2SK2727

Silicon N Channel MOS FET
High Speed Power Switching

HITACHI

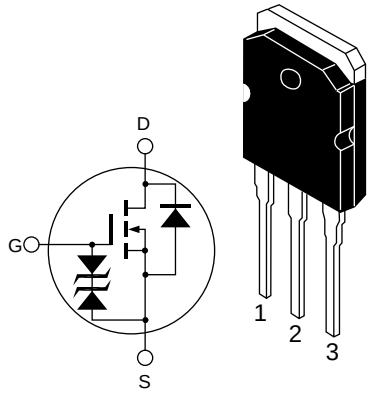
ADE-208-526 A
2nd. Edition

Features

- Low on-resistance
- High speed switching
- Low drive current
- Avalanche ratings

Outline

TO–3P



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

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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	10	A
Drain peak current	$I_{D(pulse)}$*[1]	40	A
Body to drain diode reverse drain current	I_{DR}	10	A
Avalanche current	I_{AP}*[3]	10	A
Avalanche energy	E_{AR}*[3]	5.55	mJ
Channel dissipation	Pch*[2]	100	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

Notes: 1. PW ≤ 10μs, duty cycle ≤ 1 %
2. Value at Tc = 25°C
3. Value at Tch = 25°C, Rg ≥ 50Ω

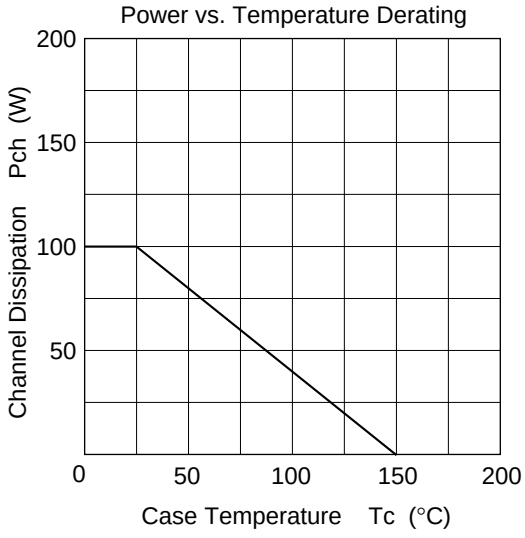
Electrical Characteristics (Ta = 25°C)

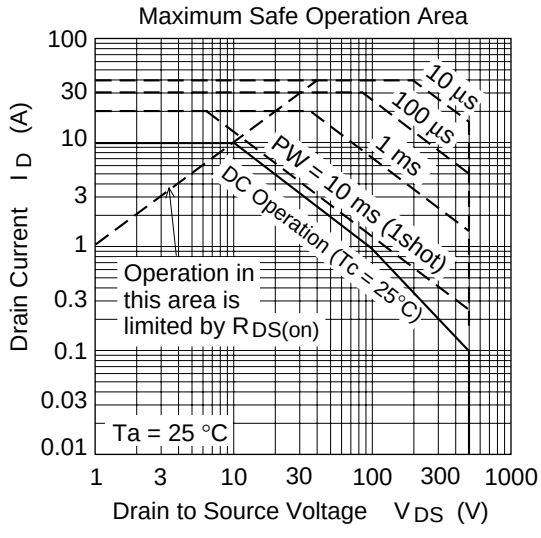
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	500	—	—	V	I_D = 10mA, V_{GS} = 0
Gate to source breakdown voltage	$V_{(BR)GSS}$	±30	—	—	V	I_G = ±100µA, V_{DS} = 0
Gate to source leak current	I_{GSS}	—	—	±10	µA	V_{GS} = ±25V, V_{DS} = 0
Zero gate voltege drain current	I_{DSS}	—	—	10	µA	V_{DS} = 500 V, V_{GS} = 0
Gate to source cutoff voltage	$V_{GS(off)}$	2.5	—	3.5	V	I_D = 1mA, V_{DS} = 10V*[1]
Static drain to source on state resistance	$R_{DS(on)}$	—	0.75	0.95	Ω	I_D = 5A, V_{GS} = 10V*[1]
Forward transfer admittance	$\|y_{fs}\|$	4.2	7.0	—	S	I_D = 5A, V_{DS} = 10V*[1]
Input capacitance	Ciss	—	1100	—	pF	V_{DS} = 10V
Output capacitance	Coss	—	330	—	pF	V_{GS} = 0
Reverse transfer capacitance	Crss	—	65	—	pF	f = 1MHz
Total gate charge	Qg	—	21	—	nc	V_{DD} = 400V
Gate to source charge	Qgs	—	5	—	nc	V_{GS} = 10V
Gate to drain charge	Qgd	—	8	—	nc	I_D = 10A
Turn-on delay time	$t_{d(on)}$	—	20	—	ns	V_{GS} = 10V, I_D = 5A
Rise time	t_r	—	70	—	ns	R_L = 6Ω
Turn-off delay time	$t_{d(off)}$	—	55	—	ns	
Fall time	t_f	—	50	—	ns	
Body to drain diode forward voltage	V_{DF}	—	1.0	—	V	I_D = 10A, V_{GS} = 0
Body to drain diode reverse recovery time	t_{rr}	—	300	—	ns	I_F = 10A, V_{GS} = 0 diF/ dt = 100A/µs

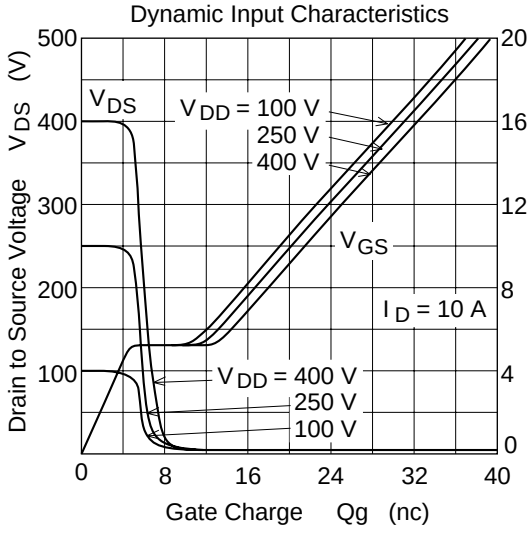
Note: 1. Pulse test

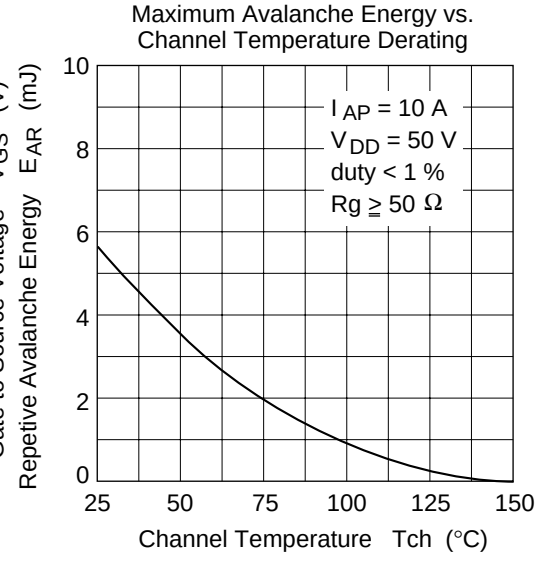
See characteristics curves of 2SK2726

Main Characteristics

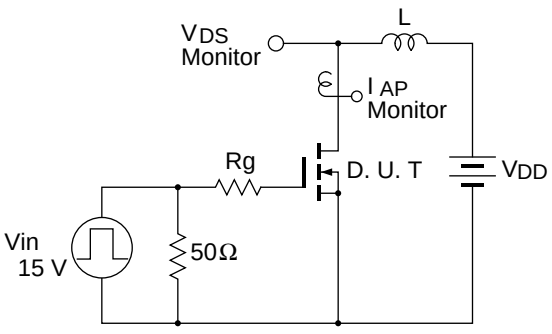






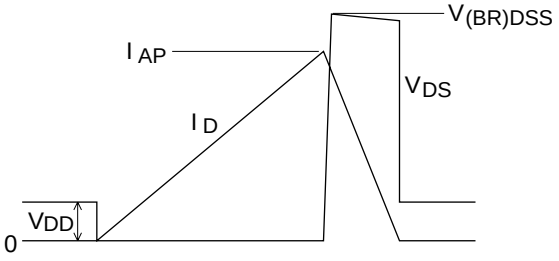


Avalanche Test Circuit

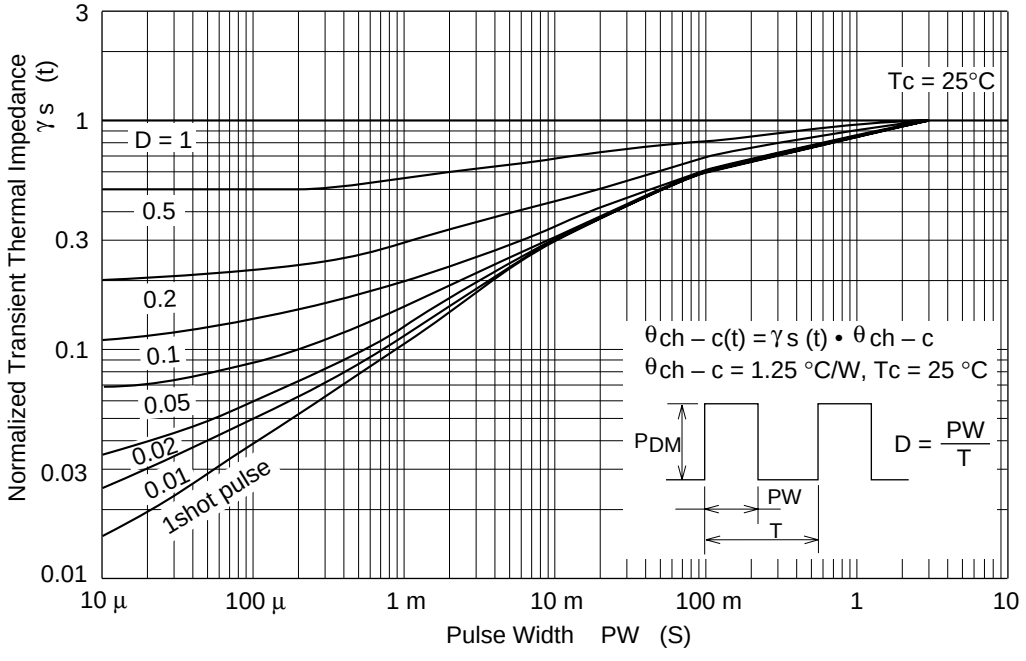


Avalanche Waveform

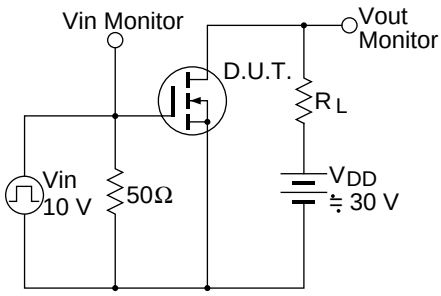
$$E_{AR} = \frac{1}{2} \bullet L \bullet I_{AP}^{2} \bullet \frac{V_{DSS}}{V_{DSS} - V_{DD}}$$



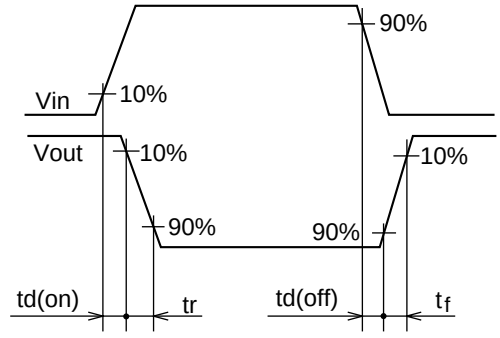
Normalized Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit

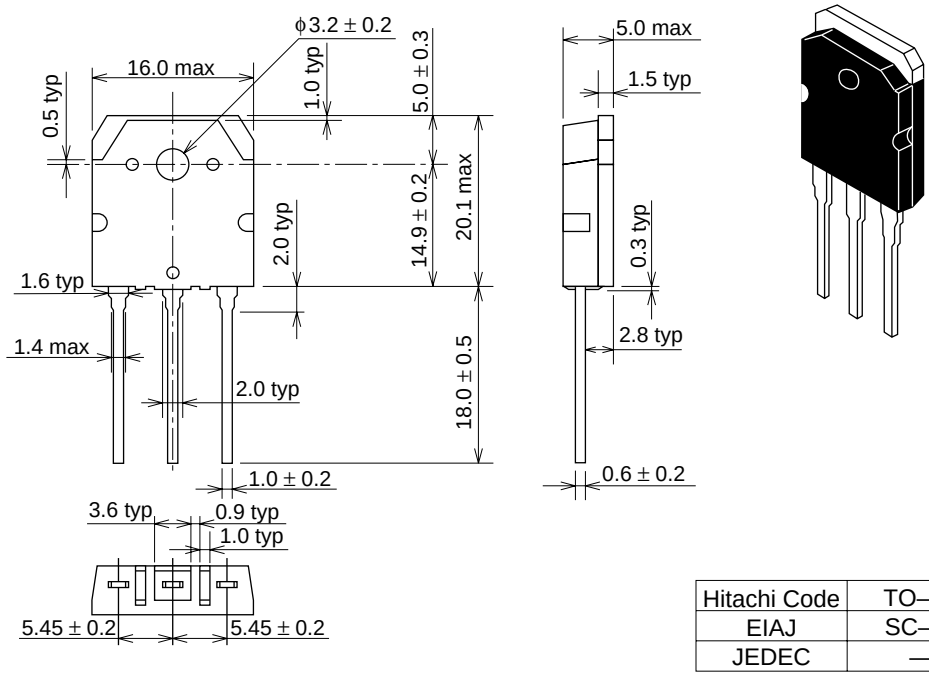


Switching Time Waveforms



Package Dimensions

Unit: mm



Hitachi Code	TO–3P
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