

HAT2192WP

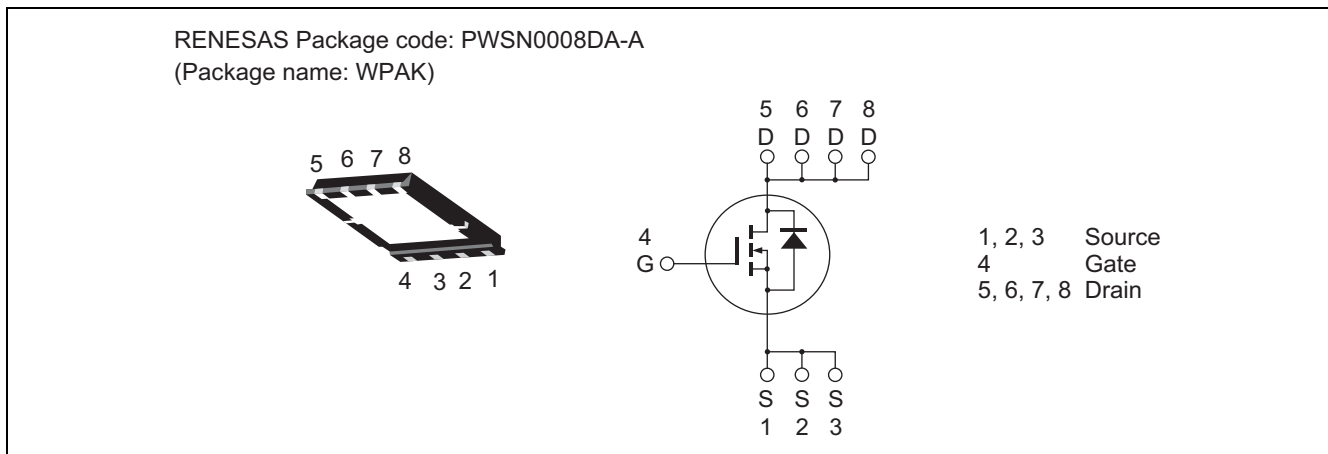
Silicon N Channel Power MOS FET
Power Switching

REJ03G0533-0200
Rev.2.00
Oct 09, 2009

Features

- Low on-resistance
- Low drive current
- High density mounting

Outline



Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | Ratings | Unit |
|---|----------------------------------|-------------|------|
| Drain to source voltage | V_{DSS} | 250 | V |
| Gate to source voltage | V_{GSS} | ±30 | V |
| Drain current | I_D | 10 | A |
| Drain peak current | $I_{D(pulse)}$ ^{Note1} | 20 | A |
| Body-drain diode reverse drain current | I_{DR} | 10 | A |
| Body-drain diode reverse drain peak current | $I_{DR(pulse)}$ ^{Note1} | 20 | A |
| Avalanche current | I_{AP} ^{Note3} | 5 | A |
| Avalanche energy | E_{AR} ^{Note3} | 1.5 | mJ |
| Channel dissipation | P_{ch} ^{Note2} | 25 | W |
| Channel to case thermal impedance | θ_{ch-c} | 5 | °C/W |
| Channel temperature | T_{ch} | 150 | °C |
| Storage temperature | T_{stg} | -55 to +150 | °C |

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

2. Value at $T_c = 25^\circ C$

3. $STch = 25^\circ C$, $T_{ch} \leq 150^\circ C$

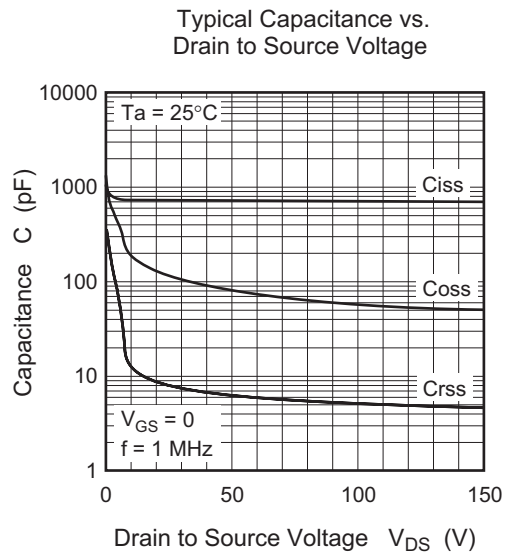
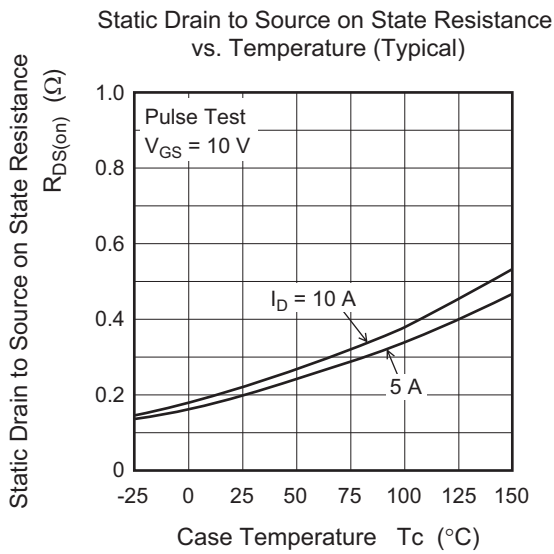
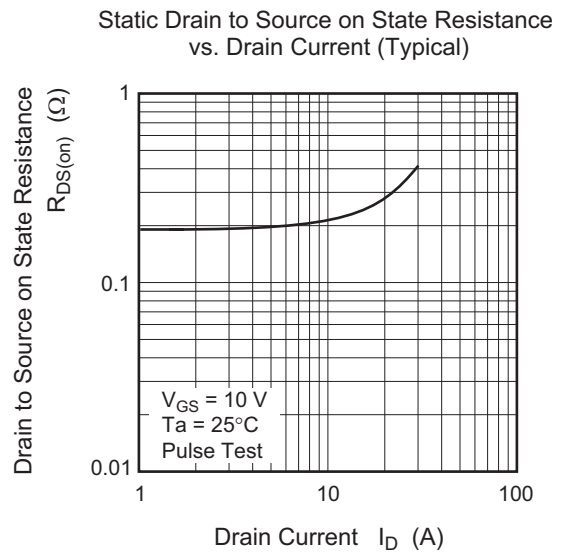
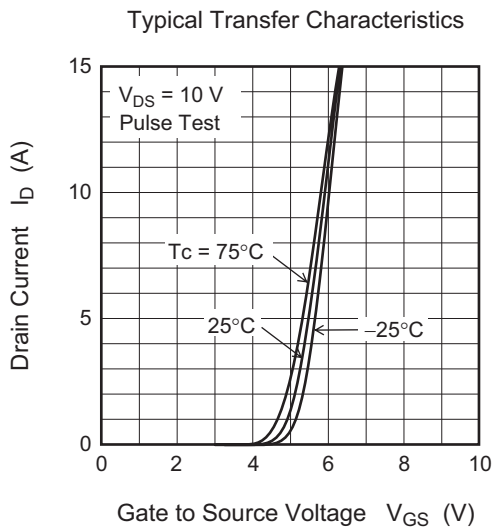
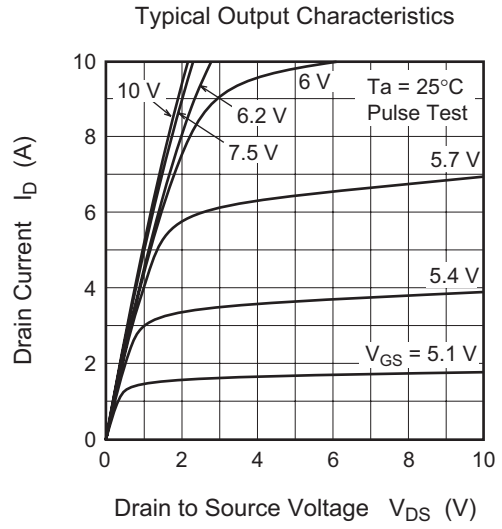
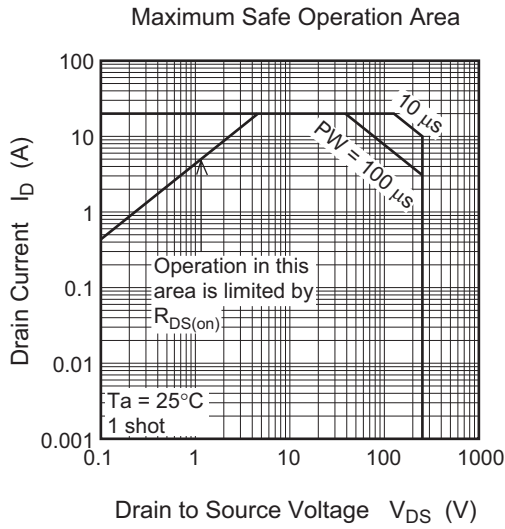
Electrical Characteristics

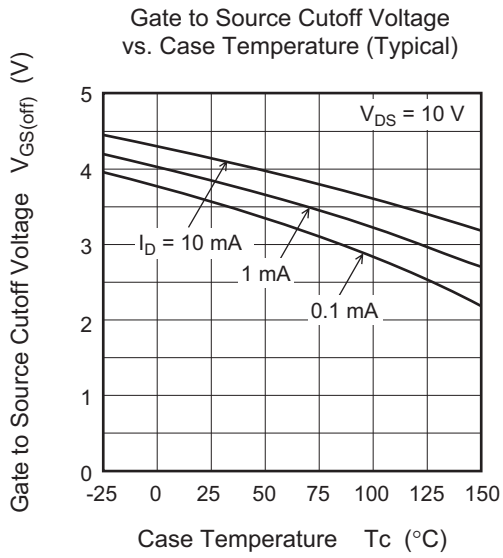
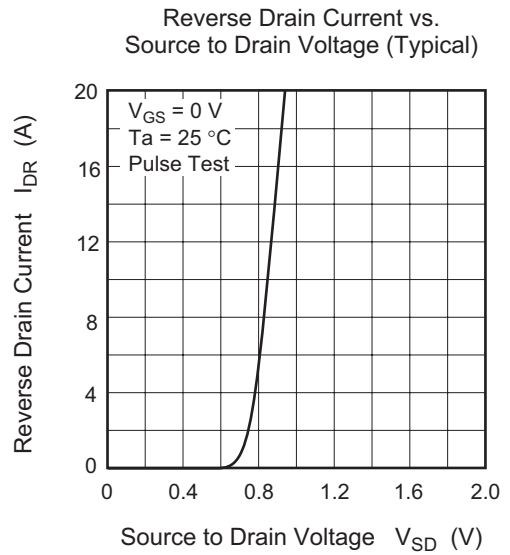
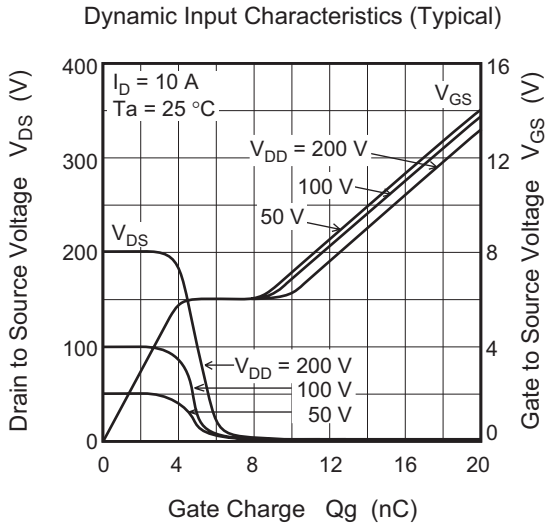
(Ta = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test conditions |
|--|---------------|-----|------|-----------|---------------|---|
| Drain to source breakdown voltage | $V_{(BR)DSS}$ | 250 | — | — | V | $I_D = 10 \text{ mA}$, $V_{GS} = 0$ |
| Zero gate voltage drain current | I_{DSS} | — | — | 1 | μA | $V_{DS} = 250 \text{ V}$, $V_{GS} = 0$ |
| Gate to source leak current | I_{GSS} | — | — | ± 0.1 | μA | $V_{GS} = \pm 30 \text{ V}$, $V_{DS} = 0$ |
| Gate to source cutoff voltage | $V_{GS(off)}$ | 3.0 | — | 4.5 | V | $V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$ |
| Forward transfer admittance | $ y_{fs} $ | 5 | 8 | — | S | $I_D = 5 \text{ A}$, $V_{DS} = 10 \text{ V}$ ^{Note4} |
| Static drain to source on state resistance | $R_{DS(on)}$ | — | 0.2 | 0.23 | Ω | $I_D = 5 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note4} |
| Input capacitance | C_{iss} | — | 710 | — | pF | $V_{DS} = 25 \text{ V}$ |
| Output capacitance | C_{oss} | — | 110 | — | pF | $V_{GS} = 0$ |
| Reverse transfer capacitance | C_{rss} | — | 8 | — | pF | $f = 1 \text{ MHz}$ |
| Turn-on delay time | $t_{d(on)}$ | — | 26 | — | ns | $I_D = 5 \text{ A}$ |
| Rise time | t_r | — | 18 | — | ns | $V_{GS} = 10 \text{ V}$ |
| Turn-off delay time | $t_{d(off)}$ | — | 54 | — | ns | $R_L = 25 \Omega$ |
| Fall time | t_f | — | 8 | — | ns | $R_g = 10 \Omega$ |
| Total gate charge | Q_g | — | 15 | — | nC | $V_{DD} = 200 \text{ V}$ |
| Gate to source charge | Q_{gs} | — | 4 | — | nC | $V_{GS} = 10 \text{ V}$ |
| Gate to drain charge | Q_{gd} | — | 6 | — | nC | $I_D = 10 \text{ A}$ |
| Body-drain diode forward voltage | V_{DF} | — | 0.85 | 1.4 | V | $I_F = 10 \text{ A}$, $V_{GS} = 0$ ^{Note4} |
| Body-drain diode reverse recovery time | t_{rr} | — | 110 | — | ns | $I_F = 10 \text{ A}$, $V_{GS} = 0$ $diF/dt = 100 \text{ A}/\mu\text{s}$ |

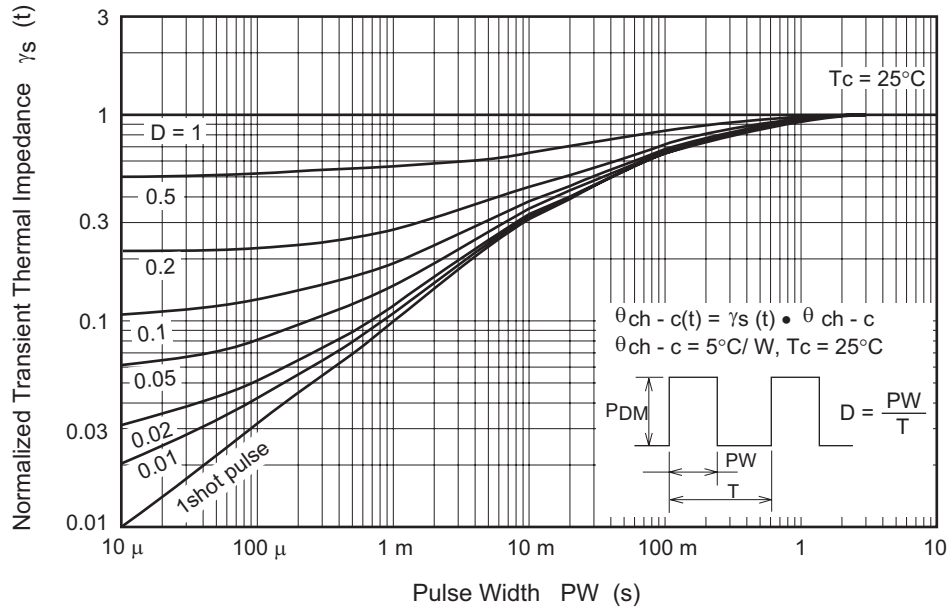
Notes: 4. Pulse test

Main Characteristics

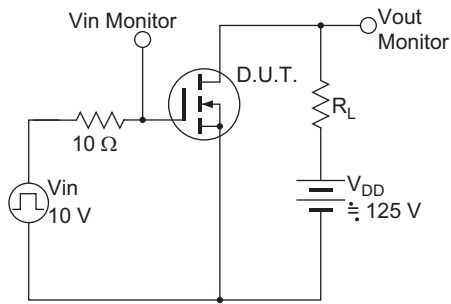




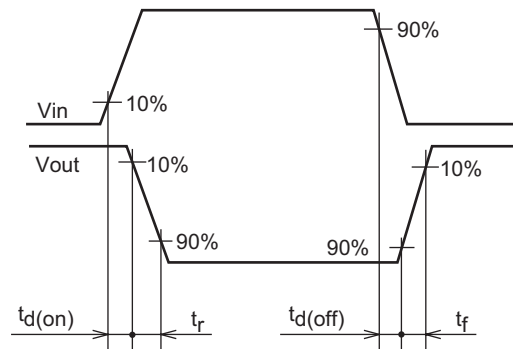
Normalized Transient Thermal Impedance vs. Pulse Width



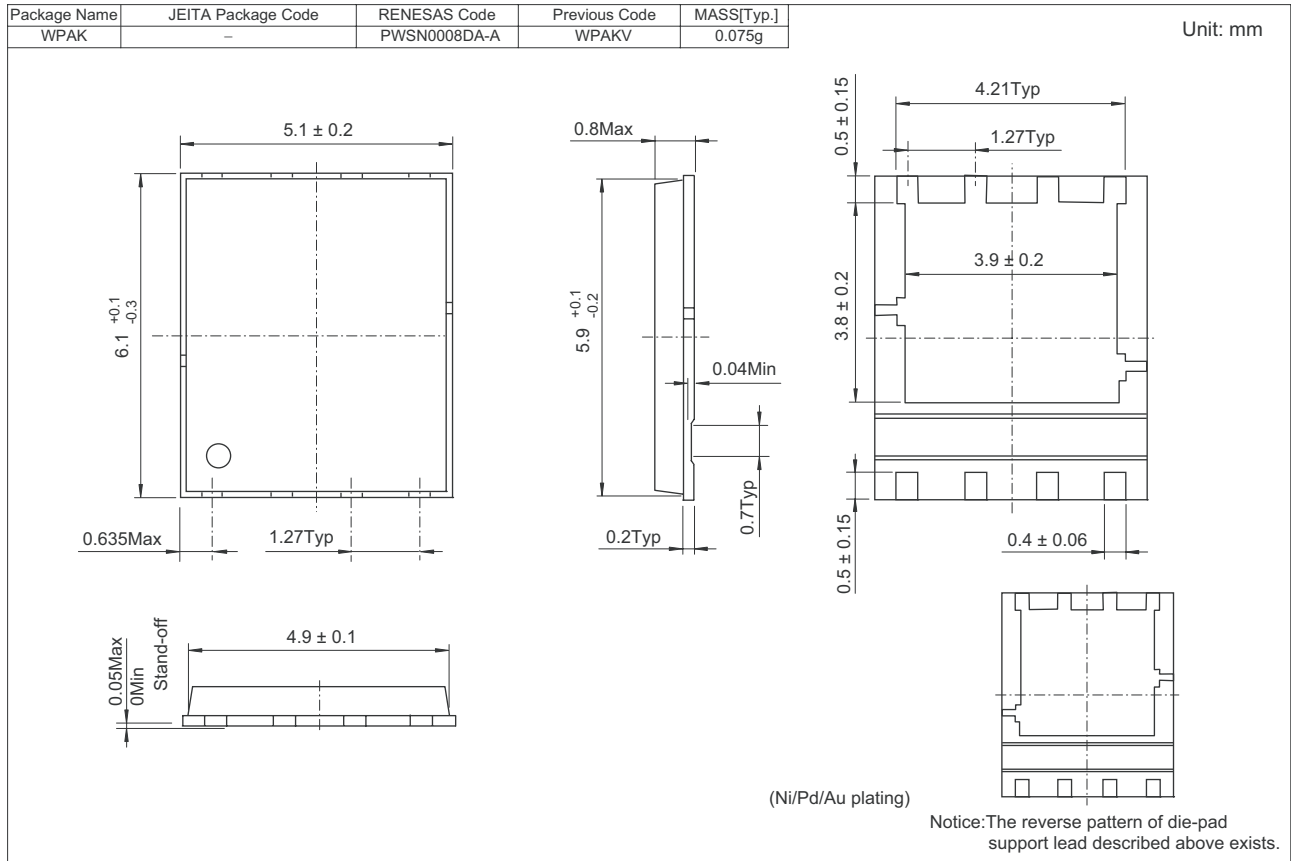
Switching Time Test Circuit



Waveform



Package Dimensions



Ordering Information

| Part No. | Quantity | Shipping Container |
|----------------|----------|--------------------|
| HAT2192WP-EL-E | 2500 pcs | Taping |

Notes:

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