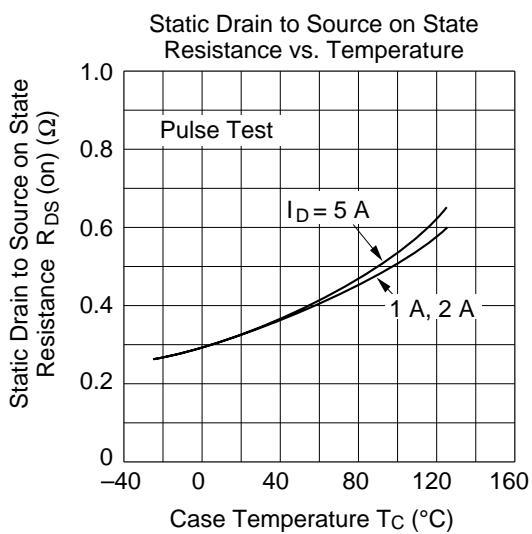
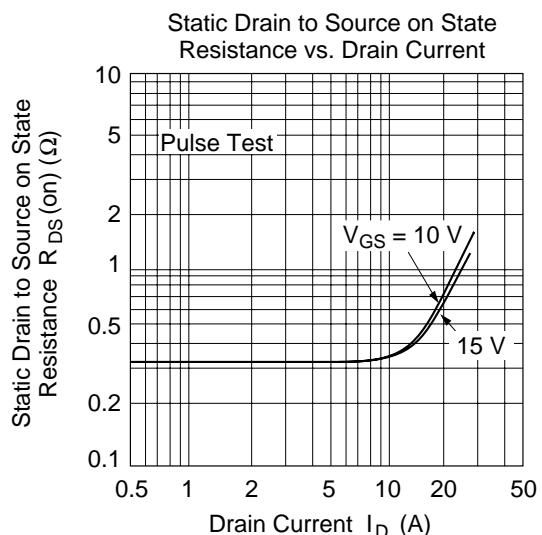
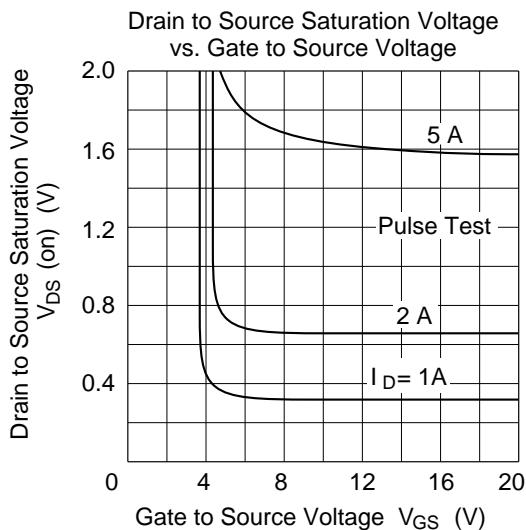
2. Value at T_c = 25°C

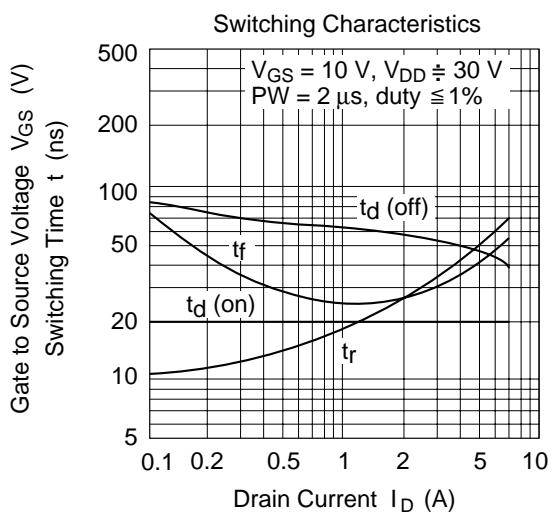
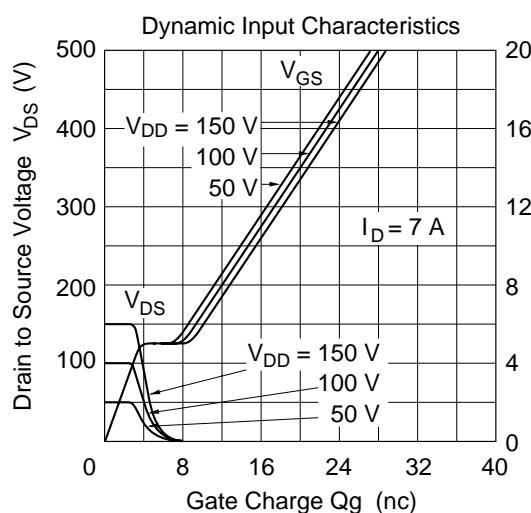
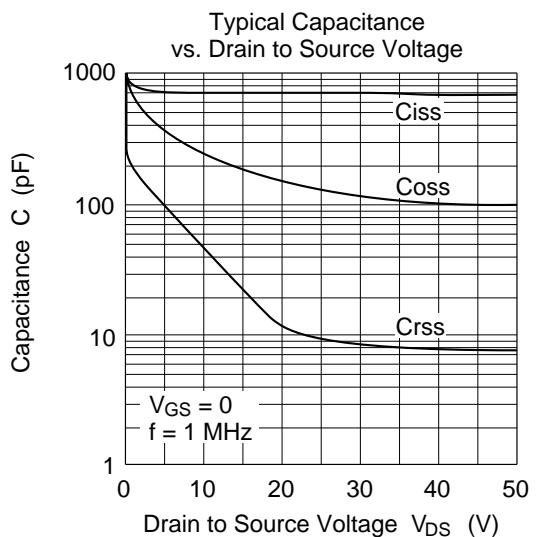
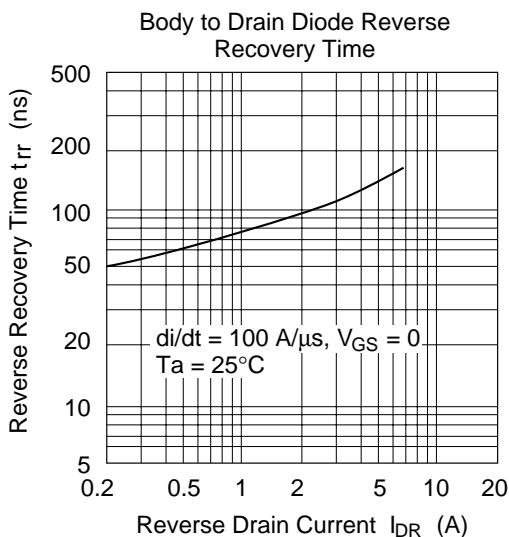
Electrical Characteristics (Ta = 25°C)

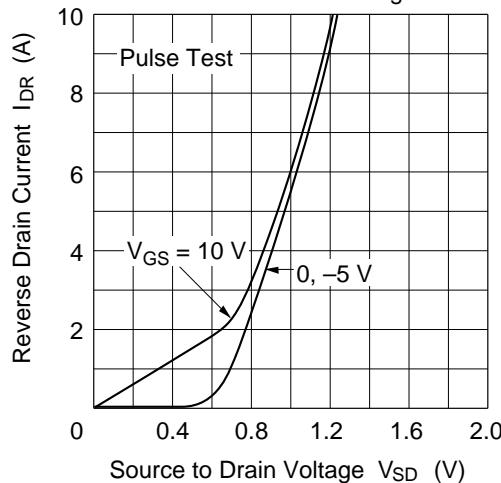
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	V _{(BR)DSS}	200	—	—	V	I _D = 10 mA, V _{GS} = 0
Gate to source breakdown voltage	V _{(BR)GSS}	±20	—	—	V	I _G = ±100 µA, V _{DS} = 0
Gate to source leak current	I _{GSS}	—	—	±10	µA	V _{GS} = ±16 V, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	250	µA	V _{DS} = 160 V, V _{GS} = 0
Gate to source cutoff voltage	V _{GS(off)}	2.0	—	4.0	V	I _D = 1 mA, V _{DS} = 10 V
Static drain to source on state resistance	R _{DS(on)}	—	0.33	0.45		I _D = 4 A V _{GS} = 10 V ^{*1}
Forward transfer admittance	y _{fs}	3.0	4.5	—	S	I _D = 4 A V _{DS} = 10 V ^{*1}
Input capacitance	C _{iss}	—	700	—	pF	V _{DS} = 10 V
Output capacitance	C _{oss}	—	260	—	pF	V _{GS} = 0
Reverse transfer capacitance	C _{rss}	—	45	—	pF	f = 1 MHz
Turn-on delay time	t _{d(on)}	—	20	—	ns	I _D = 4 A
Rise time	t _r	—	45	—	ns	V _{GS} = 10 V
Turn-off delay time	t _{d(off)}	—	50	—	ns	R _L = 7.5
Fall time	t _f	—	35	—	ns	
Body to drain diode forward voltage	V _{DF}	—	1.1	—	V	I _F = 7 A, V _{GS} = 0
Body to drain diode reverse recovery time	t _{rr}	—	150	—	ns	I _F = 7 A, V _{GS} = 0, di _F / dt = 100 A / µs

Note 1. Pulse Test

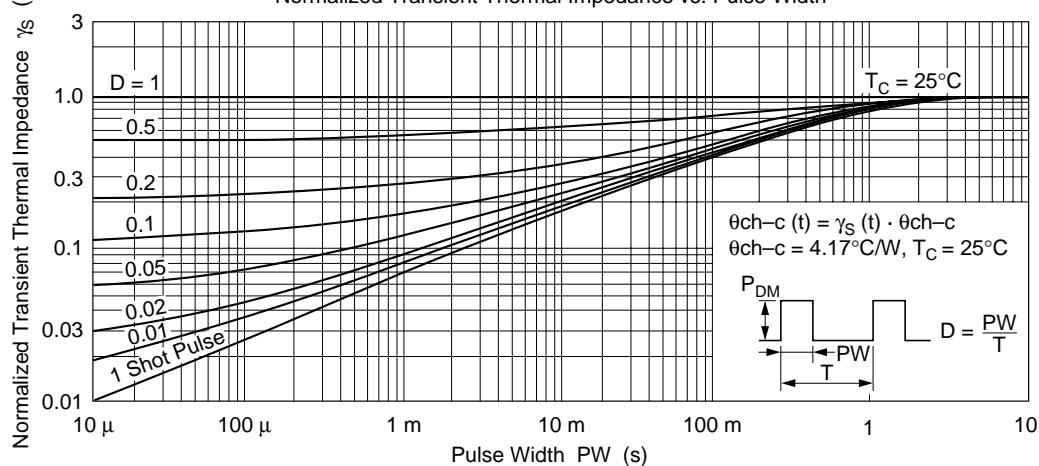




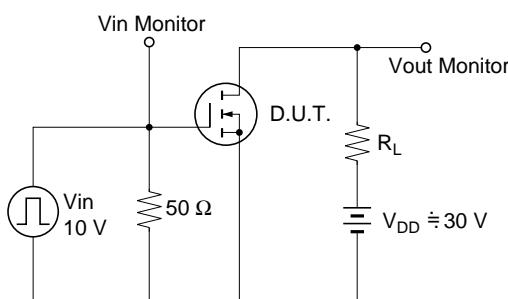


Reverse Drain Current vs.
Source to Drain Voltage

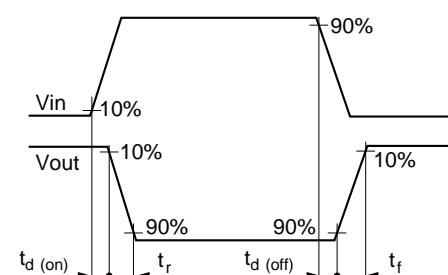
Normalized Transient Thermal Impedance vs. Pulse Width

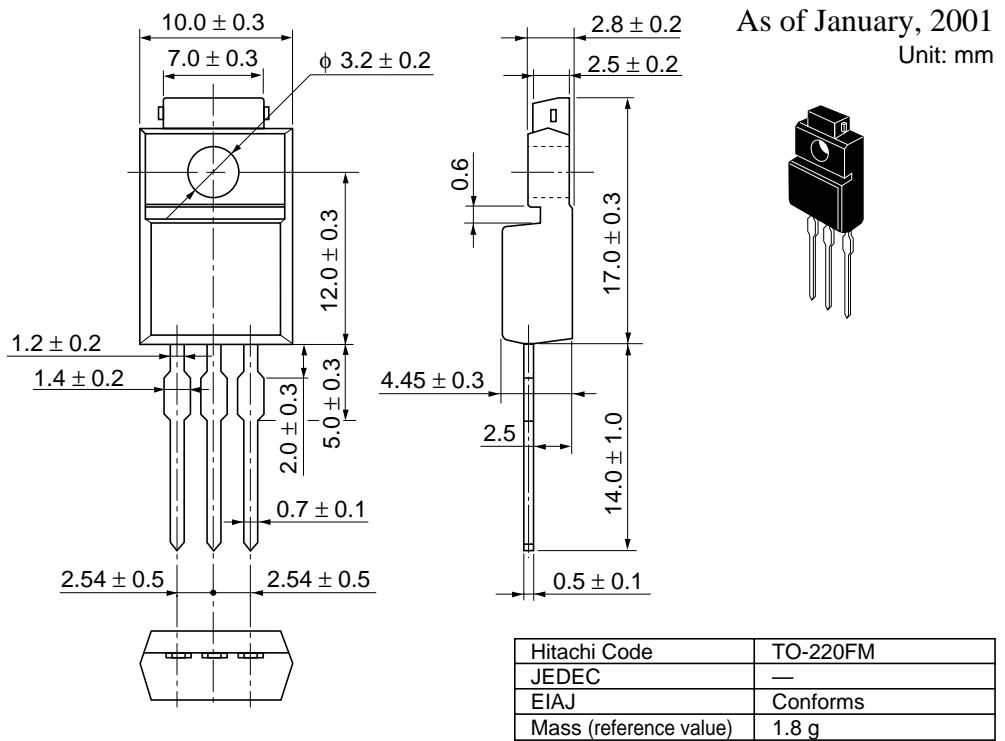


Switching Time Test Circuit



Waveforms



Package Dimensions

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