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# 2SK2586

Silicon N-Channel MOS FET

## HITACHI

November 1996

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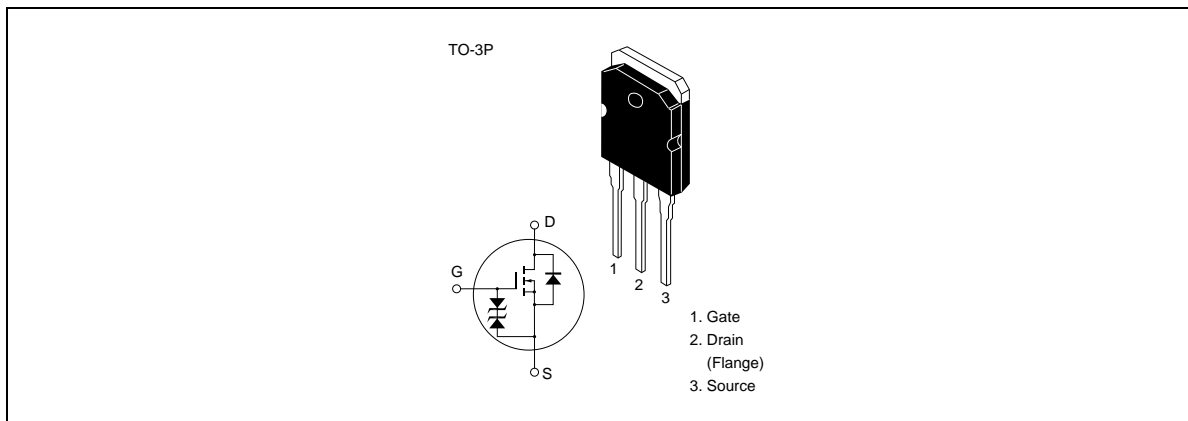
### Application

High speed power switching

### Features

- Low on-resistance
- $R_{DS(on)} = 7 \text{ m}\Omega$  typ.
- High speed switching
- 4 V gate drive device can be driven from 5 V source

### Outline



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

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	60	V
Gate to source voltage	$V_{GSS}$	$\pm 20$	V
Drain current	$I_D^{*2}$	60	A
Drain peak current	$I_{D(pulse)}^{*1}$	240	A
Body to drain diode reverse drain current	$I_{DR}^{*2}$	60	A
Avalanche current	$I_{AP}^{*3}$	45	A
Avalanche energy	$E_{AR}^{*3}$	174	mJ
Channel dissipation	$P_{ch}^{*2}$	125	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

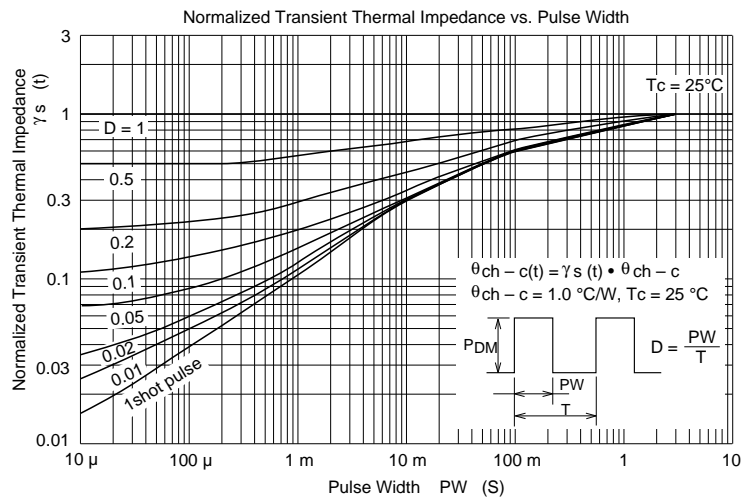
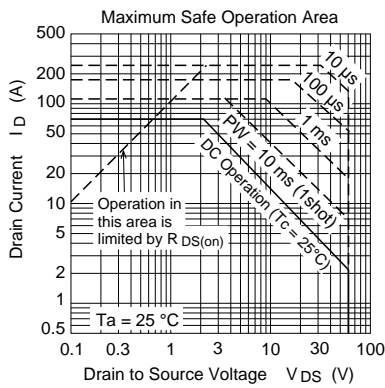
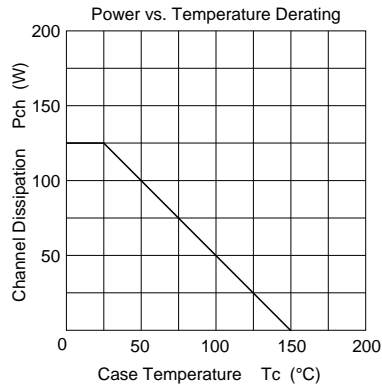
Notes 1.  $PW \leq 10 \mu s$ , duty cycle  $\leq 1 \%$   
2. Value at  $T_c = 25^\circ C$   
3. Value at  $T_{ch} = 25^\circ C$ ,  $R_g \geq 50 \Omega$

**Electrical Characteristics (Ta = 25°C)**

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	60	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	$\pm 20$	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$ , $V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 10$	$\mu\text{A}$	$V_{GS} = \pm 16 \text{ V}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	100	$\mu\text{A}$	$V_{DS} = 60 \text{ V}$ , $V_{GS} = 0$
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	$R_{DS(on)}$	—	7	10	$\text{m}\Omega$	$I_D = 30 \text{ A}$ $V_{GS} = 10 \text{ V}^{*1}$
		—	10	16	$\text{m}\Omega$	$I_D = 30 \text{ A}$ $V_{GS} = 4 \text{ V}^{*1}$
Forward transfer admittance	$ y_{fs} $	35	60	—	S	$I_D = 30 \text{ A}$ $V_{DS} = 10 \text{ V}^{*1}$
Input capacitance	$C_{iss}$	—	3550	—	pF	$V_{DS} = 10 \text{ V}$
Output capacitance	$C_{oss}$	—	1760	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	$C_{rss}$	—	500	—	pF	$f = 1 \text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	35	—	ns	$I_D = 30 \text{ A}$
Rise time	$t_r$	—	260	—	ns	$V_{GS} = 10 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	480	—	ns	$R_L = 1.0 \text{ }\Omega$
Fall time	$t_f$	—	370	—	ns	
Body to drain diode forward voltage	$V_{DF}$	—	0.94	—	V	$I_F = 60 \text{ A}$ , $V_{GS} = 0$
Body to drain diode reverse recovery time	$t_{rr}$	—	140	—	ns	$I_F = 60 \text{ A}$ , $V_{GS} = 0$ $diF / dt = 50 \text{ A} / \mu\text{s}$

Note 1. Pulse Test

See characteristic curves of 2SK2529.



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