
2SK3082(L), 2SK3082(S)

Silicon N Channel MOS FET
High Speed Power Switching

HITACHI

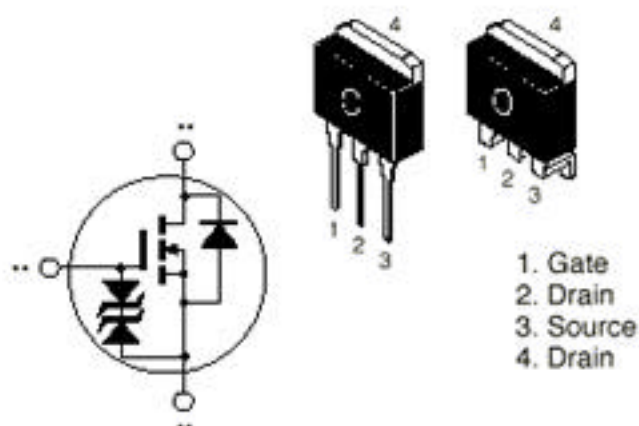
ADE-208-637 (Z)
2nd. Edition
May 1998

Features

- Low on-resistance
 $R_{DS(on)} = 0.055 \Omega$ typ.
- High speed switching
- 4V gate drive device can be driven from 5V source

Outline

LDPAK



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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	10	A
Drain peak current	$I_{D(pulse)}$ ^{Note1}	40	A
Body-drain diode reverse drain current	I_{DR}	10	A
Avalanche current	I_{AP} ^{Note3}	10	A
Avalanche energy	E_{AR} ^{Note3}	8.5	mJ
Channel dissipation	P_{ch} ^{Note2}	30	W
Channel temperature	T_{ch}	150	°C
Storage temperature	T_{stg}	−55 to +150	°C

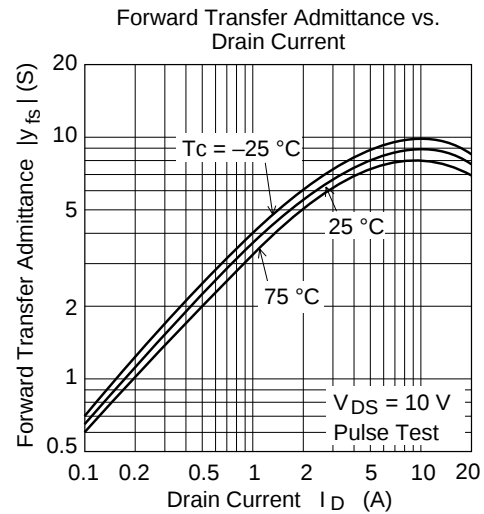
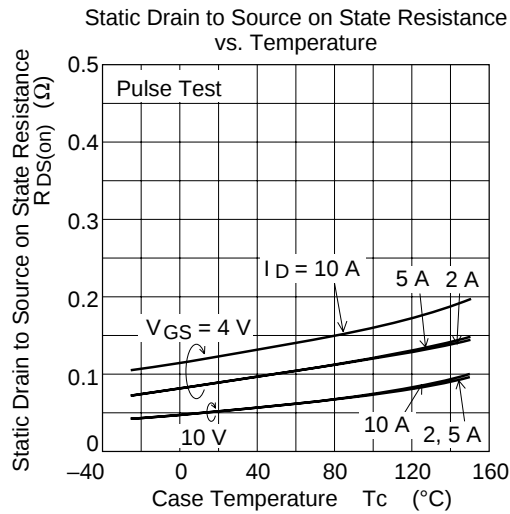
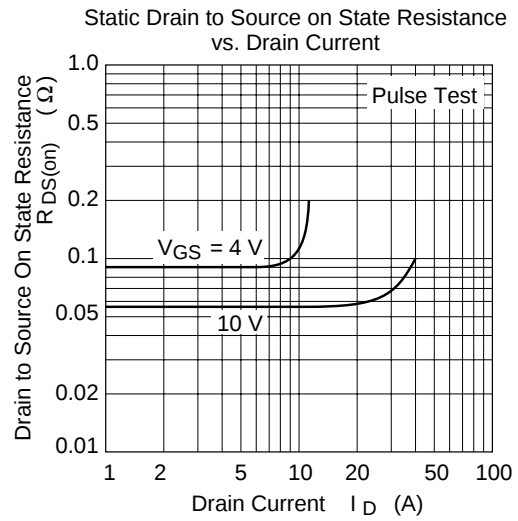
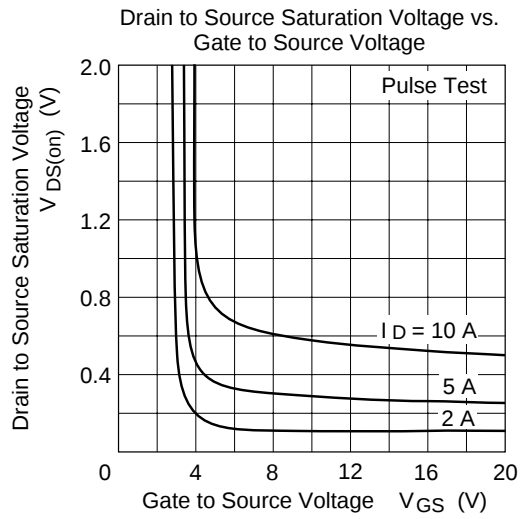
Note: 1. $PW \leq 10\mu s$, duty cycle $\leq 1\%$
 2. Value at $T_c = 25^\circ C$
 3. Value at $T_{ch} = 25^\circ C$, $R_g \geq 50\Omega$

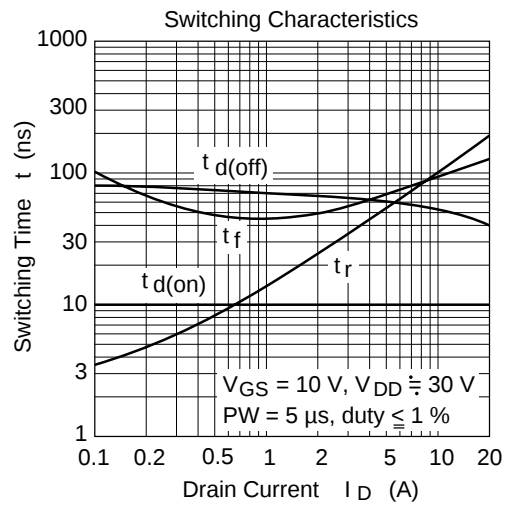
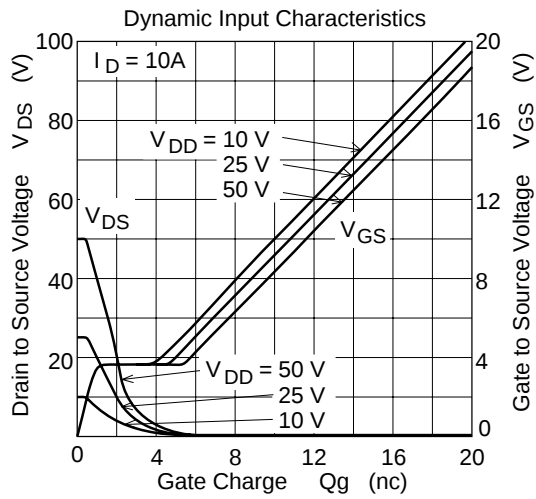
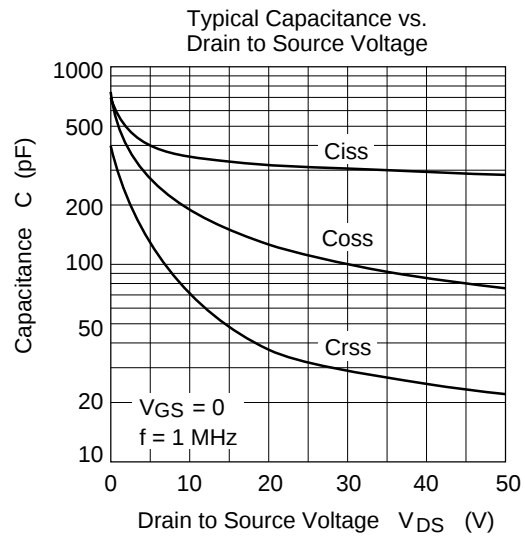
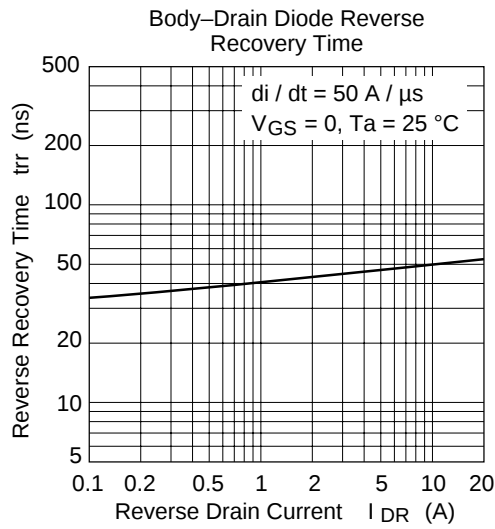
Electrical Characteristics (Ta = 25°C)

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	$I_G = \pm 100\mu A$, $V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	±10	μA	$V_{GS} = \pm 16V$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	10	μA	$V_{DS} = 60V$, $V_{GS} = 0$
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	$R_{DS(on)}$	—	0.055	0.075	Ω	$I_D = 5A$, $V_{GS} = 10V$ ^{Note4}
	$R_{DS(on)}$	—	0.090	0.150	Ω	$I_D = 5A$, $V_{GS} = 4V$ ^{Note4}
Forward transfer admittance	$ y_{fs} $	5	8	—	S	$I_D = 5A$, $V_{DS} = 10V$ ^{Note4}
Input capacitance	C_{iss}	—	350	—	pF	$V_{DS} = 10V$
Output capacitance	C_{oss}	—	190	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	70	—	pF	$f = 1MHz$
Turn-on delay time	$t_{d(on)}$	—	10	—	ns	$I_D = 5A$, $V_{GS} = 10V$
Rise time	t_r	—	55	—	ns	$R_L = 6\Omega$
Turn-off delay time	$t_{d(off)}$	—	60	—	ns	
Fall time	t_f	—	70	—	ns	
Body-drain diode forward voltage	V_{DF}	—	0.9	—	V	$I_F = 10A$, $V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	50	—	ns	$I_F = 10A$, $V_{GS} = 0$ $diF/dt = 50A/\mu s$

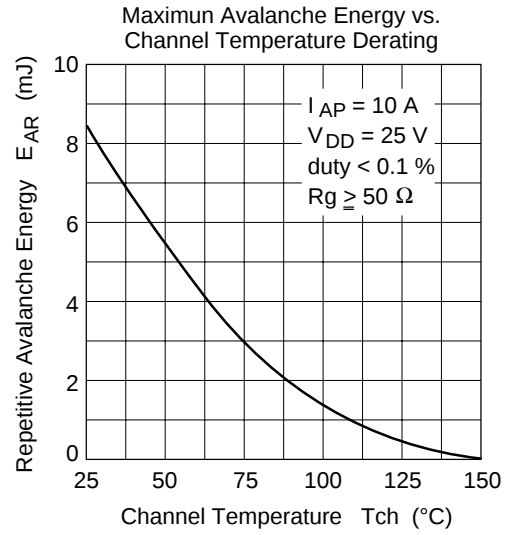
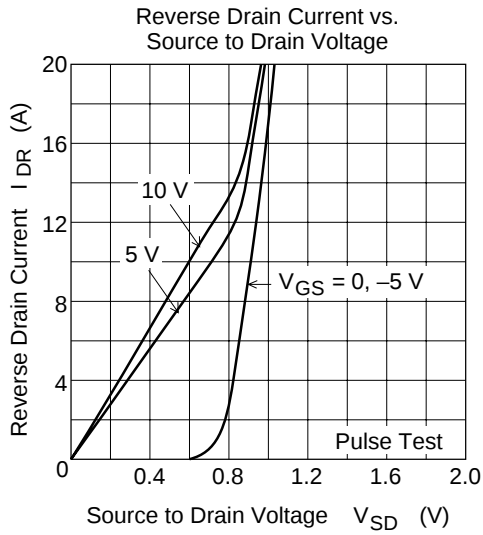
Note: 4. Pulse test

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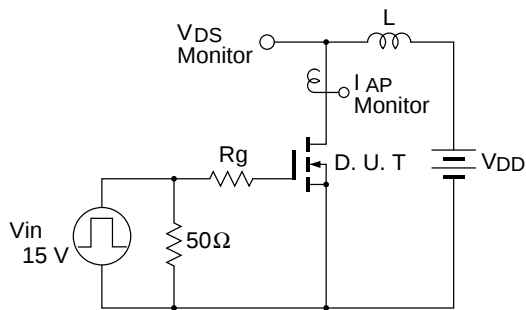




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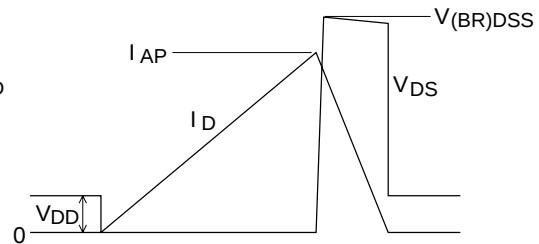


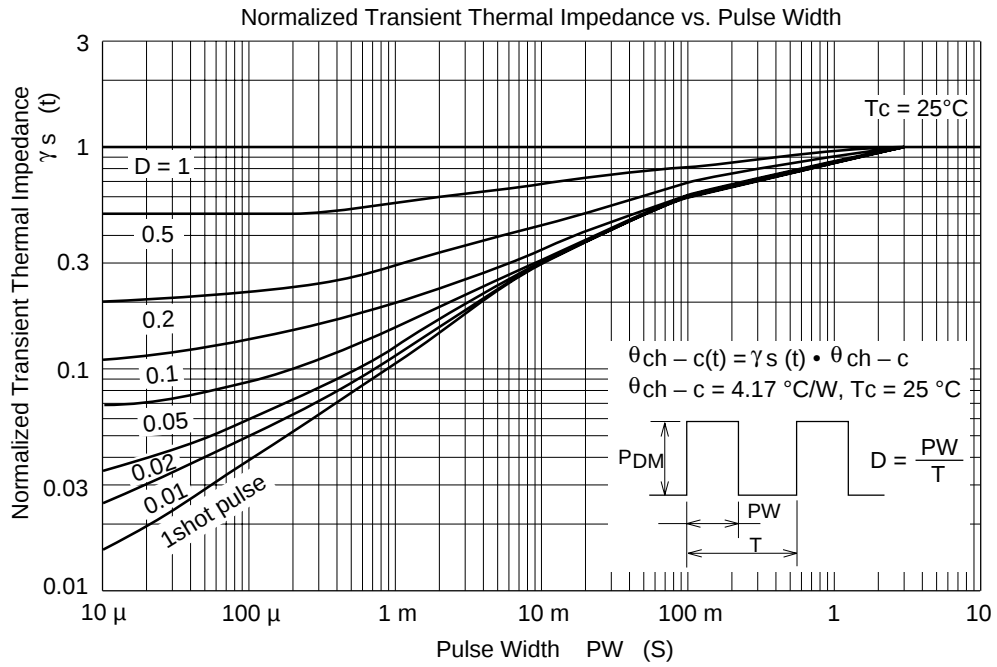
Avalanche Test Circuit



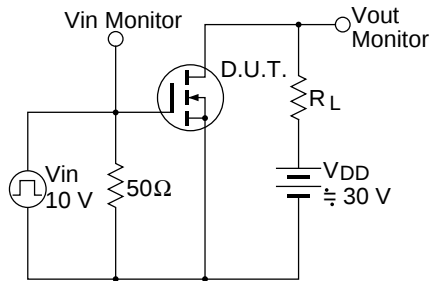
Avalanche Waveform

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

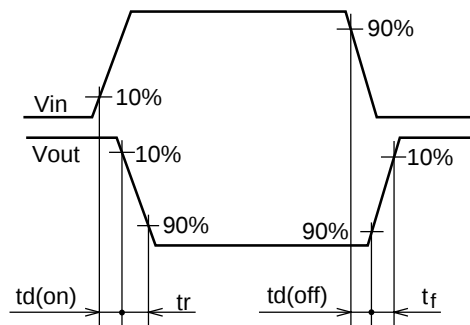




Switching Time Test Circuit



Waveform



Unit: mm



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