

2SK2980

Silicon N Channel MOS FET
High Speed Power Switching

HITACHI

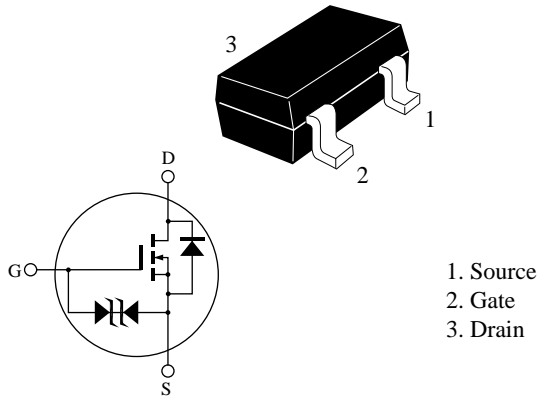
ADE-208-571B (Z)
3rd. Edition
Jun 1998

Features

- Low on-resistance
 $R_{DS(on)} = 0.2\Omega$ typ. ($V_{GS} = 4\text{ V}$, $I_D = 500\text{ mA}$)
- 2.5V gate drive devices.
- Small package (MPAK)

Outline

MPAK



Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	30	V
Gate to source voltage	V_{GSS}	+12	V
		-10	V
Drain current	I_{D}	1.0	A
Drain peak current	$I_{\text{D(pulse)}}$ ^{Note1}	4	A
Channel dissipation	P_{ch} ^{Note2}	0.8	W
Channel temperature	T_{ch}	150	°C
Storage temperature	T_{stg}	-55 to +150	°C

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

2. Value at when using alumina ceramic board (12.5 x 20 x 0.7 mm)

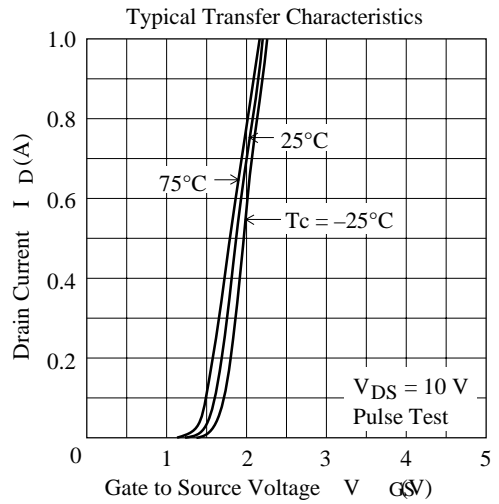
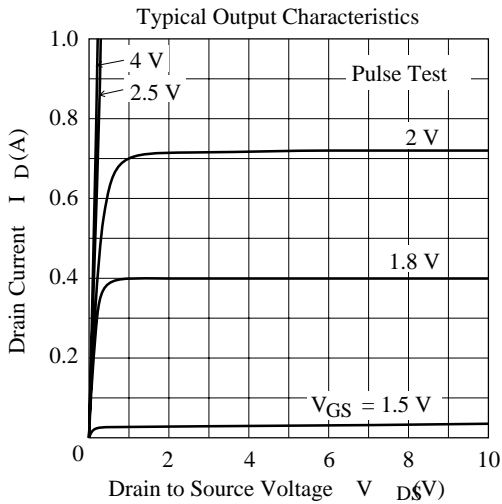
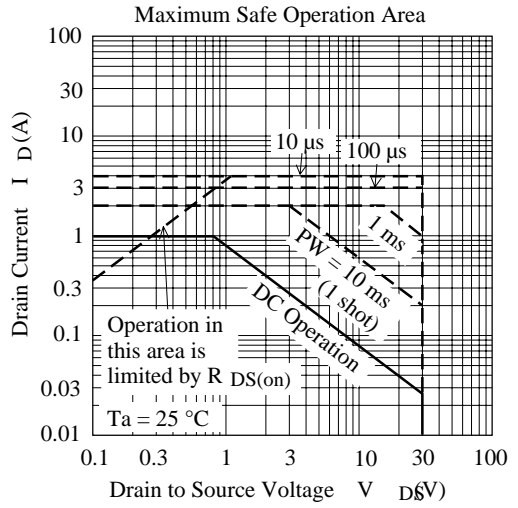
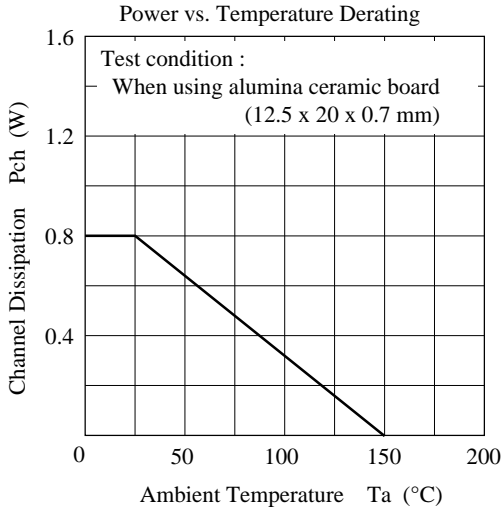
Electrical Characteristics (Ta = 25°C)

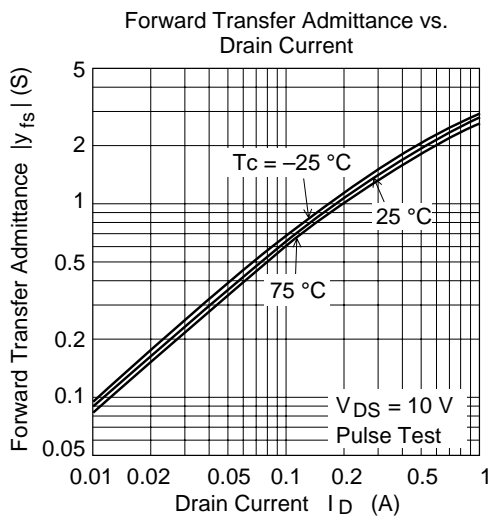
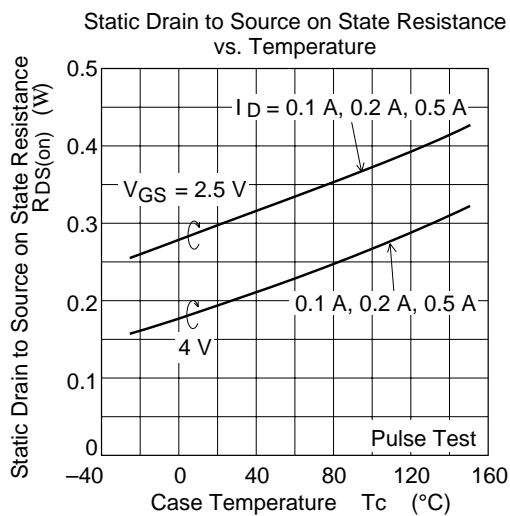
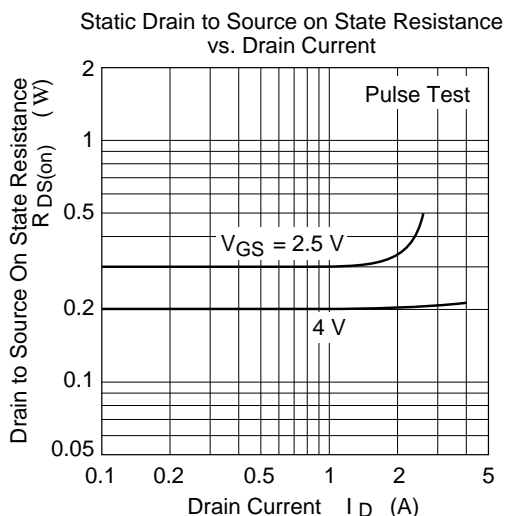
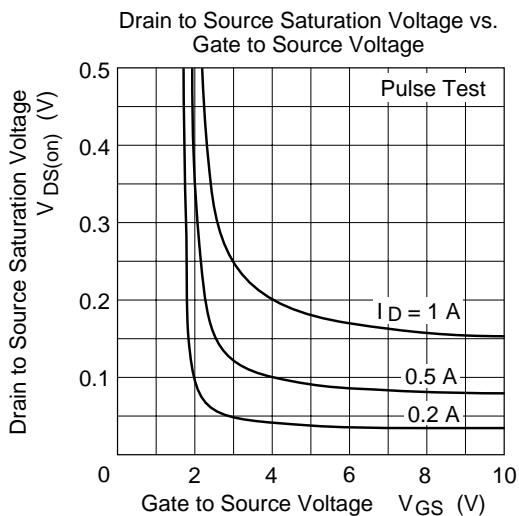
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	30	—	—	V	$I_D = 100\mu A, V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	+12	—	—	V	$I_G = +100\mu A, V_{DS} = 0$
		-10	—	—	V	$I_G = -100\mu A, V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	1.0	μA	$V_{DS} = 30 V, V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 5.0	μA	$V_{GS} = \pm 8V, V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	0.5	—	1.5	V	$I_D = 10\mu A, V_{DS} = 5V$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.2	0.28	Ω	$I_D = 500 mA$ $V_{GS} = 4V$ ^{Note3}
Static drain to source on state resistance	$R_{DS(on)}$	—	0.3	0.5	Ω	$I_D = 500 mA$ $V_{GS} = 2.5V$ ^{Note3}
Forward transfer admittance	$ y_{fs} $	1.2	2.0	—	S	$I_D = 500 mA$ $V_{DS} = 10V$ ^{Note3}
Input capacitance	C_{iss}	—	155	—	pF	$V_{DS} = 10V$
Output capacitance	C_{oss}	—	75	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	35	—	pF	$f = 1MHz$
Turn-on delay time	$t_{d(on)}$	—	12	—	ns	$V_{GS} = 4V, I_D = 500 mA$
Rise time	t_r	—	30	—	ns	$R_L = 20\Omega$
Turn-off delay time	$t_{d(off)}$	—	35	—	ns	
Fall time	t_f	—	30	—	ns	

Note: 3. Pulse test

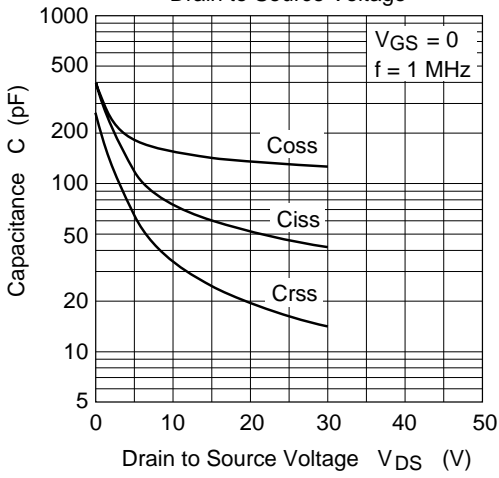
4. Marking is "ZZ-"

Main Characteristics

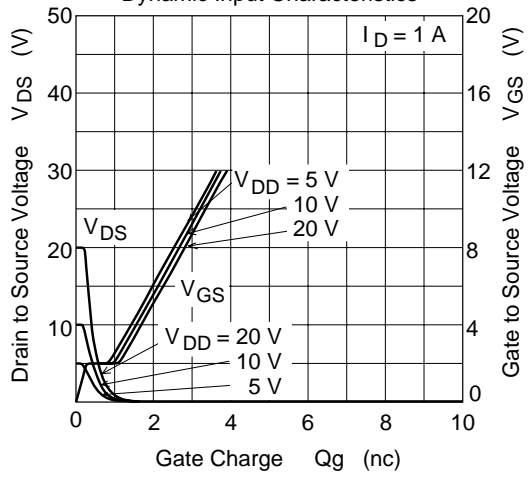




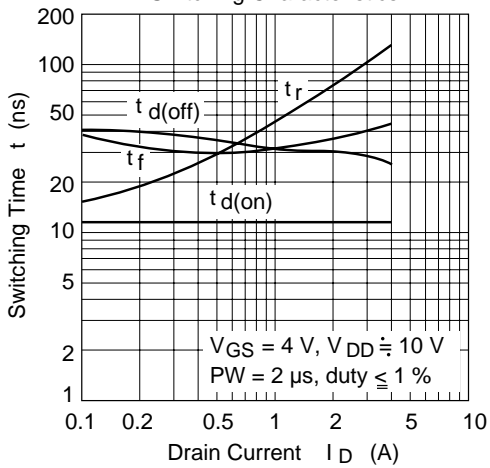
Typical Capacitance vs. Drain to Source Voltage



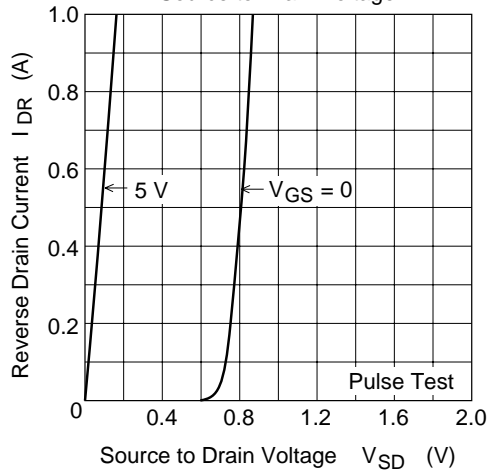
Dynamic Input Characteristics



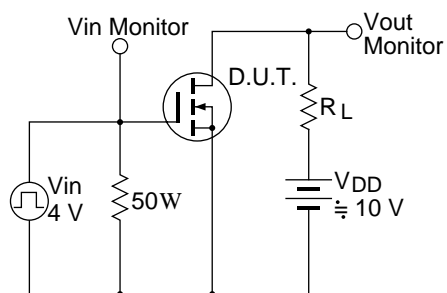
Switching Characteristics



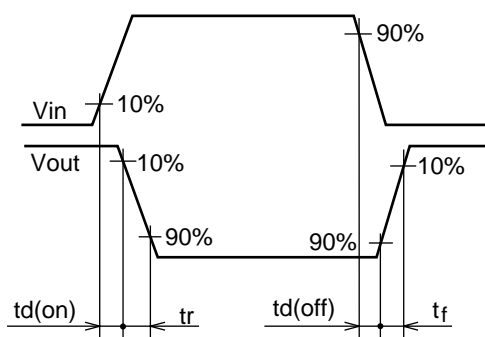
Reverse Drain Current vs. Source to Drain Voltage



Switching Time Test Circuit

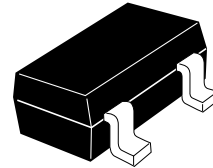
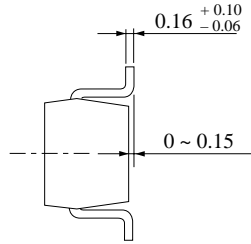
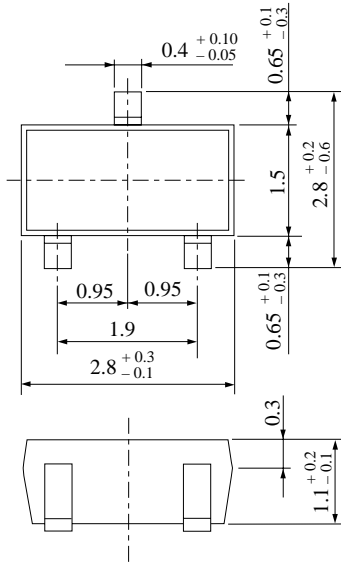


Waveform



Package Dimensions

Unit: mm



Hitachi Code	MPAK
EIAJ	SC-59A
JEDEC	TO-236Mod.

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