

HAT2020R

Silicon N Channel Power MOS FET
High Speed Power Switching

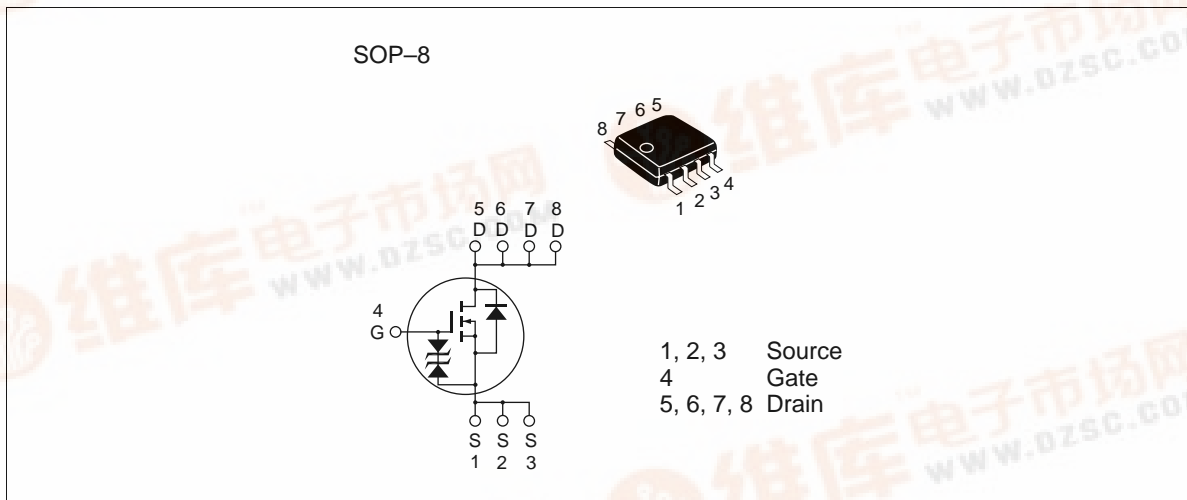
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ADE-208-439 J (Z)
11th. Edition
February 1999

Features

- Low on-resistance
- Capable of 4 V gate drive
- Low drive current
- High density mounting

Outline



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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	8	A
Drain peak current	$I_{D(pulse)}$ ^{Note1}	64	A
Body-drain diode reverse drain current	I_{DR}	8	A
Channel dissipation	Pch ^{Note2}	2.5	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	– 55 to + 150	°C

Note: 1. PW ≤ 10μs, duty cycle ≤ 1 %

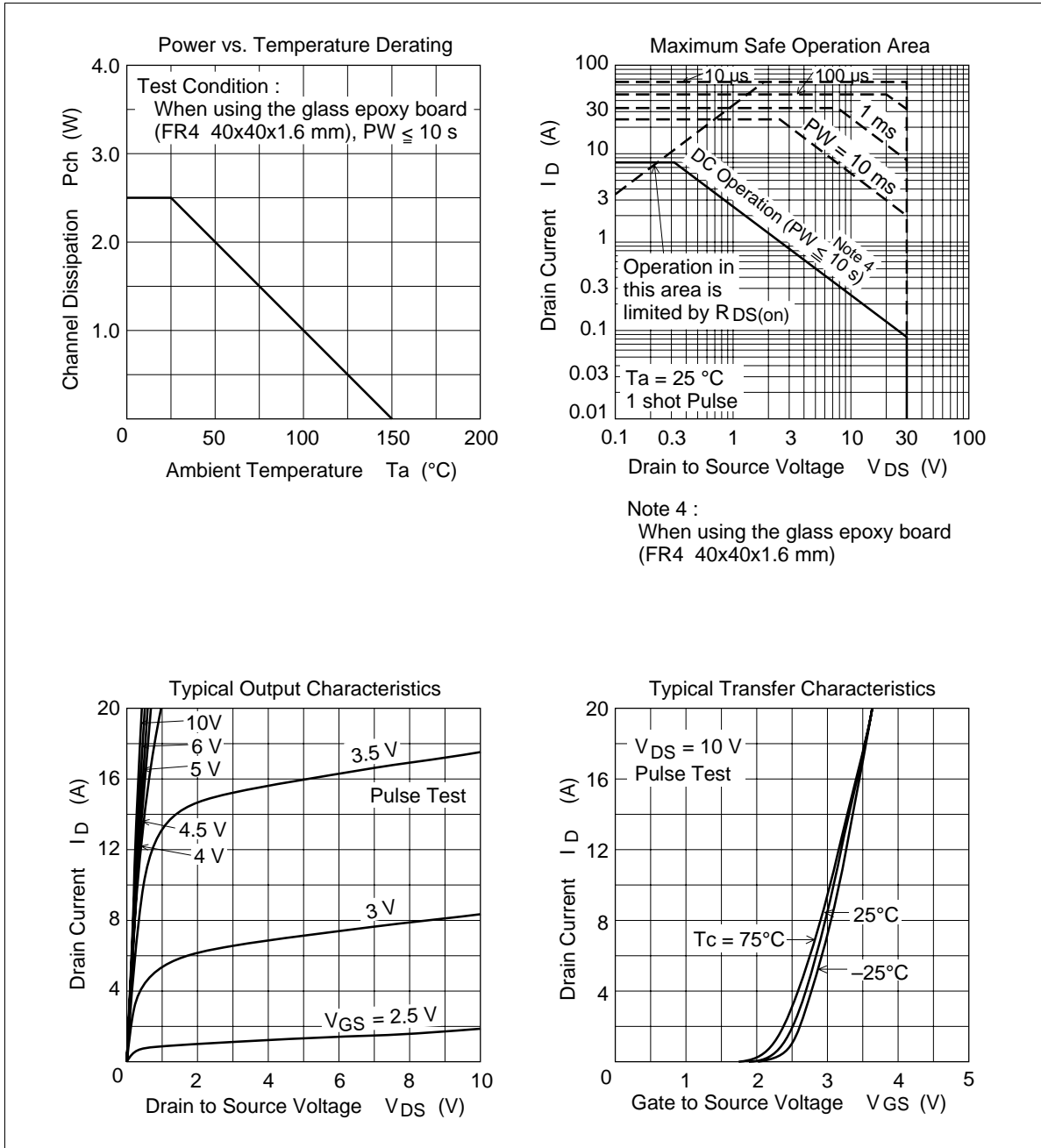
2. When using the glass epoxy board (FR4 40 x 40 x 1.6 mm), PW ≤ 10s

Electrical Characteristics (Ta = 25°C)

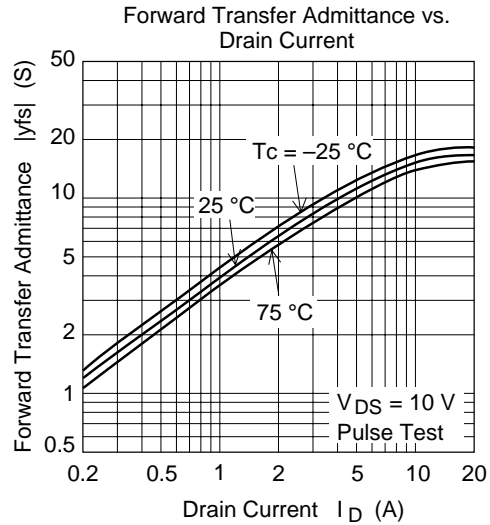
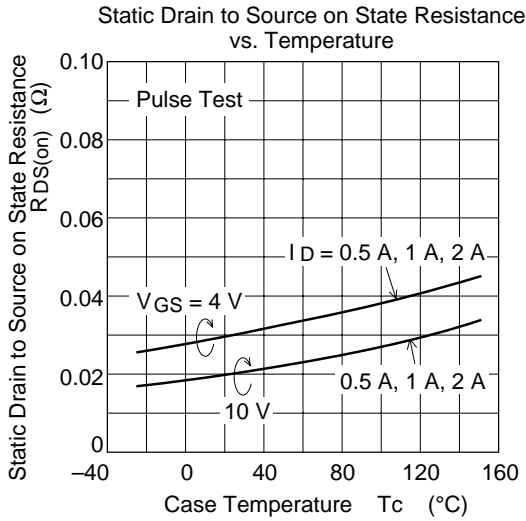
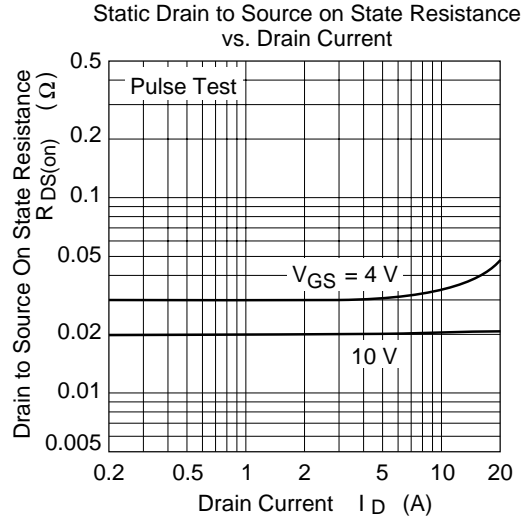
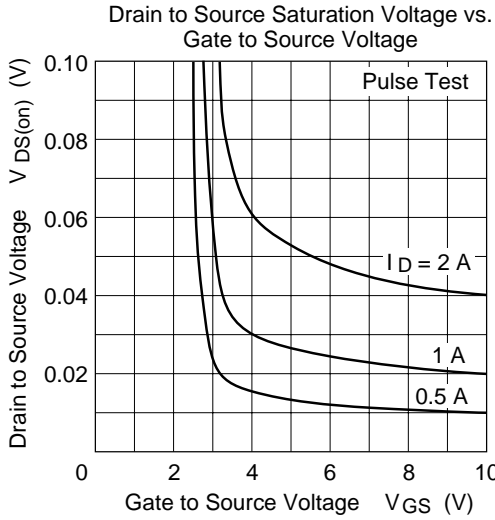
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	30	—	—	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	± 20	—	—	V	$I_G = \pm 100 \mu\text{A}, V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 16 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	10	μA	$V_{DS} = 30 \text{ V}, V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.0	V	$V_{DS} = 10 \text{ V}, I_D = 1 \text{ mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.020	0.028	Ω	$I_D = 4 \text{ A}, V_{GS} = 10 \text{ V}$ ^{Note3}
	$R_{DS(on)}$	—	0.030	0.050	Ω	$I_D = 4 \text{ A}, V_{GS} = 4 \text{ V}$ ^{Note3}
Forward transfer admittance	$ y_{fs} $	7	11	—	S	$I_D = 4 \text{ A}, V_{DS} = 10 \text{ V}$ ^{Note3}
Input capacitance	Ciss	—	780	—	pF	$V_{DS} = 10 \text{ V}$
Output capacitance	Coss	—	560	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	Crss	—	240	—	pF	f = 1MHz
Turn-on delay time	$t_{d(on)}$	—	35	—	ns	$V_{GS} = 4 \text{ V}, I_D = 4 \text{ A}$
Rise time	t_r	—	240	—	ns	$V_{DD} \cong 10 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	50	—	ns	
Fall time	t_f	—	100	—	ns	
Body–drain diode forward voltage	V_{DF}	—	0.8	1.3	V	IF = 8 A, $V_{GS} = 0$ ^{Note3}
Body–drain diode reverse recovery time	t_{rr}	—	55	—	ns	IF = 8 A, $V_{GS} = 0$ diF/dt = 20 A/μs

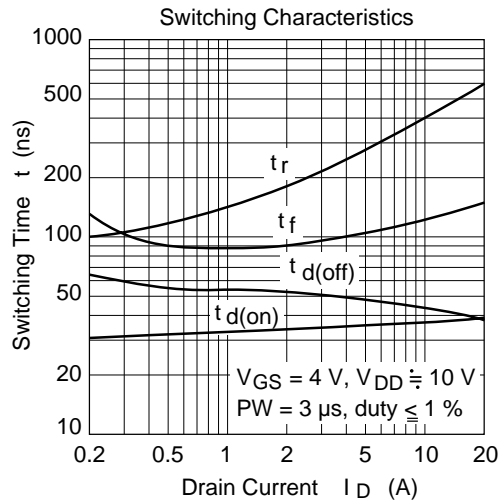
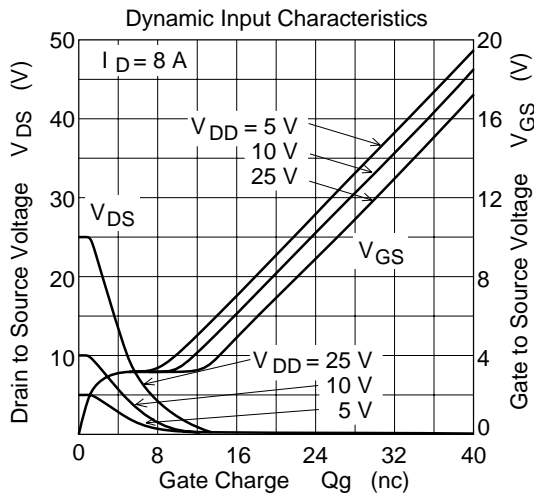
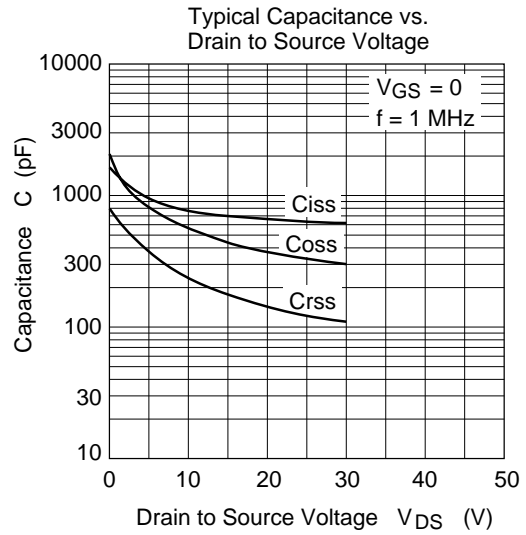
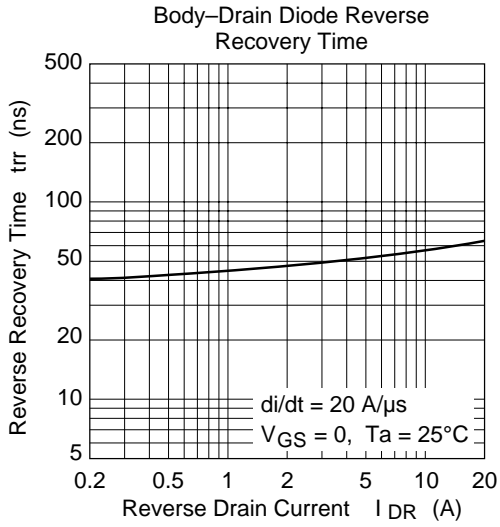
Note: 3. Pulse test

Main Characteristics

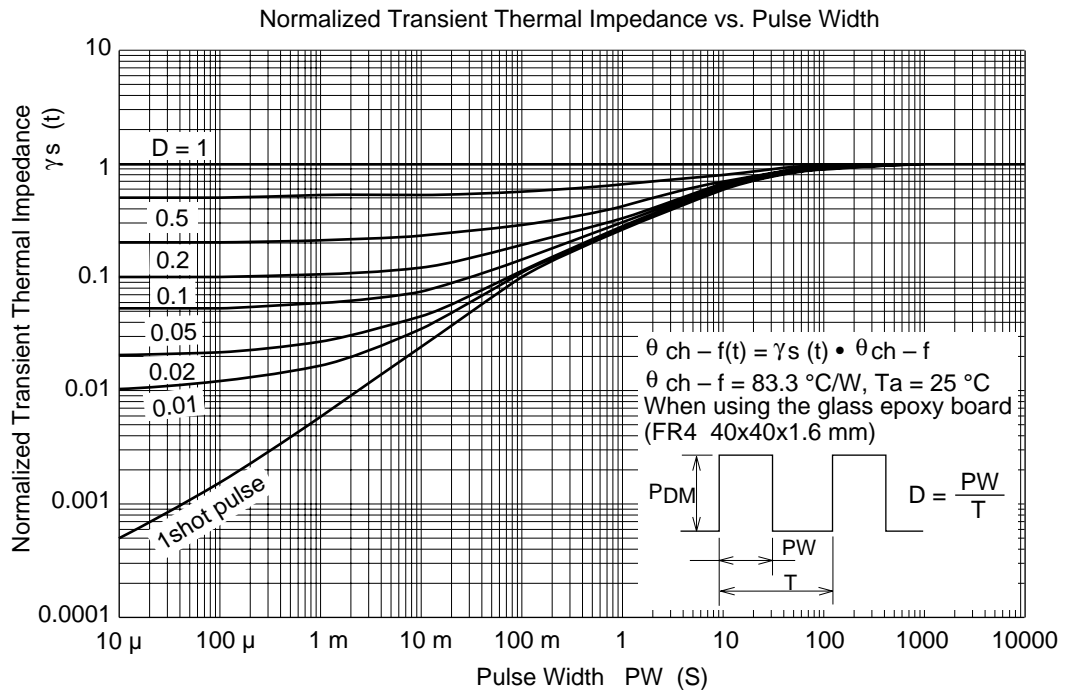
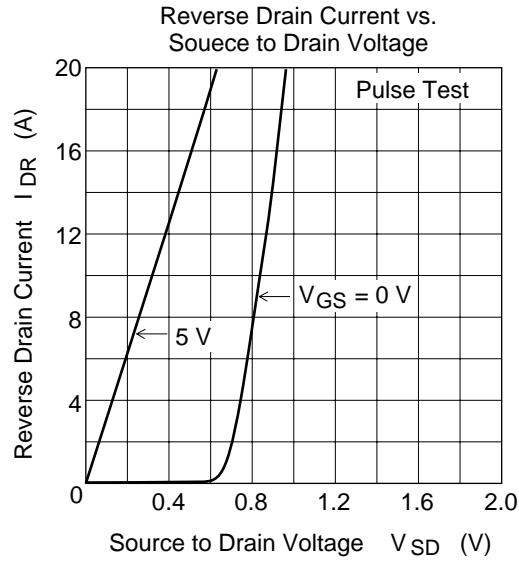


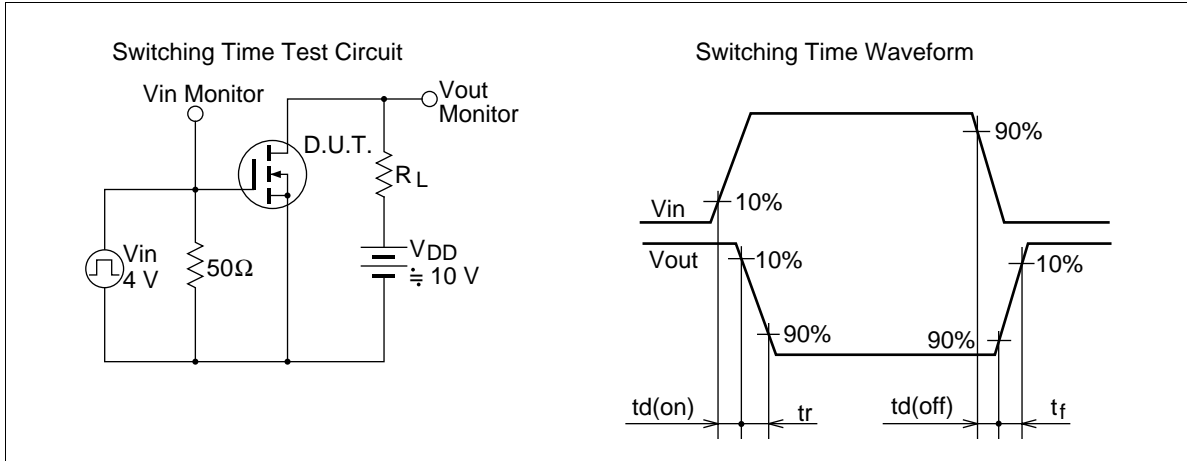
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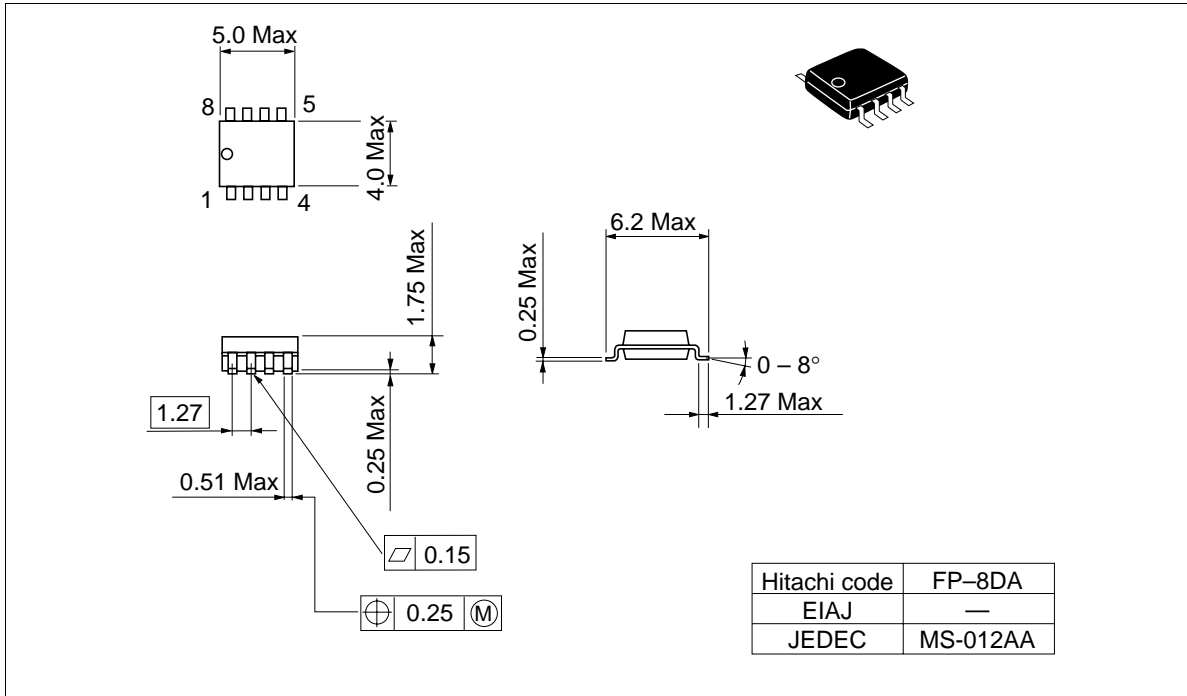




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Package Dimensions

Unit: mm



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