

2SK3081

Silicon N Channel MOS FET
High Speed Power Switching

HITACHI

ADE-208-636A (Z)

3rd. Edition

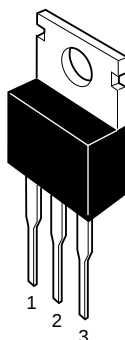
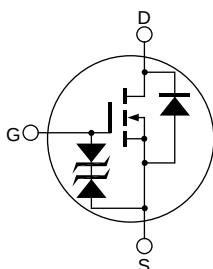
Jun 1998

Features

- Low on-resistance
 $R_{DS(on)} = 10m\Omega$ 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	45	A
Drain peak current	$I_{D(pulse)}$ ^{Note1}	180	A
Body-drain diode reverse drain current	I_{DR}	45	A
Channel dissipation	P_{ch} ^{Note2}	75	W
Channel temperature	T_{ch}	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

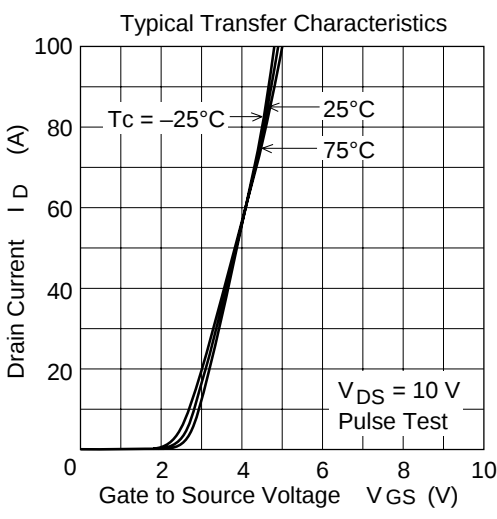
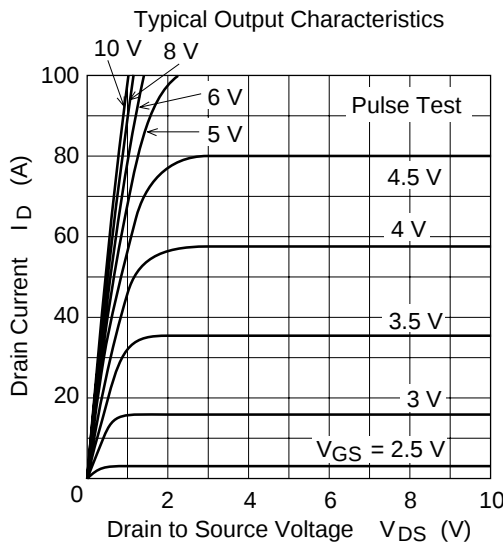
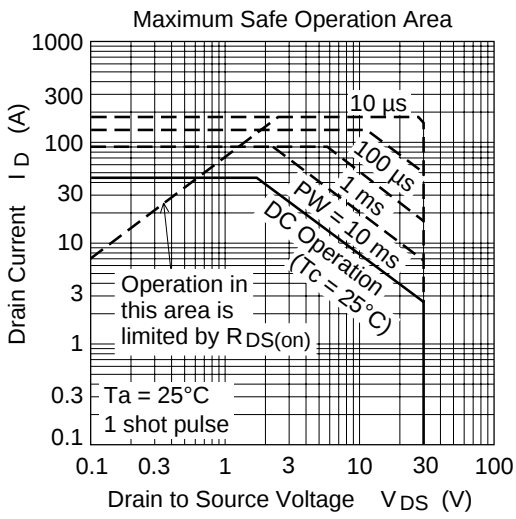
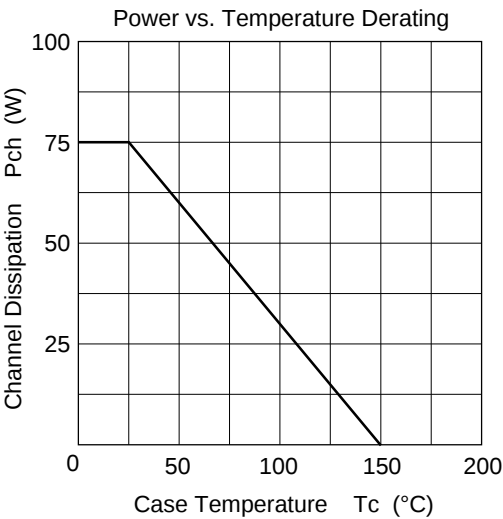
Note: 1. $PW \leq 10\mu s$, duty cycle $\leq 1\%$
2. Value at $T_c = 25^\circ C$

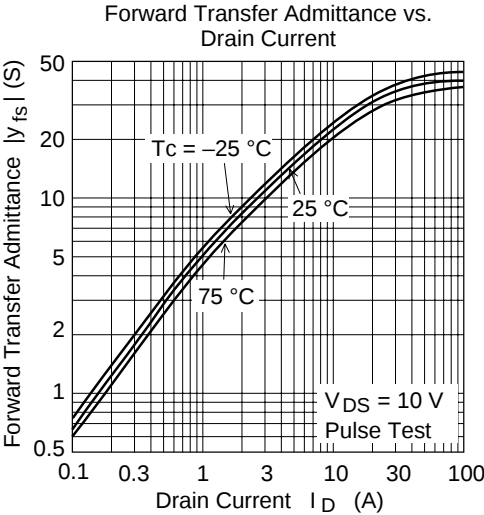
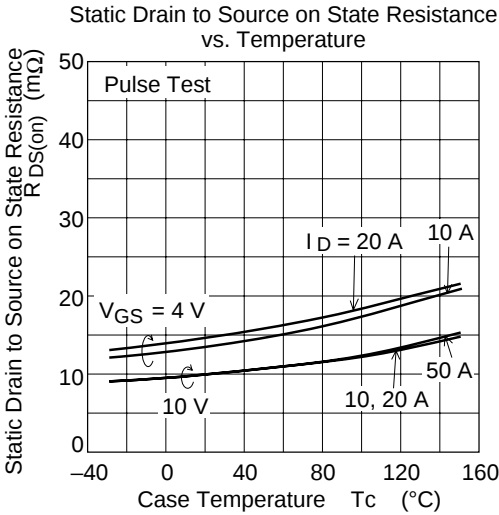
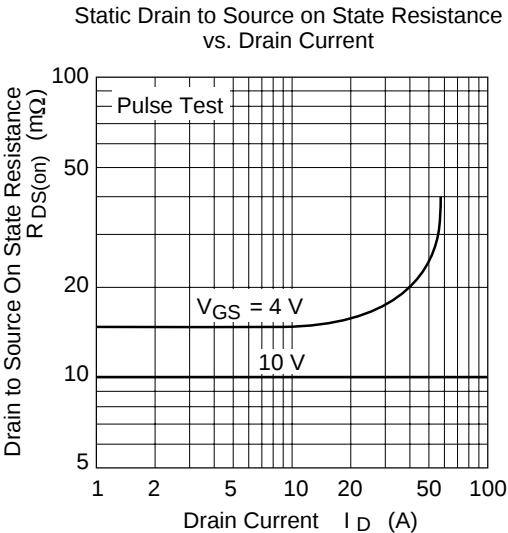
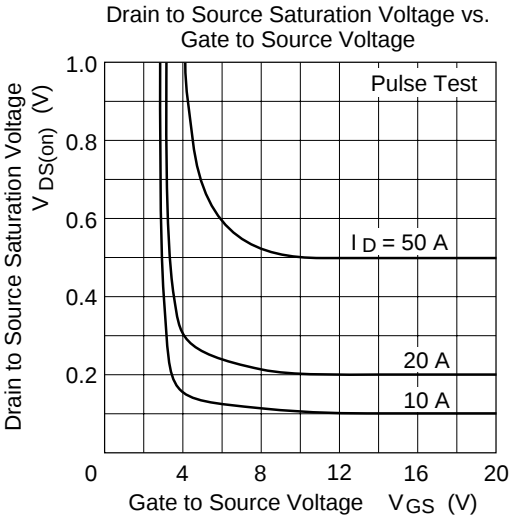
Electrical Characteristics (Ta = 25°C)

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	$R_{DS(on)}$	—	10	14	$m\Omega$	$I_D = 20A, V_{GS} = 10V$ ^{Note3}
Static drain to source on state resistance	$R_{DS(on)}$	—	15	25	$m\Omega$	$I_D = 20A, V_{GS} = 4V$ ^{Note3}
Forward transfer admittance	$ y_{fs} $	20	30	—	S	$I_D = 20A, V_{DS} = 10V$ ^{Note3}
Input capacitance	C_{iss}	—	1570	—	pF	$V_{DS} = 10V$
Output capacitance	C_{oss}	—	1100	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	410	—	pF	$f = 1MHz$
Turn-on delay time	$t_{d(on)}$	—	32	—	ns	$V_{GS} = 10V, I_D = 20A$
Rise time	t_r	—	300	—	ns	$R_L = 0.5\Omega$
Turn-off delay time	$t_{d(off)}$	—	180	—	ns	
Fall time	t_f	—	200	—	ns	
Body-drain diode forward voltage	V_{DF}	—	1.0	—	V	$I_F = 45A, V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	75	—	ns	$I_F = 45A, V_{GS} = 0$ $diF/dt = 50A/\mu s$

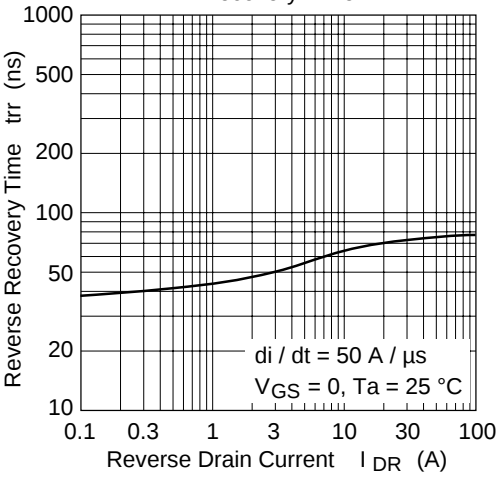
Note: 3. Pulse test

Main Characteristics

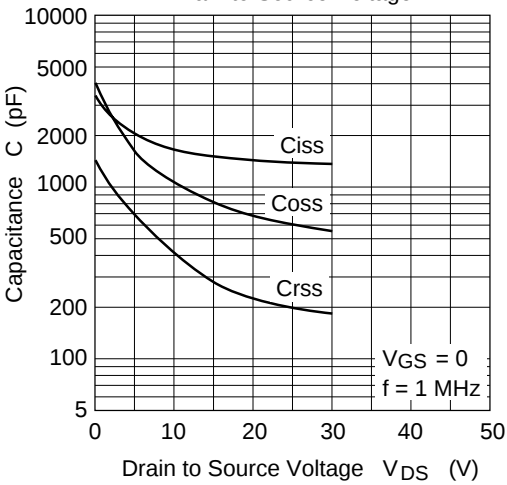




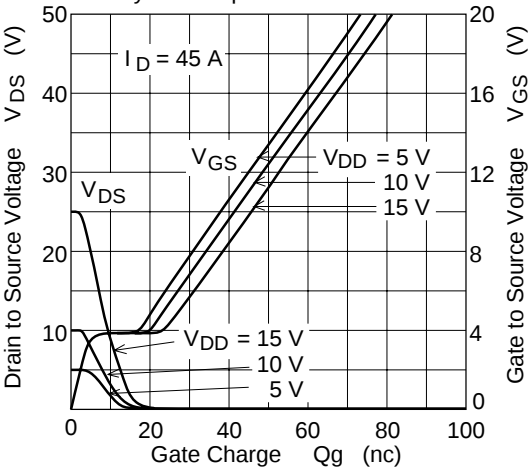
Body-Drain Diode Reverse Recovery Time



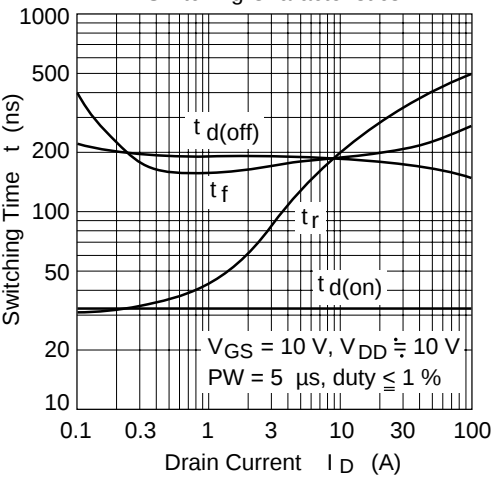
Typical Capacitance vs. Drain to Source Voltage

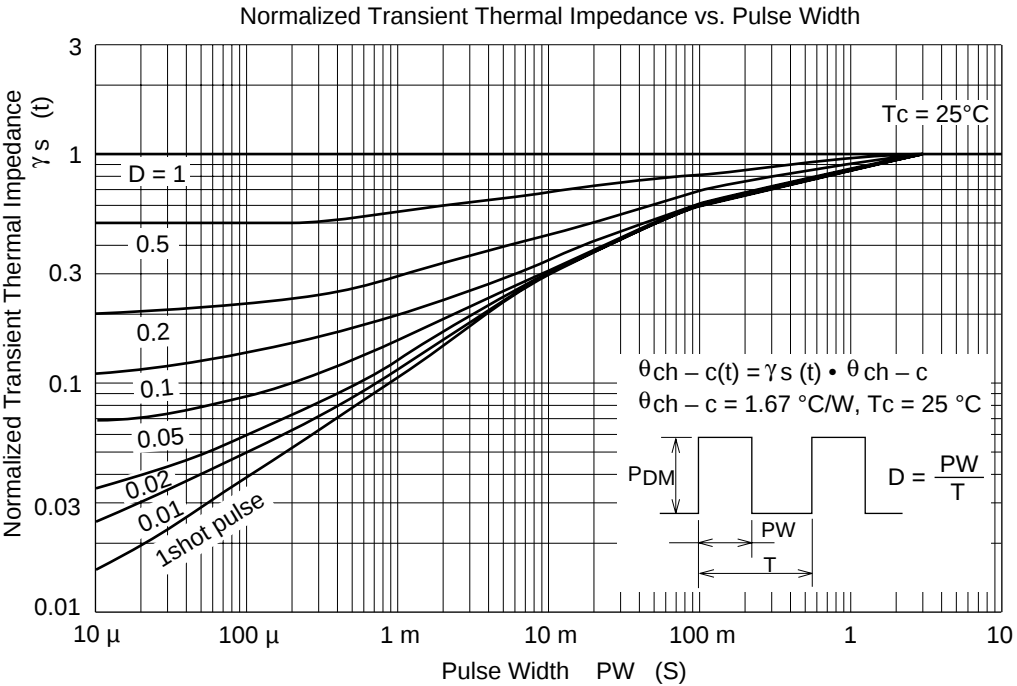
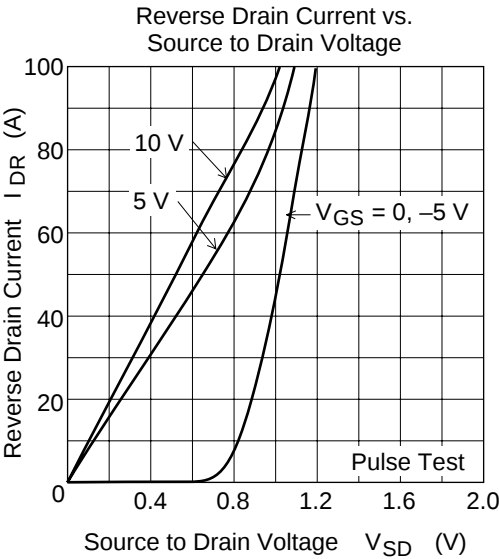


Dynamic Input Characteristics

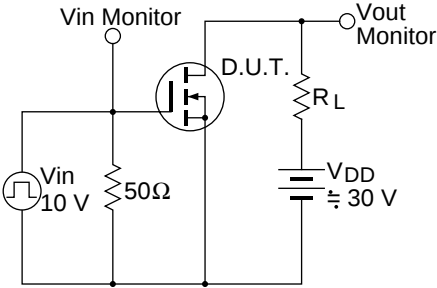


Switching Characteristics

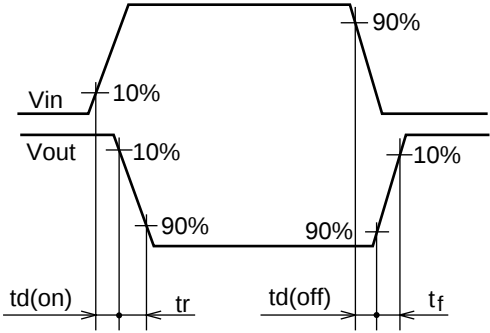




Switching Time Test Circuit

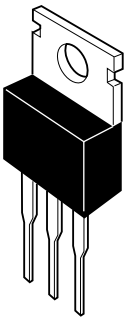
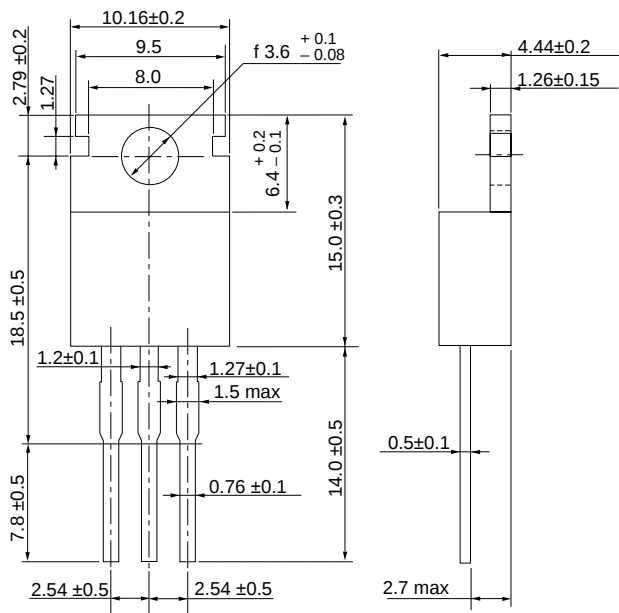


Waveform



Package Dimensions

Unit: mm



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

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