

2SK2959

Silicon N Channel MOS FET
High Speed Power Switching

HITACHI

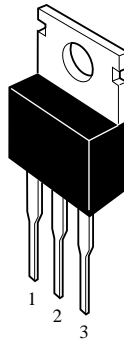
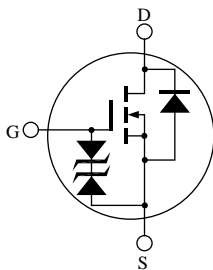
ADE-208-569C (Z)
4th. Edition
Aug 1998

Features

- Low on-resistance
 $R_{DS(on)} = 7m\Omega$ typ.
- 4V gate drive devices.
- High speed switching

Outline

TO-220AB



1. Gate
2. Drain(Flange)
3. Source

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	30	V
Gate to source voltage	V_{GSS}	±20	V
Drain current	I_D	50	A
Drain peak current	$I_{D(pulse)}$ ^{Note1}	200	A
Body-drain diode reverse drain current	I_{DR}	50	A
Channel dissipation	Pch ^{Note2}	75	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

Note: 1. $PW \leq 10\mu s$, duty cycle $\leq 1\%$

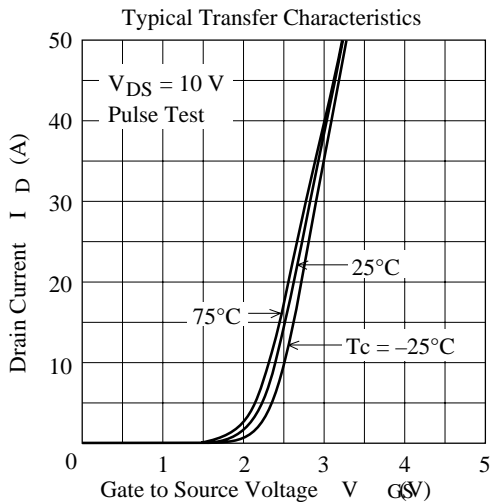
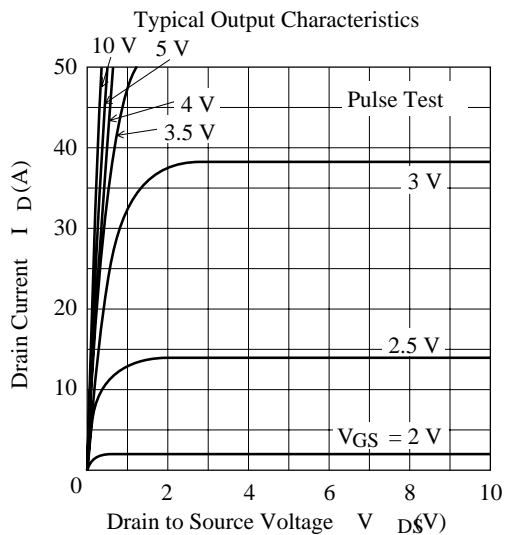
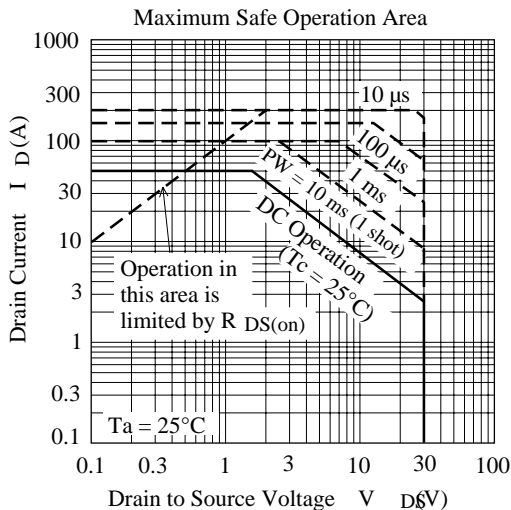
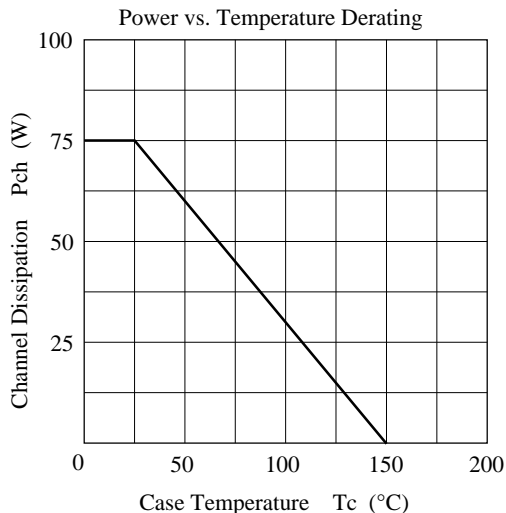
2. Value at $T_c = 25^\circ C$

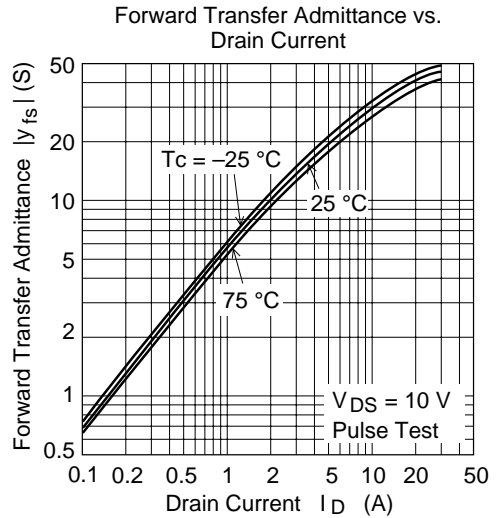
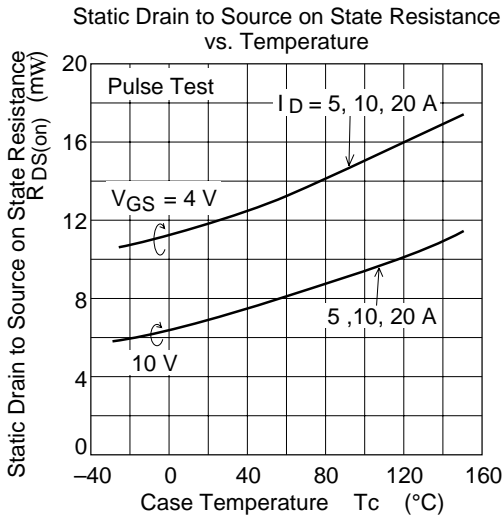
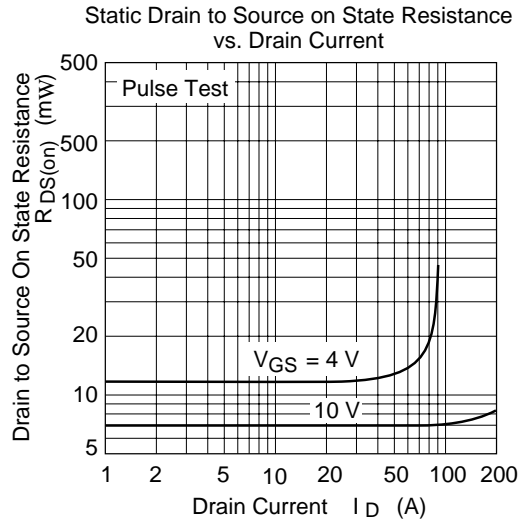
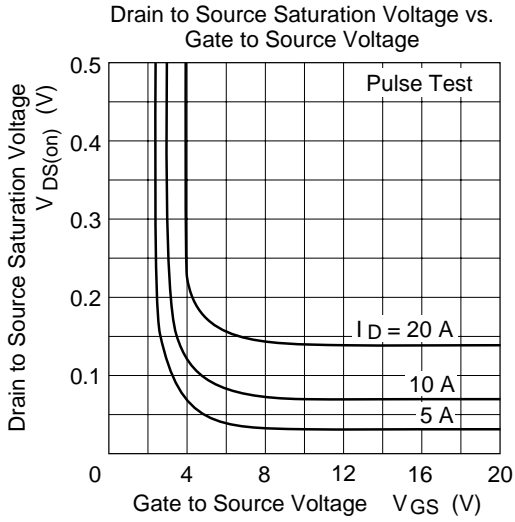
Electrical Characteristics (Ta = 25°C)

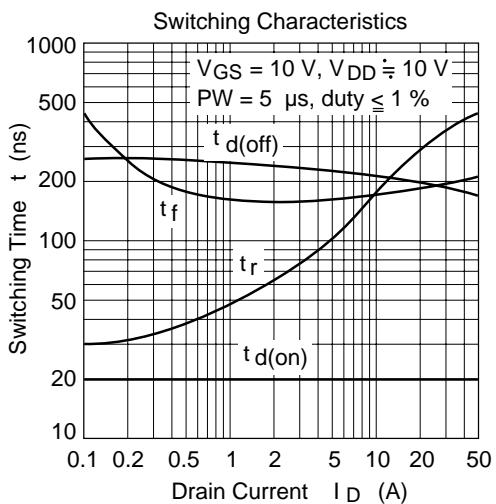
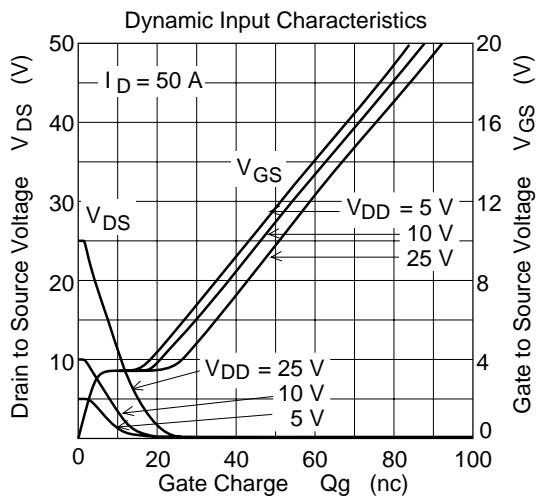
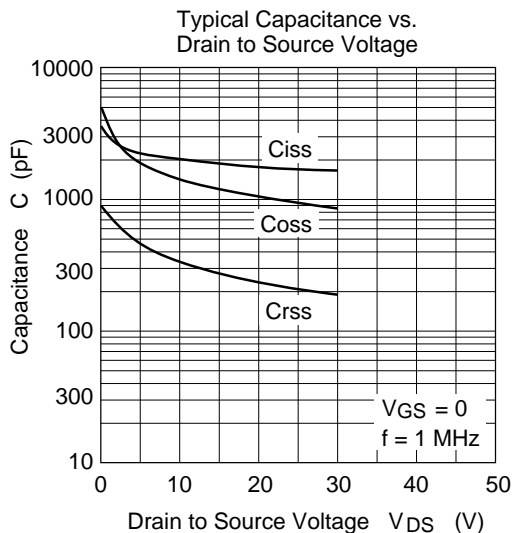
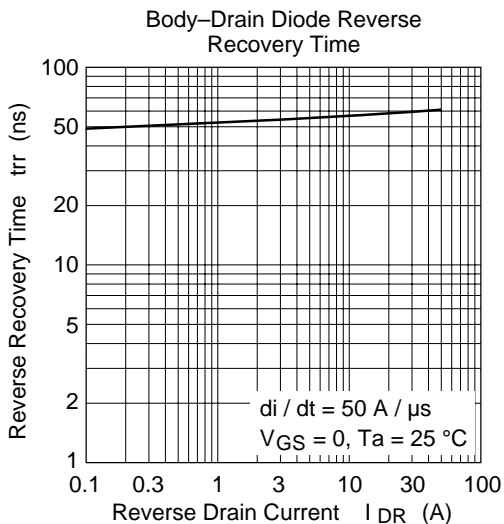
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	30	—	—	V	$I_D = 10mA, V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	—	—	V	$I_G = \pm 100\mu A, V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	10	μA	$V_{DS} = 30V, V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	±10	μA	$V_{GS} = \pm 16V, V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.0	V	$I_D = 1mA, V_{DS} = 10V$
Static drain to source on state resistance	$R_{DS(on)}$	—	7.0	10	mΩ	$I_D = 25A, V_{GS} = 10V$ ^{Note3}
Static drain to source on state resistance	$R_{DS(on)}$	—	12	18	mΩ	$I_D = 25A, V_{GS} = 4V$ ^{Note3}
Forward transfer admittance	$ y_{fs} $	25	45	—	S	$I_D = 25A, V_{DS} = 10V$ ^{Note3}
Input capacitance	Ciss	—	2000	—	pF	$V_{DS} = 10V$
Output capacitance	Coss	—	1500	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	Crss	—	350	—	pF	$f = 1MHz$
Turn-on delay time	$t_{d(on)}$	—	20	—	ns	$V_{GS} = 10V, I_D = 25A$
Rise time	t_r	—	330	—	ns	$R_L = 0.4\Omega$
Turn-off delay time	$t_{d(off)}$	—	190	—	ns	
Fall time	t_f	—	190	—	ns	
Body-drain diode forward voltage	V_{DF}	—	0.95	—	V	$I_F = 50A, V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	60	—	ns	$I_F = 50A, V_{GS} = 0$ $diF/dt = 50A/\mu s$

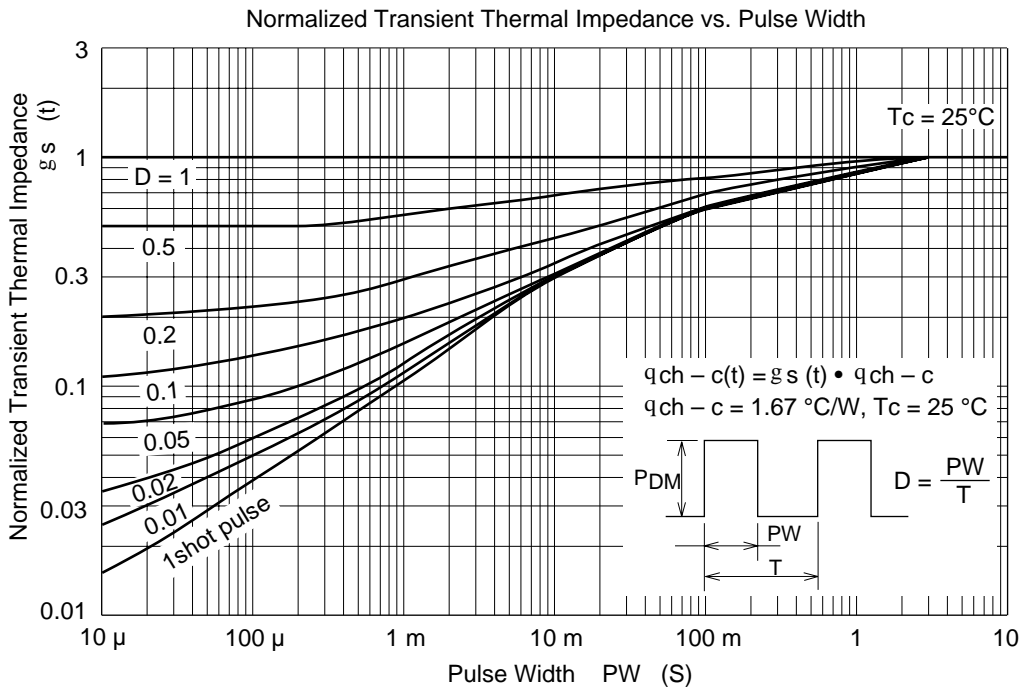
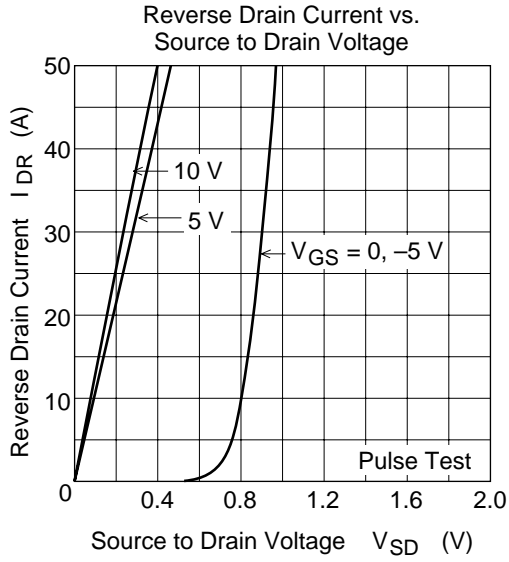
Note: 3. Pulse test

Main Characteristics

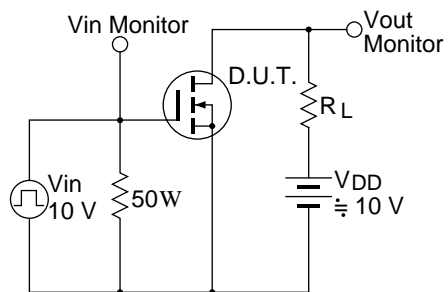




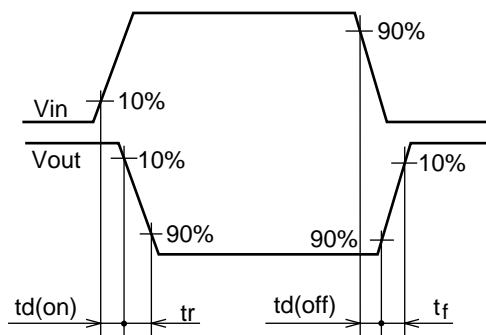




Switching Time Test Circuit

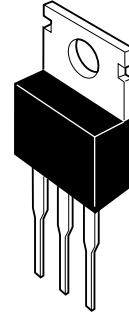
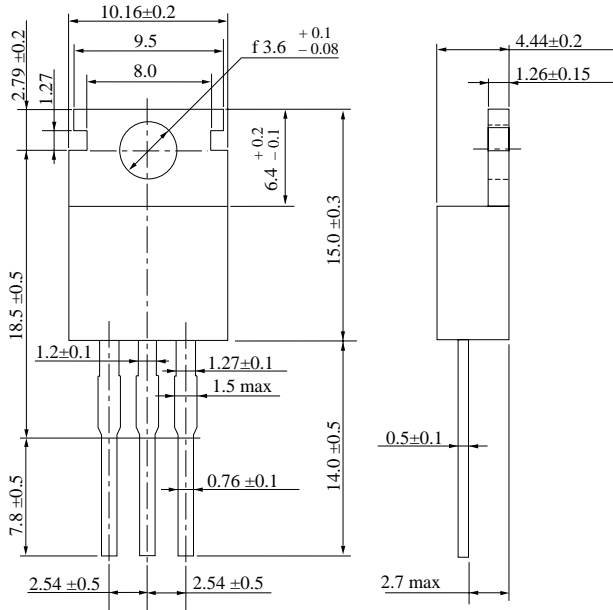


Waveform



Package Dimensions

Unit: mm



Hitachi Code	FO-220AB
EIAJ	SC-46
JEDEC	—

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