

2SK2955

Silicon N Channel MOS FET
High Speed Power Switching

HITACHI

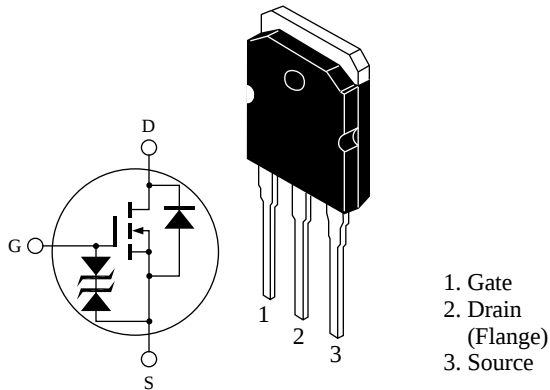
ADE-208-564B (Z)
3rd. Edition
Jun 1998

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

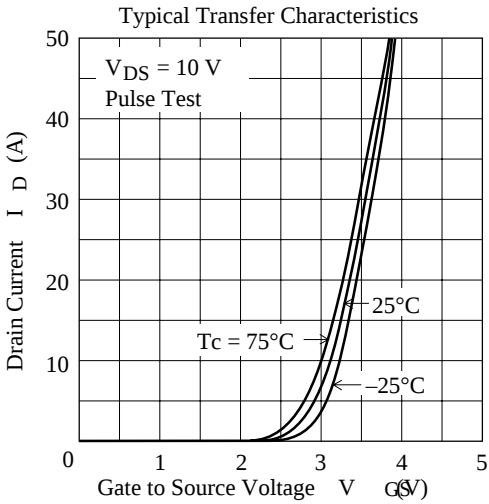
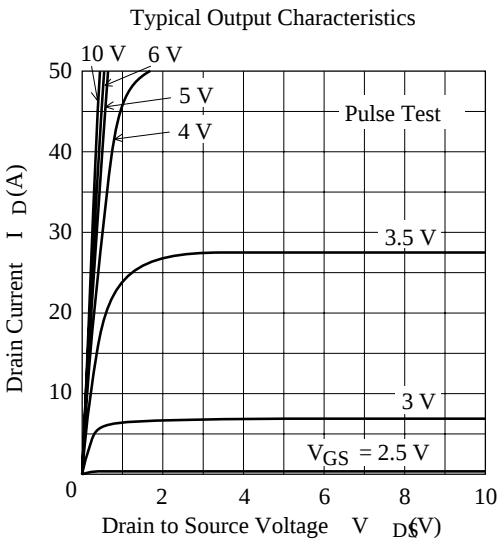
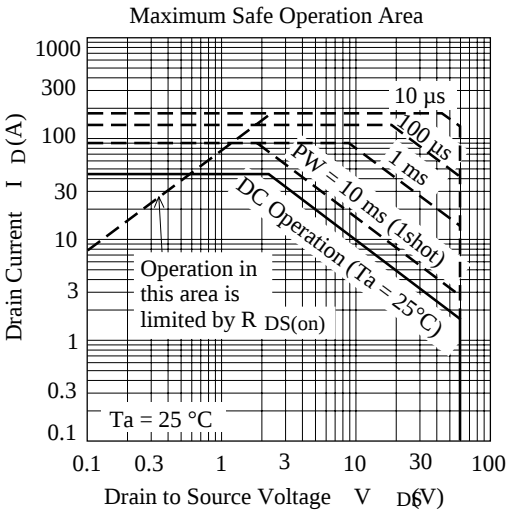
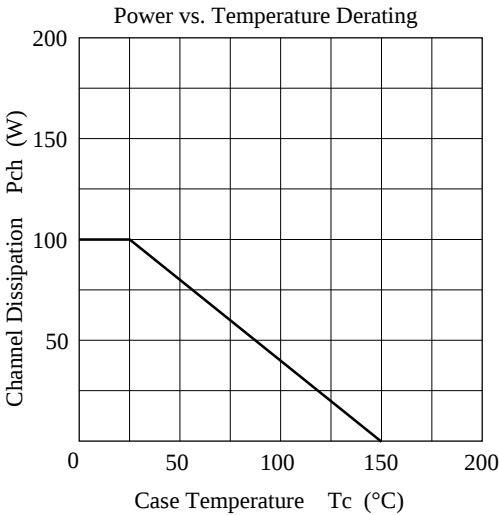
Note: 1. PW ≤ 10μs, duty cycle ≤ 1 %
2. Value at Tc = 25°C
3. Value at Tch = 25°C, Rg ≥ 50Ω

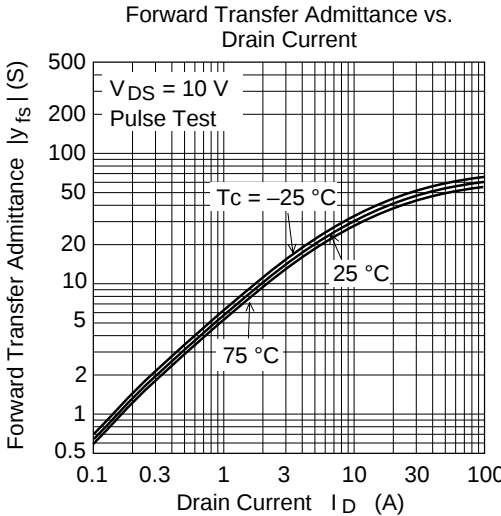
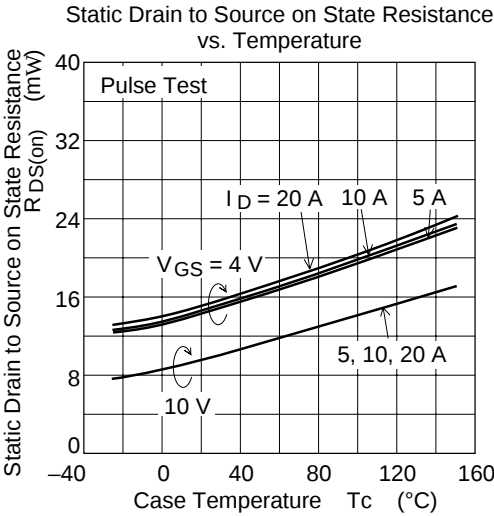
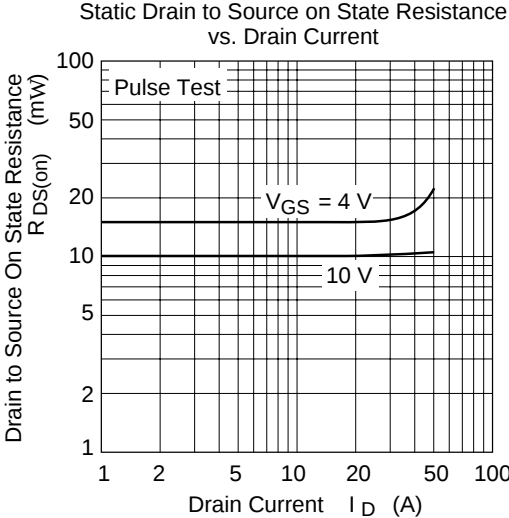
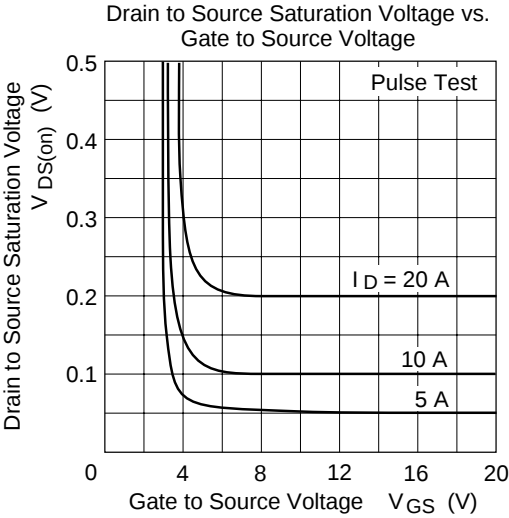
Electrical Characteristics (Ta = 25°C)

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

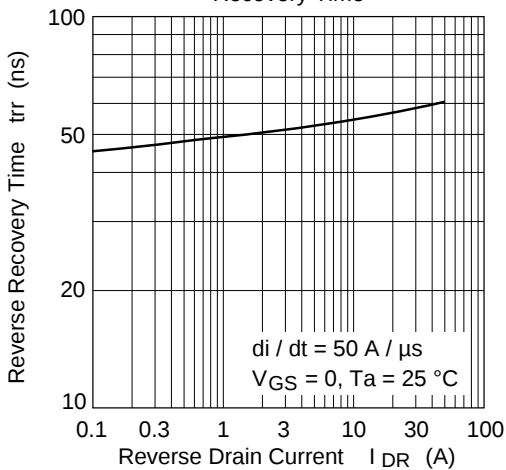
Note: 4. Pulse test

Main Characteristics

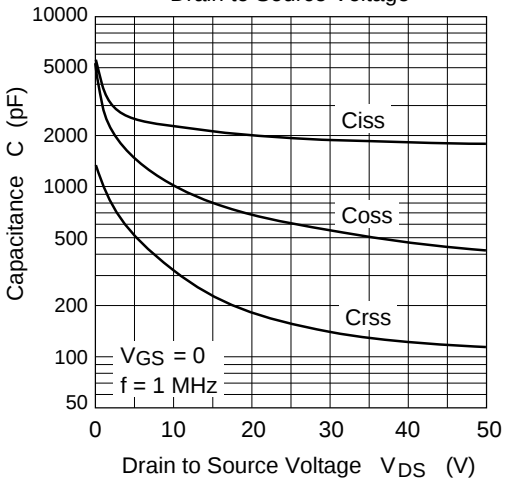




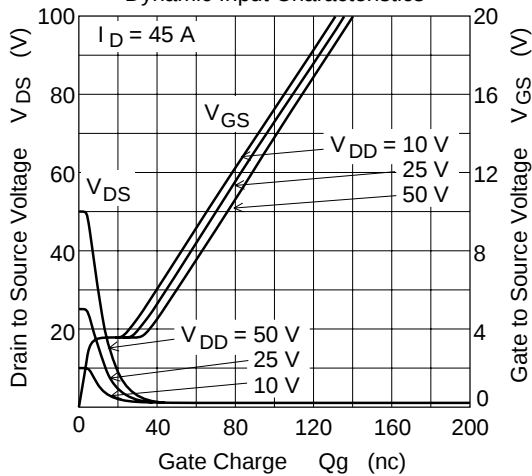
Body-Drain Diode Reverse Recovery Time



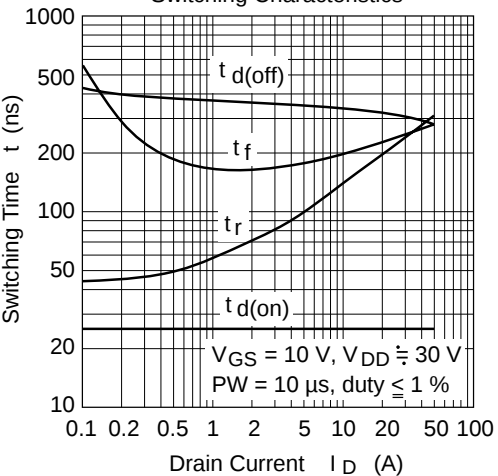
Typical Capacitance vs. Drain to Source Voltage

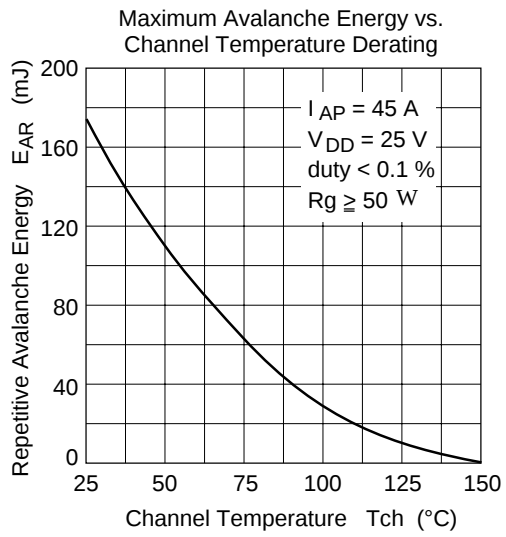
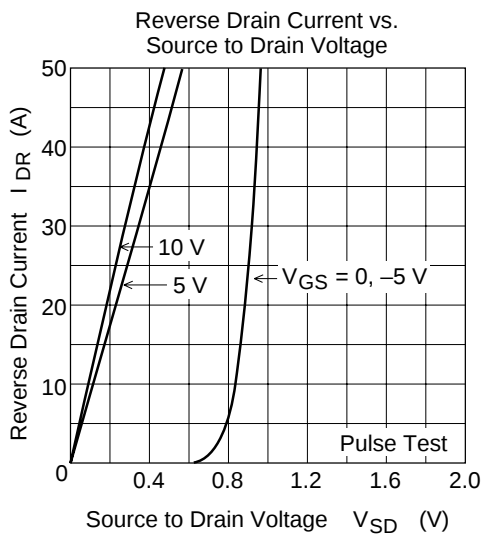


Dynamic Input Characteristics

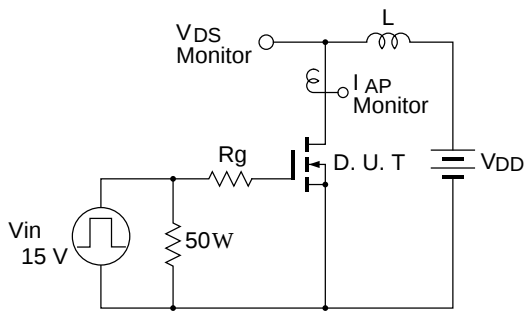


Switching Characteristics



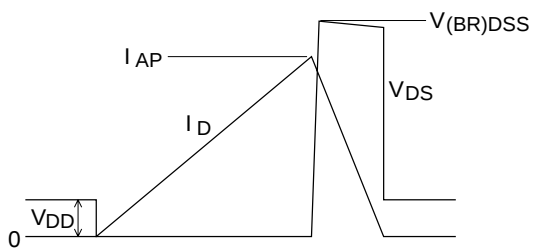


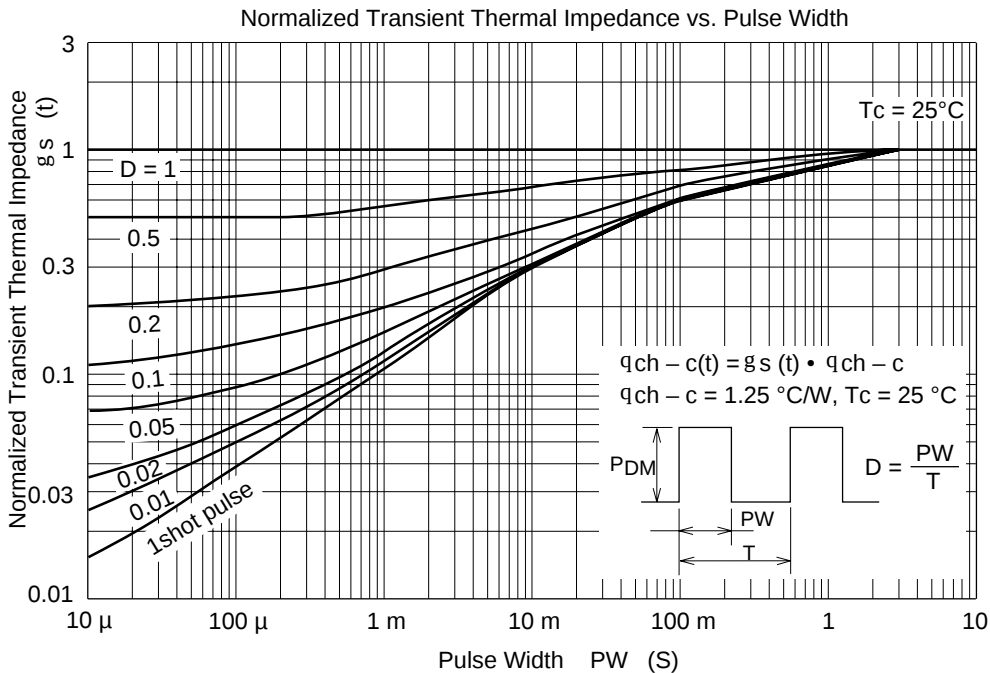
Avalanche Test Circuit



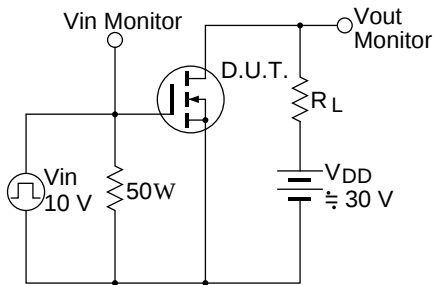
Avalanche Waveform

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

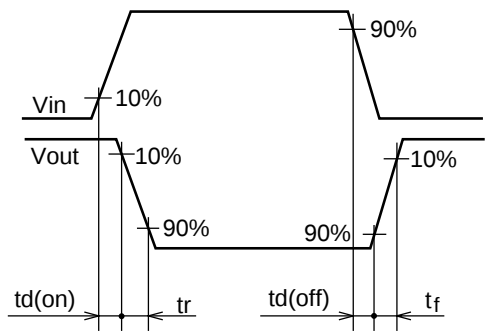




Switching Time Test Circuit

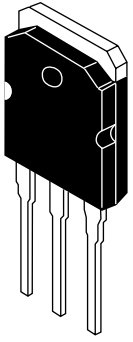
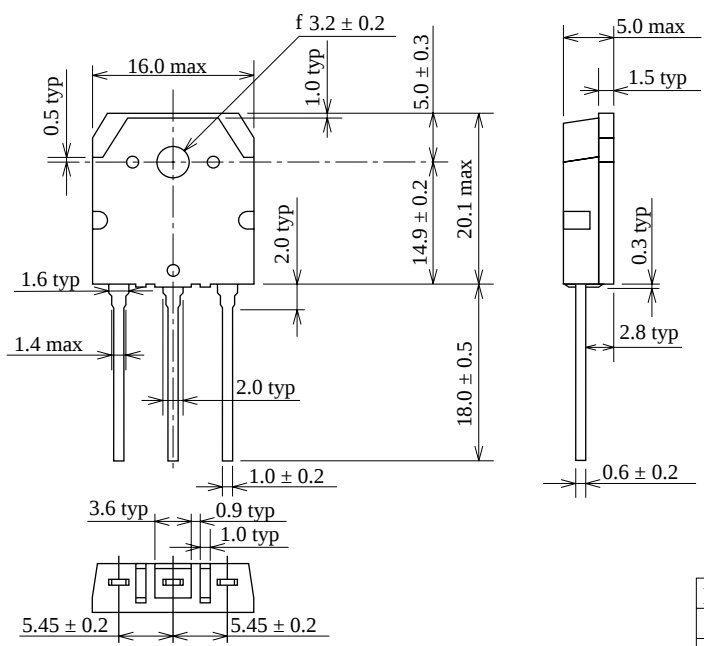


Waveform



Package Dimensions

Unit: mm



Hitachi Code	TO-3P
EIAJ	SC-65
JEDEC	—

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