

2SJ518

Silicon P Channel MOS FET
High Speed Power Switching

HITACHI

ADE-208-580B (Z)

3rd. Edition

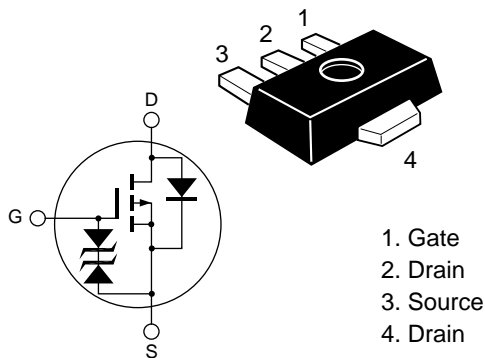
Jun 1998

Features

- Low on-resistance
 $R_{DS(on)} = 0.35 \Omega$ typ. at ($V_{GS} = -10V$, $I_D = -1A$)
- Low drive current
- 4 V gate drive devices
- High speed switching

Outline

UPAK



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	-2	A
Drain peak current	$I_{D(pulse)}$ ^{Note1}	-4	A
Body-drain diode reverse drain current	I_{DR}	-2	A
Avalanche current	I_{AP} ^{Note2}	-2	A
Avalanche energy	E_{AR}	0.34	mJ
Channel dissipation	P_{ch} ^{Note3}	1	W
Channel temperature	T_{ch}	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

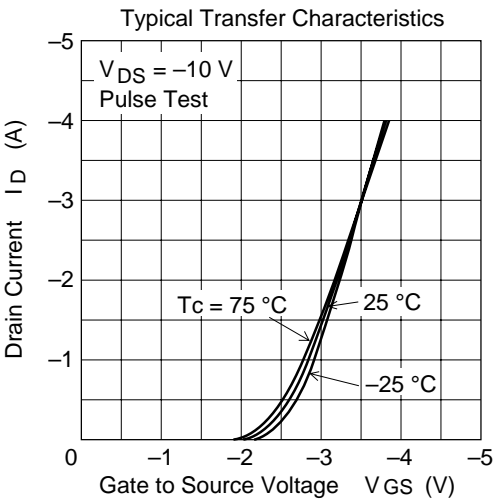
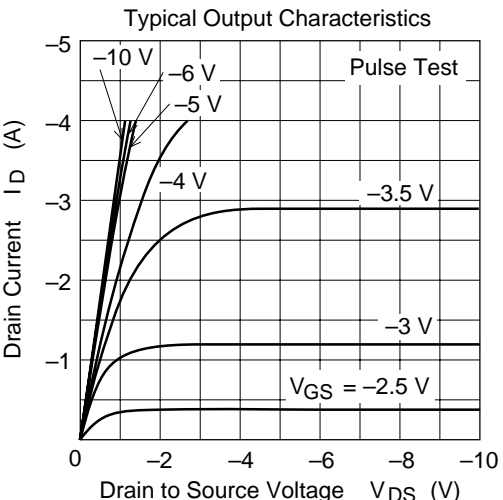
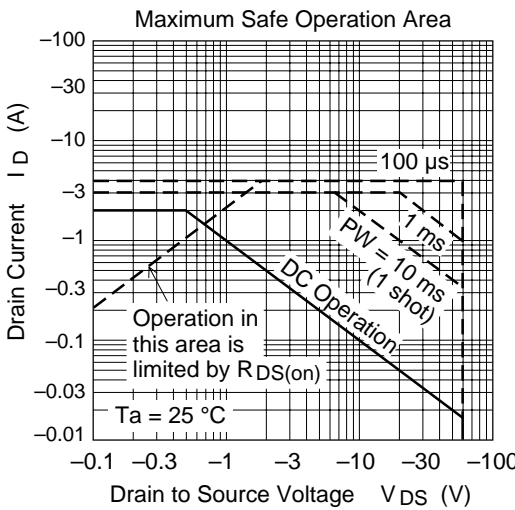
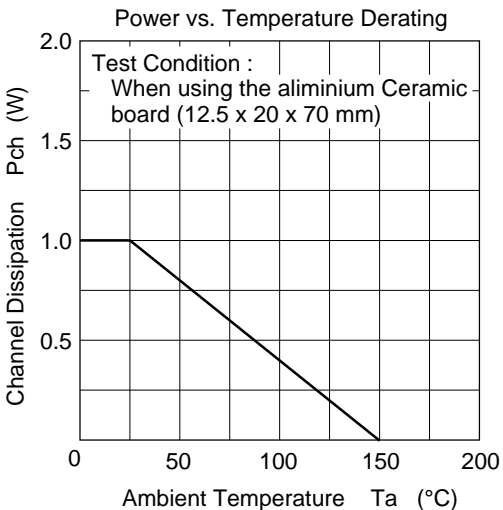
Note: 1. $PW \leq 10\mu s$, duty cycle $\leq 1\%$
2. value at $T_{ch} = 25^\circ C$, $R_g \geq 50\ \Omega$
3. Value at when using the aluminaceramic board (12.5x20x0.7mm)

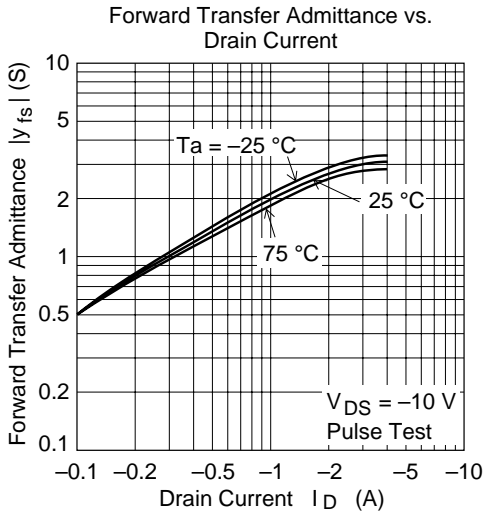
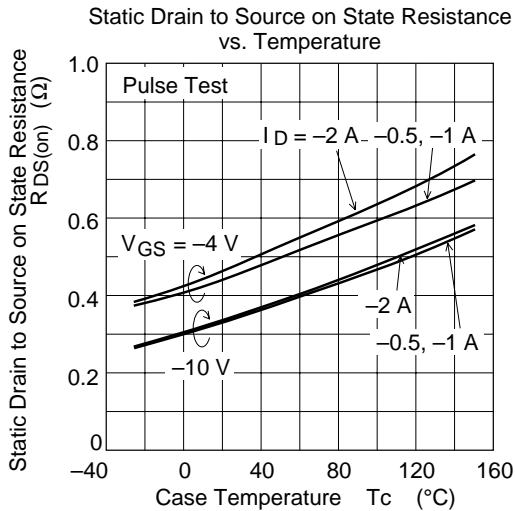
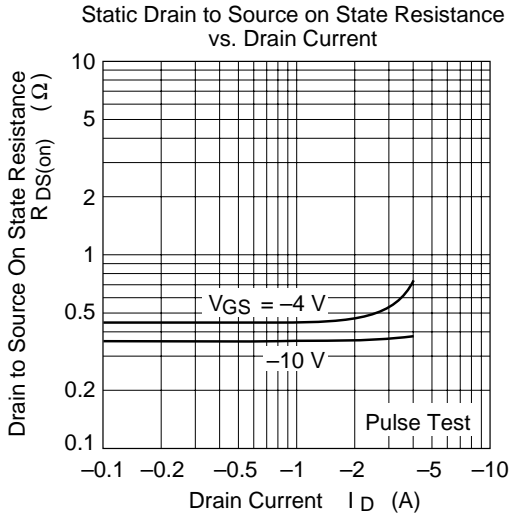
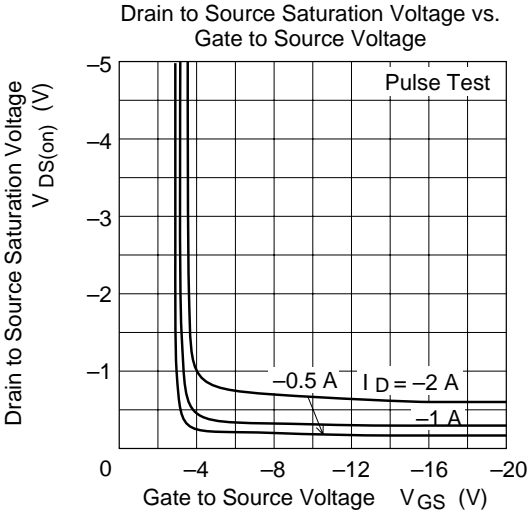
Electrical Characteristics (Ta = 25°C)

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	$I_G = \pm 100\mu A$, $V_{DS} = 0$
Zero gate voltege drain current	I_{DSS}	—	—	-10	μA	$V_{DS} = -60\ V$, $V_{GS} = 0$
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	$R_{DS(on)}$	—	0.35	0.46	Ω	$I_D = -1A$, $V_{GS} = -10V$ ^{Note4}
	$R_{DS(on)}$	—	0.45	0.63	Ω	$I_D = -1A$, $V_{GS} = -4V$ ^{Note4}
Forward transfer admittance	$ y_{fs} $	1.2	2.0	—	S	$I_D = -1A$, $V_{DS} = -10V$ ^{Note4}
Input capacitance	C_{iss}	—	220	—	pF	$V_{DS} = -10V$
Output capacitance	C_{oss}	—	110	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	35	—	pF	$f = 1MHz$
Turn-on delay time	$t_{d(on)}$	—	10	—	ns	$V_{GS} = -10V$, $I_D = -1A$
Rise time	t_r	—	11	—	ns	$R_L = 30\Omega$
Turn-off delay time	$t_{d(off)}$	—	45	—	ns	
Fall time	t_f	—	30	—	ns	
Body-drain diode forward voltage	V_{DF}	—	-1.05	—	V	$I_D = -2A$, $V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	50	—	ns	$I_F = -2A$, $V_{GS} = 0$ $diF/dt = 50A/\mu s$

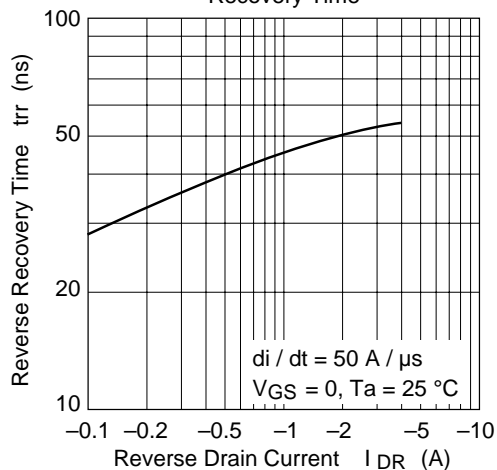
Note: 4. Pulse test
5. Marking is “AZ”

Main Characteristics

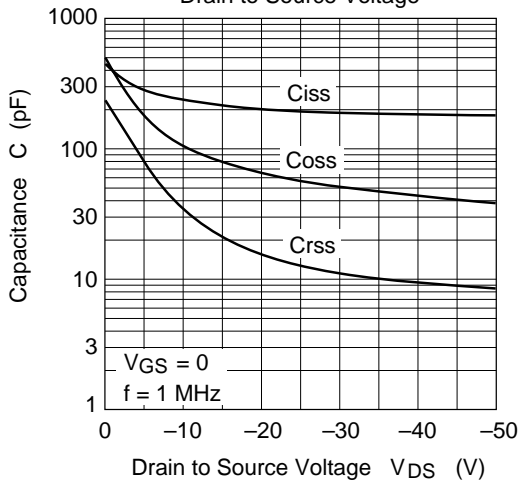




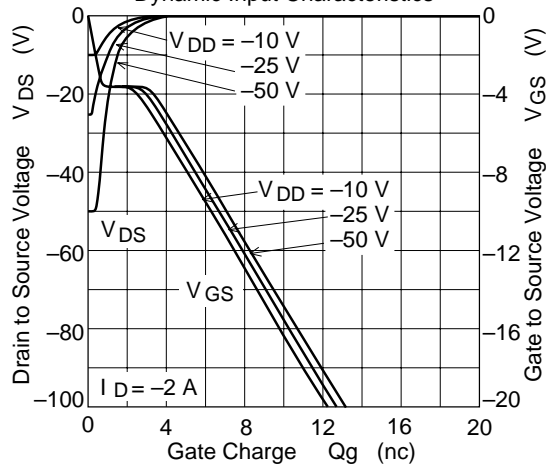
Body-Drain Diode Reverse Recovery Time



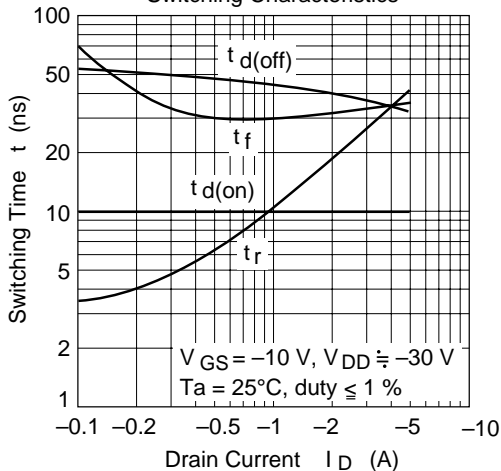
Typical Capacitance vs. Drain to Source Voltage

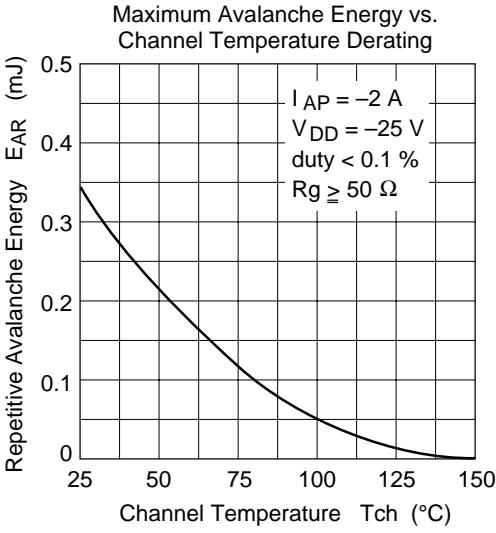
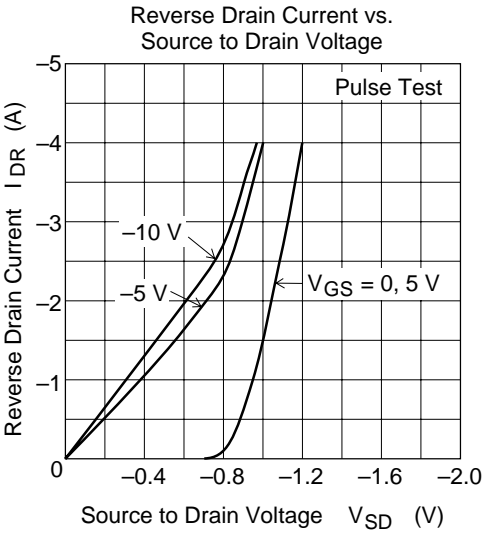


Dynamic Input Characteristics

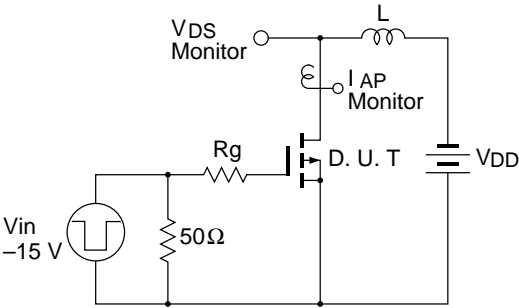


Switching Characteristics



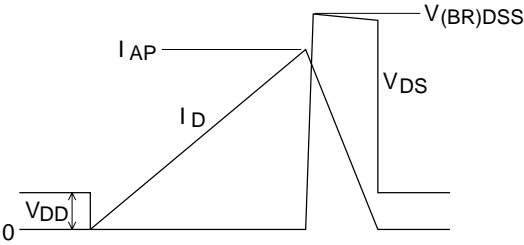


Avalanche Test Circuit

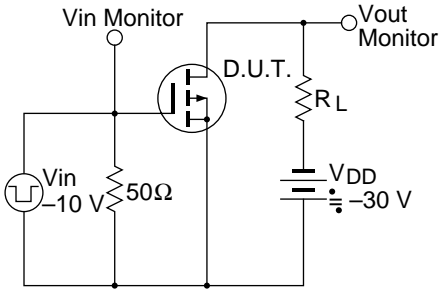


Avalanche Waveform

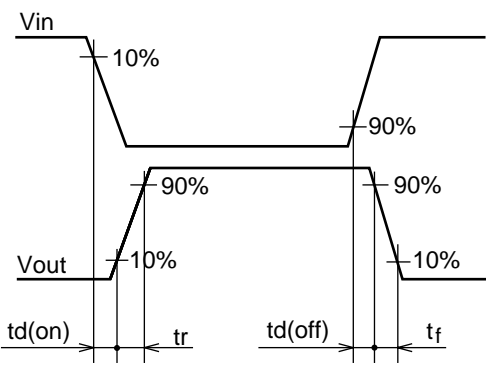
$$E_{AR} = \frac{1}{2} \cdot L \cdot I_{AP}^2 \cdot \frac{V_{DSS}}{V_{DSS} - V_{DD}}$$



Switching Time Test Circuit

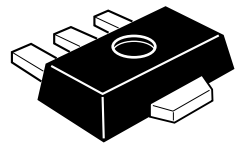
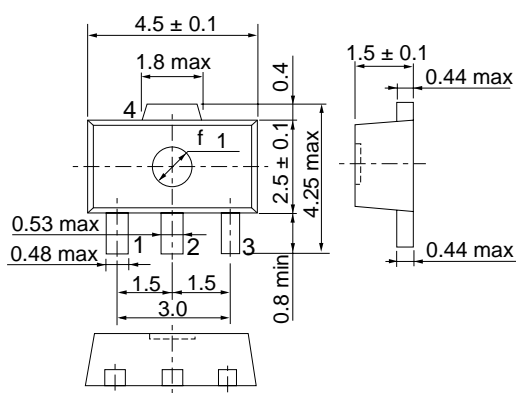


Waveform



Package Dimensions

Unit: mm



Hitachi Code	UPAK
EIAJ	SC-62
JEDEC	UPAK

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