

# 2SK3000

Silicon N Channel MOS FET  
Low Frequency Power Switching

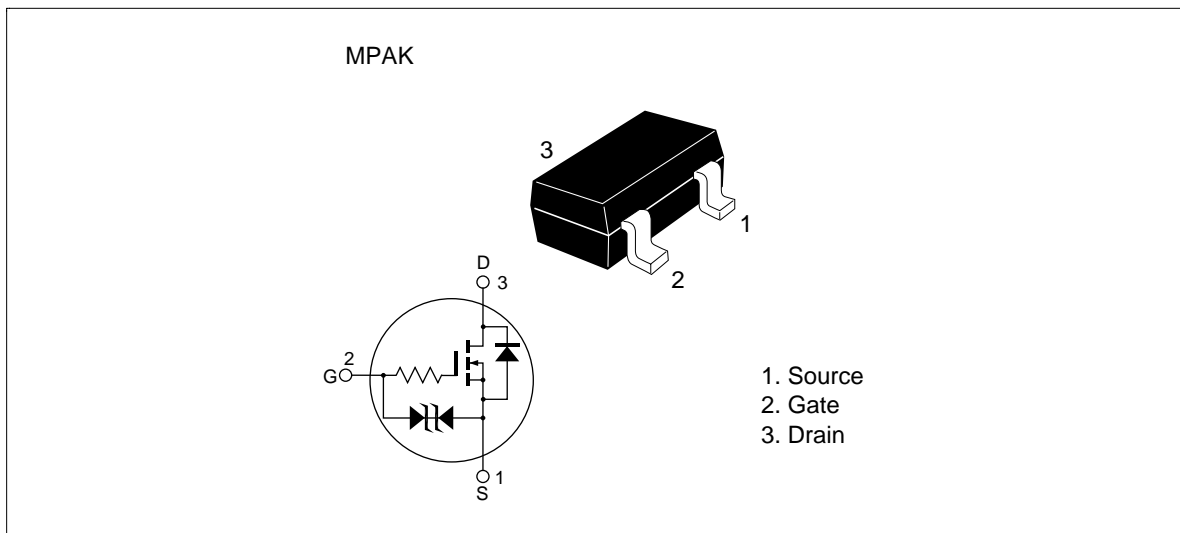
# HITACHI

ADE-208-585 (Z)  
1st. Edition  
December 1997

## Features

- Low on-resistance  
 $R_{DS(on)} = 0.25\Omega$  typ. ( $V_{GS} = 10\text{ V}$ ,  $I_D = 450\text{ mA}$ )
- 4V gate drive devices.
- Small package (MPAK)
- Expansive drain to source surge power capability

## Outline



## 2SK3000

### Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	40	V
Gate to source voltage	$V_{GSS}$	$\pm 10$	V
Drain current	$I_D$	1.0	A
Drain peak current	$I_{D(pulse)}$ <sup>Note1</sup>	4.0	A
Reverse drain current	$I_{DR}$	1.0	A
Channel dissipation	$P_{ch}$ <sup>Note2</sup>	400	mW
Channel temperature	$T_{ch}$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

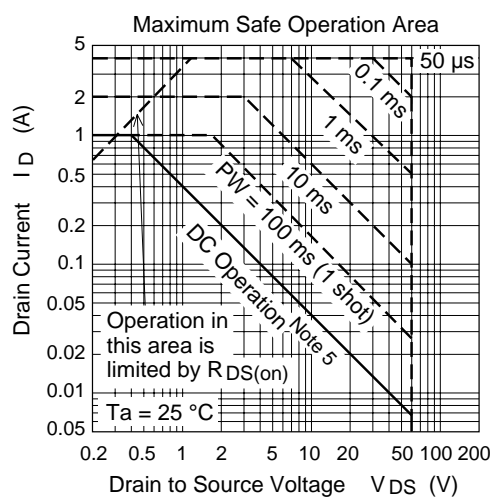
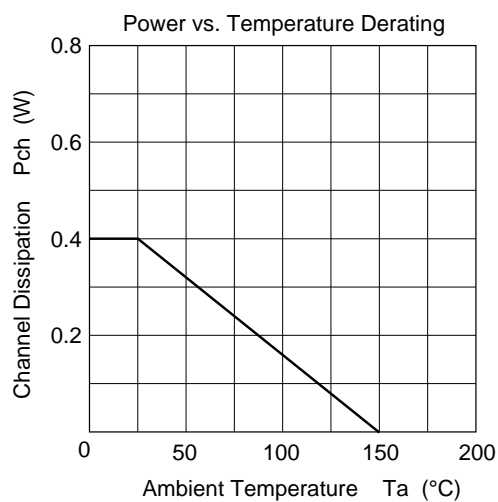
Note: 1.  $PW \leq 10\mu s$ , duty cycle  $\leq 1\%$   
2. When using the glass epoxy board (10 mm x 10 mm x 1 mm<sup>1</sup>)

### Electrical Characteristics (Ta = 25°C)

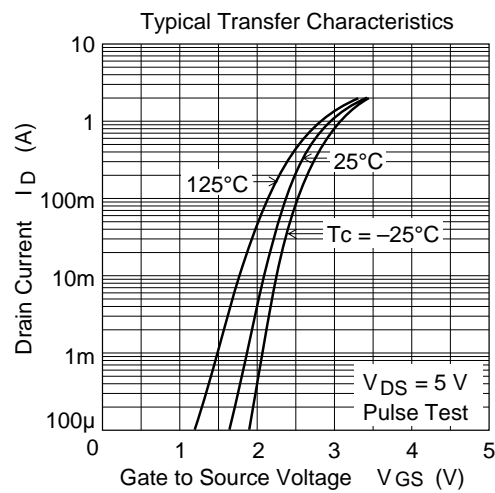
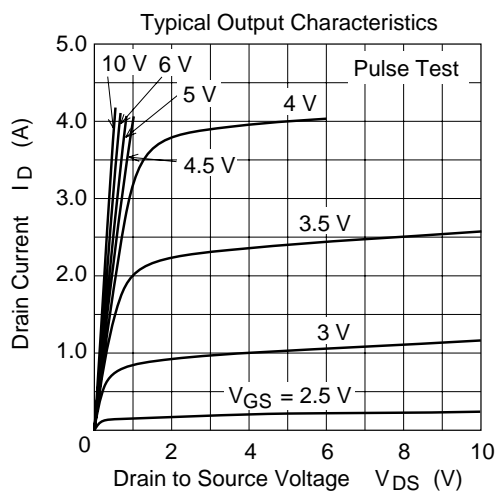
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	40	—	60	V	$I_D = 100\mu A$ , $V_{GS} = 0$
Drain to source voltage	$V_{DS(SUS)}$	40	—	—	V	$L = 100\mu H$ , $I_D = 3 A$
Gate to source breakdown voltage	$V_{(BR)GSS}$	$\pm 10$	—	—	V	$I_G = \pm 100\mu A$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	1.0	$\mu A$	$V_{DS} = 40 V$ , $V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 5$	$\mu A$	$V_{GS} = \pm 6.5V$ , $V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.1	—	2.1	V	$I_D = 10\mu A$ , $V_{DS} = 5V$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.3	0.5	$\Omega$	$I_D = 450 mA$ $V_{GS} = 4V$ <sup>Note3</sup>
Static drain to source on state resistance	$R_{DS(on)}$	—	0.25	0.3	$\Omega$	$I_D = 450 mA$ $V_{GS} = 10V$ <sup>Note3</sup>
Forward transfer admittance	$ y_{fs} $	0.5	1.2	—	S	$I_D = 450 mA$ $V_{DS} = 10V$ <sup>Note3</sup>
Input capacitance	$C_{iss}$	—	14.0	—	pF	$V_{DS} = 10V$
Output capacitance	$C_{oss}$	—	68	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	$C_{rss}$	—	3.0	—	pF	$f = 1MHz$
Turn-on delay time	$t_{d(on)}$	—	0.12	—	$\mu s$	$V_{GS} = 4V$ , $I_D = 450 mA$
Rise time	$t_r$	—	0.6	—	$\mu s$	$R_L = 22\Omega$
Turn-off delay time	$t_{d(off)}$	—	1.7	—	$\mu s$	
Fall time	$t_f$	—	1.4	—	$\mu s$	

Note: 3. Pulse test  
4. Marking is "ZY".

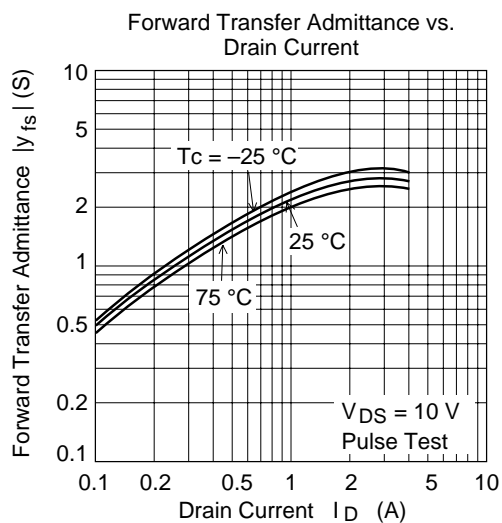
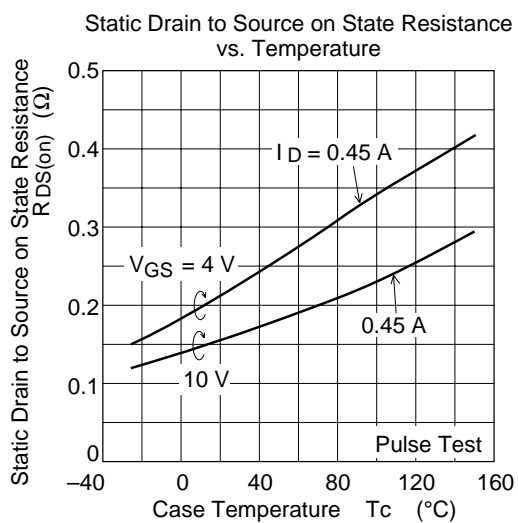
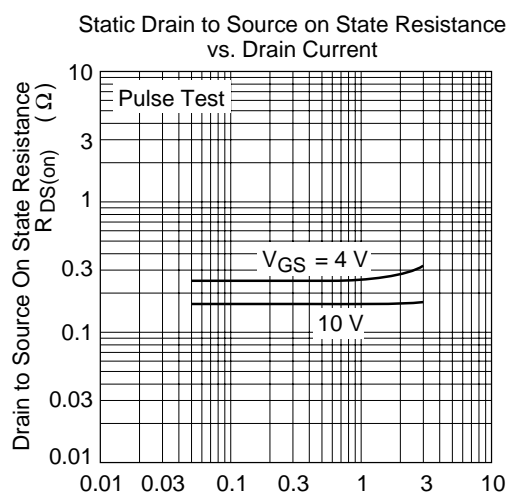
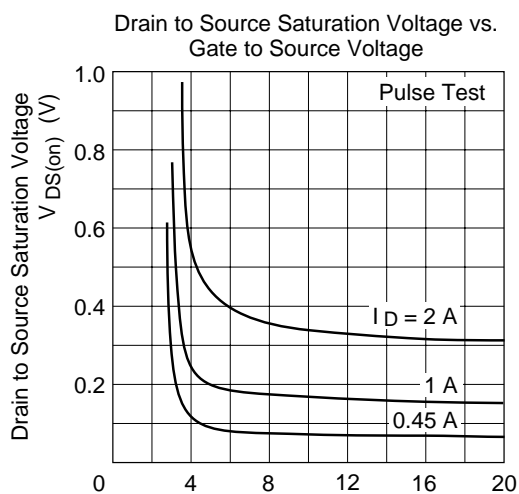
## Main Characteristics

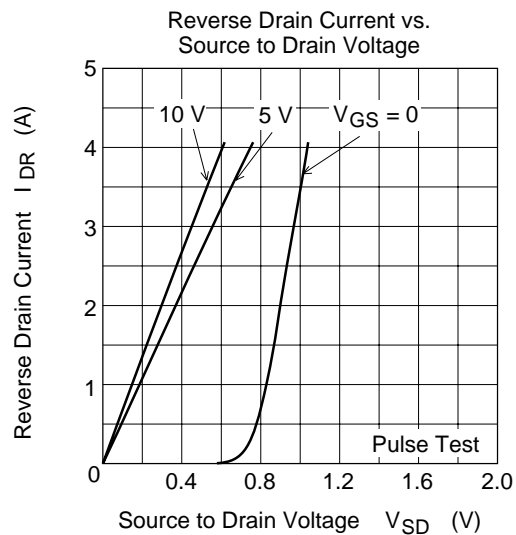
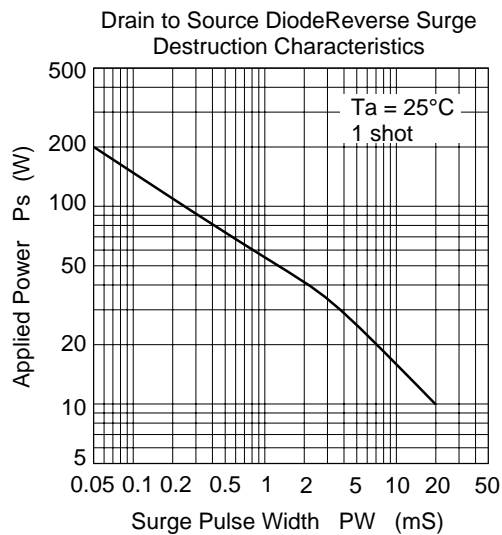
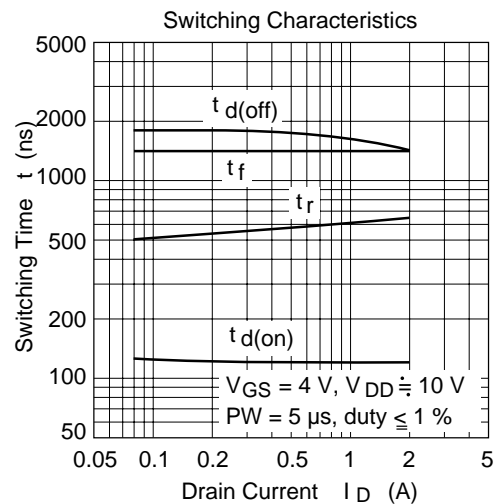
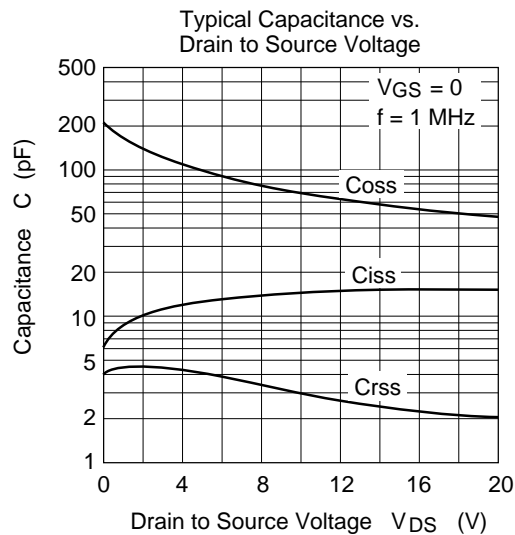


Note5 : When using the glass epoxy board (10mm x 10mm x 1mm)

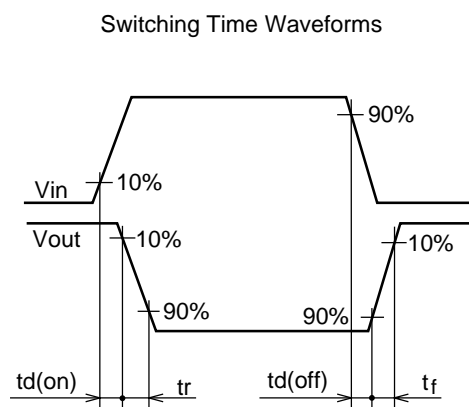
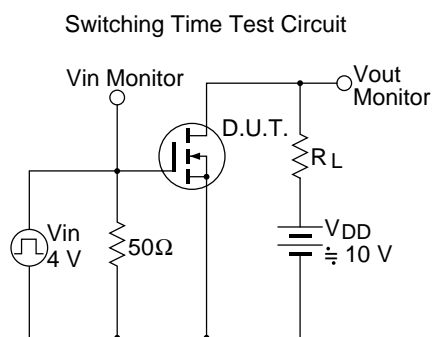
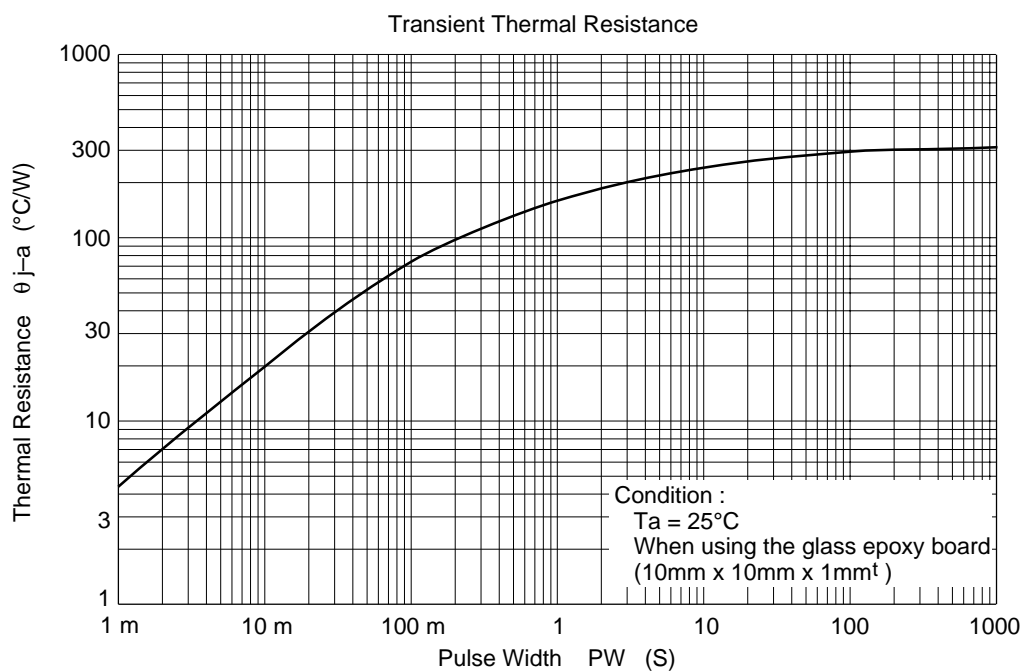


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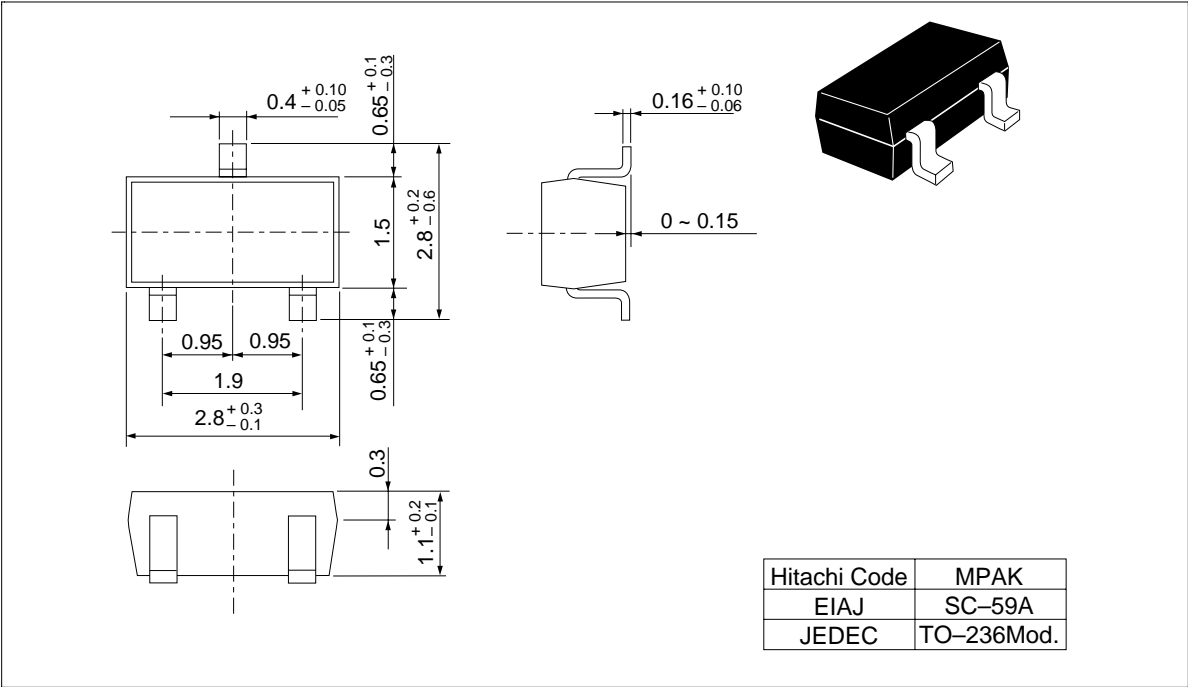


## 2SK3000



Package Dimensions

Unit: mm



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