

HAT1036R

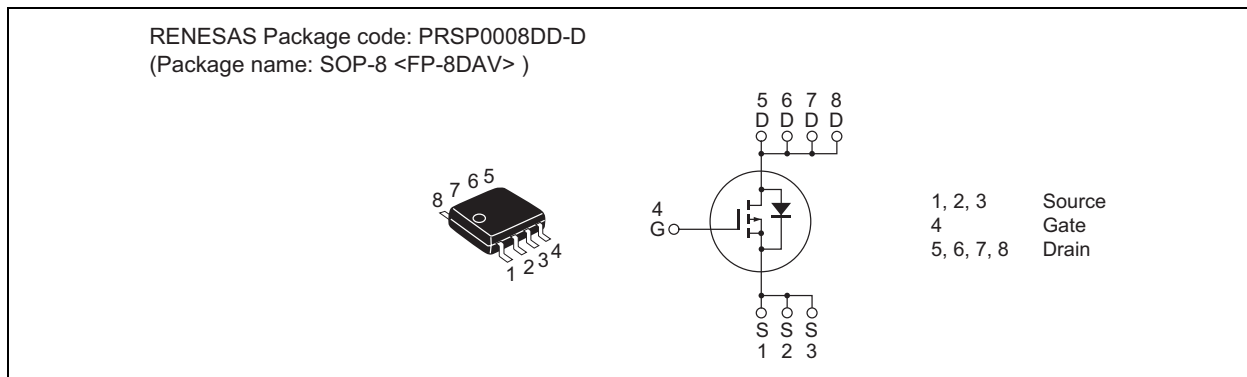
Silicon P Channel Power MOS FET
Power Switching

REJ03G1149-0700
(Previous: ADE-208-662E)
Rev.7.00
Sep 07, 2005

Features

- Low on-resistance
 $R_{DS(on)} = 11\text{ m}\Omega$ typ
- Capable of -4 V gate drive
- Low drive current
- High density mounting

Outline



Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | Value | 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)} ^{Note 1} | -96 | A |
| Body-drain diode reverse drain current | I _{DR} | -12 | A |
| Channel dissipation | P _{ch} ^{Note 2} | 2.5 | W |
| Channel temperature | T _{ch} | 150 | °C |
| Storage temperature | T _{stg} | -55 to +150 | °C |

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

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

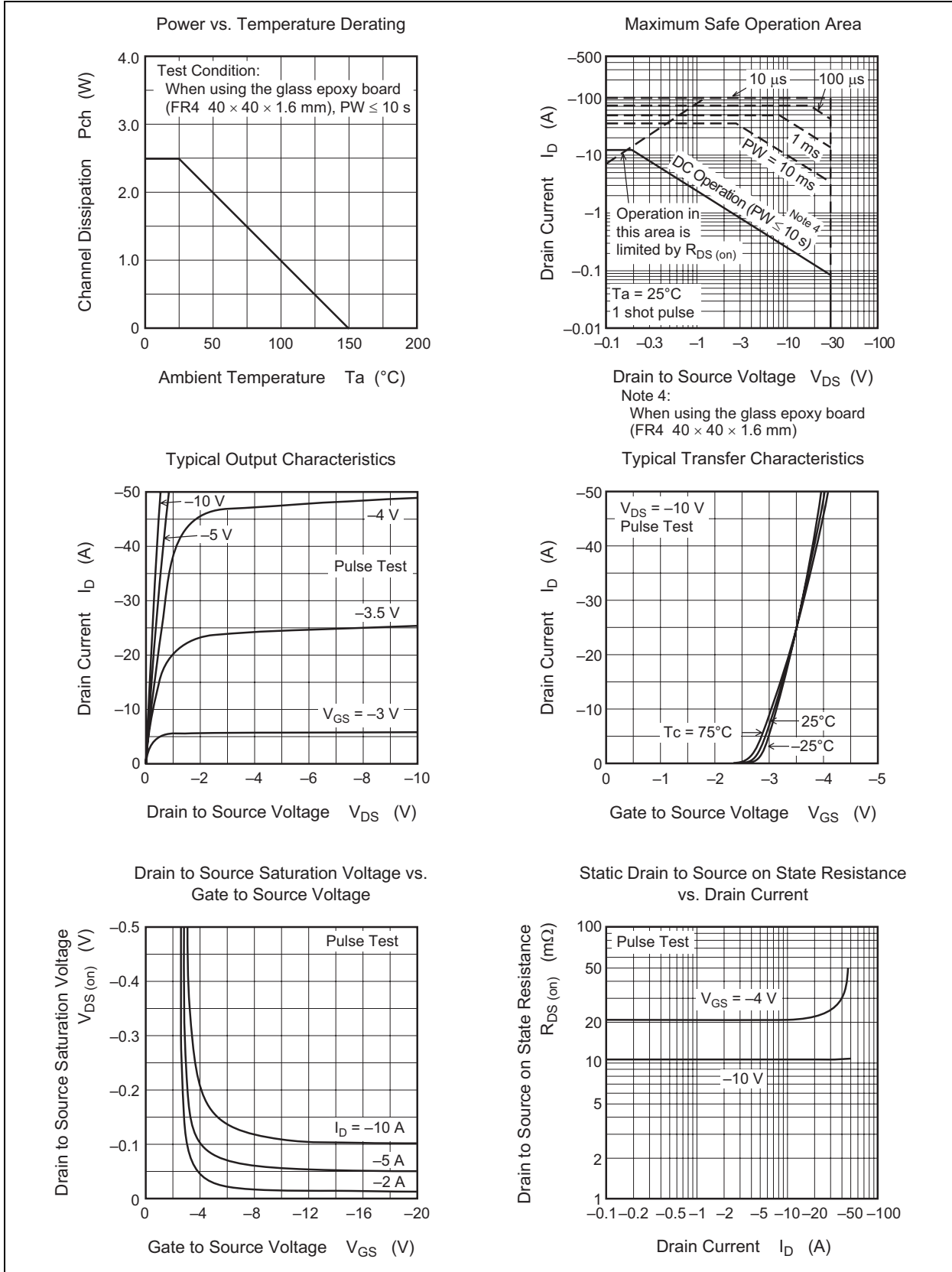
Electrical Characteristics

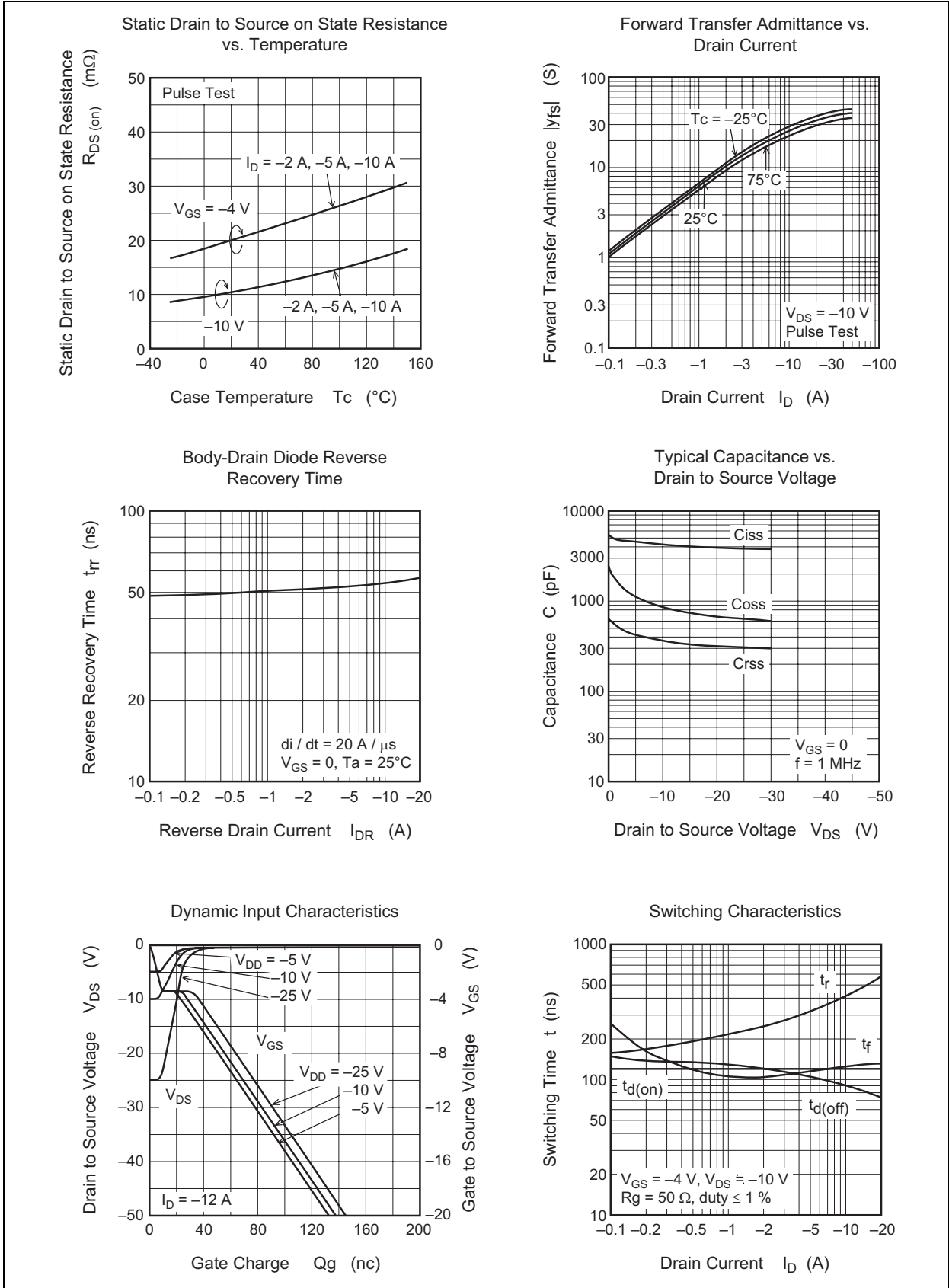
(Ta = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test Conditions |
|--|-----------------------|------|-------|-------|------|--|
| Drain to source breakdown voltage | V _{(BR) DSS} | -30 | — | — | V | I _D = -10 mA, V _{GS} = 0 |
| Gate to source leak current | I _{GSS} | — | — | ±0.1 | μA | V _{GS} = ±20 V, V _{DS} = 0 |
| Zero gate voltage drain current | I _{DSS} | — | — | -1 | μA | V _{DS} = -30 V, V _{GS} = 0 |
| Gate to source cutoff voltage | V _{GS (off)} | -1.0 | — | -2.5 | V | V _{DS} = -10 V, I _D = -1 mA |
| Static drain to source on state resistance | R _{DS (on)} | — | 11 | 14 | mΩ | I _D = -6 A, V _{GS} = -10 V ^{Note 3} |
| | R _{DS (on)} | — | 21 | 34 | mΩ | I _D = -6 A, V _{GS} = -4 V ^{Note 3} |
| Forward transfer admittance | y _{fs} | 12 | 20 | — | S | I _D = -6 A, V _{DS} = -10 V ^{Note 3} |
| Input capacitance | C _{iss} | — | 4200 | — | pF | V _{DS} = -10 V |
| Output capacitance | C _{oss} | — | 870 | — | pF | V _{GS} = 0 |
| Reverse transfer capacitance | C _{rss} | — | 360 | — | pF | f = 1 MHz |
| Total gate charge | Q _g | — | 70 | — | nC | V _{DD} = -10 V |
| Gate to source charge | Q _{gs} | — | 12 | — | nC | V _{GS} = -10 V |
| Gate to drain charge | Q _{gd} | — | 14 | — | nC | I _D = -12 A |
| Turn-on delay time | t _{d (on)} | — | 120 | — | ns | V _{GS} = -4 V, I _D = -6 A, |
| Rise time | t _r | — | 350 | — | ns | V _{DD} ≅ -10 V |
| Turn-off delay time | t _{d (off)} | — | 100 | — | ns | |
| Fall time | t _f | — | 120 | — | ns | |
| Body-drain diode forward voltage | V _{DF} | — | -0.85 | -1.11 | V | I _F = -12 A, V _{GS} = 0 ^{Note 3} |
| Body-drain diode reverse recovery time | t _{rr} | — | 55 | — | ns | I _F = -12 A, V _{GS} = 0 di _F /dt = 20 A/μs |

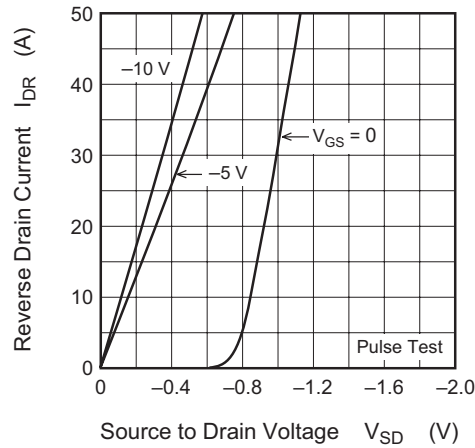
Note: 3. Pulse test

Main Characteristics

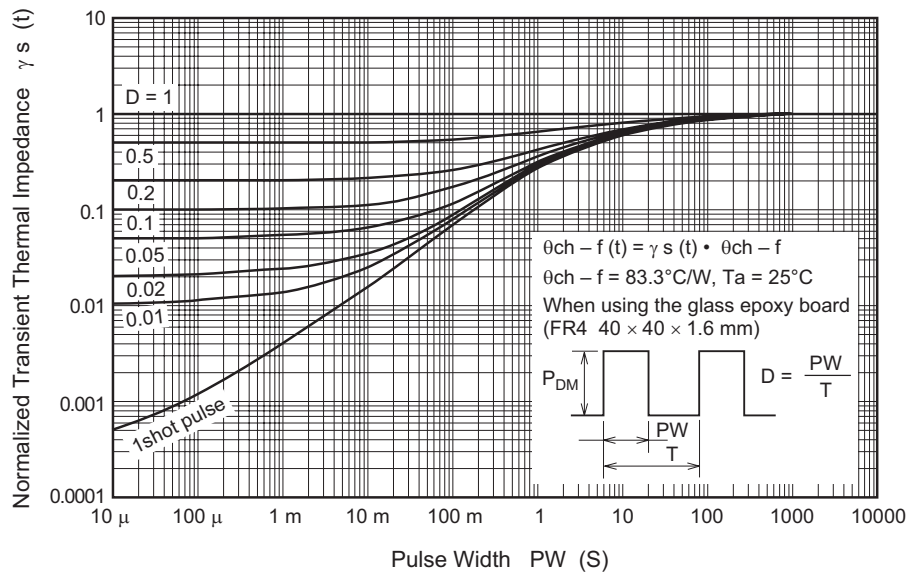




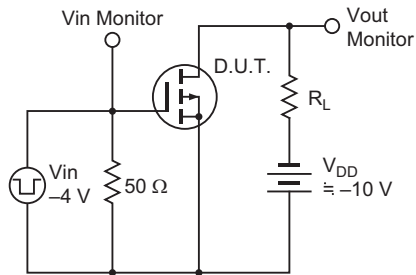
Reverse Drain Current vs. Source to Drain Voltage



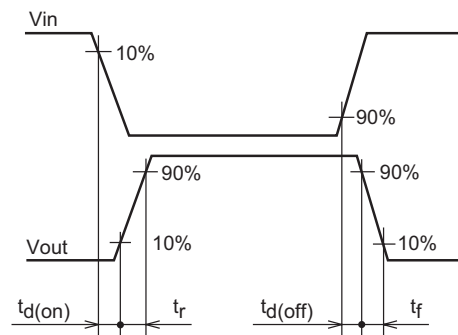
Normalized Transient Thermal Impedance vs. Pulse Width



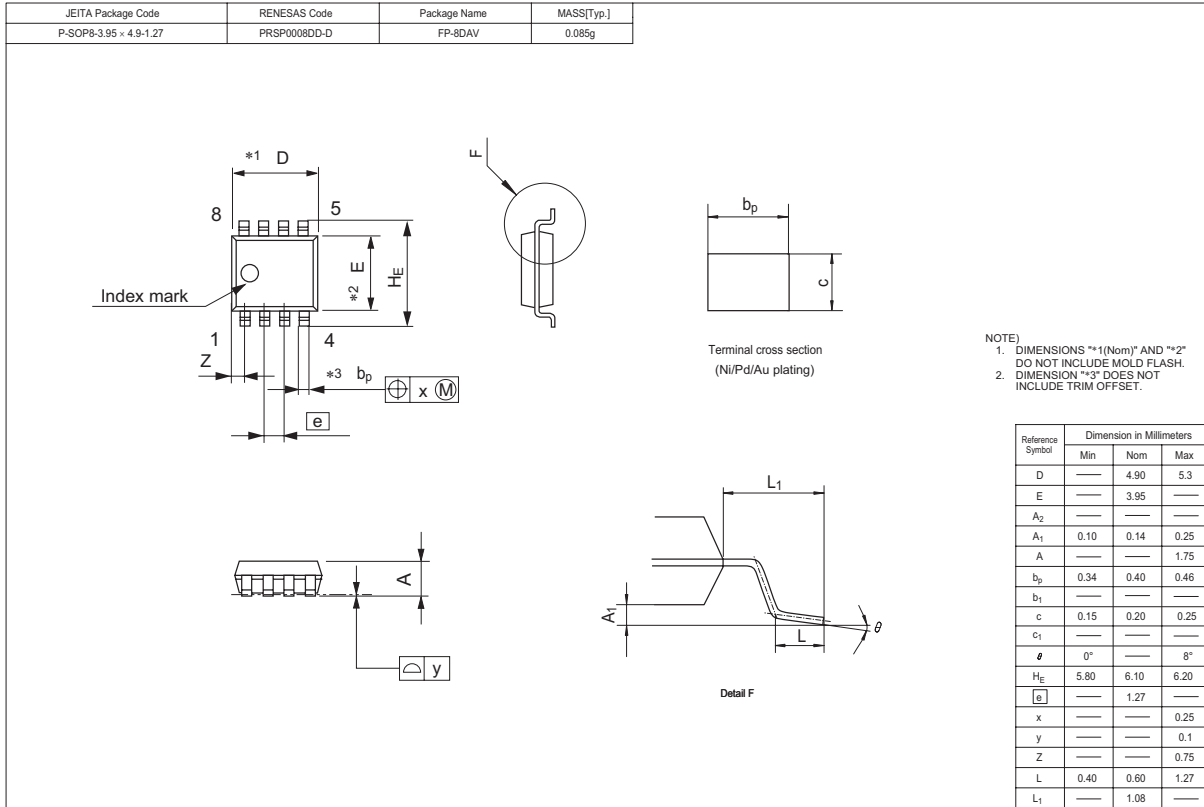
Switching Time Test Circuit



Switching Time Waveform



Package Dimensions



Ordering Information

| Part Name | Quantity | Shipping Container |
|---------------|----------|--------------------|
| HAT1036R-EL-E | 2500 pcs | Taping |

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