Silicon N Channel MOS FET High Speed Power Switching

# HITACHI

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

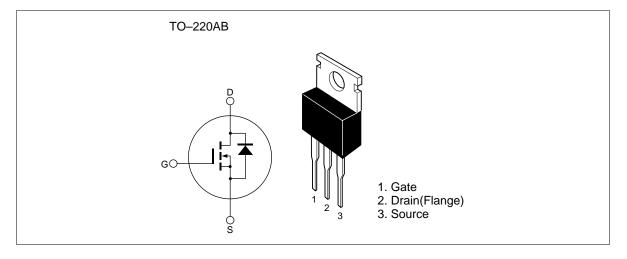
#### Features

Low on-resistance

 $R_{DS(on)} = 6m\Omega$  typ.

- Low drive current
- 4V gate drive device can be driven from 5V source

#### Outline





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

Item	Symbol	Ratings	Unit	
Drain to source voltage	V <sub>DSS</sub>	80	V	
Gate to source voltage	V <sub>GSS</sub>	±20	V	
Drain current	I <sub>D</sub>	75	А	
Drain peak current	L *1 D(pulse)	300	А	
Body-drain diode reverse drain current	I <sub>DR</sub>	75	А	
Avalanche current	I <sub>AP</sub> * <sup>3</sup>	50	А	
Avalanche energy	E <sub>AR</sub> * <sup>3</sup>	181	mJ	
Channel dissipation	Pch*2	100	W	
Channel temperature	Tch	150	°C	
Storage temperature	Tstg	-55 to +150	°C	

Note: 1.  $PW \le 10\mu s$ , duty cycle  $\le 1 \%$ 

2. Value at Tc =  $25^{\circ}$ C

3. Value at Tch =  $25^{\circ}$ C, Rg  $\geq 50\Omega$ 

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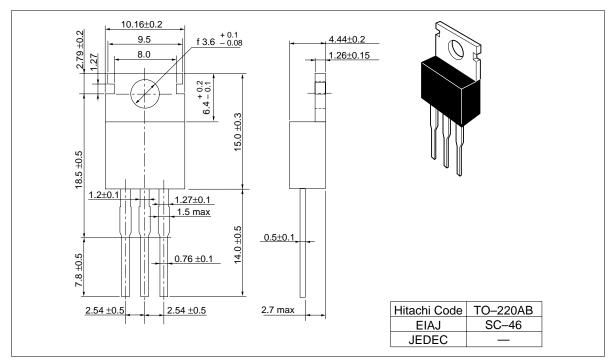
# **Electrical Characteristics** (Ta = $25^{\circ}$ C)

Item	Symbol	Min	Тур	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	80	—		V	$I_{\rm D} = 10 {\rm mA}, V_{\rm GS} = 0$
Gate to source leak current	I <sub>GSS</sub>	—	_	±0.1	μΑ	$V_{GS} = \pm 20V, V_{DS} = 0$
Zero gate voltege drain current	I <sub>DSS</sub>	_	_	10	μΑ	$V_{\rm DS} = 80 \text{ V}, V_{\rm GS} = 0$
Gate to source cutoff voltage	$V_{\text{GS(off)}}$	1.0	_	2.5	V	$I_{\rm D} = 1$ mA, $V_{\rm DS} = 10$ V <sup>*1</sup>
Static drain to source on state	$R_{\text{DS(on)}}$	_	6.0	7.5	mΩ	$I_{\rm D} = 40$ A, $V_{\rm GS} = 10$ V* <sup>1</sup>
resistance		_	8.0	12	mΩ	$I_{\rm D} = 40$ A, $V_{\rm GS} = 4$ V <sup>*1</sup>
Forward transfer admittance	y <sub>fs</sub>	55	90		S	$I_{\rm D} = 40$ A, $V_{\rm DS} = 10$ V* <sup>1</sup>
Input capacitance	Ciss	_	9700	_	pF	V <sub>DS</sub> = 10V
Output capacitance	Coss	_	1250		pF	$V_{GS} = 0$
Reverse transfer capacitance	Crss	_	290		pF	f = 1MHz
Total gate charge	Qg	_	150	_	nc	$V_{DD} = 25V$
Gate to source charge	Qgs	_	30		nc	V <sub>GS</sub> = 25V
Gate to drain charge	Qgd	_	30		nc	I <sub>D</sub> = 75A
Turn-on delay time	$t_{d(on)}$	_	80	_	ns	$V_{GS} = 10V, I_{D} = 40A$
Rise time	t,	_	300		ns	$R_L = 0.75\Omega$
Turn-off delay time	$t_{d(off)}$	_	770		ns	
Fall time	t <sub>r</sub>	_	370	_	ns	
Body-drain diode forward voltage	$V_{\text{DF}}$	_	1.05		V	I <sub>F</sub> = 75A, V <sub>GS</sub> = 0
Body–drain diode reverse recovery time	t <sub>rr</sub>	—	90	—	ns	$I_{F} = 75A, V_{GS} = 0$ diF/ dt =50A/µs

Note: 1. Pulse test

## **Package Dimensions**

Unit: mm



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