

HAT2016R

Silicon N Channel Power MOS FET
High Speed Power Switching

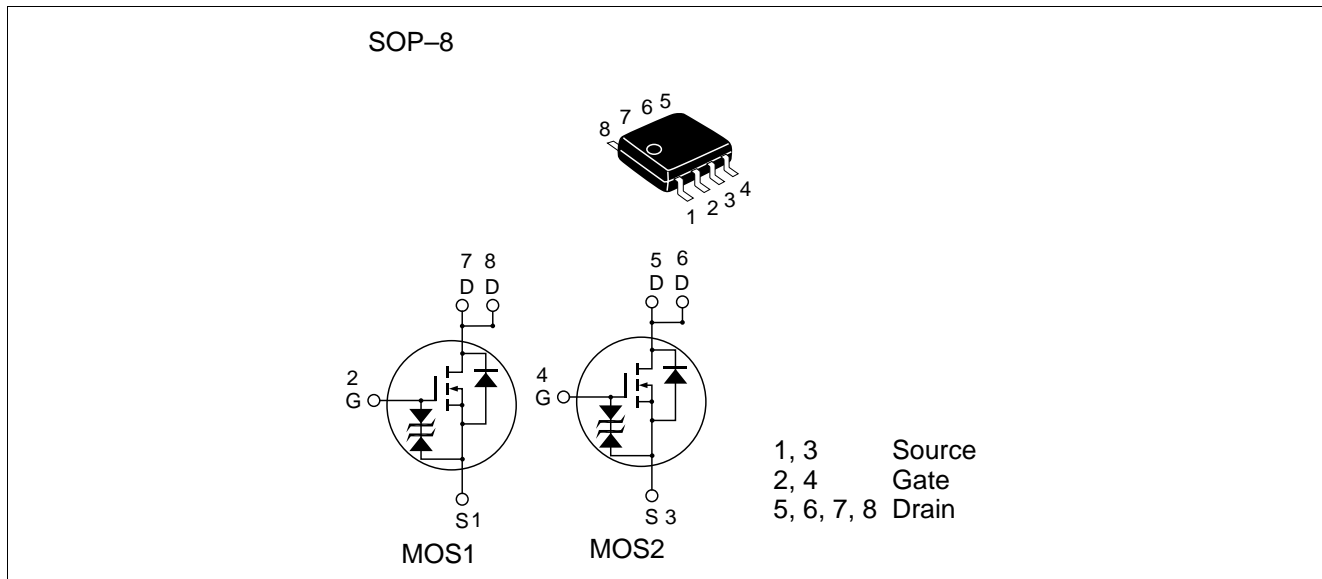
HITACHI

ADE-208-438 H (Z)
9th. Edition
June 1997

Features

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

Outline



HAT2016R

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 | 6.5 | A |
| Drain peak current | $I_{D(pulse)}^{Note1}$ | 52 | A |
| Body-drain diode reverse drain current | I_{DR} | 6.5 | A |
| Channel dissipation | Pch^{Note2} | 2 | W |
| Channel dissipation | Pch^{Note3} | 3 | W |
| Channel temperature | Tch | 150 | °C |
| Storage temperature | Tstg | -55 to +150 | °C |

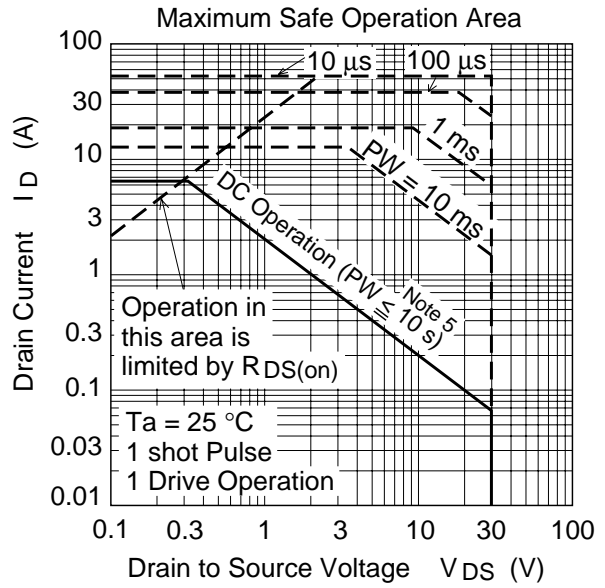
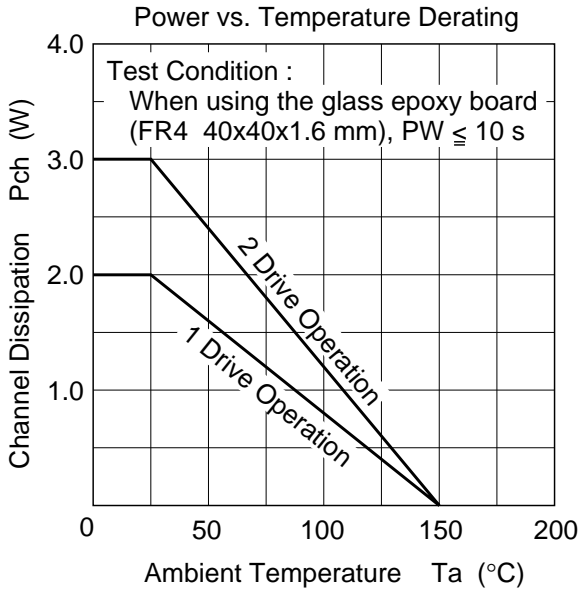
- Note:
1. $PW \leq 10\mu s$, duty cycle $\leq 1\%$
 2. 1 Drive operation : When using the glass epoxy board (FR4 40 x 40 x 1.6 mm), $PW \leq 10s$
 3. 2 Drive operation : When using the glass epoxy board (FR4 40 x 40 x 1.6 mm), $PW \leq 10s$

Electrical Characteristics ($T_a = 25^\circ\text{C}$)

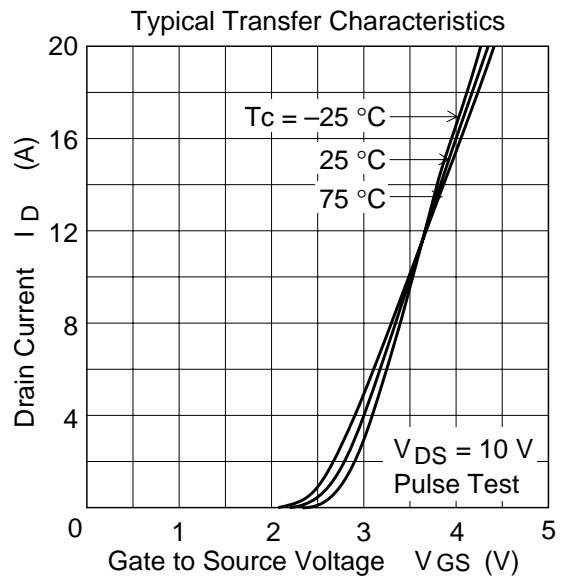
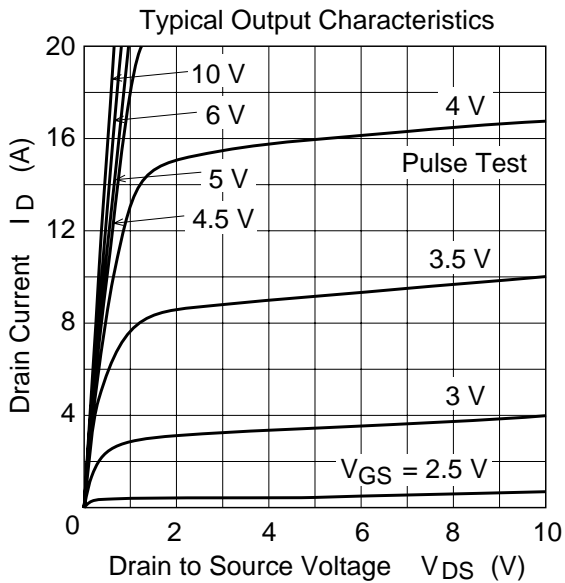
| Item | Symbol | Min | Typ | Max | Unit | Test Conditions |
|--|---------------|----------|------|----------|---------------|---|
| Drain to source breakdown voltage | $V_{(BR)DSS}$ | 30 | — | — | V | $I_D = 10\text{mA}$, $V_{GS} = 0$ |
| Gate to source breakdown voltage | $V_{(BR)GSS}$ | ± 20 | — | — | 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 | $R_{DS(on)}$ | — | 0.03 | 0.045 | Ω | $I_D = 4\text{A}$, $V_{GS} = 10\text{V}$ ^{Note4} |
| | $R_{DS(on)}$ | — | 0.05 | 0.08 | Ω | $I_D = 4\text{A}$, $V_{GS} = 4\text{V}$ ^{Note4} |
| Forward transfer admittance | $ y_{fs} $ | 5 | 8 | — | S | $I_D = 4\text{A}$, $V_{DS} = 10\text{V}$ ^{Note4} |
| Input capacitance | C_{iss} | — | 560 | — | pF | $V_{DS} = 10\text{V}$ |
| Output capacitance | C_{oss} | — | 380 | — | pF | $V_{GS} = 0$ |
| Reverse transfer capacitance | C_{rss} | — | 170 | — | pF | $f = 1\text{MHz}$ |
| Turn-on delay time | $t_{d(on)}$ | — | 30 | — | ns | $V_{GS} = 4\text{V}$, $I_D = 4\text{A}$ |
| Rise time | t_r | — | 270 | — | ns | $V_{DD} \cong 10\text{V}$ |
| Turn-off delay time | $t_{d(off)}$ | — | 40 | — | ns | |
| Fall time | t_f | — | 65 | — | ns | |
| Body-drain diode forward voltage | V_{DF} | — | 0.9 | 1.4 | V | $I_F = 6.5\text{A}$, $V_{GS} = 0$ ^{Note4} |
| Body-drain diode reverse recovery time | t_{rr} | — | 45 | — | ns | $I_F = 6.5\text{A}$, $V_{GS} = 0$ $diF/dt = 20\text{A}/\mu\text{s}$ |

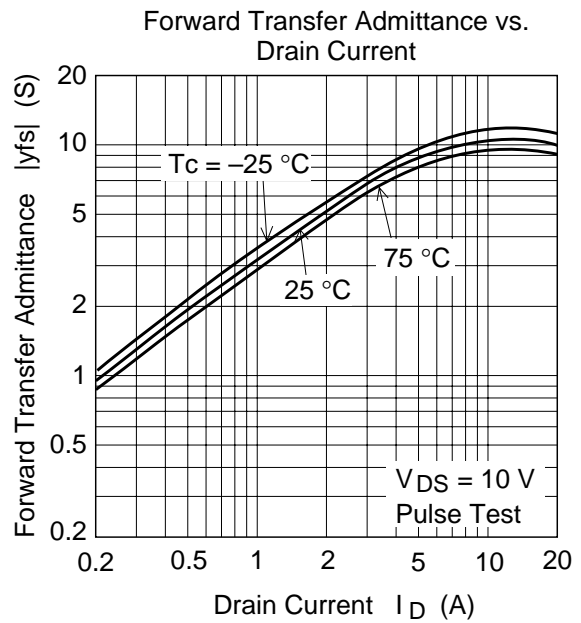
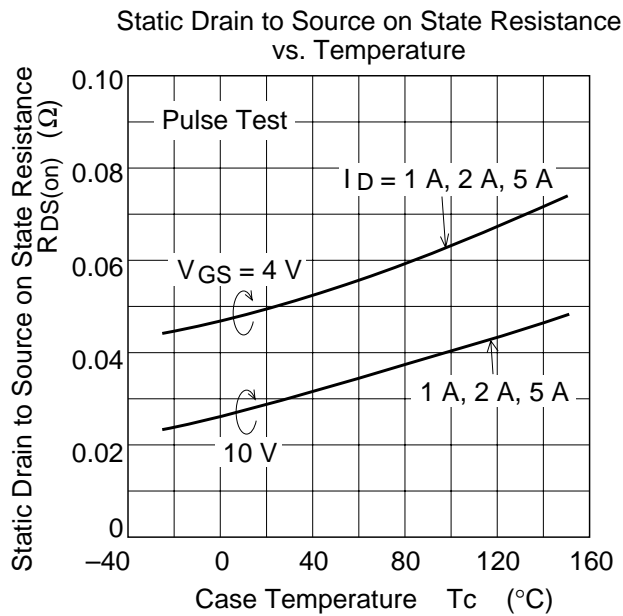
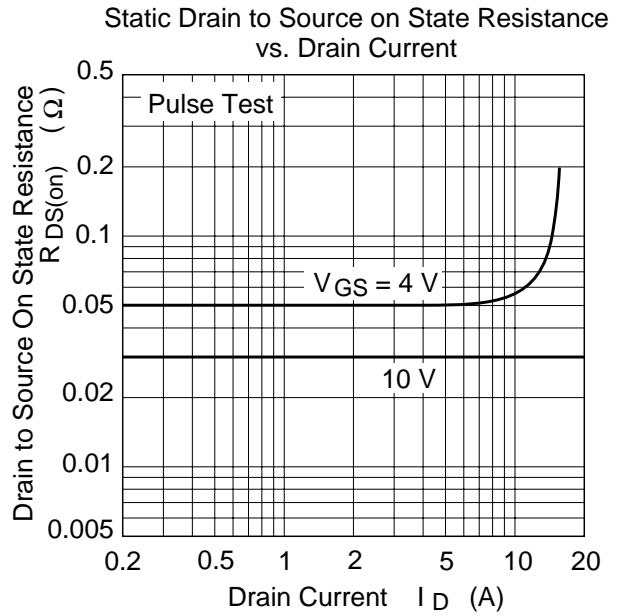
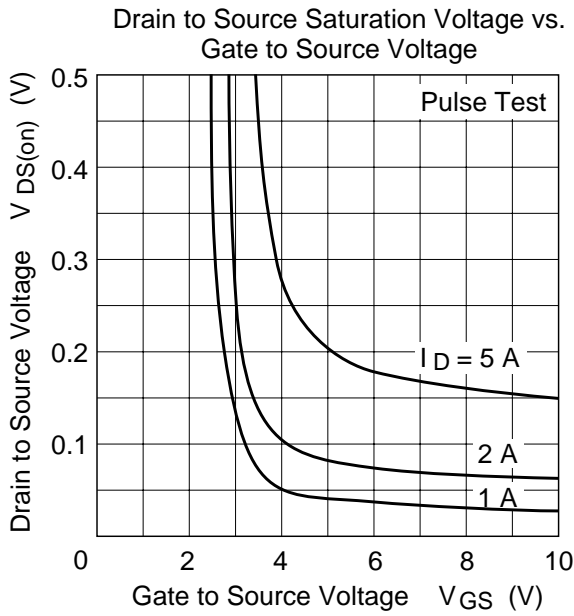
Note: 4. Pulse test

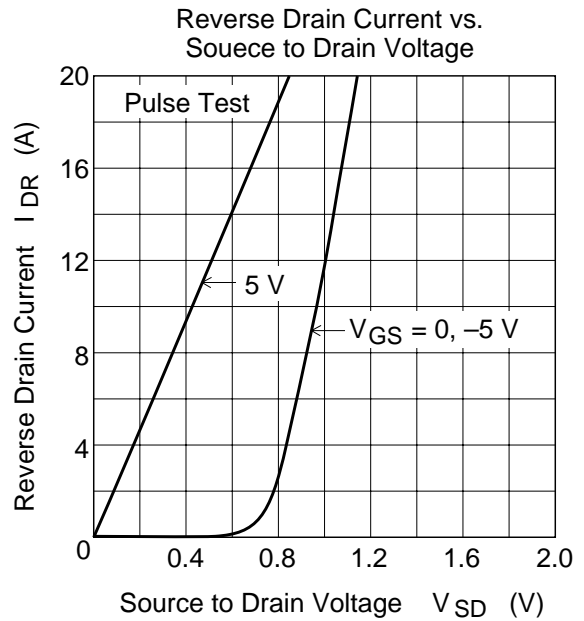
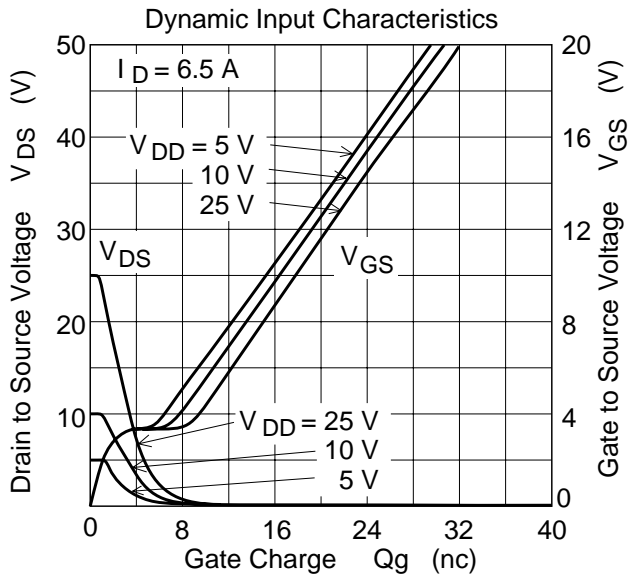
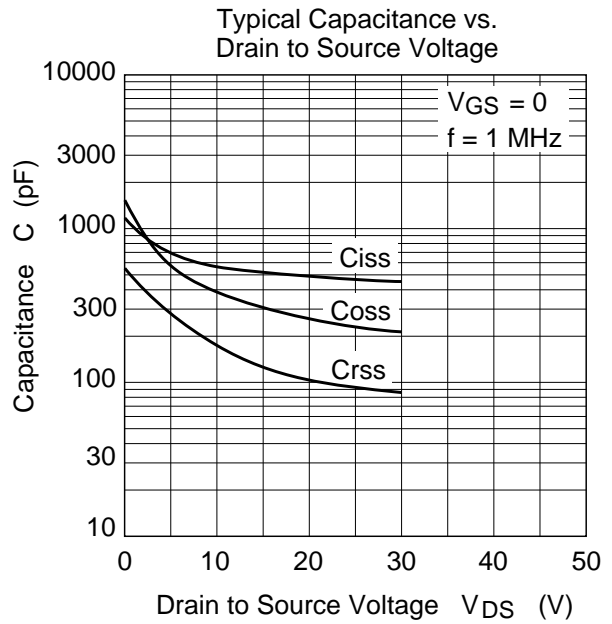
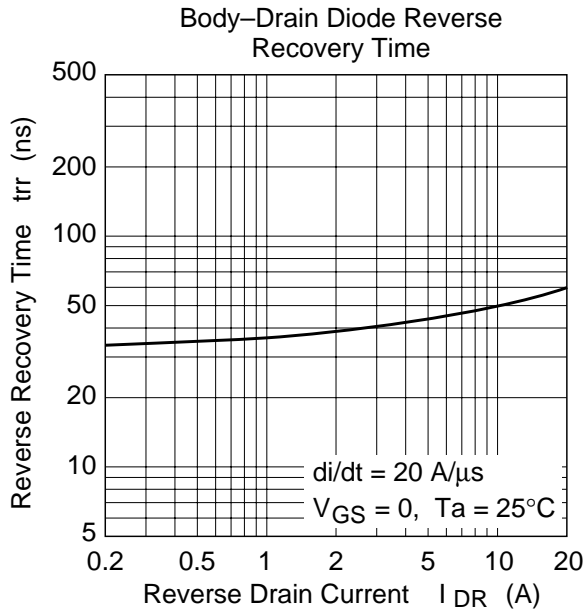
Main Characteristics

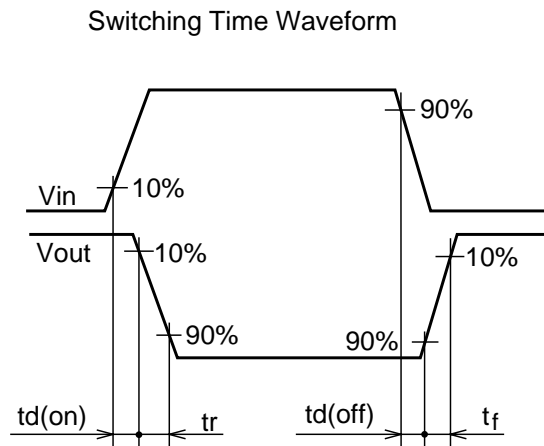
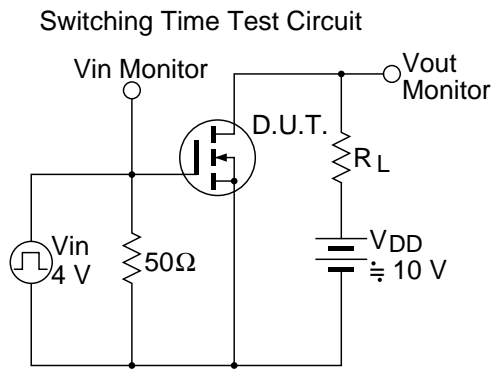
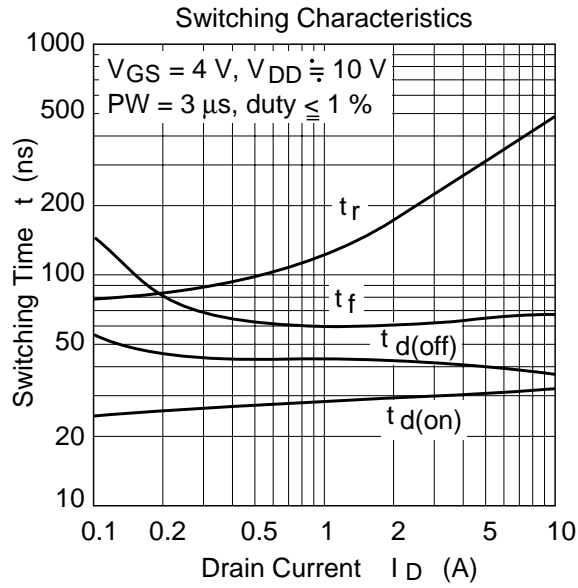


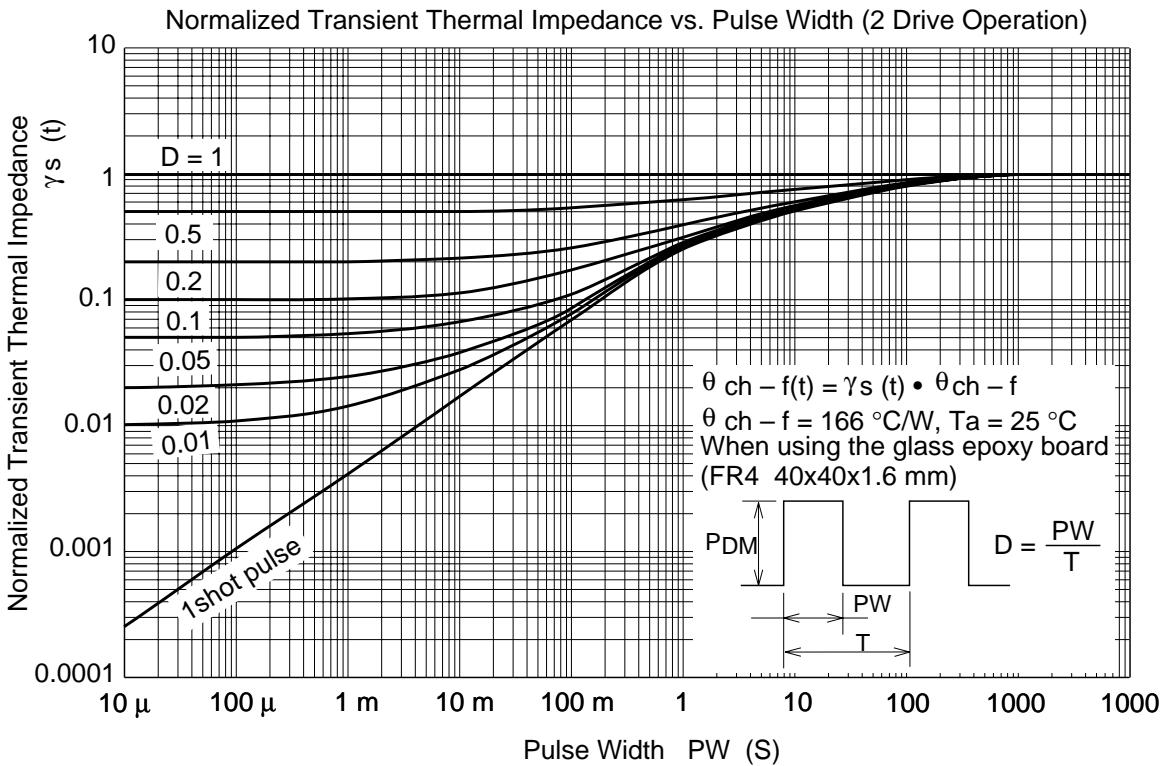
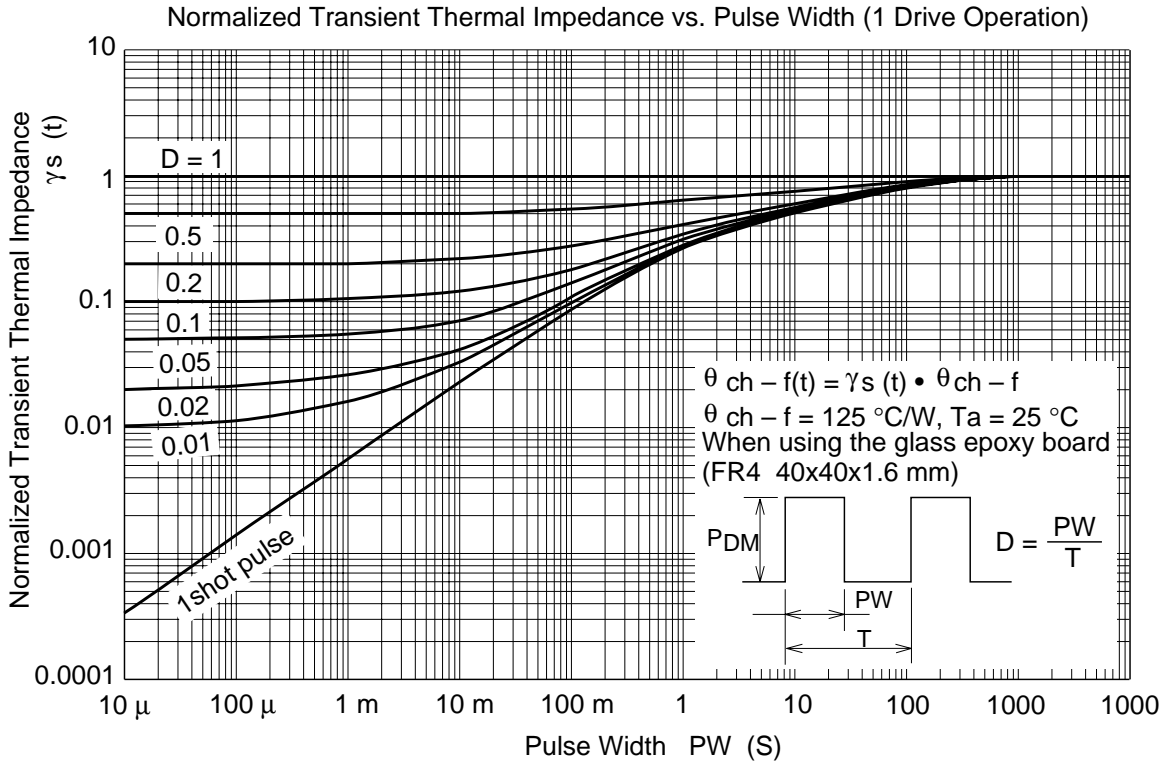
Note 5 :
When using the glass epoxy board
(FR4 40x40x1.6 mm)





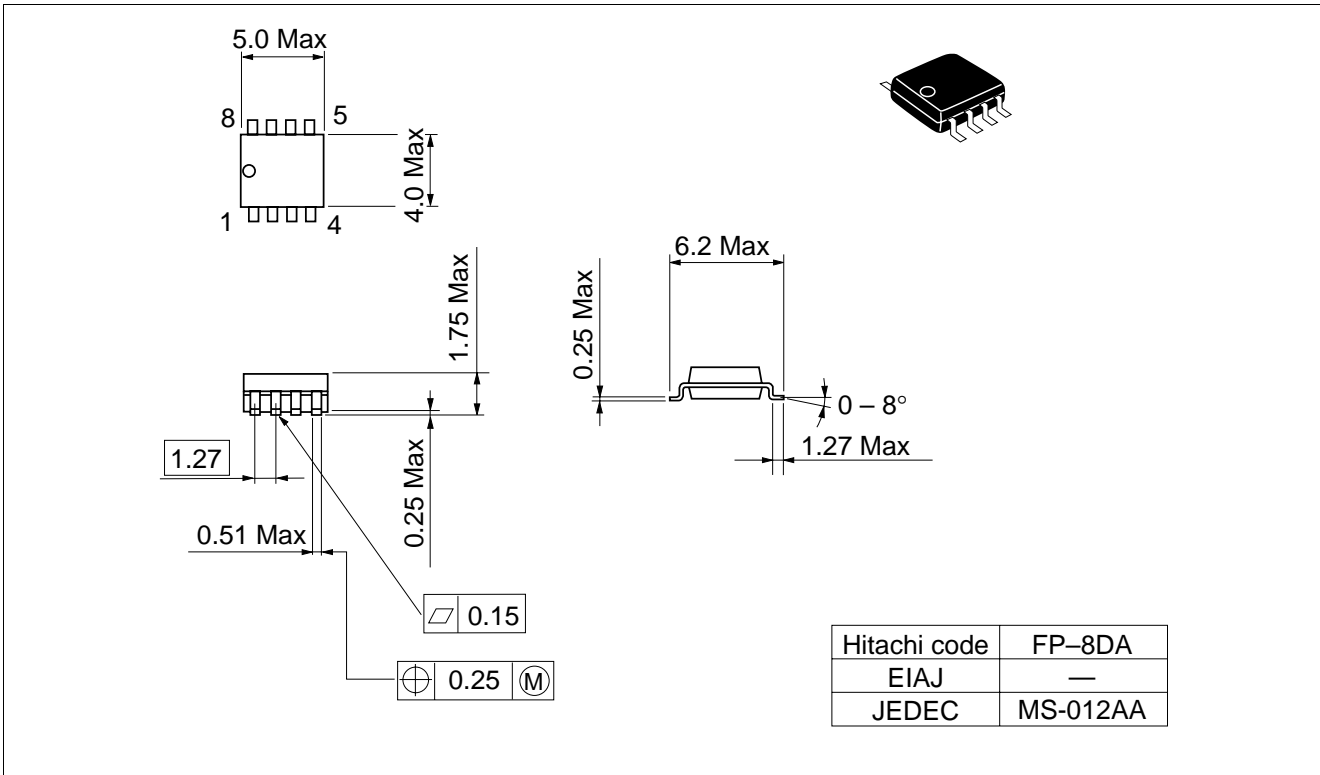






Package Dimensions

Unit: mm



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