

2SK1317

Silicon N-Channel MOS FET

HITACHI

ADE-208-1268 (Z)
1st. Edition
Mar. 2001

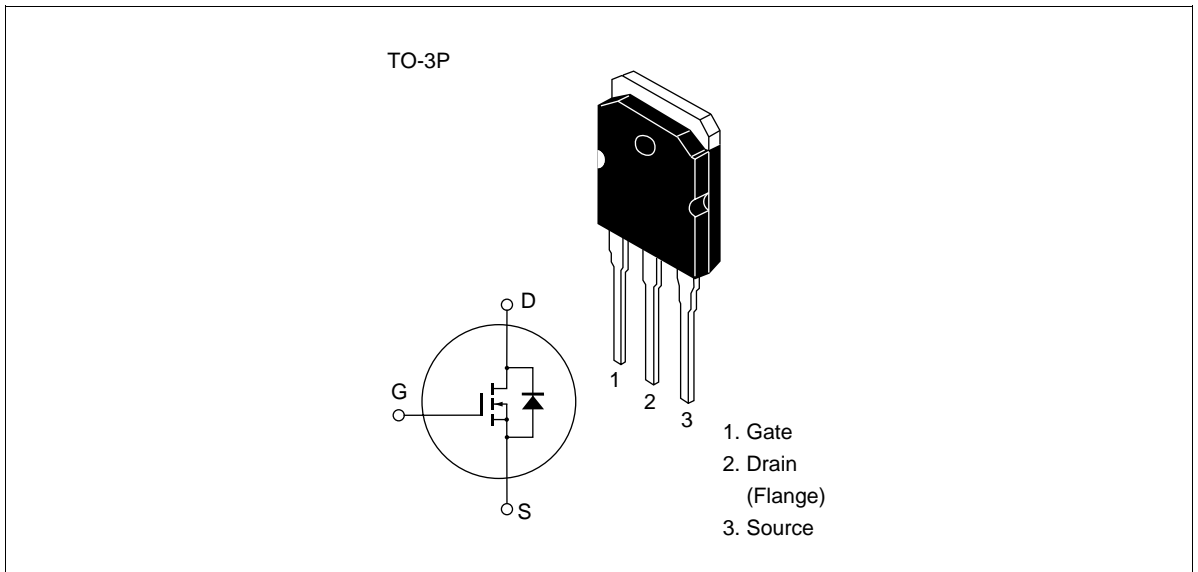
Application

High speed power switching

Features

- High breakdown voltage $V_{DSS} = 1500\text{ V}$
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for switching regulator, DC-DC converter and motor driver

Outline



Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	1500	V
Gate to source voltage	V_{GSS}	±20	V
Drain current	I_D	2.5	A
Drain peak current	$I_{D(pulse)}^{*1}$	7	A
Body to drain diode reverse drain current	I_{DR}	2.5	A
Channel dissipation	Pch*2	100	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

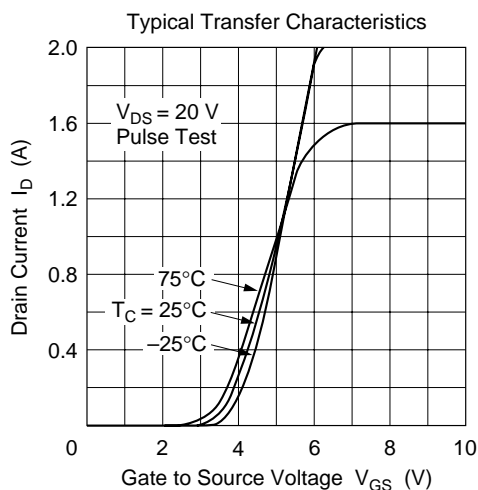
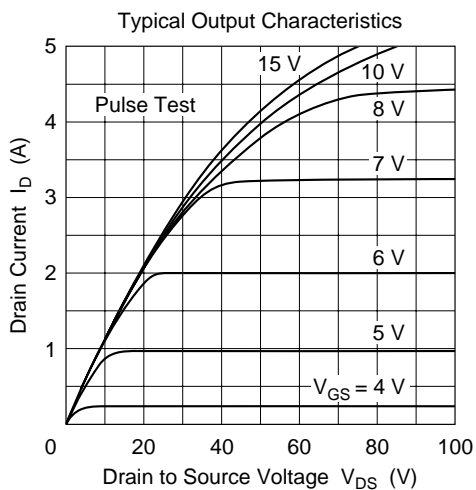
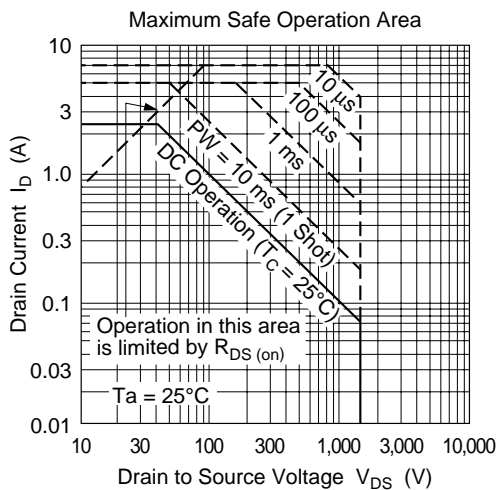
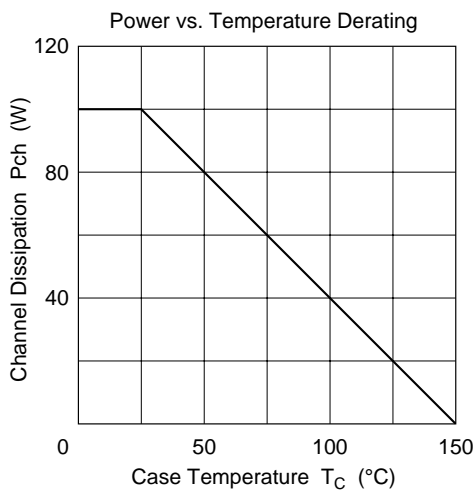
Notes: 1. PW 10 μs, duty cycle 1%

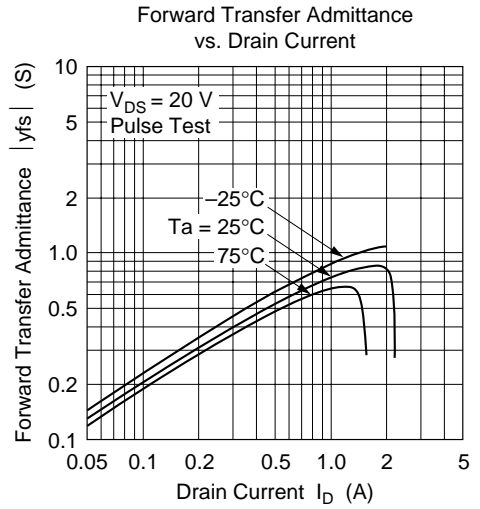
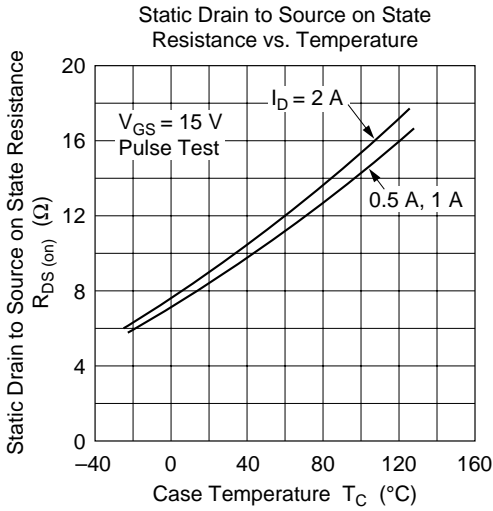
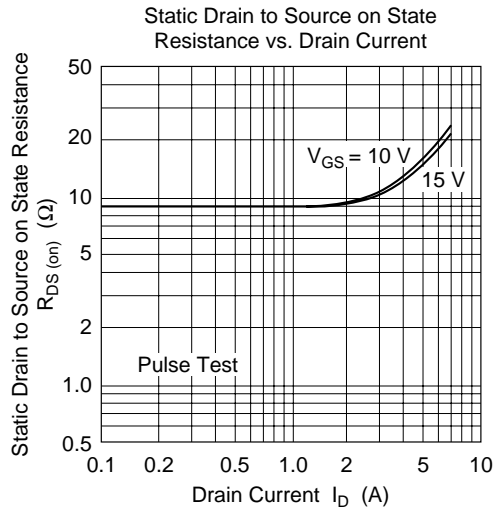
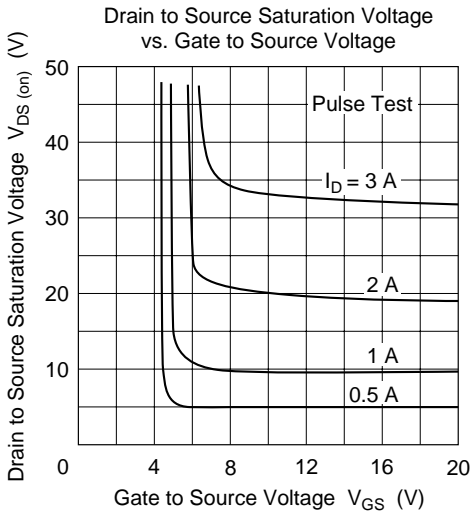
2. Value at T_c = 25°C

Electrical Characteristics (Ta = 25°C)

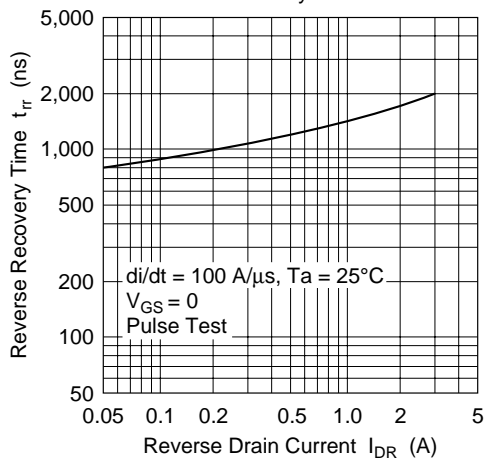
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	1500	—	—	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	±1	μA	$V_{GS} = \pm 20 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	500	μA	$V_{DS} = 1200 \text{ V}, V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	2.0	—	4.0	V	$I_D = 1 \text{ mA}, V_{DS} = 10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	9	12		$I_D = 2 \text{ A}, V_{GS} = 15 \text{ V}^{*1}$
Forward transfer admittance	yfs	0.45	0.75	—	S	$I_D = 1 \text{ A}, V_{DS} = 20 \text{ V}^{*1}$
Input capacitance	Ciss	—	990	—	pF	$V_{DS} = 10 \text{ V}, V_{GS} = 0,$
Output capacitance	Coss	—	125	—	pF	f = 1 MHz
Reverse transfer capacitance	Crss	—	60	—	pF	
Turn-on delay time	$t_{d(on)}$	—	17	—	ns	$I_D = 2 \text{ A}, V_{GS} = 10 \text{ V},$
Rise time	t_r	—	70	—	ns	$R_L = 15$
Turn-off delay time	$t_{d(off)}$	—	110	—	ns	
Fall time	t_f	—	60	—	ns	
Body to drain diode forward voltage	V_{DF}	—	0.9	—	V	$I_F = 2 \text{ A}, V_{GS} = 0$
Body to drain diode reverse recovery time	t_{rr}	—	1750	—	ns	$I_F = 2 \text{ A}, V_{GS} = 0,$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

Note: 1. Pulse test

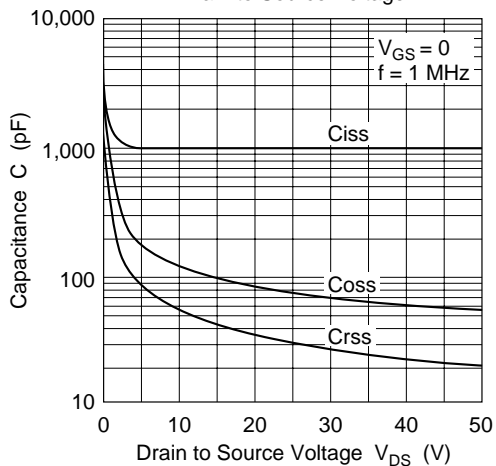




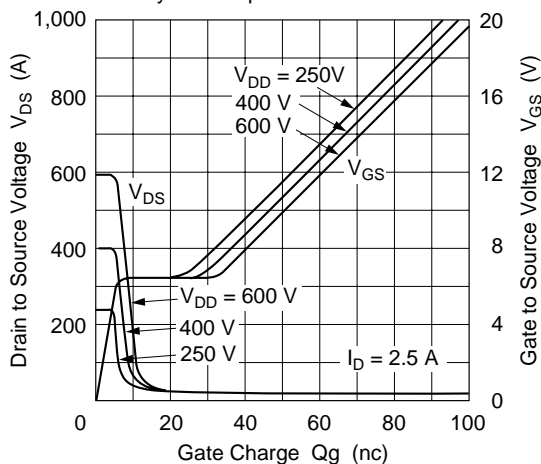
Body to Drain Diode Reverse Recovery Time



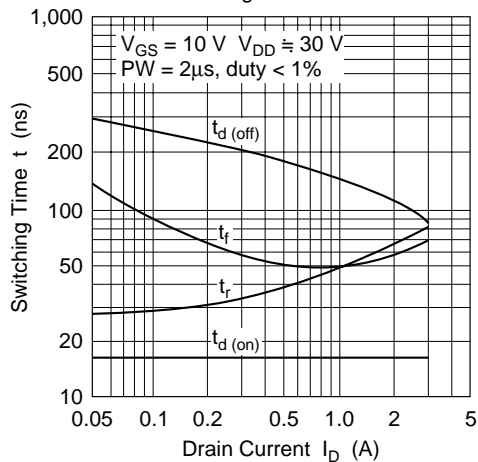
Typical Capacitance vs. Drain to Source Voltage

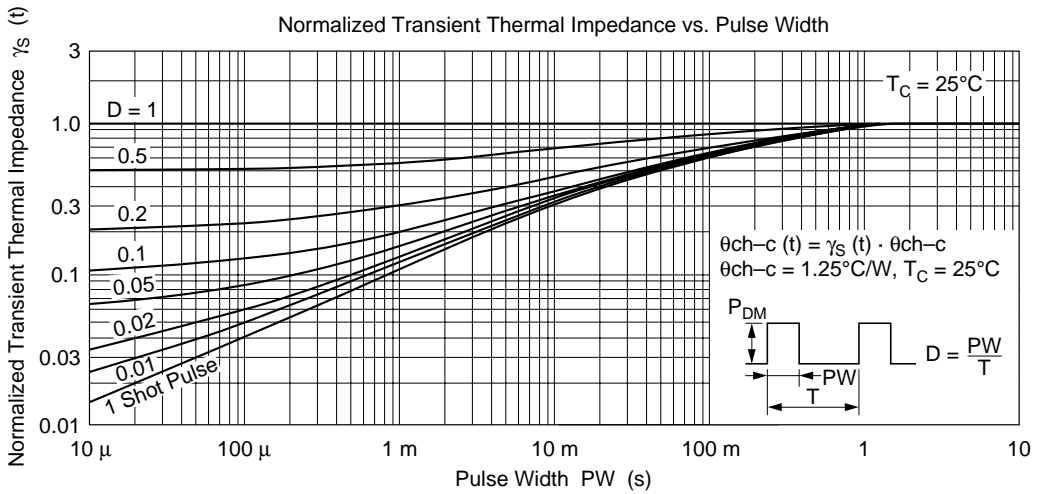
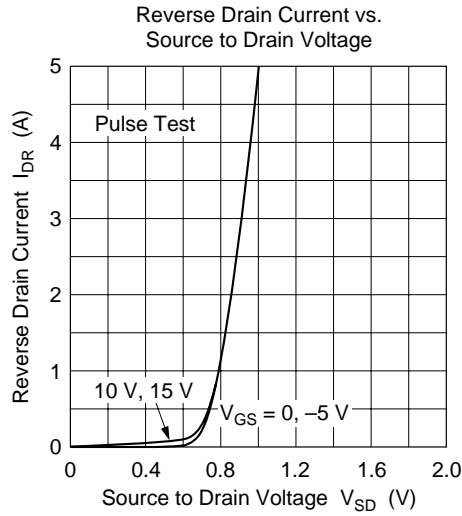


Dynamic Input Characteristics

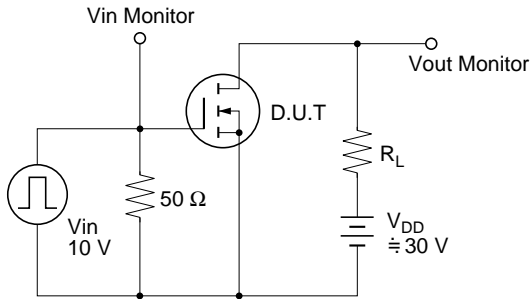


Switching Characteristics

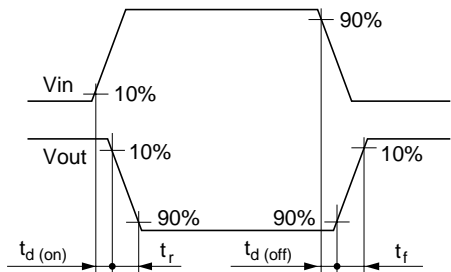




Switching Time Test Circuit



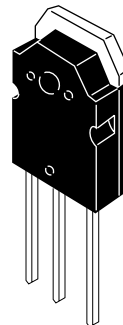
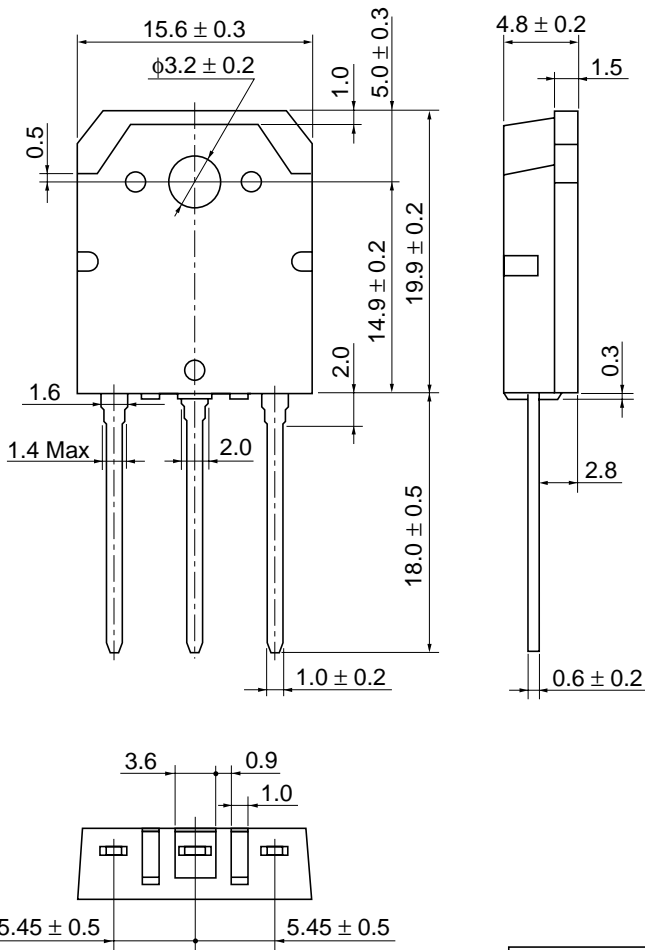
Waveforms



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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