

2SK1669

Silicon N-Channel MOS FET

HITACHI

ADE-208-1310 (Z)
1st. Edition
Mar. 2001

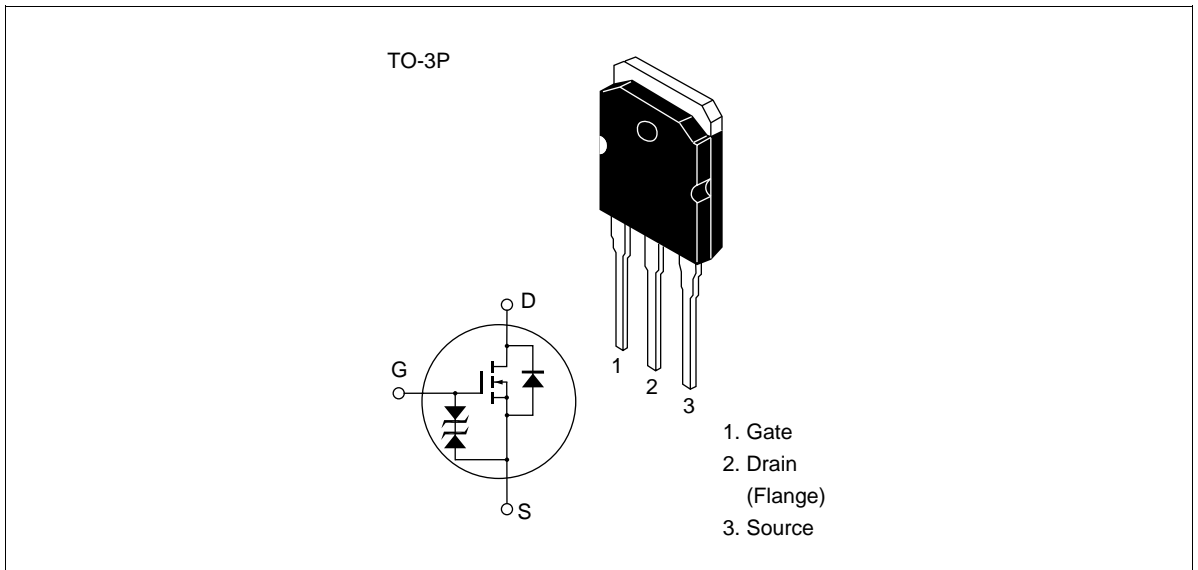
Application

High speed power switching

Features

- Low on-resistance
- High speed switching
- Low drive current
- Built-in fast recovery diode ($t_{rr} = 90$ ns)
- Suitable for motor control, switching regulator and DC – DC converter

Outline



Absolute Maximum Ratings (Ta = 25°C)

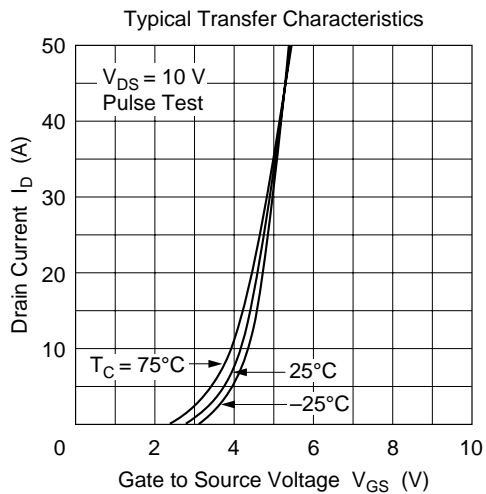
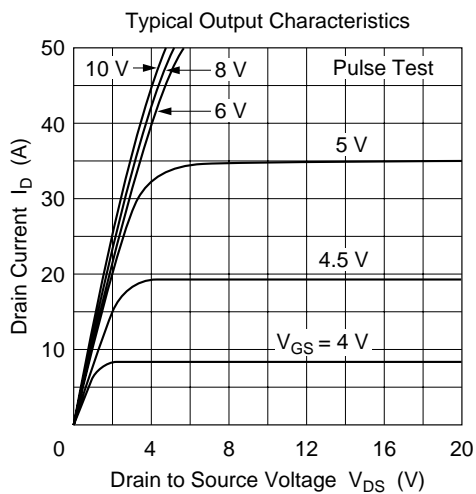
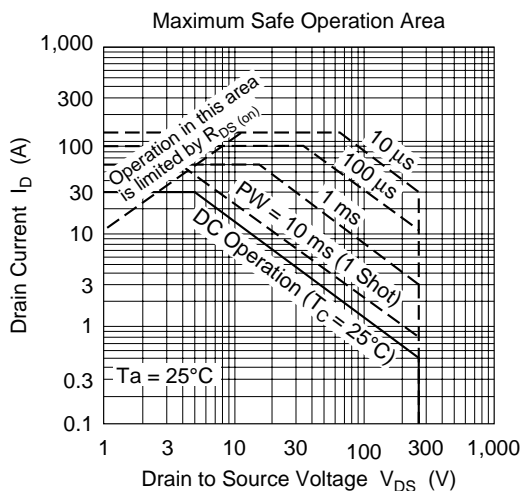
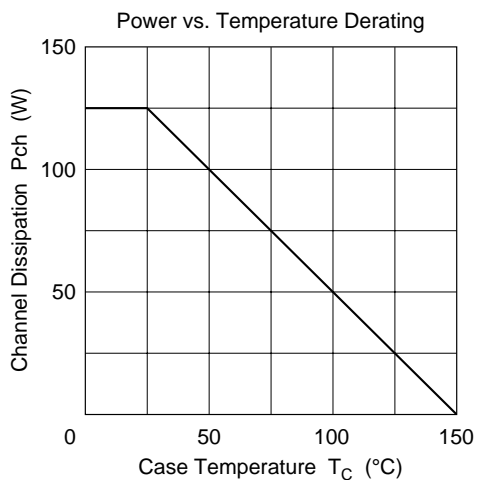
Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	250	V
Gate to source voltage	V_{GSS}	±30	V
Drain current	I_D	30	A
Drain peak current	$I_{D(pulse)}^{*1}$	120	A
Body to drain diode reverse drain current	I_{DR}	30	A
Channel dissipation	Pch^{*2}	125	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

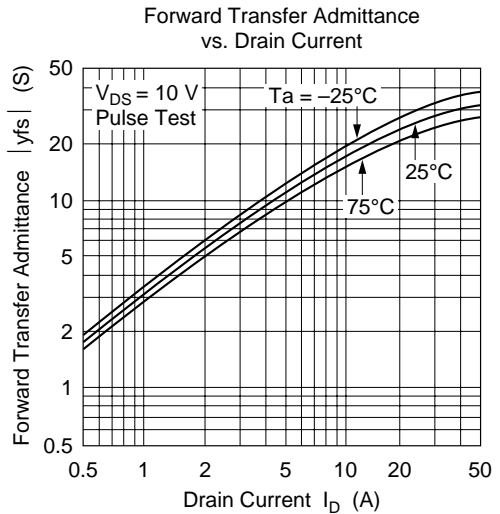
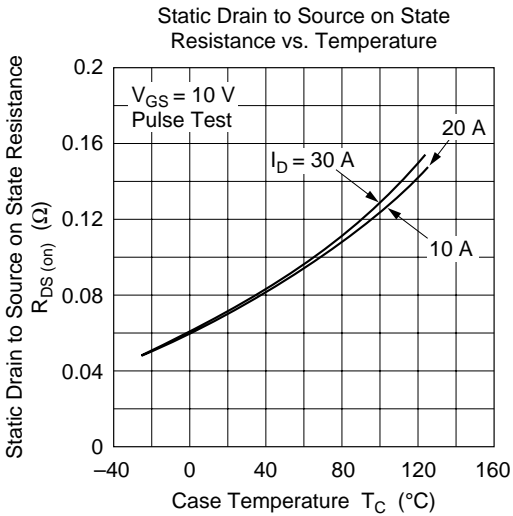
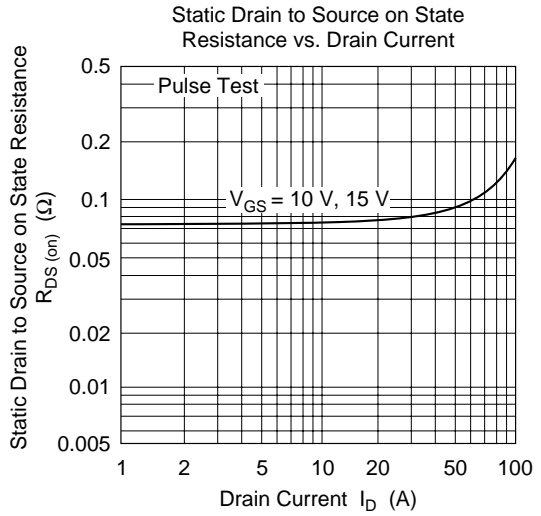
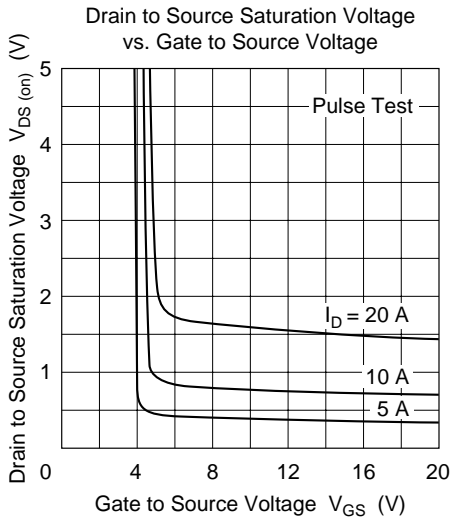
Notes 1. PW 10 μs, duty cycle 1%
 2. Value at T_c = 25°C

Electrical Characteristics (Ta = 25°C)

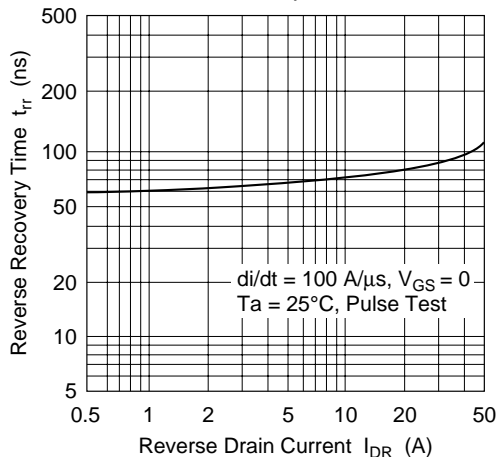
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	250	—	—	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±30	—	—	V	$I_G = \pm 100 \text{ } \mu\text{A}, V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	±10	μA	$V_{GS} = \pm 25 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	250	μA	$V_{DS} = 200 \text{ V}, V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	—	3.0	V	$I_D = 1 \text{ mA}, V_{DS} = 10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.075	0.095		$I_D = 15 \text{ A}, V_{GS} = 10 \text{ V}^{*1}$
Forward transfer admittance	$ y_{fs} $	12	20	—	S	$I_D = 15 \text{ A}, V_{DS} = 10 \text{ V}^{*1}$
Input capacitance	Ciss	—	3100	—	pF	$V_{DS} = 10 \text{ V}, V_{GS} = 0,$
Output capacitance	Coss	—	1330	—	pF	$f = 1 \text{ MHz}$
Reverse transfer capacitance	Crss	—	190	—	pF	
Turn-on delay time	$t_{d(on)}$	—	45	—	ns	$I_D = 15 \text{ A}, V_{GS} = 10 \text{ V},$
Rise time	t_r	—	170	—	ns	$R_L = 2$
Turn-off delay time	$t_{d(off)}$	—	270	—	ns	
Fall time	t_f	—	150	—	ns	
Body to drain diode forward voltage	V_{DF}	—	1.0	—	V	$I_F = 30 \text{ A}, V_{GS} = 0$
Body to drain diode reverse recovery time	t_{rr}	—	90	—	ns	$I_F = 30 \text{ A}, V_{GS} = 0,$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

Note 1. Pulse test

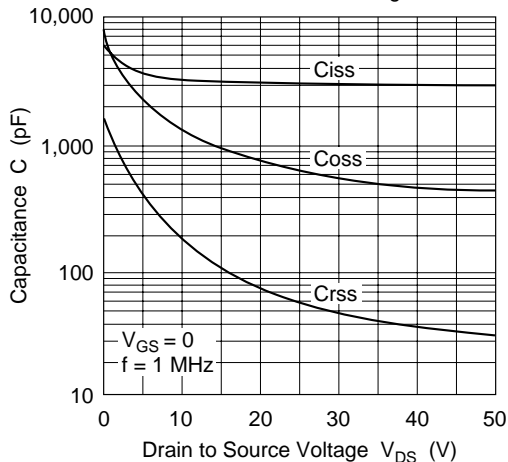




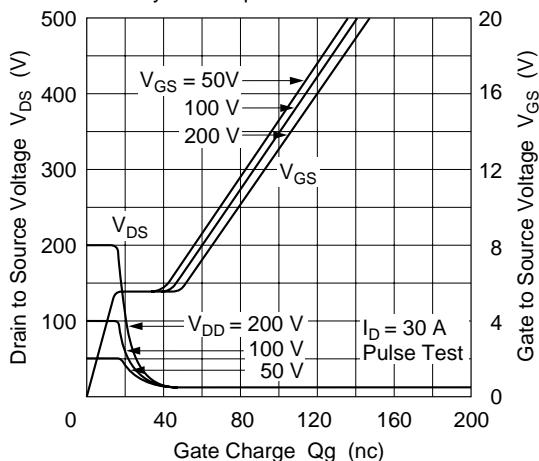
Body to Drain Diode Reverse Recovery Time



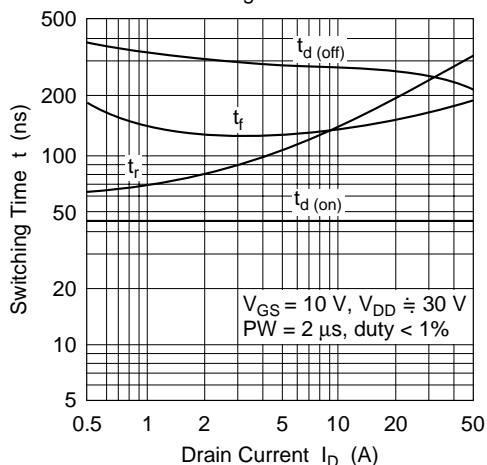
Typical Capacitance vs. Drain to Source Voltage

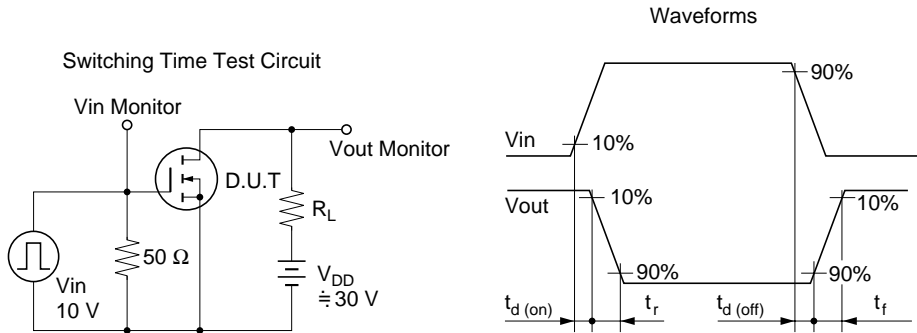
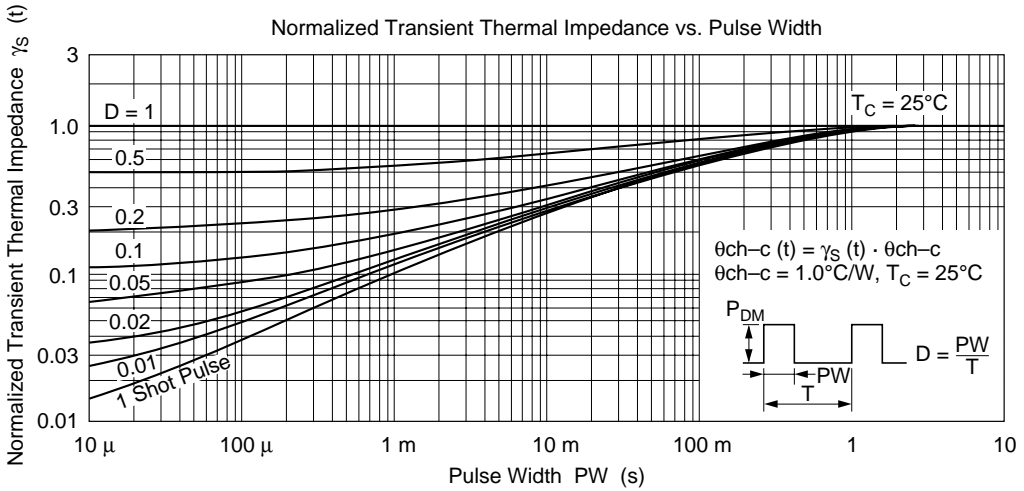
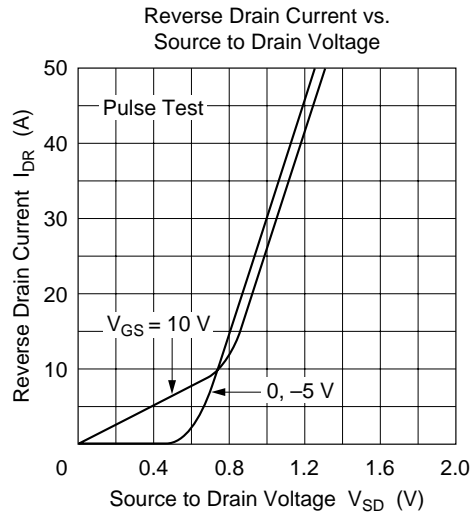


Dynamic Input Characteristics



Switching Characteristics

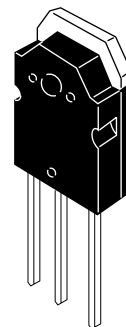
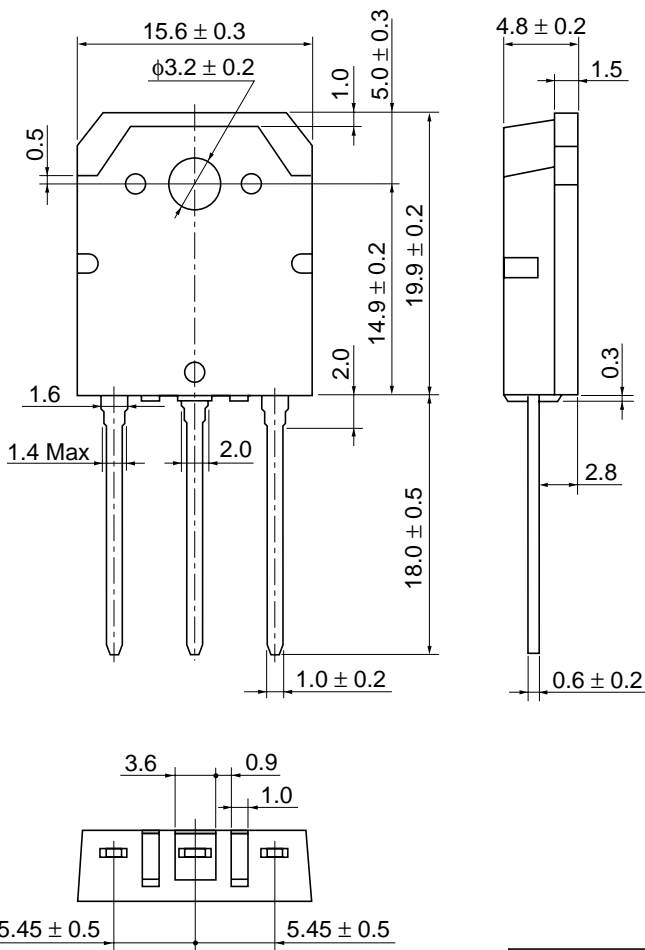




Package Dimensions

As of January, 2001

Unit: mm



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

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