

2SK2940(L),2SK2940(S)

Silicon N Channel MOS FET
High Speed Power Switching

HITACHI

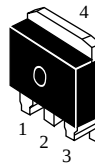
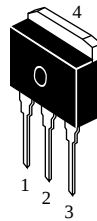
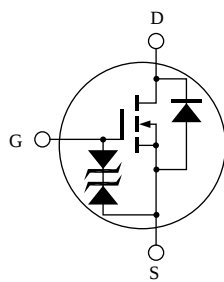
ADE-208-563B (Z)
3rd. Edition
Jun 1998

Features

- Low on-resistance
 $R_{DS} = 0.010 \Omega$ typ.
- High speed switching
- 4V gate drive device can be driven from 5V source

Outline

LDPAK



1. Gate
2. Drain
3. Source
4. Drain

2SK2940(L),2SK2940(S)

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}	75	W
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	−55 to +150	°C

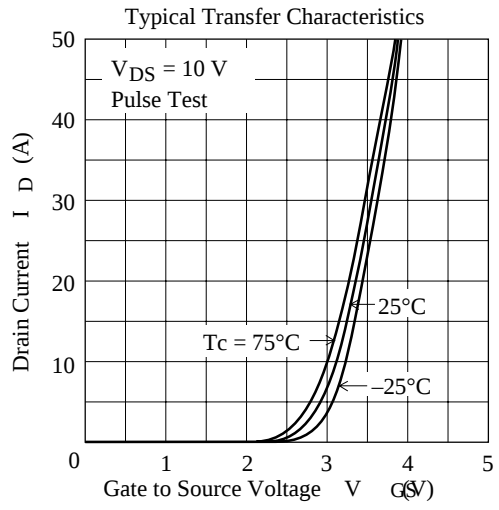
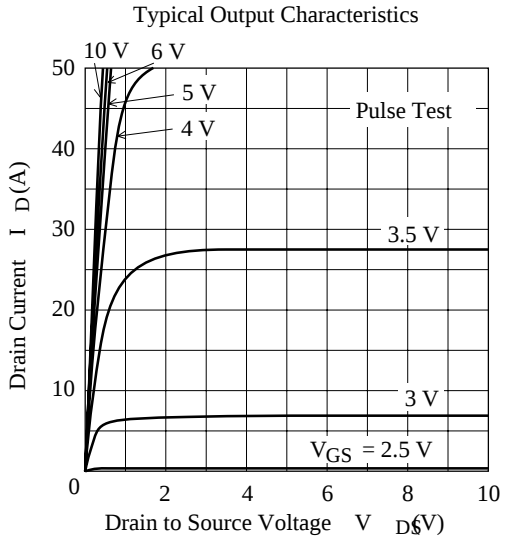
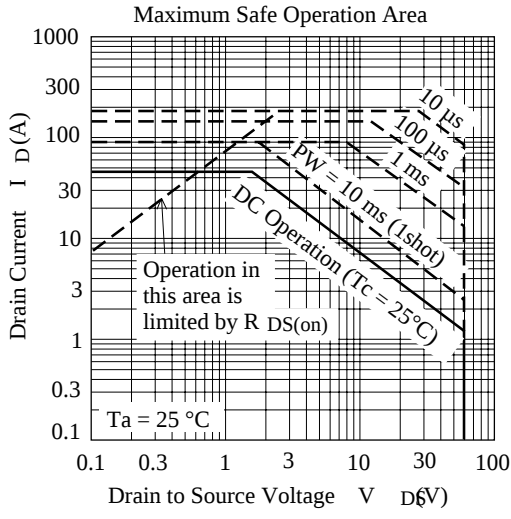
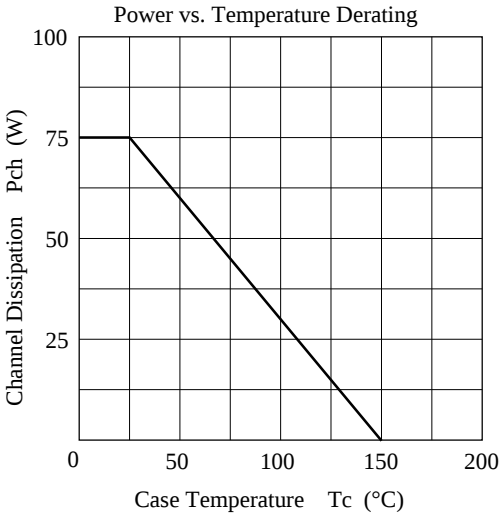
- Note:
- 1. PW ≤ 10μs, duty cycle ≤ 1 %
 - 2. Value at Tc = 25°C
 - 3. Value at Tch = 25°C, Rg ≥ 50Ω

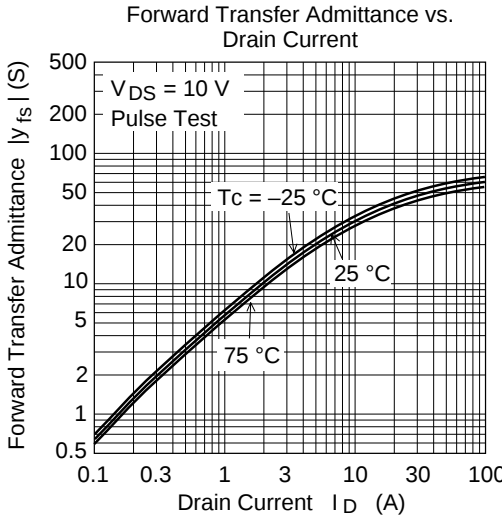
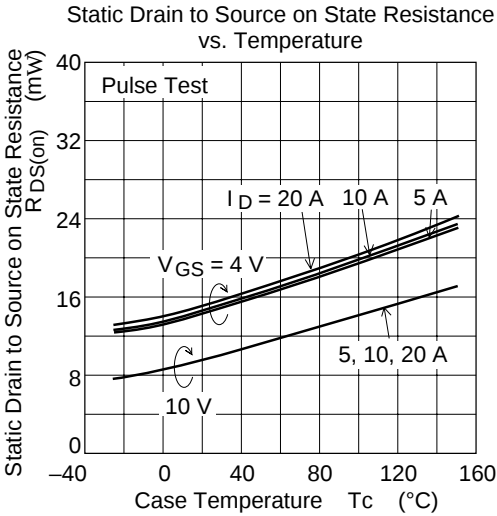
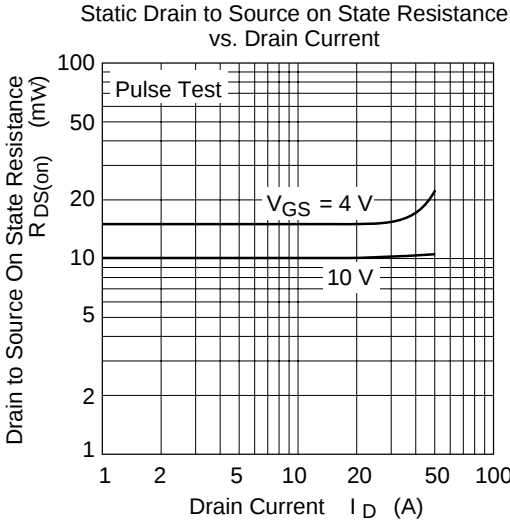
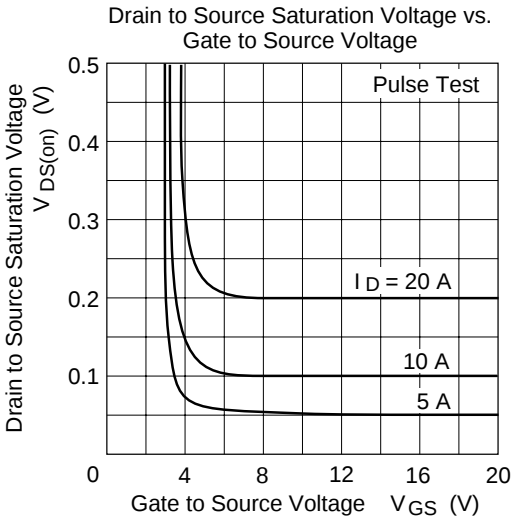
Electrical Characteristics (Ta = 25°C)

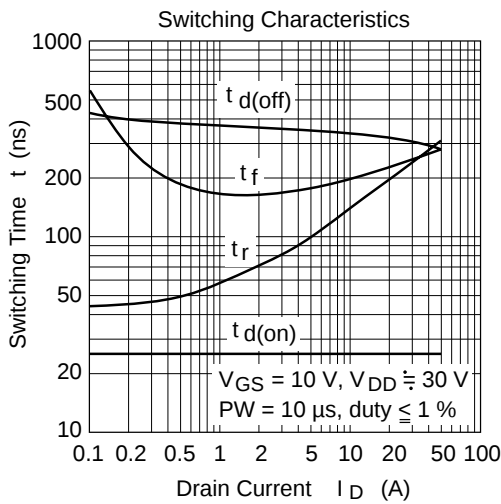
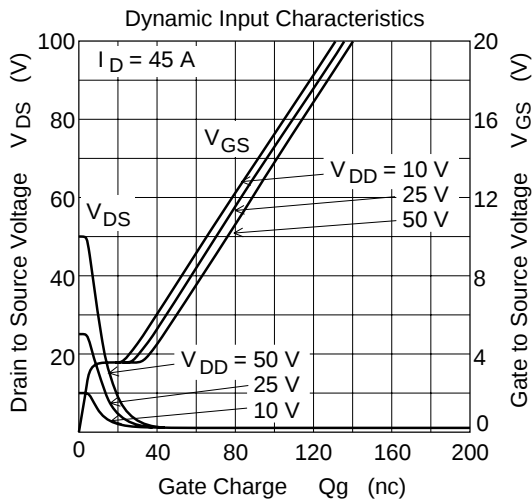
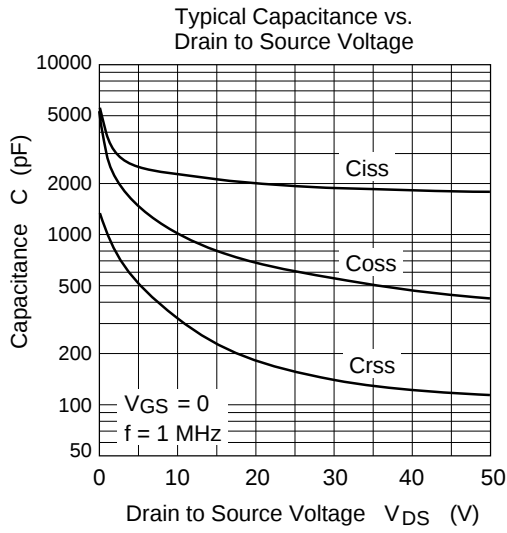
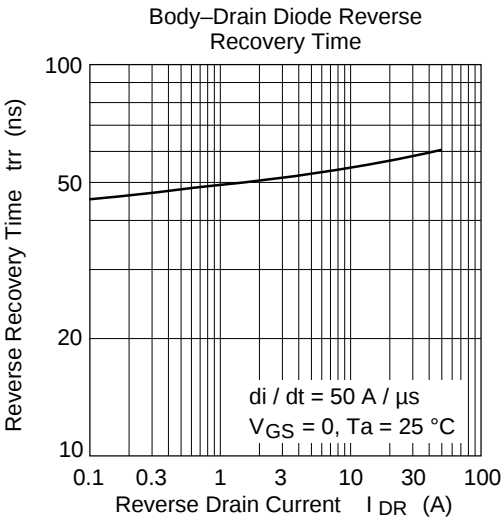
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	60	—	—	V	$I_D = 10mA, V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	—	—	V	$I_G = \pm 100\mu A, V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	±10	μA	$V_{GS} = \pm 16V, V_{DS} = 0$
Zero gate 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	$R_{DS(on)}$	—	0.010	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	C_{iss}	—	2200	—	pF	$V_{DS} = 10V$
Output capacitance	C_{oss}	—	1050	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	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	$R_L = 1.5\Omega$
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	$I_F = 45A, V_{GS} = 0$ $diF/dt = 50A/\mu s$

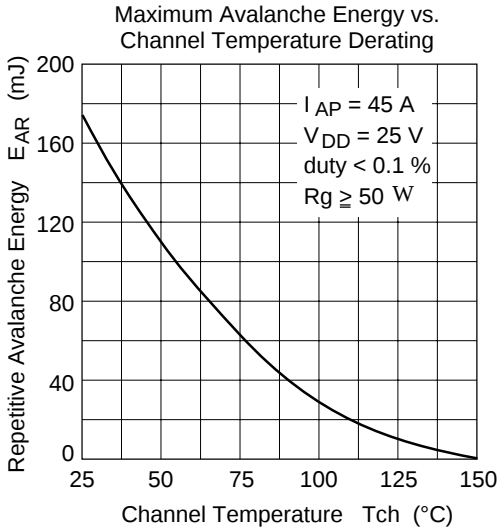
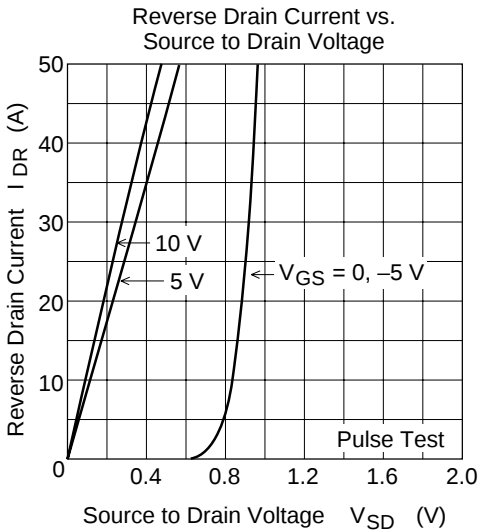
Note: 4. Pulse test

Main Characteristics

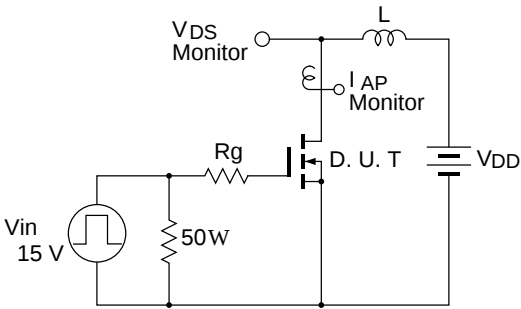






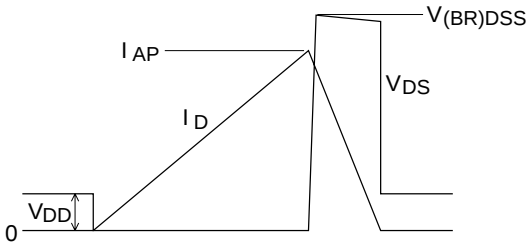


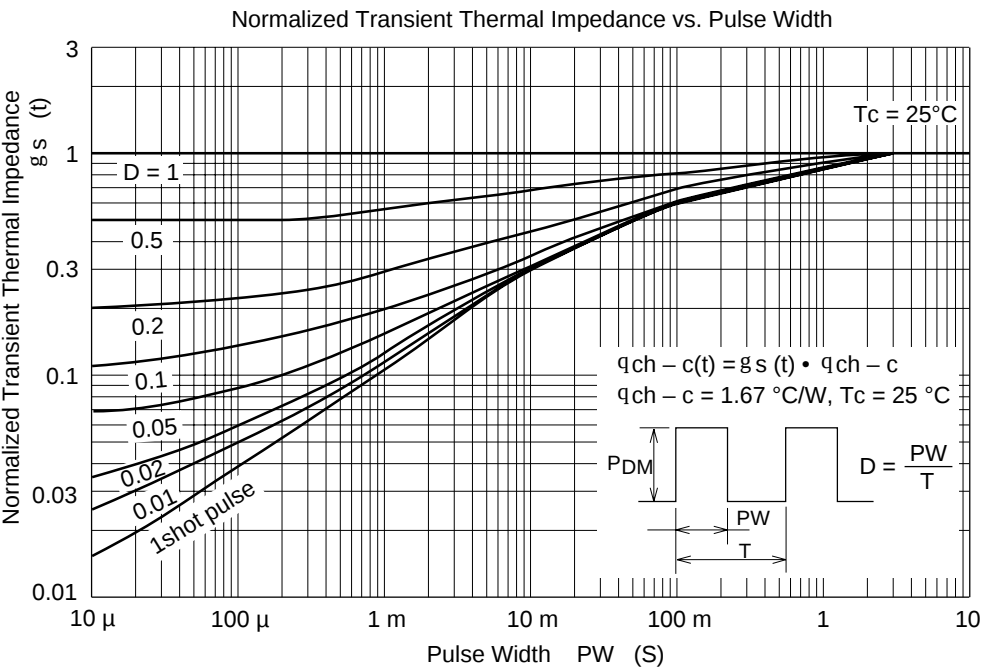
Avalanche Test Circuit



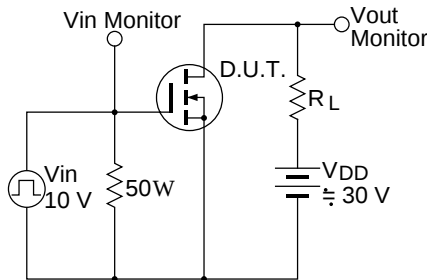
Avalanche Waveform

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

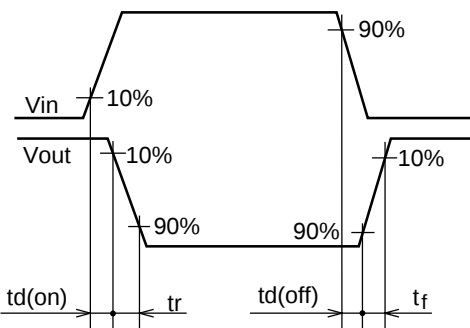




Switching Time Test Circuit

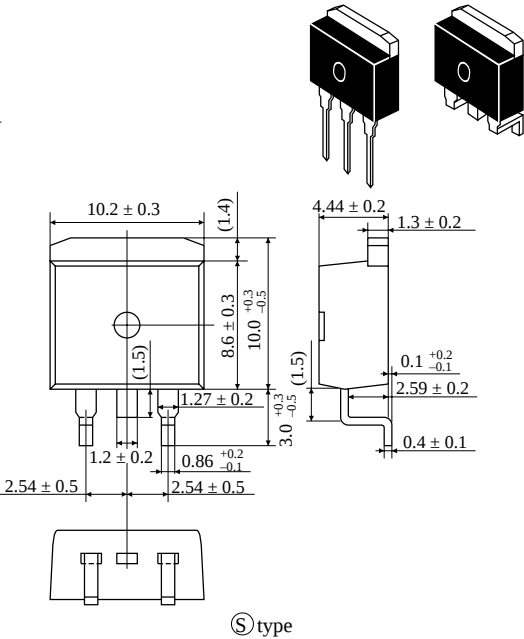
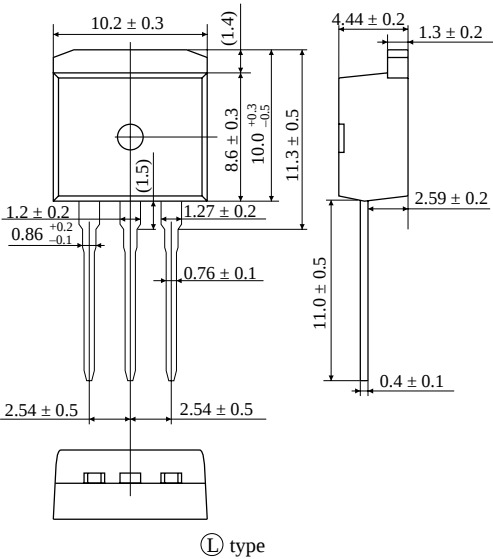


Waveform



Package Dimensions

Unit: mm



Hitachi Code	LDPAK
EIAJ	—
JEDEC	—

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