2SK2828

Silicon N Channel MOS FET
High Speed Power Switching

HITACHI

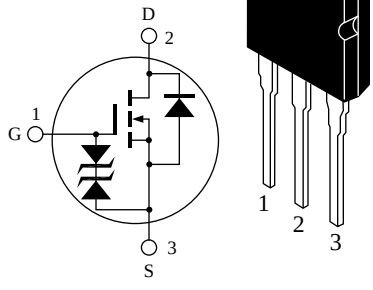
ADE-208-514 C (Z)
4th. Edition
Feb 1999

Features

- Low on-resistance
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for switching regulator and DC–DC converter
- Avalanche ratings

Outline

TO–3P



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

Hitachi semiconductor

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	700	V
Gate to source voltage	V_{GSS}	±30	V
Drain current	I_D	12	A
Drain peak current	$I_{D(pulse)}$*[1]	48	A
Body-drain diode reverse drain current	I_{DR}	12	A
Channel dissipation	Pch*[2]	175	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

Note: 1. PW ≤ 10µs, duty cycle ≤ 1 %
2. Value at Tc = 25°C

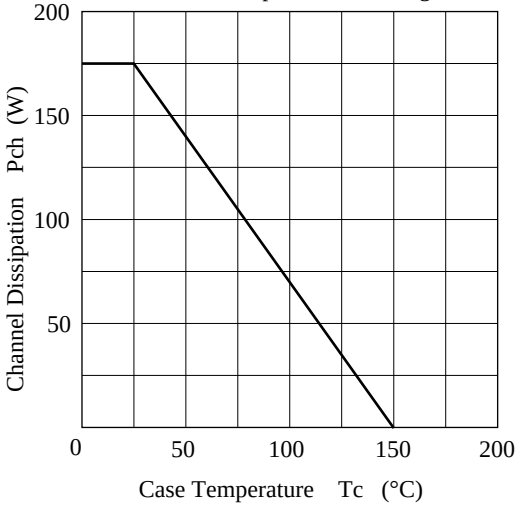
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	700	—	—	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}	—	—	100	µA	V_{DS} = 560 V, V_{GS} = 0
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	—	3.0	V	I_D = 1mA, V_{DS} = 10V*[3]
Static drain to source on state resistance	$R_{DS(on)}$	—	0.9	1.2	Ω	I_D = 6A, V_{GS} = 10V*[3]
Forward transfer admittance	$\|y_{fs}\|$	5.5	9.0	—	S	I_D = 6A, V_{DS} = 10V*[3]
Input capacitance	Ciss	—	1850	—	pF	V_{DS} = 10V
Output capacitance	Coss	—	400	—	pF	V_{GS} = 0
Reverse transfer capacitance	Crss	—	45	—	pF	f = 1MHz
Total gate charge	Qg	—	35	—	nc	V_{DD} = 400V
Gate to source charge	Qgs	—	8	—	nc	V_{GS} = 10V
Gate to drain charge	Qgd	—	10	—	nc	I_D = 12A
Turn-on delay time	$t_{d(on)}$	—	25	—	ns	I_D = 6A, R_L = 5Ω
Rise time	t_r	—	65	—	ns	V_{GS} = 10V
Turn-off delay time	$t_{d(off)}$	—	140	—	ns	
Fall time	t_f	—	55	—	ns	
Body–drain diode forward voltage	V_{DF}	—	0.95	—	V	I_F = 12A, V_{GS} = 0
Body–drain diode reverse recovery time	t_{rr}	—	2.5	—	µs	I_F = 12A, V_{GS} = 0 diF/ dt =100A/µs

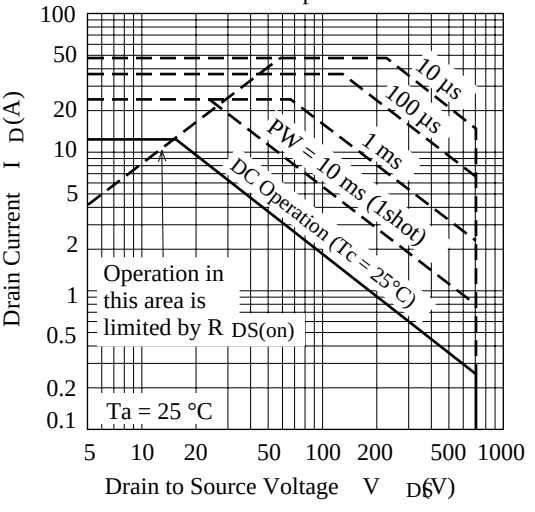
Note: 3. Pulse test

Main Characteristics

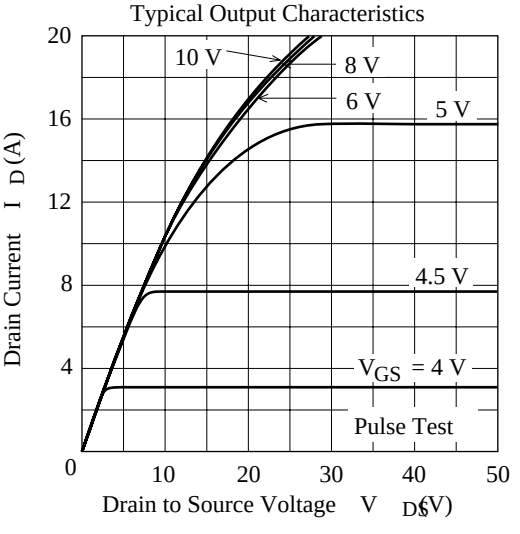
Power vs. Temperature Derating



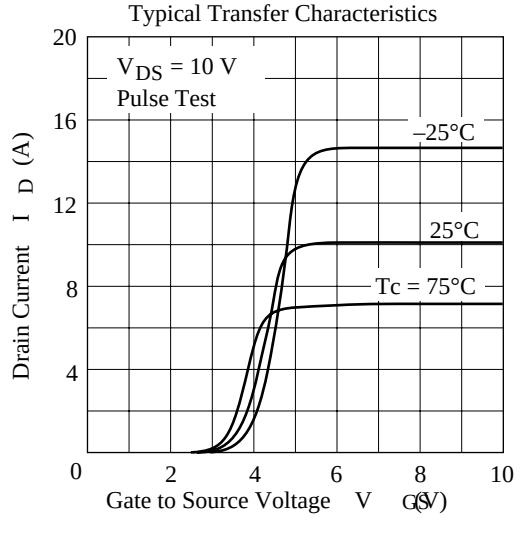
Maximum Safe Operation Area



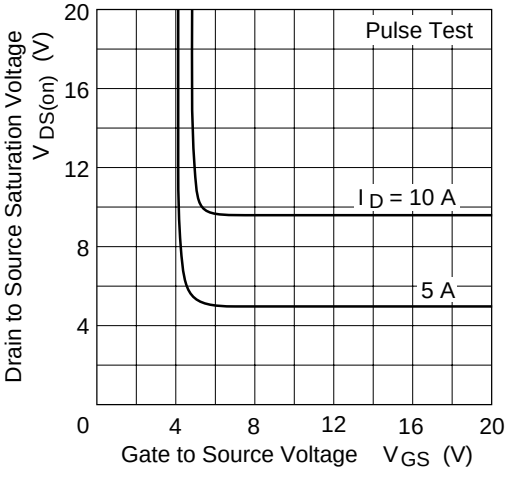
Typical Output Characteristics



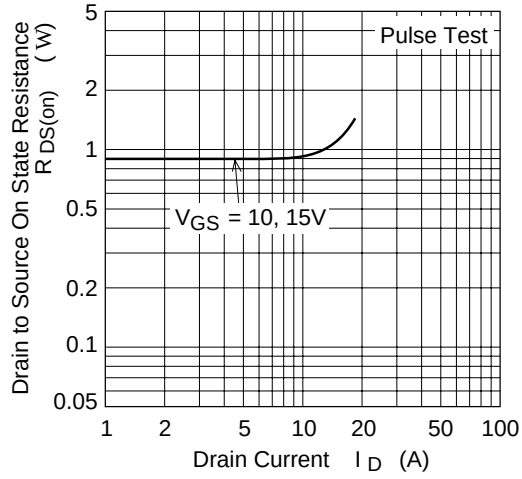
Typical Transfer Characteristics



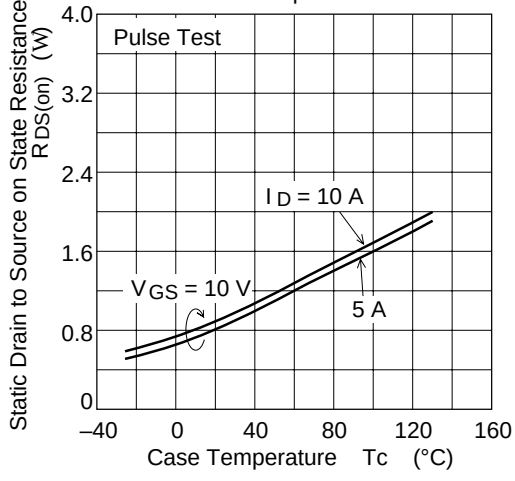
Drain to Source Saturation Voltage vs. Gate to Source Voltage



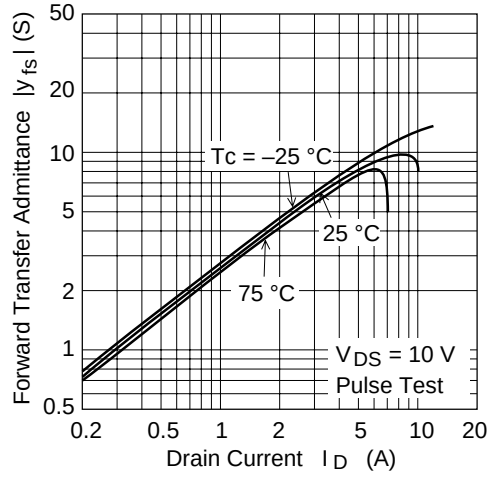
Static Drain to Source on State Resistance vs. Drain Current



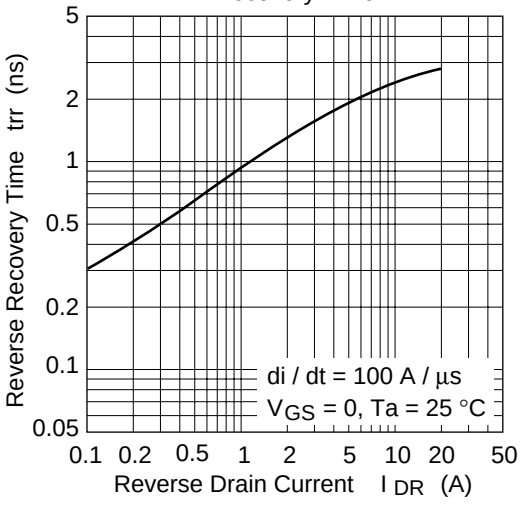
Static Drain to Source on State Resistance vs. Temperature



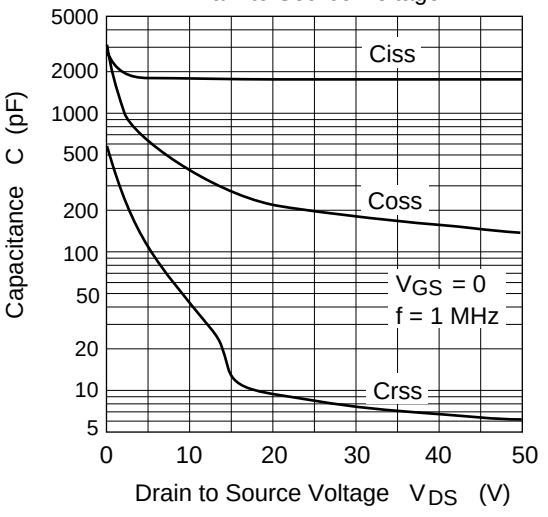
Forward Transfer Admittance vs. Drain Current



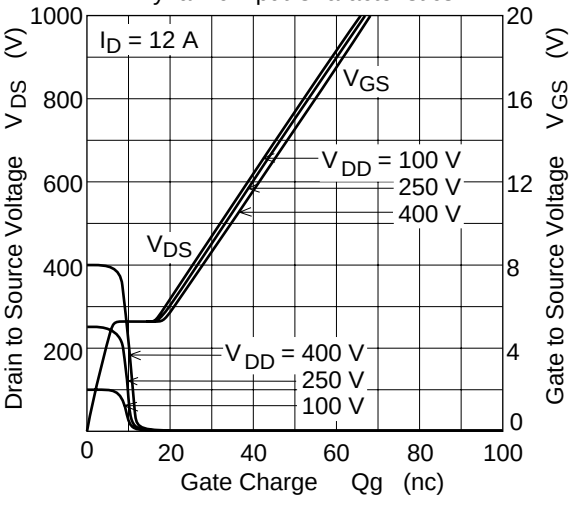
Body–Drain Diode Reverse Recovery Time



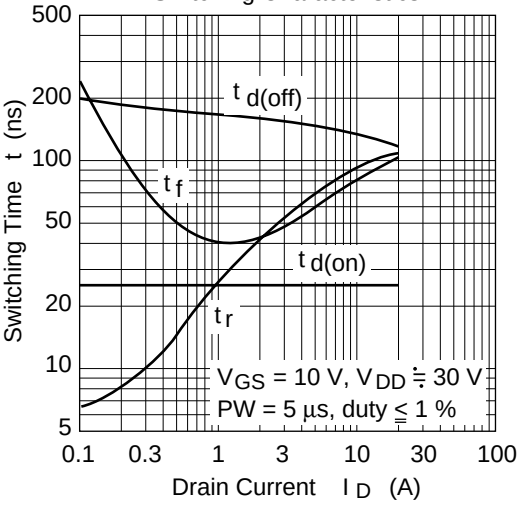
Typical Capacitance vs. Drain to Source Voltage



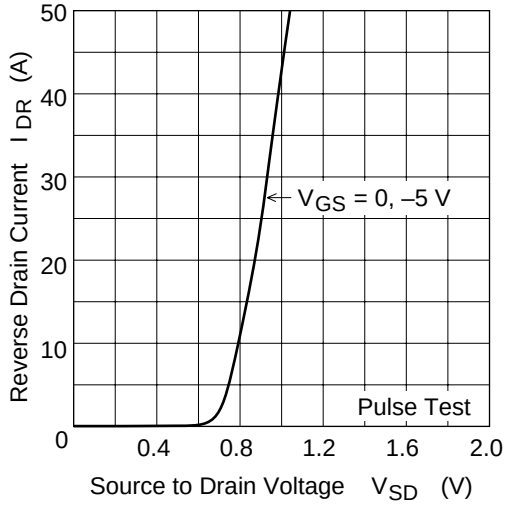
Dynamic Input Characteristics



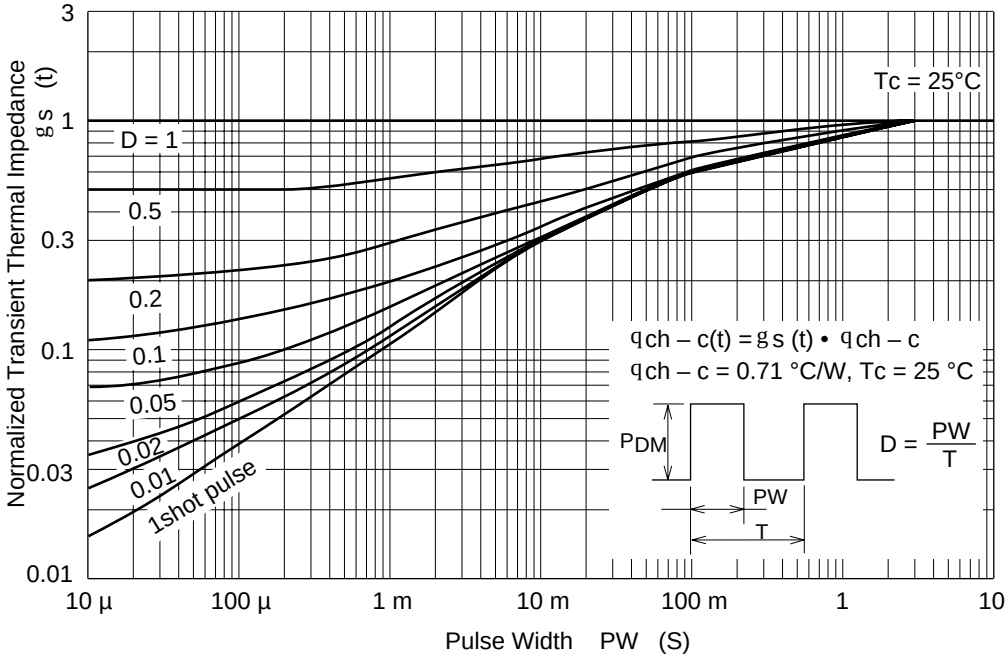
Switching Characteristics



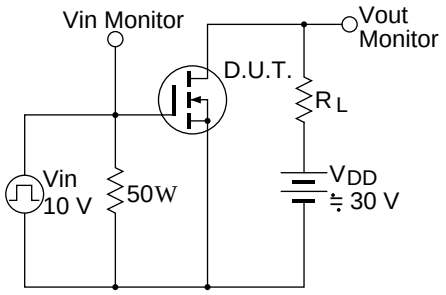
Reverse Drain Current vs.
Source to Drain Voltage



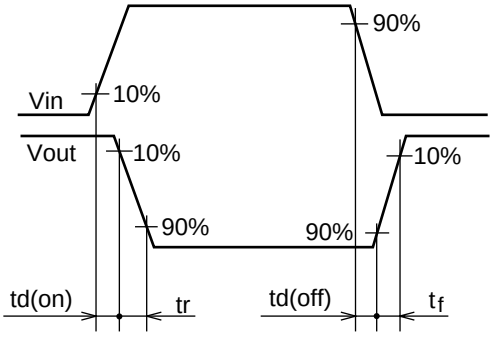
Normalized Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit

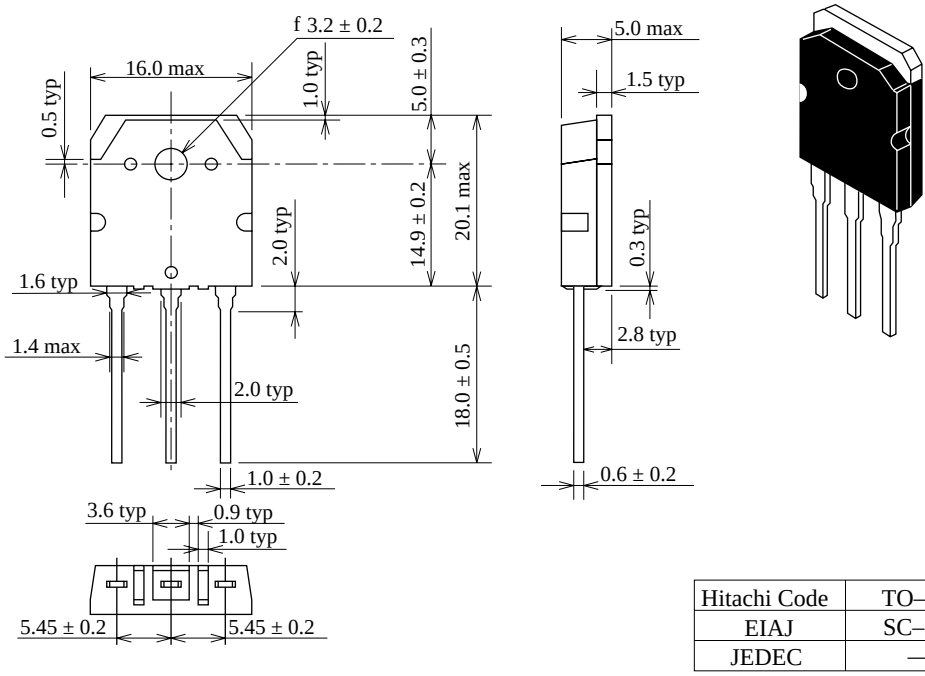


Switching Time Waveform



Package Dimentions

Unit: mm



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