

2SK2955

Silicon N Channel MOS FET
High Speed Power Switching

HITACHI

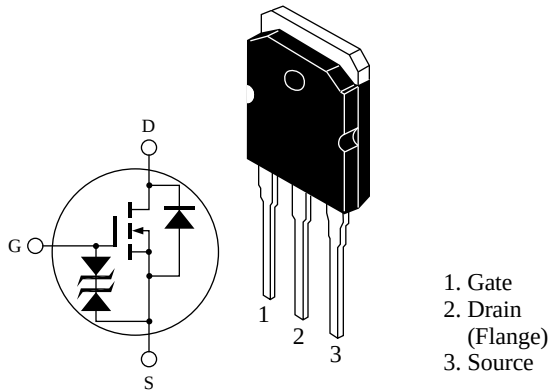
ADE-208-564B (Z)
3rd. Edition
Jun 1998

Features

- Low on-resistance
 $R_{DS} = 0.010 \Omega$ typ.
- High speed switching
- 4V gate drive device can be driven from 5V source

Outline

TO-3P



Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V _{DSS}	60	V
Gate to source voltage	V _{GSS}	±20	V
Drain current	I _D	45	A
Drain peak current	I _{D(pulse)} ^{Note1}	180	A
Body-drain diode reverse drain current	I _{DR}	45	A
Avalanche current	I _{AP} ^{Note3}	45	A
Avalanche energy	E _{AR} ^{Note3}	173	mJ
Channel dissipation	P _{ch} ^{Note2}	100	W
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	−55 to +150	°C

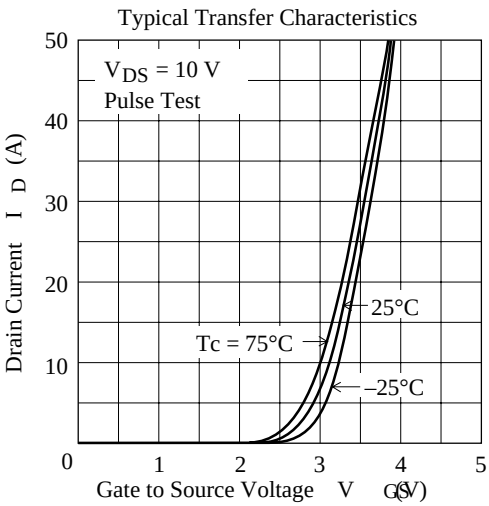
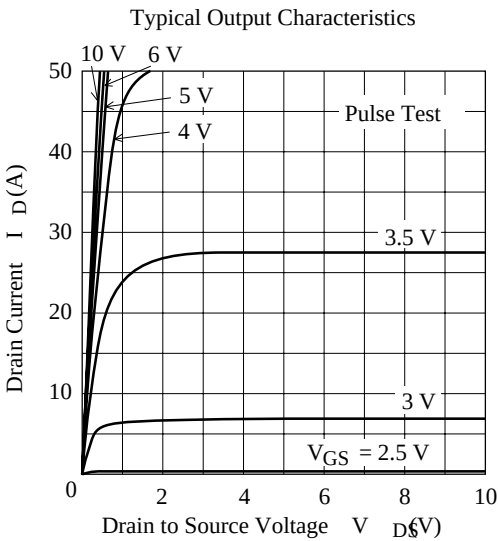
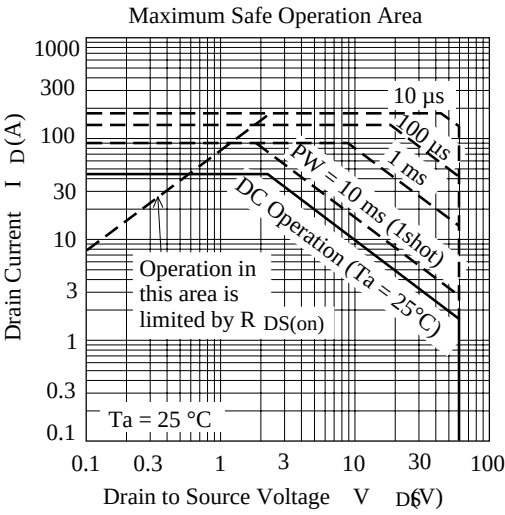
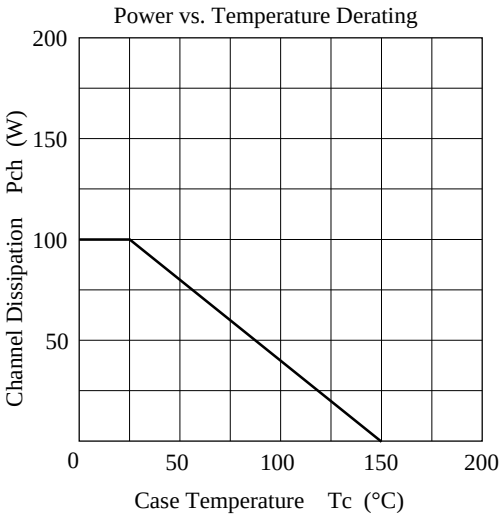
Note: 1. PW ≤ 10μs, duty cycle ≤ 1 %
2. Value at Tc = 25°C
3. Value at Tch = 25°C, Rg ≥ 50Ω

Electrical Characteristics (Ta = 25°C)

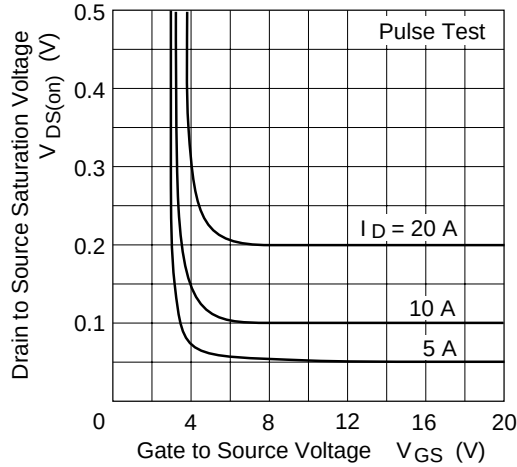
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V _{(BR)DSS}	60	—	—	V	I _D = 10mA, V _{GS} = 0
Gate to source breakdown voltage	V _{(BR)GSS}	±20	—	—	V	I _G = ±100μA, V _{DS} = 0
Gate to source leak current	I _{GSS}	—	—	±10	μA	V _{GS} = ±16V, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	10	μA	V _{DS} = 60 V, V _{GS} = 0
Gate to source cutoff voltage	V _{GS(off)}	1.5	—	2.5	V	I _D = 1mA, V _{DS} = 10V
Static drain to source on state resistance	R _{DS(on)}	—	0.010	0.013	Ω	I _D = 20A, V _{GS} = 10V ^{Note4}
	R _{DS(on)}	—	0.015	0.025	Ω	I _D = 20A, V _{GS} = 4V ^{Note4}
Forward transfer admittance	y _{fs}	24	40	—	S	I _D = 20A, V _{DS} = 10V ^{Note4}
Input capacitance	Ciss	—	2200	—	pF	V _{DS} = 10V
Output capacitance	Coss	—	1050	—	pF	V _{GS} = 0
Reverse transfer capacitance	Crss	—	320	—	pF	f = 1MHz
Turn-on delay time	t _{d(on)}	—	25	—	ns	I _D = 20A, V _{GS} = 10V
Rise time	t _r	—	200	—	ns	R _L = 1.5Ω
Turn-off delay time	t _{d(off)}	—	320	—	ns	
Fall time	t _f	—	240	—	ns	
Body–drain diode forward voltage	V _{DF}	—	0.95	—	V	I _F = 45A, V _{GS} = 0
Body–drain diode reverse recovery time	t _{rr}	—	60	—	ns	I _F = 45A, V _{GS} = 0 diF/ dt =50A/μs

Note: 4. Pulse test

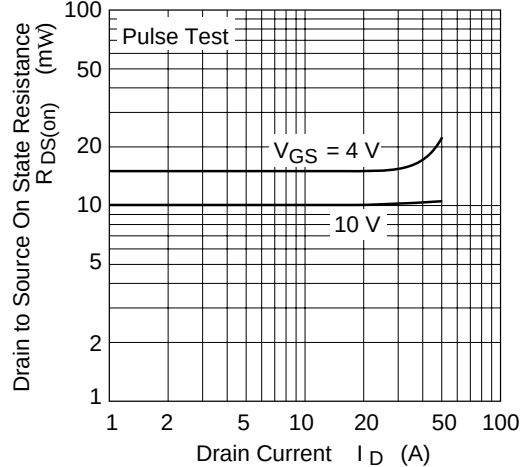
Main Characteristics



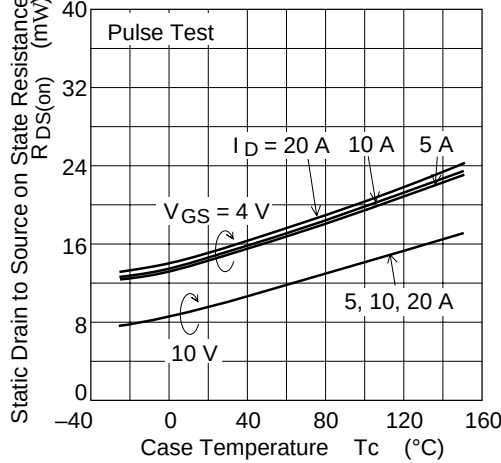
Drain to Source Saturation Voltage vs. Gate to Source Voltage



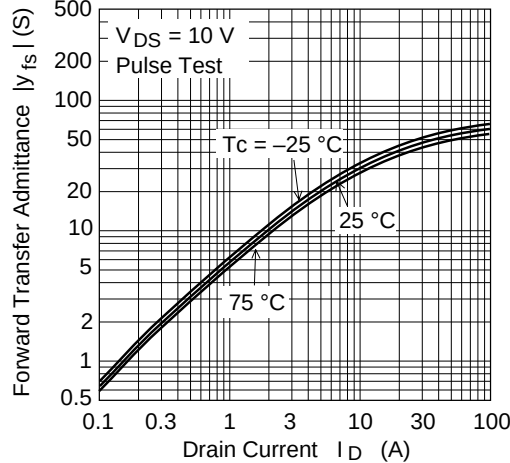
Static Drain to Source on State Resistance vs. Drain Current

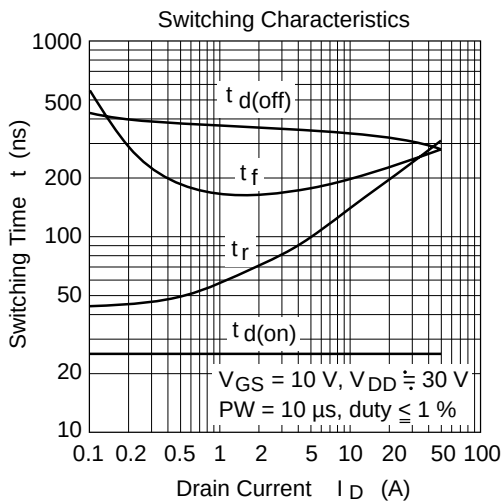
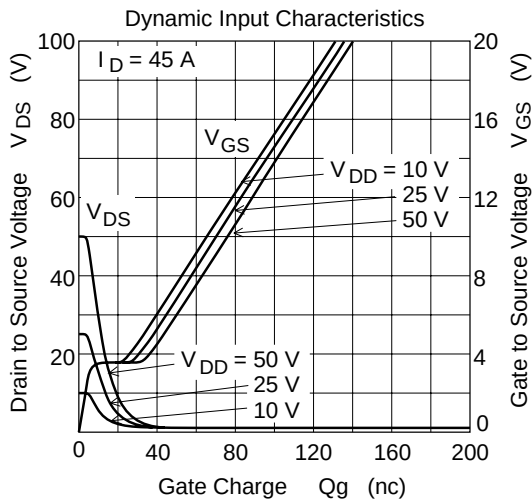
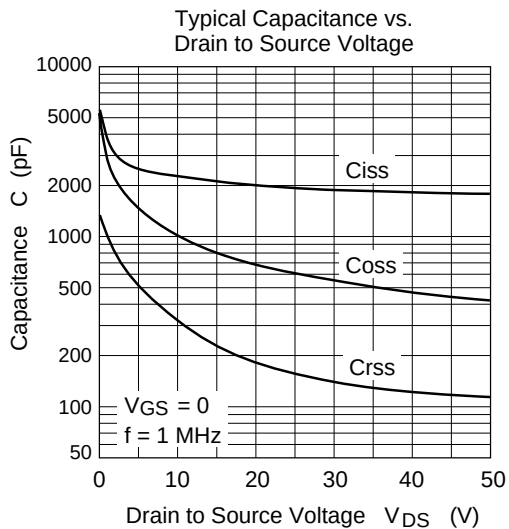
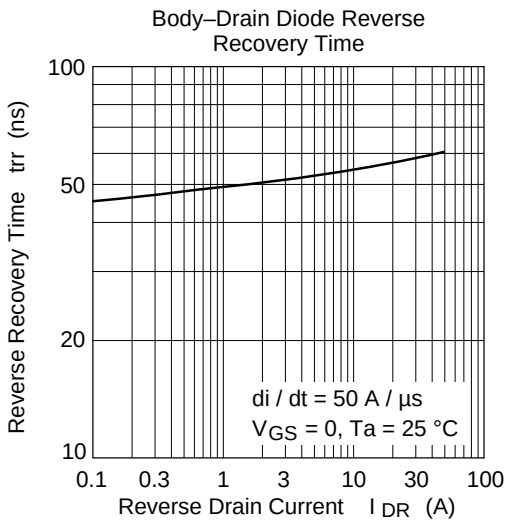


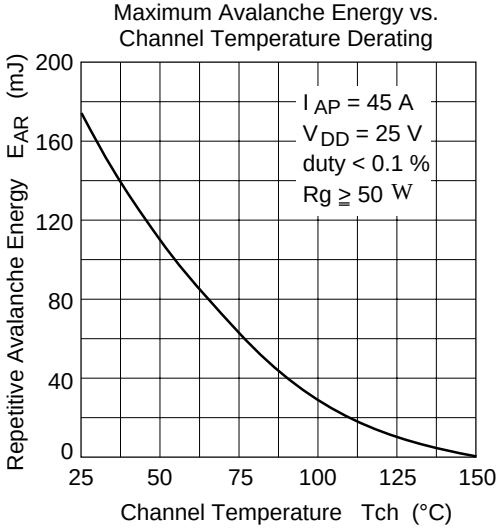
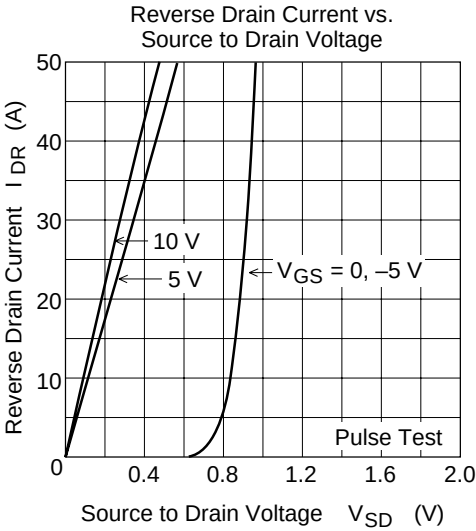
Static Drain to Source on State Resistance vs. Temperature



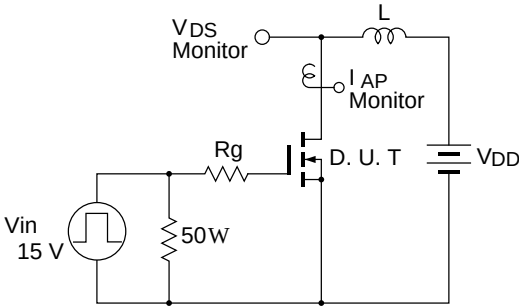
Forward Transfer Admittance vs. Drain Current





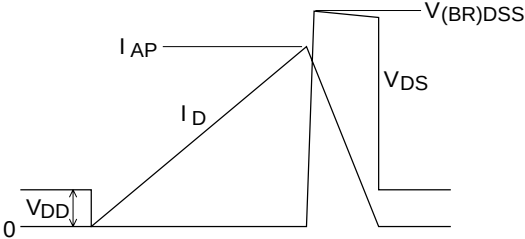


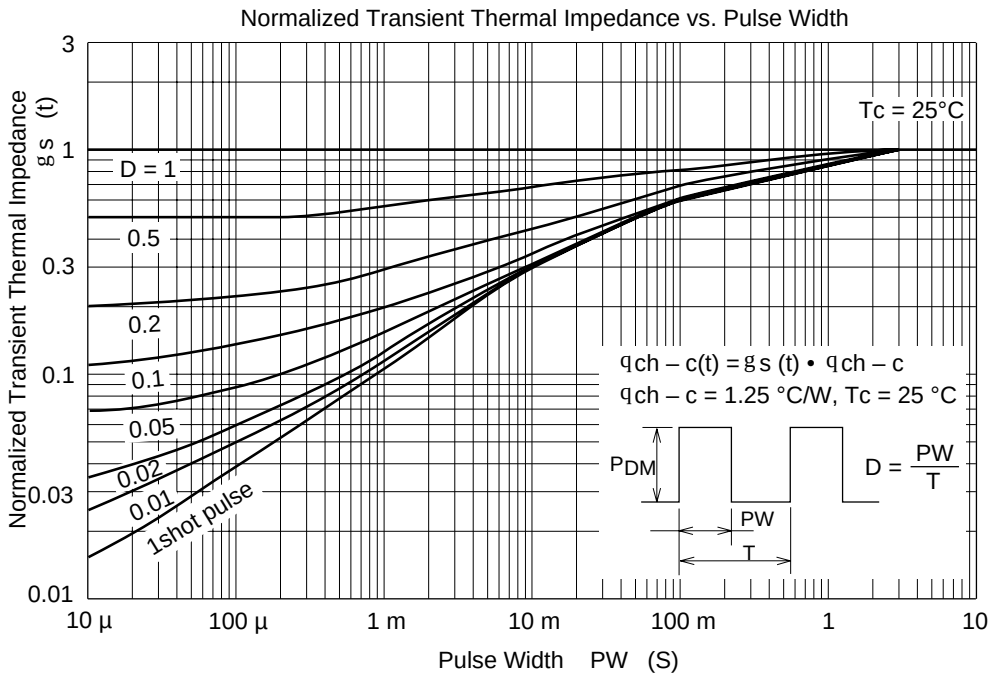
Avalanche Test Circuit



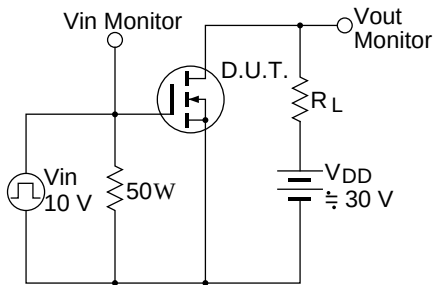
Avalanche Waveform

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

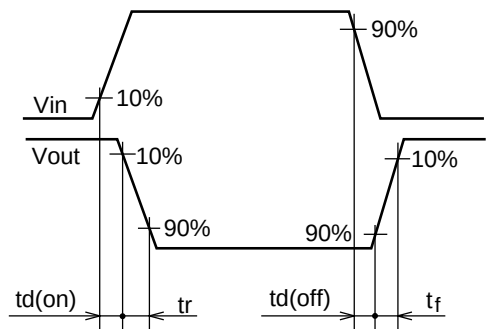




Switching Time Test Circuit

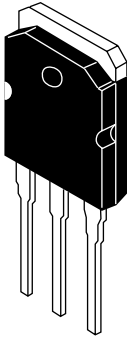
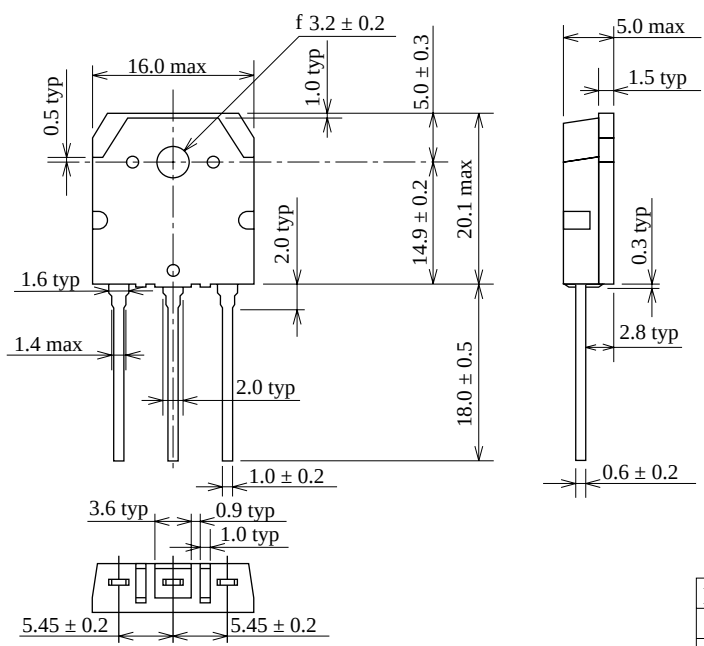


Waveform



Package Dimensions

Unit: mm



Hitachi Code	TO-3P
EIAJ	SC-65
JEDEC	—

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