

# HAT2036R

Silicon N Channel Power MOS FET  
Power Switching

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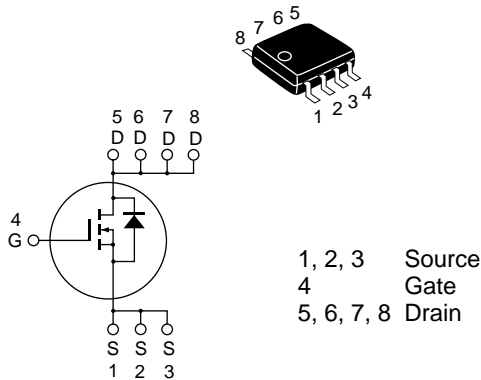
ADE-208-665B(Z)  
Target specification 3rd. Edition  
May 1998

## Features

- Low on-resistance  
 $R_{DS(on)}=12m\Omega$  typ
- Capable of 4.5 V gate drive
- Low drive current
- High density mounting
- High speed switching  
 $t_f=60ns$  typ.

## Outline

SOP-8



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

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	30	V
Gate to source voltage	$V_{GSS}$	±20	V
Drain current	$I_D$	12	A
Drain peak current	$I_{D(pulse)}^{*1}$	96	A
Body-drain diode reverse drain current	$I_{DR}$	12	A
Channel dissipation	$P_{ch}^{*2}$	2.5	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

Notes: 1.  $PW \leq 10\mu s$ , duty cycle  $\leq 1\%$

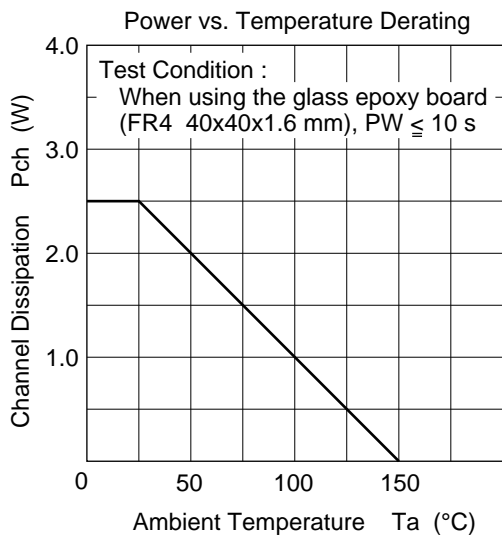
2. When using the glass epoxy board (FR4 40 x 40 x 1.6 mm),  $PW \leq 10s$

## Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	30	—	—	V	$I_D = 10mA, V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	±0.1	μA	$V_{GS} = \pm 20V, V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	1	μA	$V_{DS} = 30V, V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.5	—	3.0	V	$V_{DS} = 10V, I_D = 1mA$
Static drain to source on state resistance	$R_{DS(on)}$	—	12	15	mΩ	$I_D = 6A, V_{GS} = 10V^{*1}$
	$R_{DS(on)}$	—	20	30	mΩ	$I_D = 6A, V_{GS} = 4.5V^{*1}$
Forward transfer admittance	$ y_{fs} $	12	20	—	S	$I_D = 6A, V_{DS} = 10V^{*1}$
Input capacitance	Ciss	—	1200	—	pF	$V_{DS} = 10V$
Output capacitance	Coss	—	380	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	Crss	—	200	—	pF	$f = 1MHz$
Total gate charge	Qg	—	23	—	nc	$V_{DD} = 10V$
Gate to source charge	Qgs	—	4.0	—	nc	$V_{GS} = 10V$
Gate to drain charge	Qgd	—	6.0	—	nc	$I_D = 12A$
Turn-on delay time	$t_{d(on)}$	—	40	—	ns	$V_{GS} = 4.5V, I_D = 6A$
Rise time	$t_r$	—	300	—	ns	$V_{DD} \approx 10V$
Turn-off delay time	$t_{d(off)}$	—	35	—	ns	
Fall time	$t_f$	—	60	—	ns	
Body-drain diode forward voltage	$V_{DF}$	—	0.9	—	V	$I_F = 12A, V_{GS} = 0^{*1}$
Body-drain diode reverse recovery time	$t_{rr}$	—	35	—	ns	$I_F = 12A, V_{GS} = 0$ $diF/dt = 20A/\mu s$

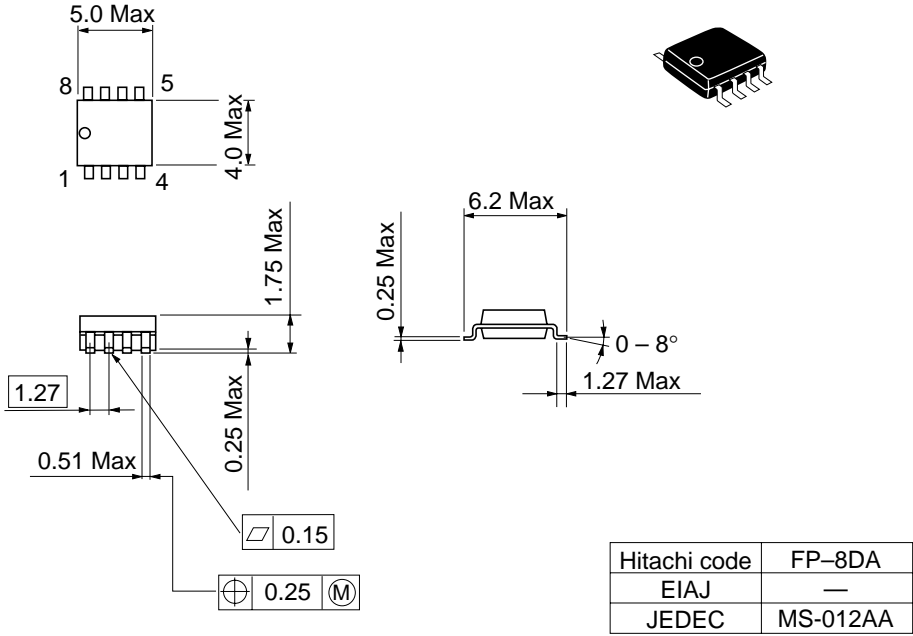
Note: 1. Pulse test

## Main Characteristics



## Package Dimensions

Unit: mm



## Cautions

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