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# 2SK2408

Silicon N-Channel MOS FET

## HITACHI

November 1996

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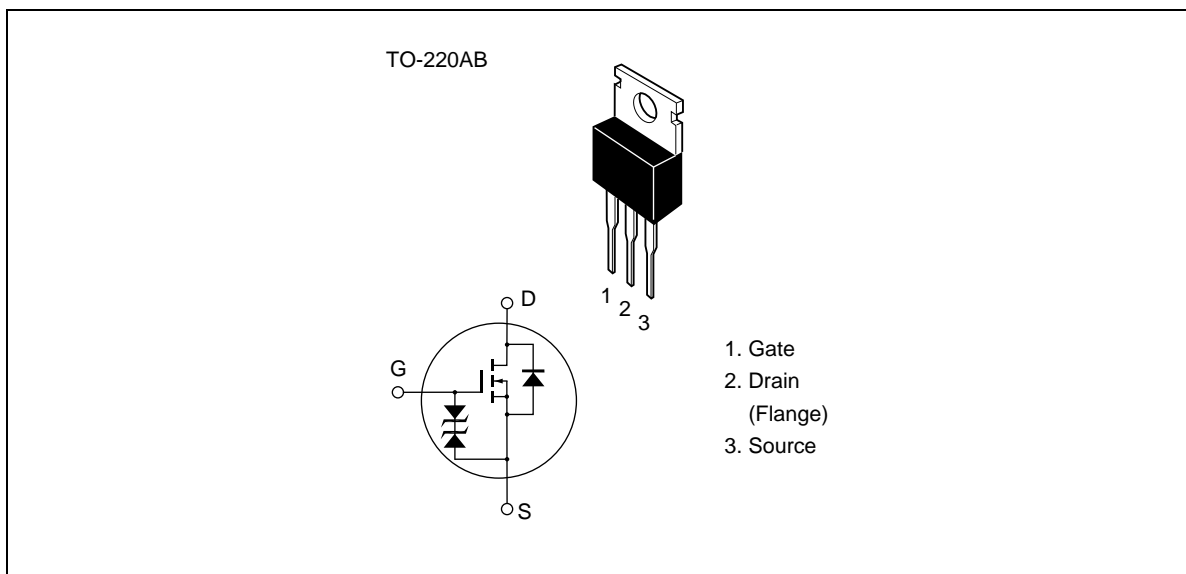
### Application

High speed power switching

### Features

- Low on-resistance
- Built-in fast recovery diode ( $t_r = 120$  ns typ)
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for switching regulator, Motor control

### Outline



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### 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	$I_D$	7	A
Drain peak current	$I_{D(pulse)}^{*1}$	21	A
Body to drain diode reverse drain current	$I_{DR}$	7	A
Channel dissipation	$P_{ch}^{*2}$	60	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

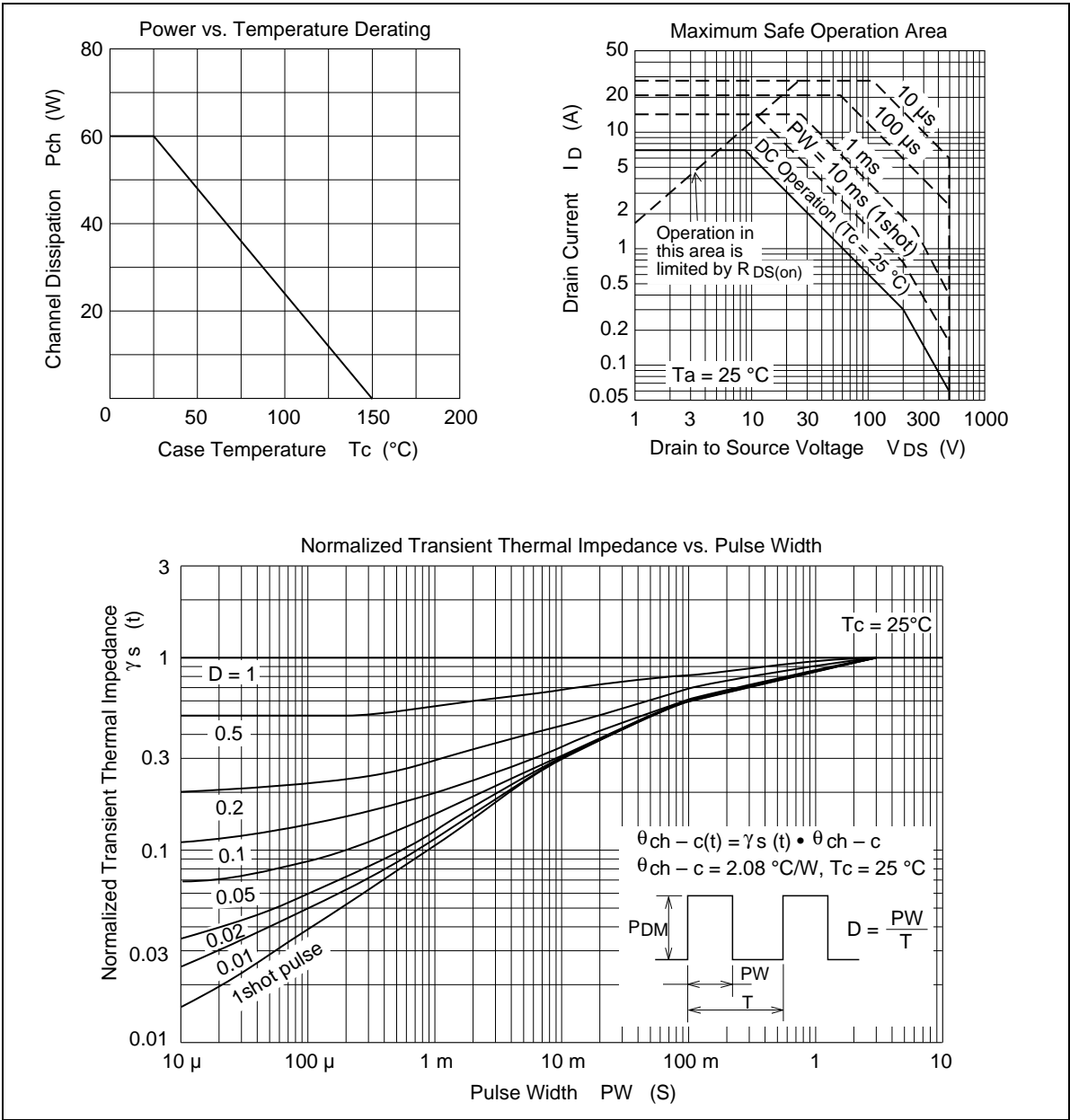
Notes 1.  $PW \leq 10 \mu s$ , duty cycle  $\leq 1 \%$   
2. Value at  $T_c = 25 \text{ }^\circ\text{C}$

## Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	500	—	—	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	$\pm 30$	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}, V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 10$	$\mu\text{A}$	$V_{GS} = \pm 25 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	250	$\mu\text{A}$	$V_{DS} = 400 \text{ V}, V_{GS} = 0$
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	$R_{DS(on)}$	—	0.7	0.9	$\Omega$	$I_D = 4 \text{ A}$ $V_{GS} = 10 \text{ V}^{*1}$
Forward transfer admittance	$ y_{fs} $	3.5	6.0	—	S	$I_D = 4 \text{ A}$ $V_{DS} = 10 \text{ V}^{*1}$
Input capacitance	Ciss	—	1100	—	pF	$V_{DS} = 10 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	Coss	—	310	—	pF	
Reverse transfer capacitance	Crss	—	50	—	pF	
Turn-on delay time	$t_{d(on)}$	—	15	—	ns	$I_D = 4 \text{ A}$ $V_{GS} = 10 \text{ V}$ $R_L = 7.5 \text{ }\Omega$
Rise time	$t_r$	—	55	—	ns	
Turn-off delay time	$t_{d(off)}$	—	100	—	ns	
Fall time	$t_f$	—	48	—	ns	
Body to drain diode forward voltage	$V_{DF}$	—	0.9	—	V	$I_F = 7 \text{ A}, V_{GS} = 0$
Body to drain diode reverse recovery time	$t_{rr}$	—	120	—	ns	$I_F = 7 \text{ A}, V_{GS} = 0,$ $diF / dt = 100 \text{ A} / \mu\text{s}$

Note 1. Pulse Test

See characteristic curves of 2SK1516



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