

# 2SK3228

Silicon N Channel MOS FET  
High Speed Power Switching

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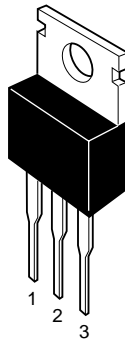
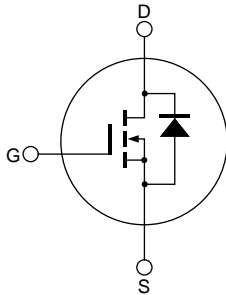
ADE-208-765A(Z)  
Target specification  
2nd. Edition  
December 1998

## Features

- Low on-resistance  
 $R_{DS(on)} = 6m\Omega$  typ.
- Low drive current
- 4V gate drive device can be driven from 5V source

## Outline

TO-220AB



1. Gate
2. Drain(Flange)
3. Source

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

<b>Item</b>	<b>Symbol</b>	<b>Ratings</b>	<b>Unit</b>
Drain to source voltage	$V_{DSS}$	80	V
Gate to source voltage	$V_{GSS}$	$\pm 20$	V
Drain current	$I_D$	75	A
Drain peak current	$I_{D(pulse)}^{*1}$	300	A
Body-drain diode reverse drain current	$I_{DR}$	75	A
Avalanche current	$I_{AP}^{*3}$	50	A
Avalanche energy	$E_{AR}^{*3}$	181	mJ
Channel dissipation	$P_{ch}^{*2}$	100	W
Channel temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

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

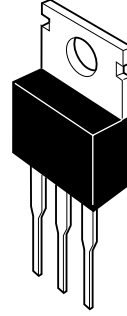
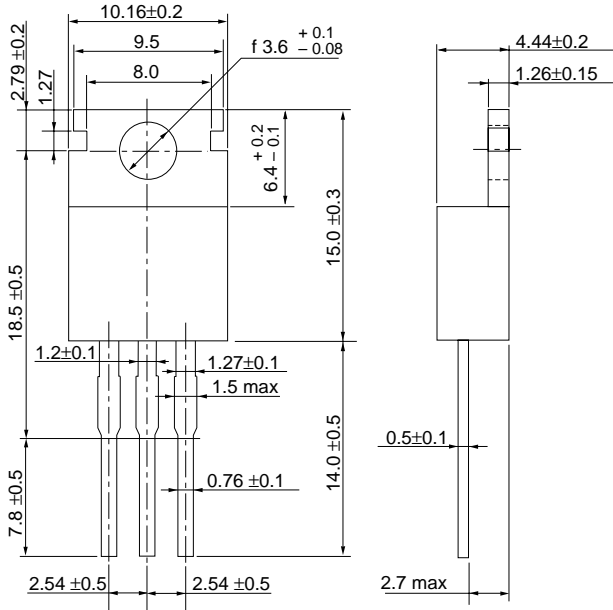
## Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	80	—	—	V	$I_D = 10\text{mA}$ , $V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 0.1$	$\mu\text{A}$	$V_{GS} = \pm 20\text{V}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	10	$\mu\text{A}$	$V_{DS} = 80\text{V}$ , $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.5	V	$I_D = 1\text{mA}$ , $V_{DS} = 10\text{V}^{*1}$
Static drain to source on state resistance	$R_{DS(on)}$	—	6.0	7.5	$\text{m}\Omega$	$I_D = 40\text{A}$ , $V_{GS} = 10\text{V}^{*1}$
		—	8.0	12	$\text{m}\Omega$	$I_D = 40\text{A}$ , $V_{GS} = 4\text{V}^{*1}$
Forward transfer admittance	$ y_{fs} $	55	90	—	S	$I_D = 40\text{A}$ , $V_{DS} = 10\text{V}^{*1}$
Input capacitance	$C_{iss}$	—	9700	—	pF	$V_{DS} = 10\text{V}$
Output capacitance	$C_{oss}$	—	1250	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	$C_{rss}$	—	290	—	pF	$f = 1\text{MHz}$
Total gate charge	$Q_g$	—	150	—	nc	$V_{DD} = 25\text{V}$
Gate to source charge	$Q_{gs}$	—	30	—	nc	$V_{GS} = 25\text{V}$
Gate to drain charge	$Q_{gd}$	—	30	—	nc	$I_D = 75\text{A}$
Turn-on delay time	$t_{d(on)}$	—	80	—	ns	$V_{GS} = 10\text{V}$ , $I_D = 40\text{A}$
Rise time	$t_r$	—	300	—	ns	$R_L = 0.75\Omega$
Turn-off delay time	$t_{d(off)}$	—	770	—	ns	
Fall time	$t_f$	—	370	—	ns	
Body-drain diode forward voltage	$V_{DF}$	—	1.05	—	V	$I_F = 75\text{A}$ , $V_{GS} = 0$
Body-drain diode reverse recovery time	$t_{rr}$	—	90	—	ns	$I_F = 75\text{A}$ , $V_{GS} = 0$ $diF/dt = 50\text{A}/\mu\text{s}$

Note: 1. Pulse test

Package Dimensions

Unit: mm



Hitachi Code	TO-220AB
EIAJ	SC-46
JEDEC	—

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