

2SK2828

Silicon N Channel MOS FET
High Speed Power Switching

HITACHI

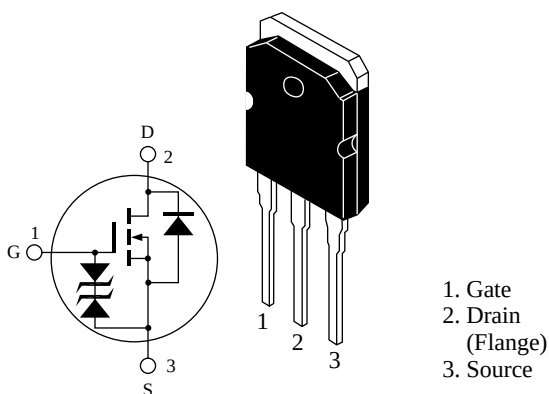
ADE-208-514C (Z)
4th. Edition
Mar. 2001

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

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

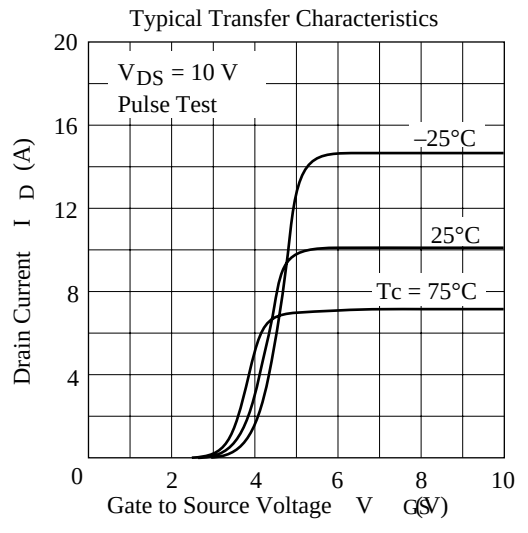
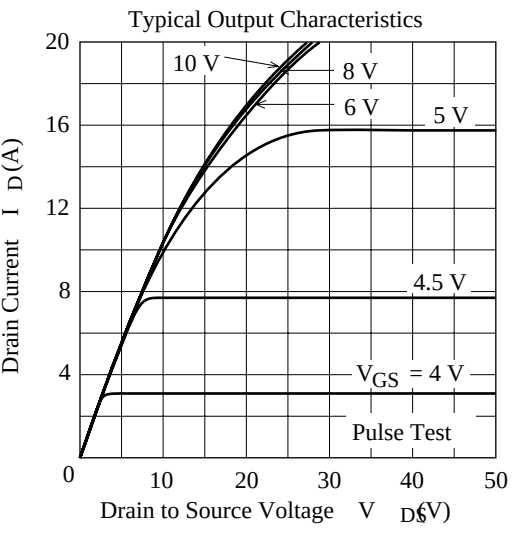
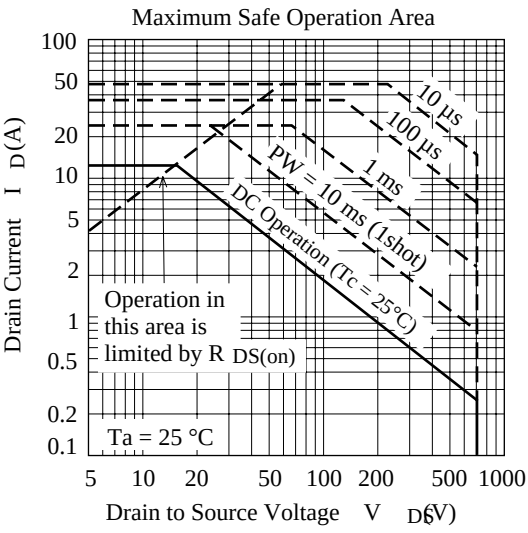
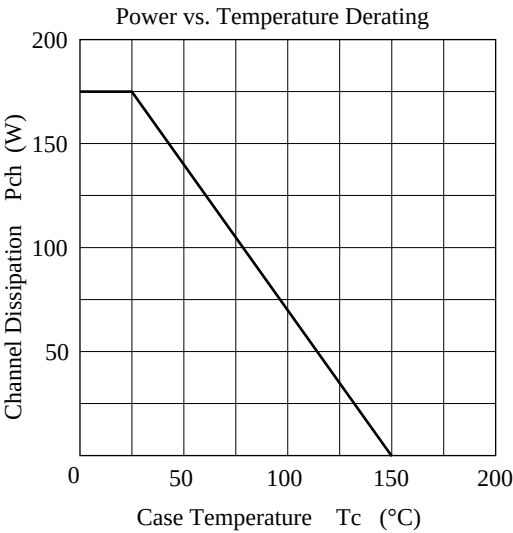
Note: 1. PW ≤ 10μs, duty cycle ≤ 1 %
2. Value at Tc = 25°C

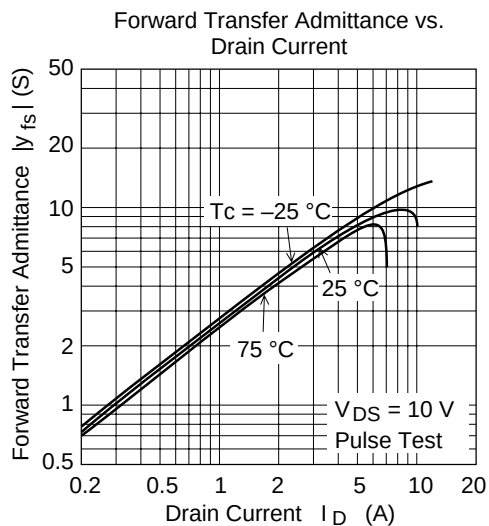
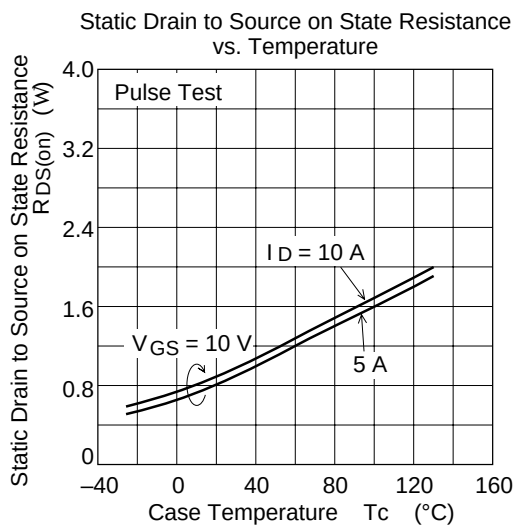
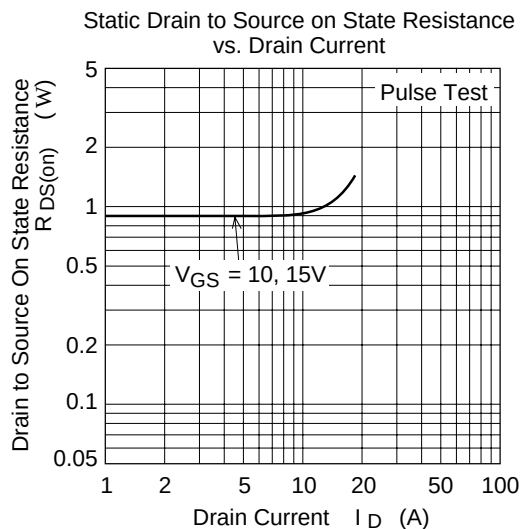
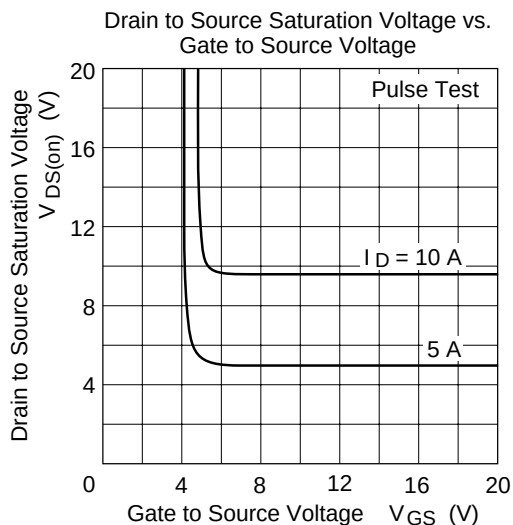
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	700	—	—	V	$I_D = 10\text{mA}$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	± 30	—	—	V	$I_G = \pm 100\mu\text{A}$, $V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 25\text{V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	100	μA	$V_{DS} = 560\text{V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	—	3.0	V	$I_D = 1\text{mA}$, $V_{DS} = 10\text{V}^{*3}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.9	1.2	Ω	$I_D = 6\text{A}$, $V_{GS} = 10\text{V}^{*3}$
Forward transfer admittance	$ y_{fs} $	5.5	9.0	—	S	$I_D = 6\text{A}$, $V_{DS} = 10\text{V}^{*3}$
Input capacitance	C_{iss}	—	1850	—	pF	$V_{DS} = 10\text{V}$
Output capacitance	C_{oss}	—	400	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	45	—	pF	$f = 1\text{MHz}$
Total gate charge	Q_g	—	35	—	nc	$V_{DD} = 400\text{V}$
Gate to source charge	Q_{gs}	—	8	—	nc	$V_{GS} = 10\text{V}$
Gate to drain charge	Q_{gd}	—	10	—	nc	$I_D = 12\text{A}$
Turn-on delay time	$t_{d(on)}$	—	25	—	ns	$I_D = 6\text{A}$, $R_L = 5\Omega$
Rise time	t_r	—	65	—	ns	$V_{GS} = 10\text{V}$
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	$I_F = 12\text{A}$, $V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	2.5	—	μs	$I_F = 12\text{A}$, $V_{GS} = 0$ $diF/dt = 100\text{A}/\mu\text{s}$

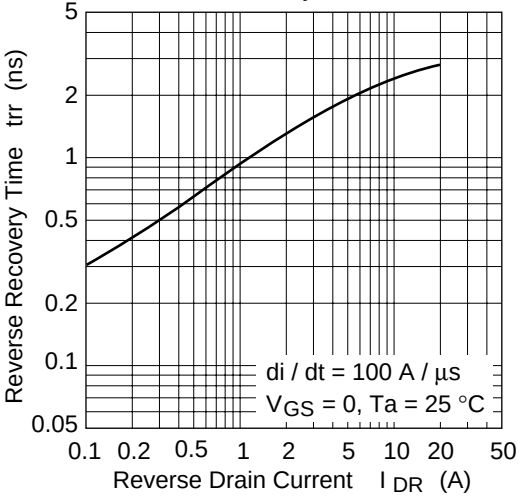
Note: 3. Pulse test

Main Characteristics

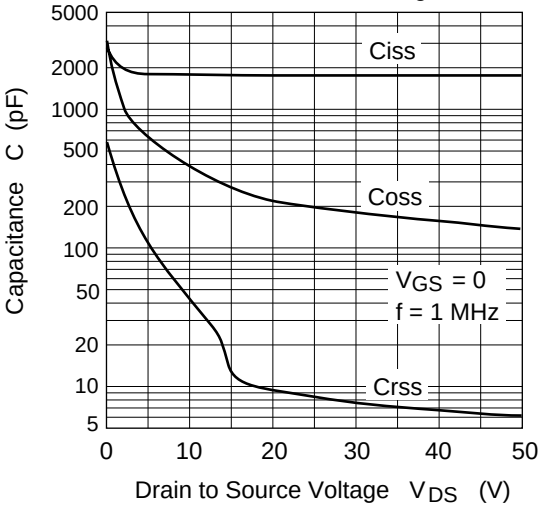




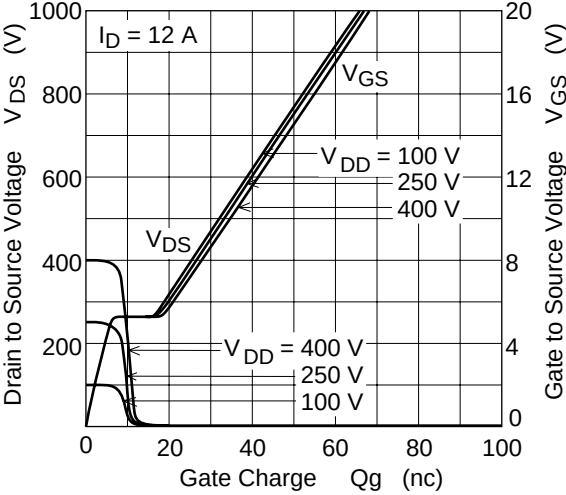
Body-Drain Diode Reverse Recovery Time



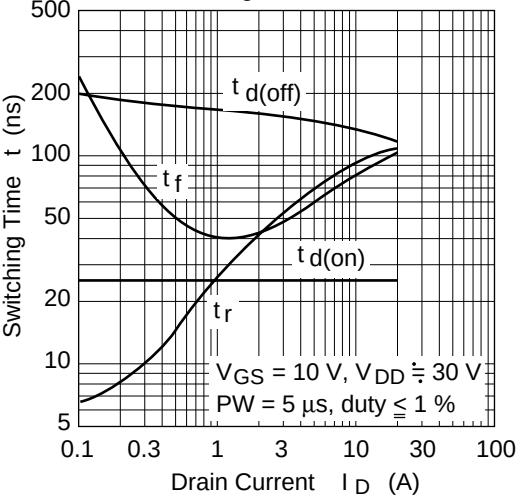
Typical Capacitance vs. Drain to Source Voltage

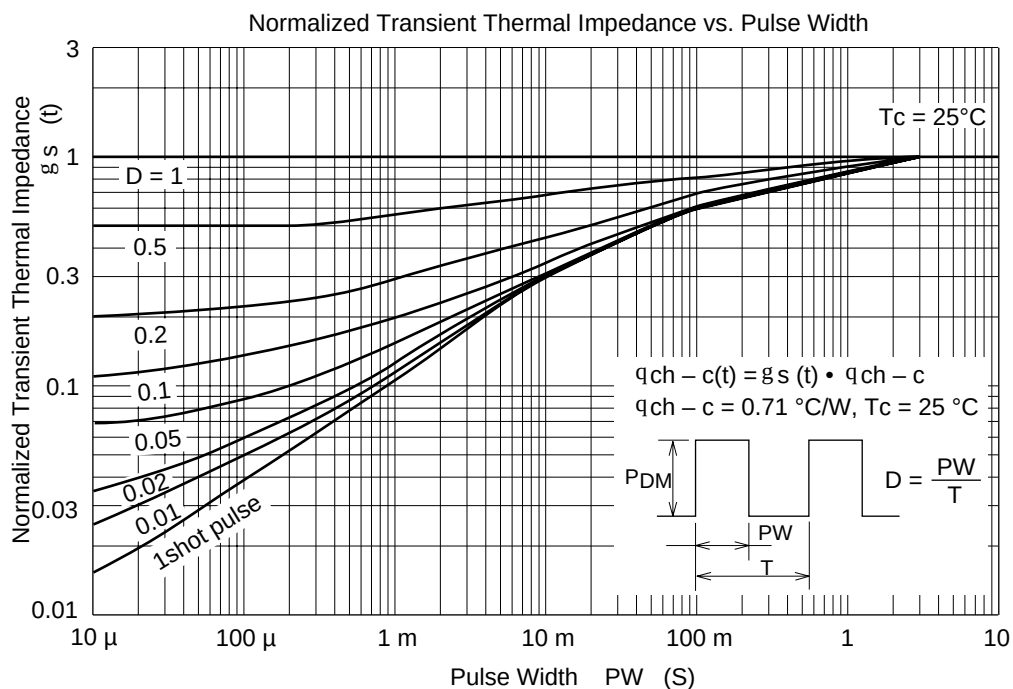
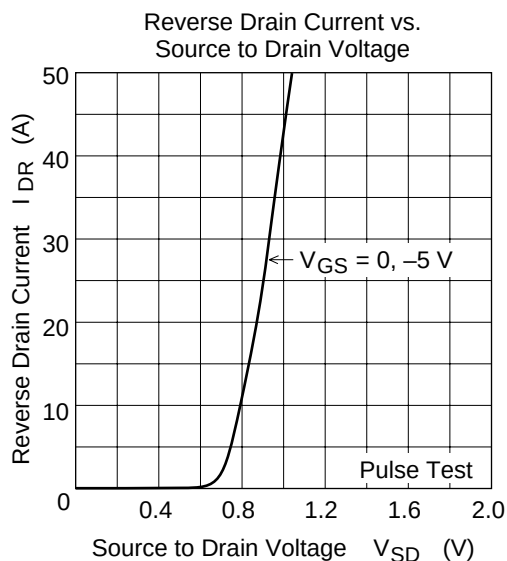


Dynamic Input Characteristics

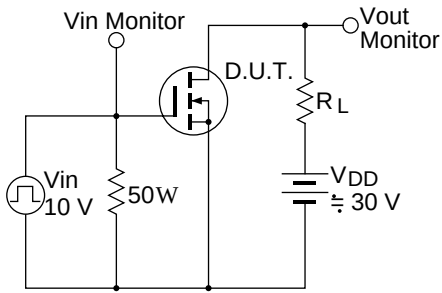


Switching Characteristics

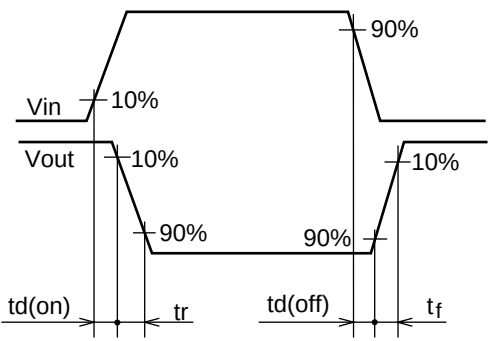




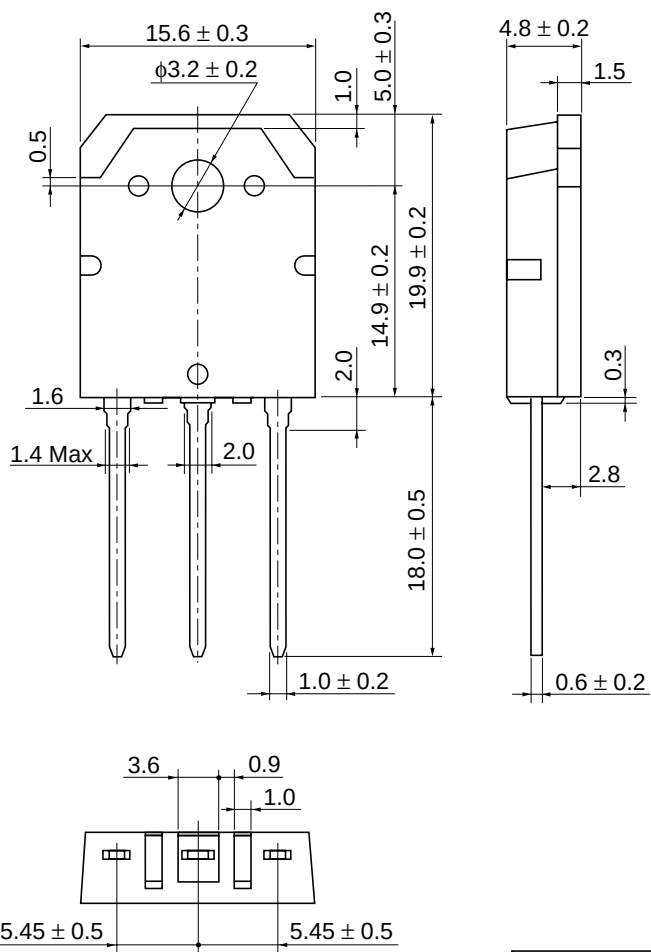
Switching Time Test Circuit



Switching Time Waveform

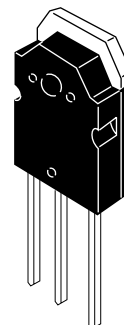


Package Dimensions



As of January, 2001

Unit: mm



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

Cautions

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