
2SK2096

Silicon N-Channel MOS FET

HITACHI

Application

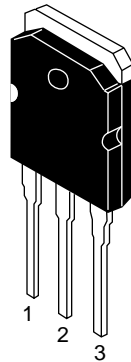
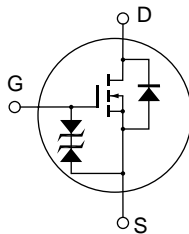
High speed power switching

Features

- Low on-resistance
- High speed switching
- Low drive current
- 4 V gate drive device can be driven from 5 V source
- Suitable for switching regulator, DC-DC converter
- Avalanche ratings

Outline

TO-3P



1. Gate
2. Drain
(Flange)
3. Source

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

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	60	V
Gate to source voltage	V_{GSS}	± 20	V
Drain current	I_D	45	A
Drain peak current	$I_{D(pulse)}^{*1}$	180	A
Body to drain diode reverse drain current	I_{DR}	45	A
Avalanche current	I_{AP}^{*3}	45	A
Avalanche energy	E_{AR}^{*3}	173	mJ
Channel dissipation	P_{ch}^{*2}	100	W
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

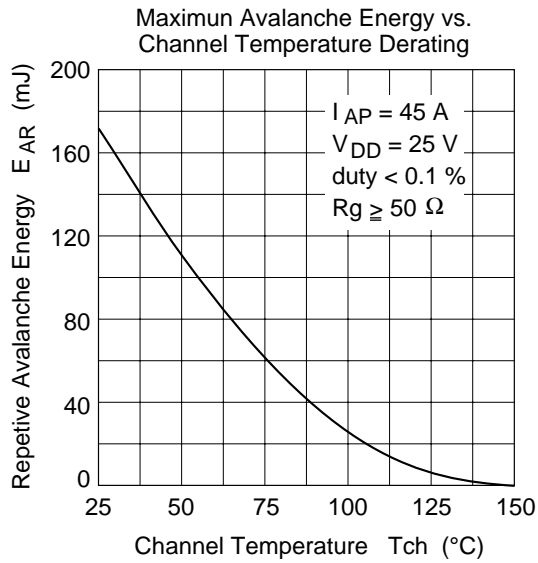
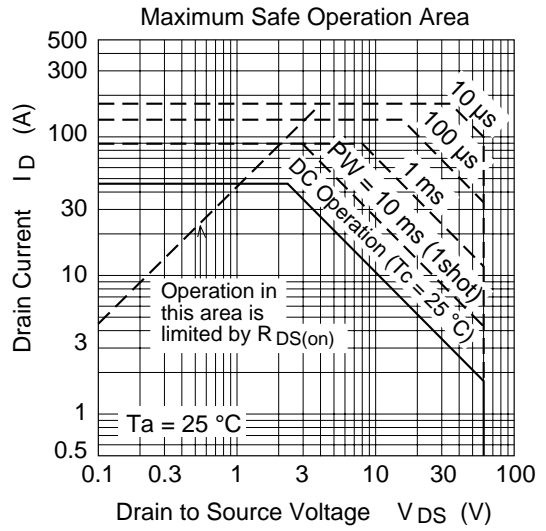
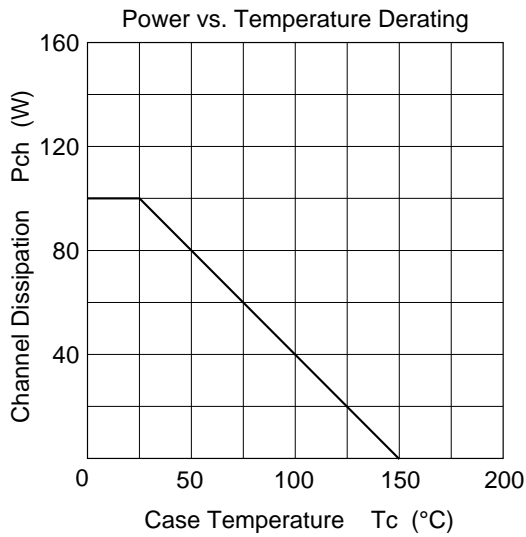
- Notes
1. $PW \leq 10 \mu\text{s}$, duty cycle $\leq 1 \%$
 2. Value at $T_c = 25^\circ\text{C}$
 3. Value at $T_{ch} = 25^\circ\text{C}$, $R_g \geq 50 \Omega$

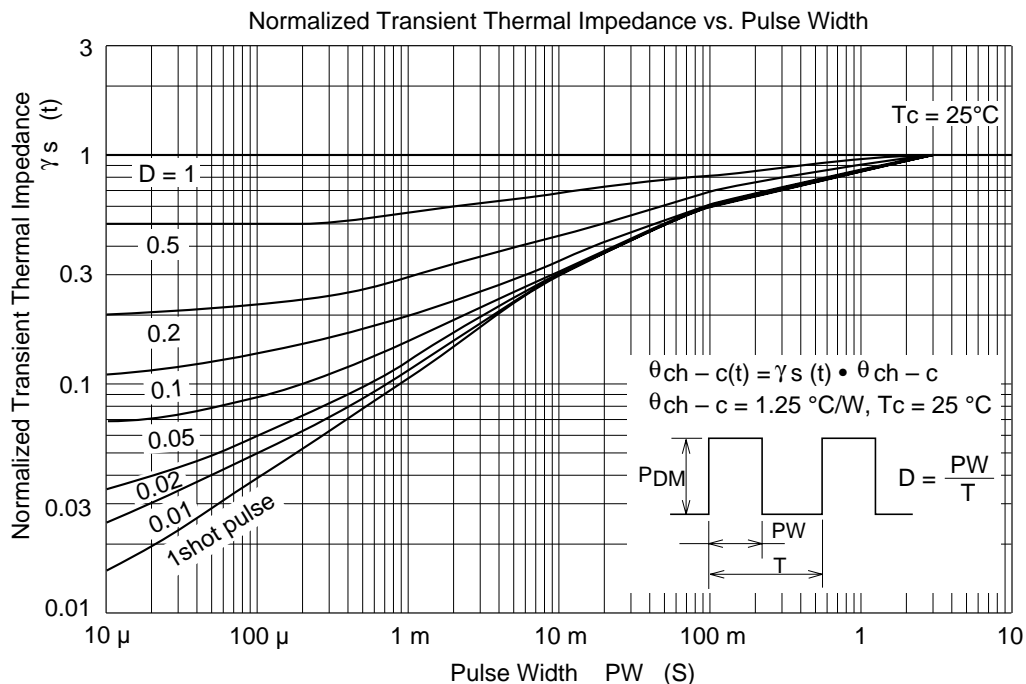
Electrical Characteristics (Ta = 25°C)

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	$V_{(BR)GSS}$	± 20	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}, V_{DS} = 0$
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	$V_{DS} = 50 \text{ V}, V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.25	V	$I_D = 1 \text{ mA}, V_{DS} = 10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.018	0.022	Ω	$I_D = 25 \text{ A}$ $V_{GS} = 10 \text{ V}^{*1}$
		—	0.023	0.028	Ω	$I_D = 25 \text{ A}$ $V_{GS} = 4 \text{ V}^{*1}$
Forward transfer admittance	$ y_{fs} $	25	37	—	S	$I_D = 25 \text{ A}$ $V_{DS} = 10 \text{ V}^{*1}$
Input capacitance	C_{iss}	—	3530	—	pF	$V_{DS} = 10 \text{ V}$
Output capacitance	C_{oss}	—	1480	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	300	—	pF	$f = 1 \text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	33	—	ns	$I_D = 25 \text{ A}$
Rise time	t_r	—	160	—	ns	$V_{GS} = 10 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	450	—	ns	$R_L = 1.5 \text{ }\Omega$
Fall time	t_f	—	230	—	ns	
Body to drain diode forward voltage	V_{DF}	—	1.3	—	V	$I_F = 45 \text{ A}, V_{GS} = 0$
Body to drain diode reverse recovery time	t_{rr}	—	130	—	ns	$I_F = 45 \text{ A}, V_{GS} = 0,$ $di_F / dt = 50 \text{ A} / \mu\text{s}$

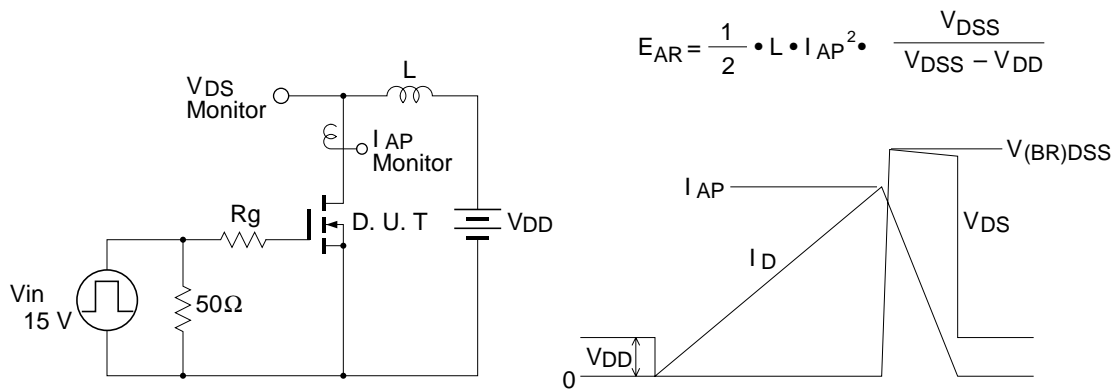
Note 1. Pulse Test

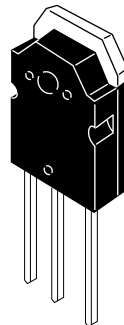
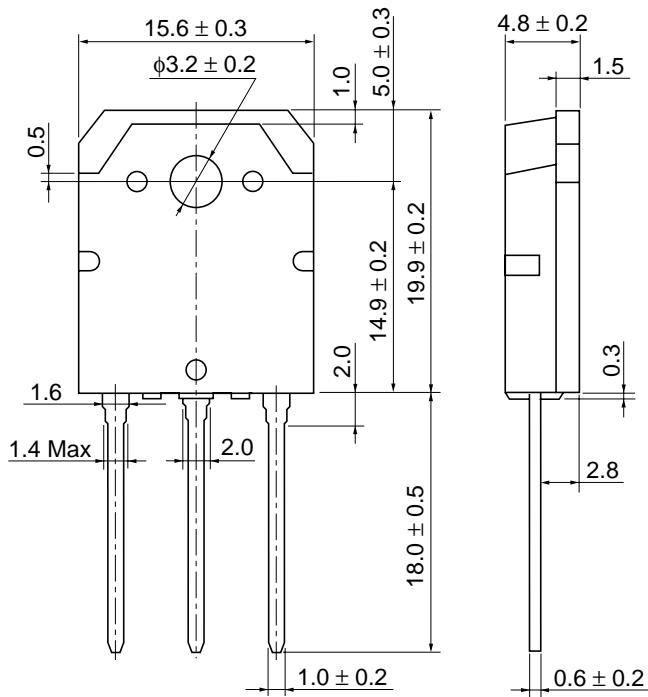
See characteristic curve of 2SK1911.





Avalanche Test Circuit and Waveform





Hitachi Code	TO-3P
JEDEC	—
EIAJ	Conforms
Weight (reference value)	5.0 g

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