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# 2SK1404

Silicon N-Channel MOS FET

# HITACHI

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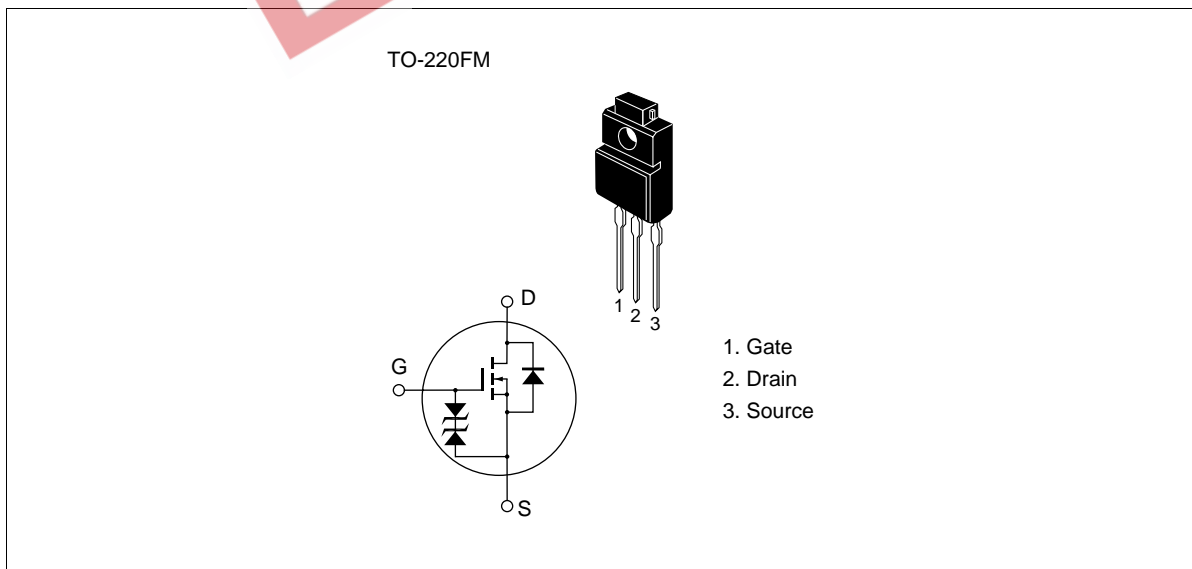
## Application

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



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### Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V <sub>DSS</sub>	600	V
Gate to source voltage	V <sub>GSS</sub>	±30	V
Drain current	I <sub>D</sub>	5	A
Drain peak current	I <sub>D(pulse)</sub> *1	20	A
Body to drain diode reverse drain current	I <sub>DR</sub>	5	A
Channel dissipation	Pch*2	35	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

2. Value at T<sub>c</sub> = 25°C

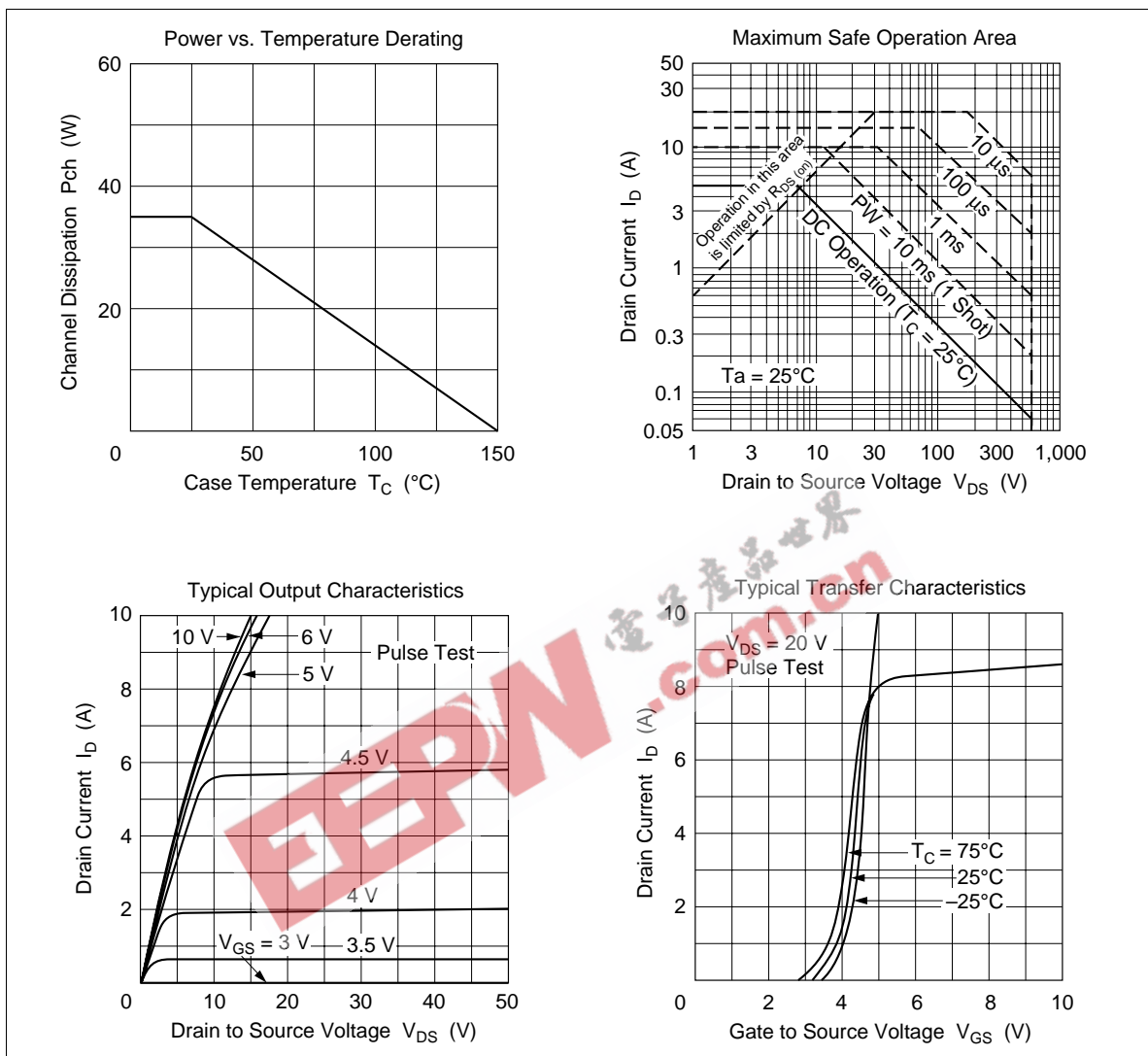
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Electrical Characteristics (T<sub>a</sub> = 25°C)

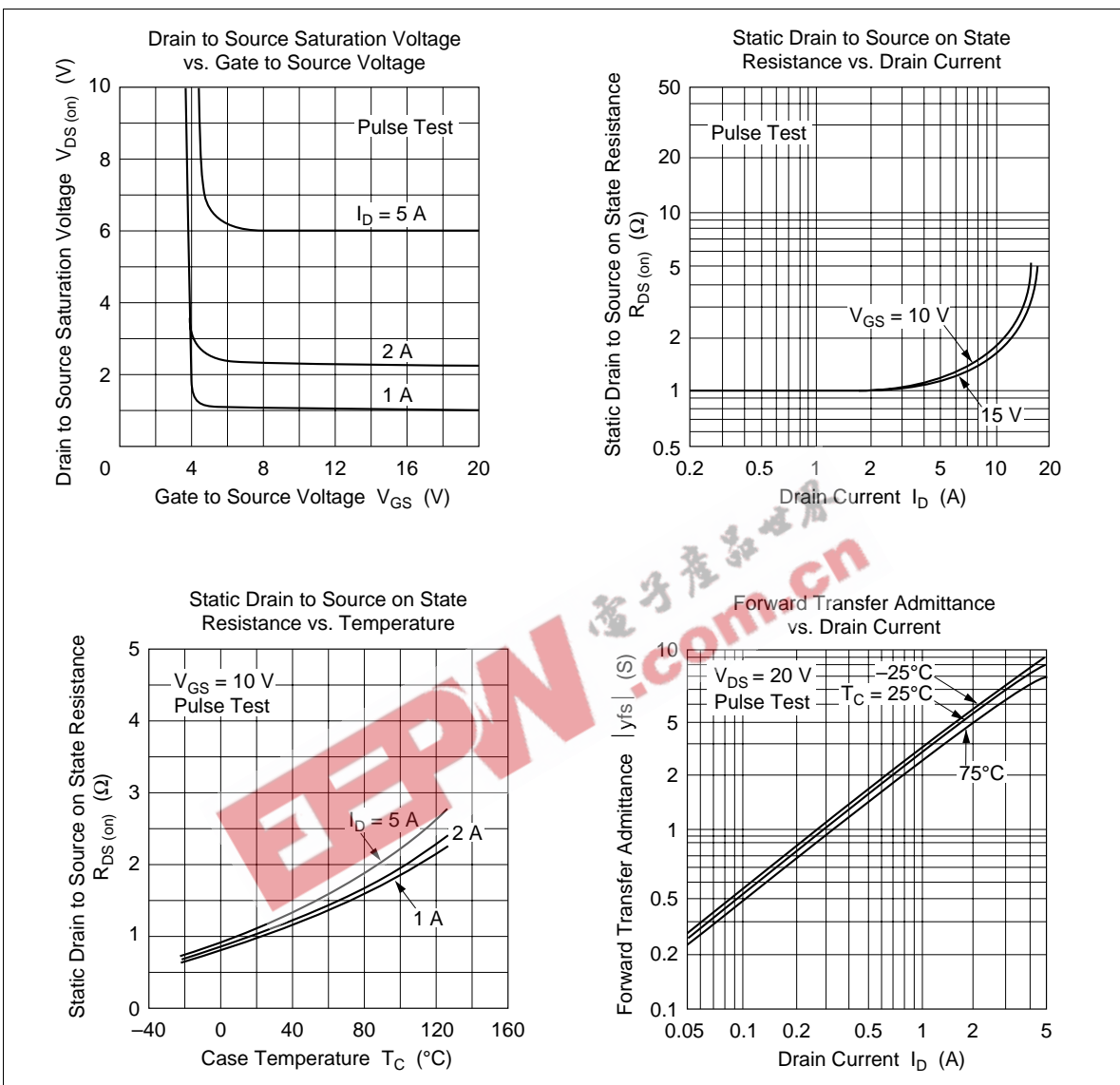
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	600	—	—	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±30	—	—	V	$I_G = \pm 100 \text{ } \mu\text{A}, V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	±10	μA	$V_{GS} = \pm 25 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	250	μA	$V_{DS} = 500 \text{ V}, V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	—	3.0	V	$I_D = 1 \text{ mA}, V_{DS} = 10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	1.1	1.5	Ω	$I_D = 2.5 \text{ A}, V_{GS} = 10 \text{ V}^{*1}$
Forward transfer admittance	y <sub>fs</sub>	3.0	5.0	—	S	$I_D = 2.5 \text{ A}, V_{DS} = 10 \text{ V}^{*1}$
Input capacitance	C <sub>iss</sub>	—	1000	—	pF	$V_{DS} = 10 \text{ V}, V_{GS} = 0,$
Output capacitance	C <sub>oss</sub>	—	250	—	pF	$f = 1 \text{ MHz}$
Reverse transfer capacitance	C <sub>rss</sub>	—	45	—	pF	
Turn-on delay time	$t_{d(on)}$	—	12	—	ns	$I_D = 2.5 \text{ A}, V_{GS} = 10 \text{ V},$
Rise time	$t_r$	—	45	—	ns	$R_L = 12 \text{ } \Omega$
Turn-off delay time	$t_{d(off)}$	—	105	—	ns	
Fall time	$t_f$	—	55	—	ns	
Body to drain diode forward voltage	$V_{DF}$	—	0.9	—	V	$I_F = 5 \text{ A}, V_{GS} = 0$
Body to drain diode reverse recovery time	$t_{rr}$	—	500	—	ns	$I_F = 5 \text{ A}, V_{GS} = 0,$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

Note: 1. Pulse test

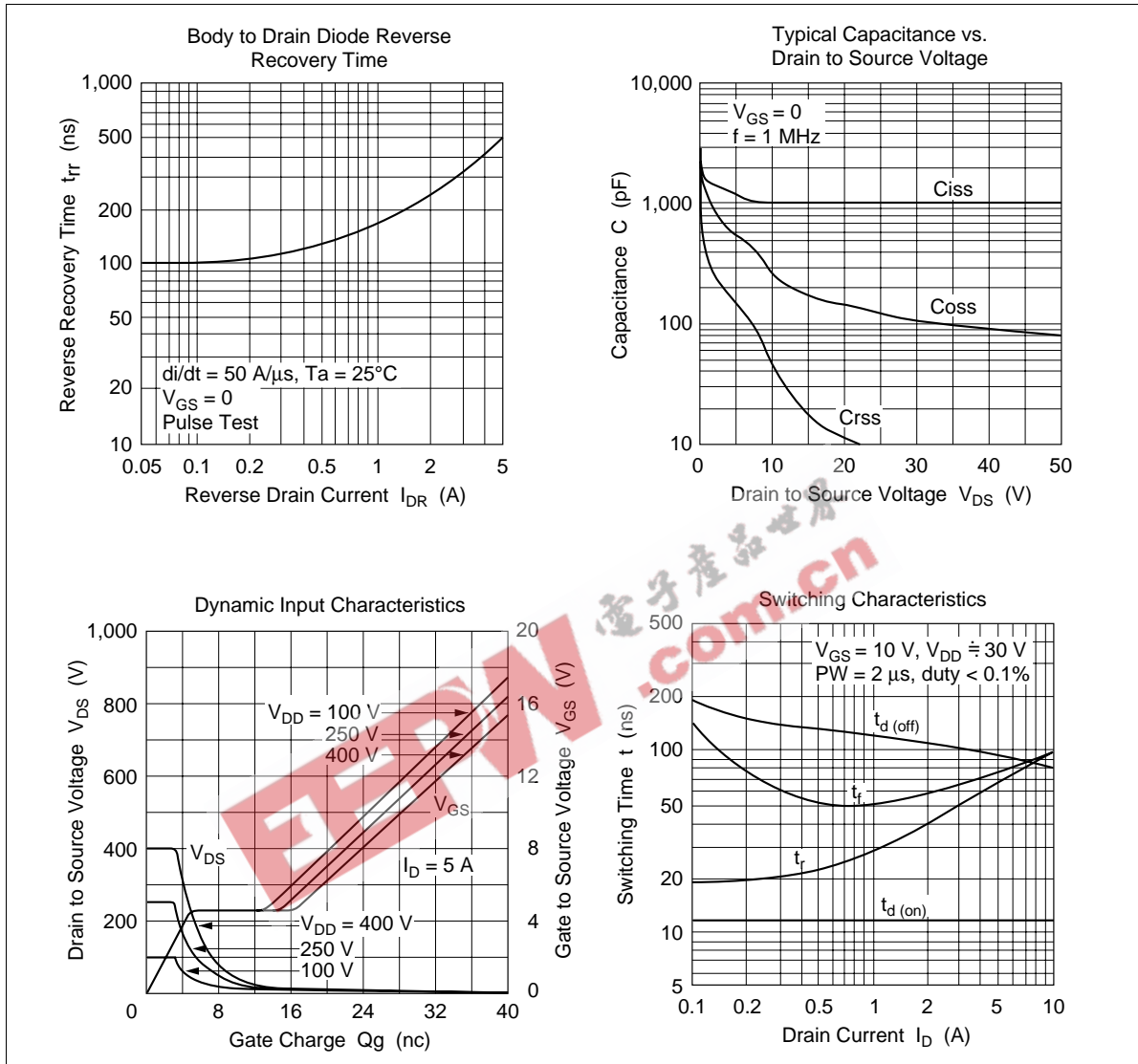
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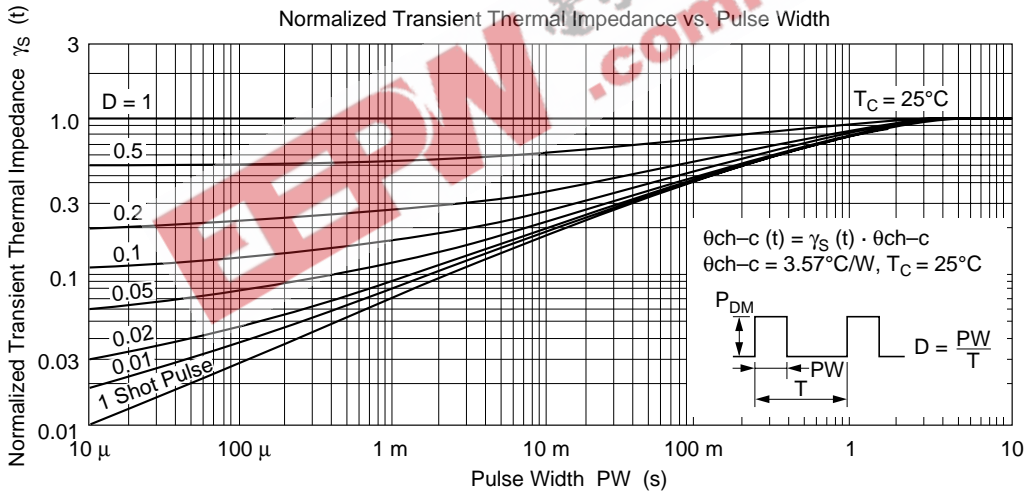
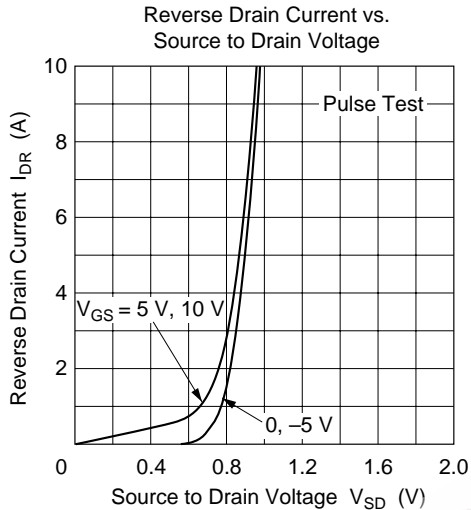


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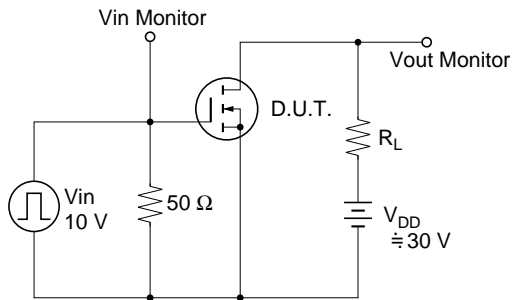


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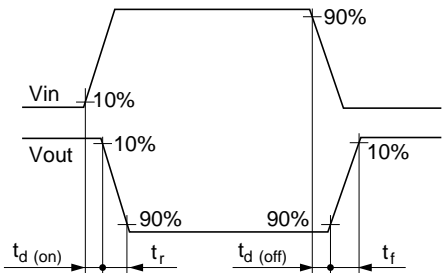




Switching Time Test Circuit

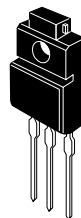
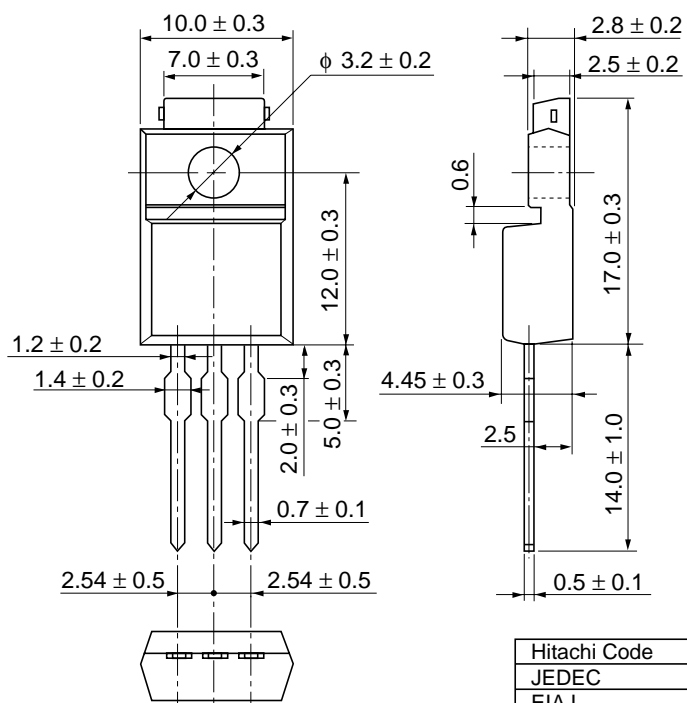


Waveforms



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Unit: mm



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



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