
2SK1318

Silicon N Channel MOS FET
High Speed Power Switching

HITACHI

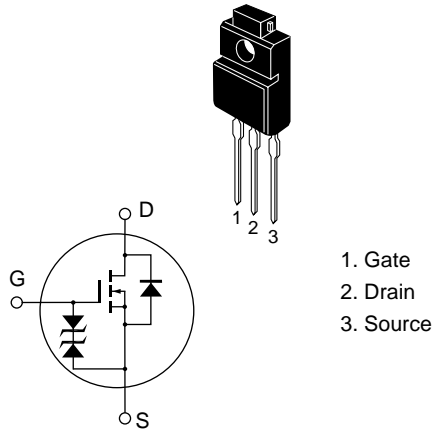
ADE-208-1269 (Z)
1st. Edition
Jan. 2001

Features

- Low on-resistance
- High speed switching
- Low drive current
- 4V gate drive device can be driven from 5V source
- Suitable for motor drive, DC-DC converter, power switch and solenoid drive

Outline

TO-220FM



Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	120	V
Gate to source voltage	V_{GSS}	± 20	V
Drain current	I_D	20	A
Drain peak current	$I_{D(\text{peak})}^{*1}$	80	A
Body to drain diode reverse drain current	I_{DR}	20	A
Channel dissipation	P_{ch}^{*2}	35	W
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

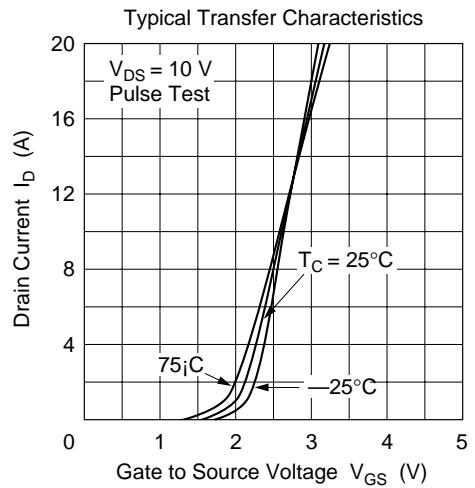
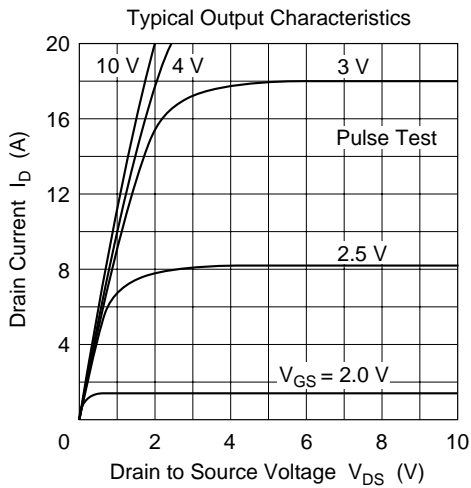
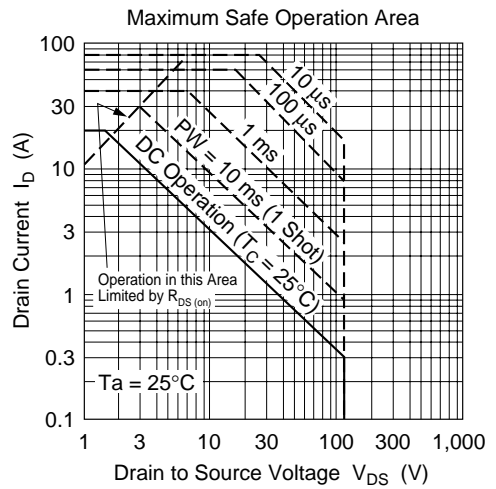
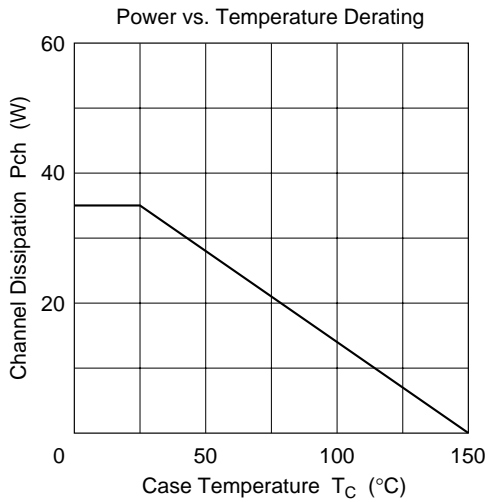
Notes: 1. $PW \leq 10 \mu\text{s}$, duty cycle $\leq 1\%$ 2. Value at $T_c = 25^\circ\text{C}$

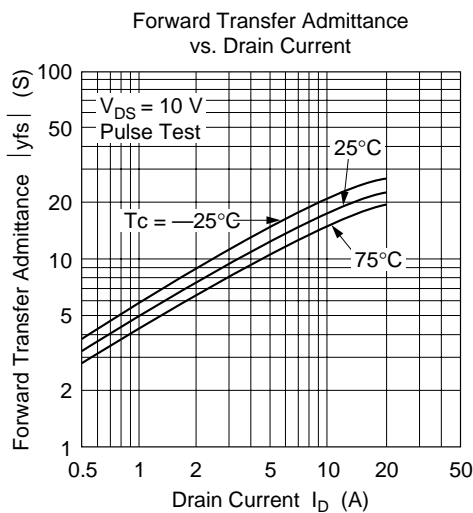
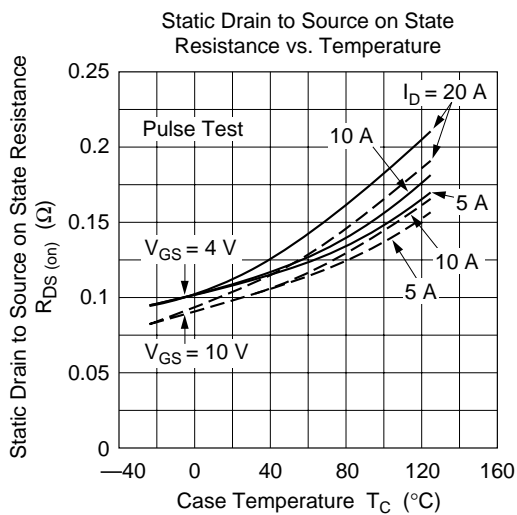
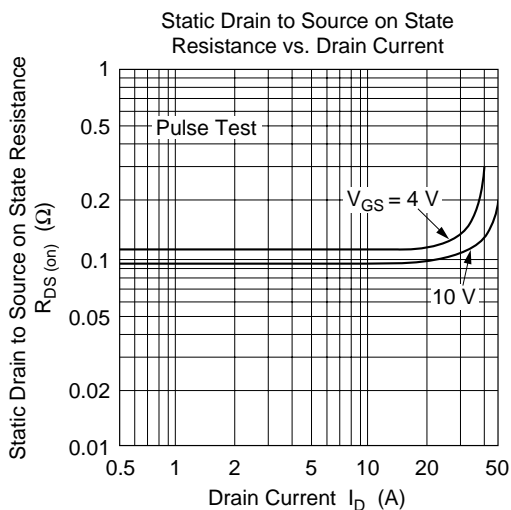
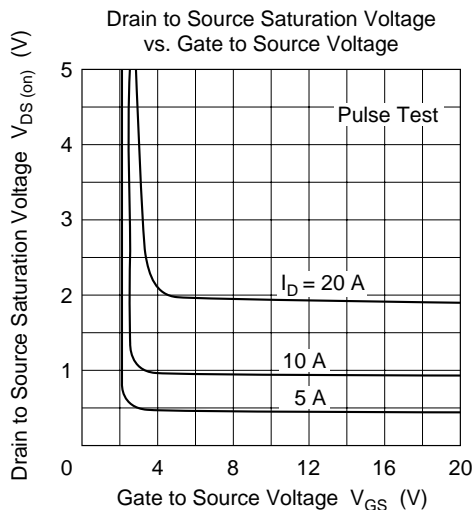
Electrical Characteristics (Ta = 25°C)

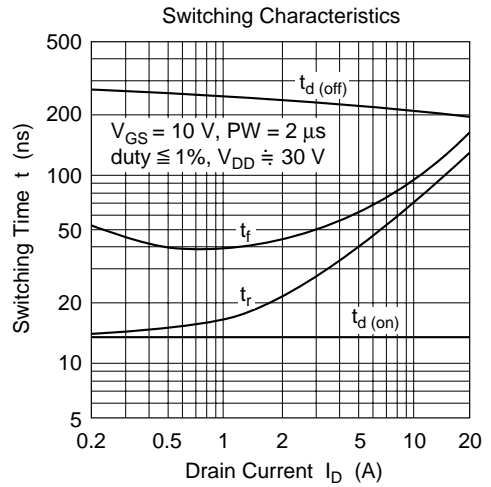
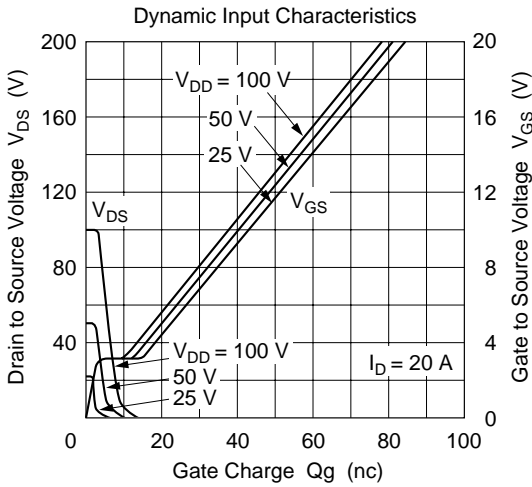
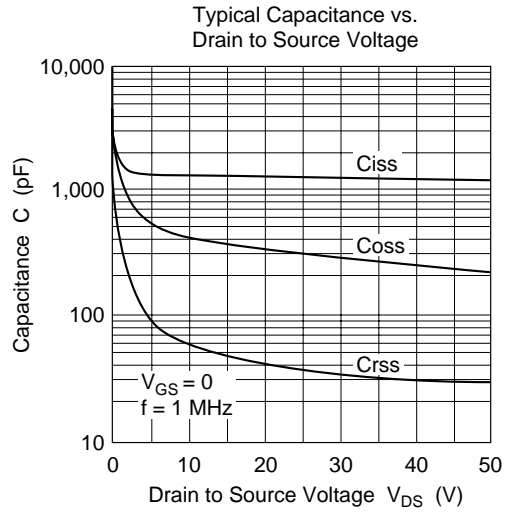
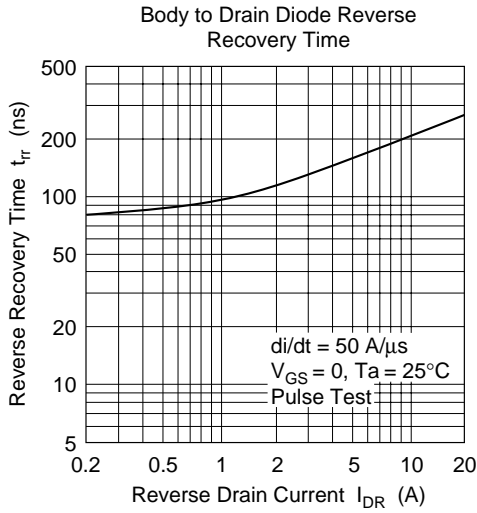
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	120	—	—	V	$I_D = 10\text{mA}, V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	± 20	—	—	V	$I_G = \pm 100\mu\text{A}, V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 16\text{V}, V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	250	μA	$V_{DS} = 100\text{V}, V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.0	V	$I_D = 1\text{mA}, V_{DS} = 10\text{V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.095	0.12		$I_D = 10\text{A}, V_{GS} = 10\text{V}^{*1}$
		—	0.11	0.16		$I_D = 10\text{A}, V_{GS} = 4\text{V}^{*1}$
Forward transfer admittance	$ y_{fs} $	10	17	Å	S	$I_D = 10\text{A}, V_{DS} = 10\text{V}^{*1}$
Input capacitance	C_{iss}	—	1300	Å	pF	$V_{DS} = 10\text{V}, V_{GS} = 0,$
Output capacitance	C_{oss}	—	430	—	pF	$f = 1\text{MHz}$
Reverse transfer capacitance	C_{rss}	—	60	—	pF	
Turn-on delay time	$t_d(\text{on})$	—	14	—	ns	$I_D = 10\text{A},$
Rise time	t_r	—	70	—	ns	$V_{GS} = 10\text{V}, R_L = 3$
Turn-off delay time	$t_d(\text{off})$	—	210	—	ns	
Fall time	t_f	—	90	—	ns	
Body-drain diode forward voltage	V_{DF}	—	1.4	—	V	$I_F = 20\text{A}, V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	280	—	ns	$I_F = 20\text{A}, V_{GS} = 0,$ $di_F / dt = 50\text{A} / \mu\text{s}$

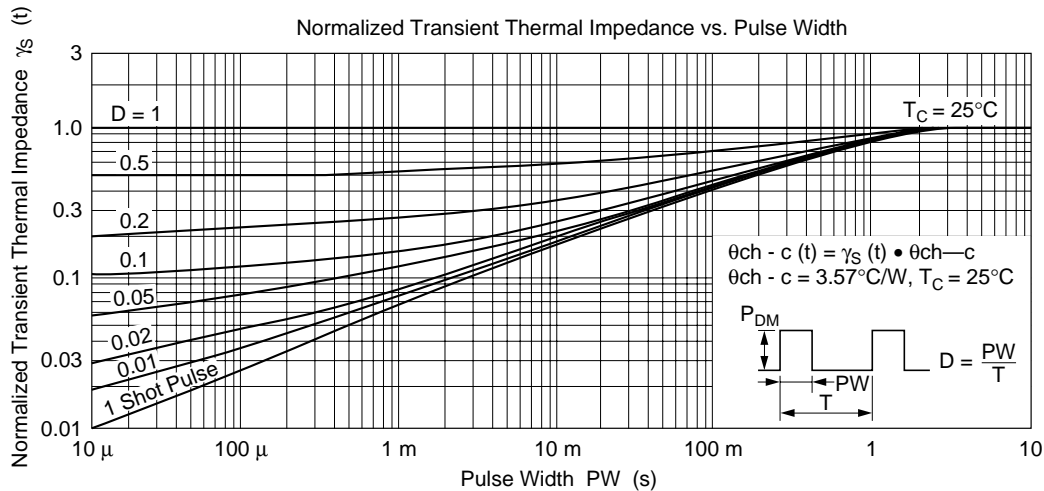
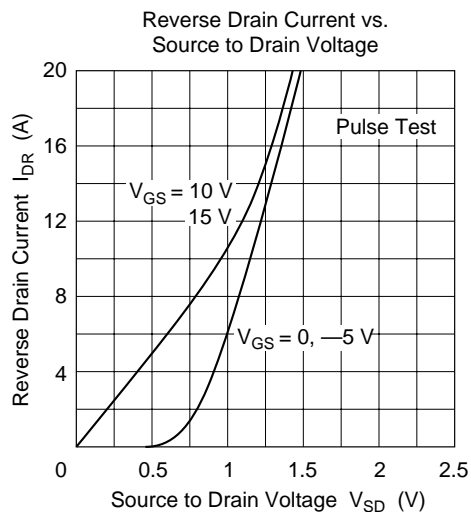
Note: 1. Pulse test

Main Characteristics

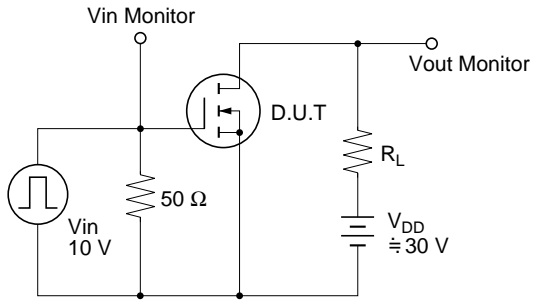




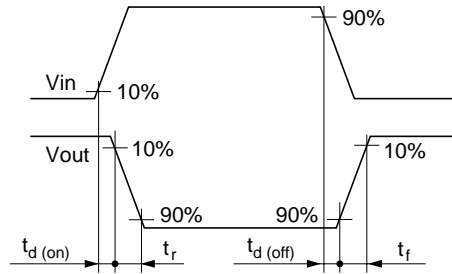




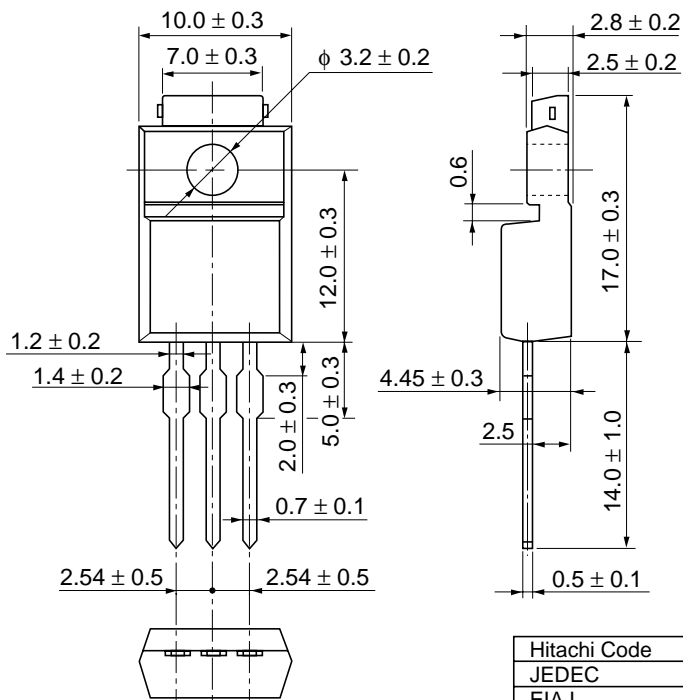
Switching Time Test Circuit



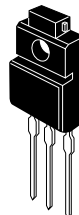
Waveforms



Package Dimensions



As of January, 2001
Unit: mm



Hitachi Code	TO-220FM
JEDEC	—
EIAJ	Conforms
Mass (reference value)	1.8 g

Cautions

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