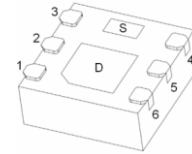


CMSP2011A6-HF

P-Channel
RoHS Device
Halogen Free



Features

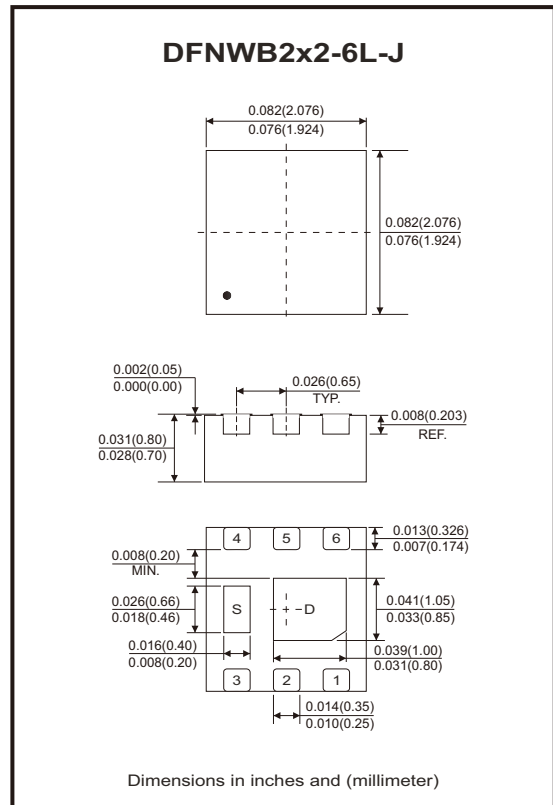
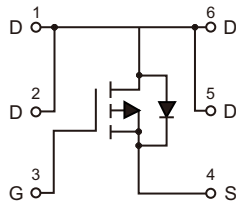
- Advanced trench MOSFET process technology.
- Ultra low on-resistance with low gate charge.

Mechanical data

- Case: DFNWB2x2-6L-J, molded plastic.
- Mounting position: Any.

Circuit Diagram

- D: Drain
- G: Gate
- S: Source



Maximum Ratings (at Ta=25 °C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|------------------|-------------|------|
| Drain-source voltage | V _{DS} | -20 | V |
| Gate-source voltage | V _{GS} | ±12 | |
| Continuous drain current | I _D | -11 | A |
| Pulsed drain current (Note 1) | I _{DM} | -44 | |
| Power Dissipation (Note 2) | P _D | 0.75 | W |
| Thermal resistance from junction to ambient | R _{θJA} | 167 | °C/W |
| Junction temperature | T _J | 150 | °C |
| Storage temperature range | T _{STG} | -55 to +150 | °C |

Electrical Characteristics (at $T_A=25^\circ\text{C}$ unless otherwise noted)

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|---|---------------|---|------|------|-----------|------------|
| Off characteristics | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = -250\mu A$ | -20 | | | V |
| Zero gate voltage drain current | I_{DSS} | $V_{DS} = -20V, V_{GS} = 0V$ | | | -1 | μA |
| Gate-body leakage current | I_{GSS} | $V_{GS} = \pm 12V, V_{DS} = 0V$ | | | ± 100 | nA |
| On characteristics (Note 3) | | | | | | |
| Gate threshold voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = -250\mu A$ | -0.4 | -0.6 | -1.0 | V |
| Drain-source on-resistance | $R_{DS(on)}$ | $V_{GS} = -4.5V, I_D = -7.2A$ | | 14 | 24 | m Ω |
| | | $V_{GS} = -2.5V, I_D = -6.4A$ | | 19 | 40 | |
| Forward transconductance | g_{FS} | $V_{DS} = -10V, I_D = -7.2A$ | 10 | | | S |
| Dynamic characteristics (Note 4) | | | | | | |
| Input capacitance | C_{iss} | $V_{DS} = -6V, V_{GS} = 0V, f = 1MHz$ | | 1580 | | pF |
| Output capacitance | C_{oss} | | | 330 | | |
| Reverse transfer capacitance | C_{rss} | | | 240 | | |
| Total gate charge | Q_g | $V_{DS} = -6V, V_{GS} = -4.5V, I_D = -10A$ | | 35 | | nC |
| Gate-source charge | Q_{gs} | | | 5 | | |
| Gate-drain charge | Q_{gd} | | | 10 | | |
| Switching characteristics (Note 4) | | | | | | |
| Turn-on delay time | $t_{d(on)}$ | $V_{GEN} = -4.5V, V_{DD} = -10V, I_D = -1A$ $R_G = 10\Omega$ | | 11 | | ns |
| Turn-on rise time | t_r | | | 35 | | |
| Turn-off delay time | $t_{d(off)}$ | | | 30 | | |
| Turn-off fall time | t_f | | | 10 | | |
| Drain-source diode characteristics | | | | | | |
| Diode forward current | I_S | | | | -11 | A |
| Diode forward voltage (Note 3) | V_{SD} | $V_{GS} = 0V, I_{SD} = -1.9A$ | | | -1.2 | V |

- Notes: 1. Pulse width limited by maximum junction temperature.
 2. This test is performed with no heat sink at $T_A=25^\circ\text{C}$.
 3. Pulse with $\leq 300\mu s$, duty cycle $\leq 2\%$.
 4. Guaranteed by design, not subject to production testing.

Rating and Characteristic Curves (CMSP2011A6-HF)

Fig.1 - Output Characteristics

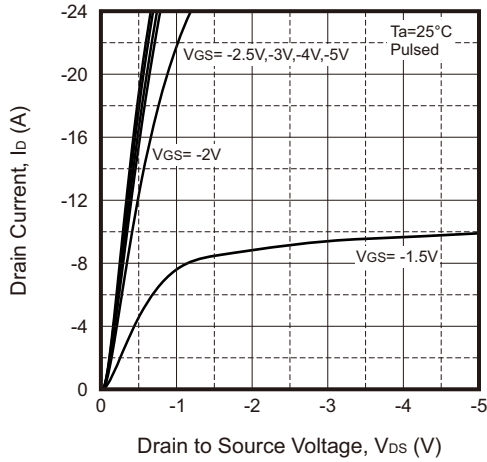


Fig.2 - Transfer Characteristics

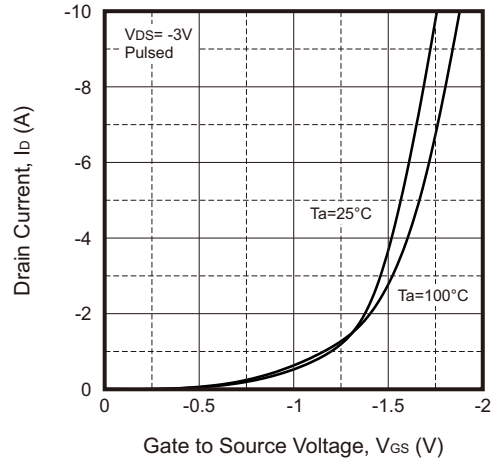


Fig.3 - $R_{DS(ON)} - I_D$

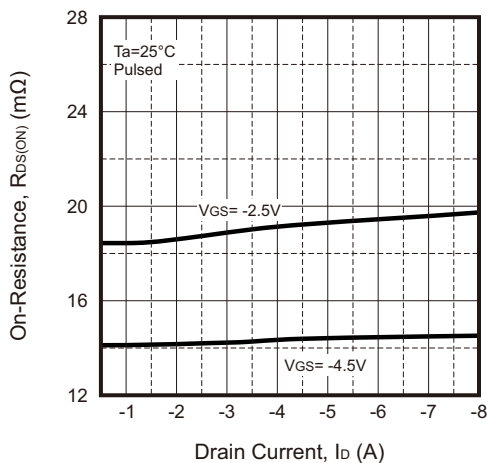


Fig.4 - $R_{DS(ON)} - V_{GS}$

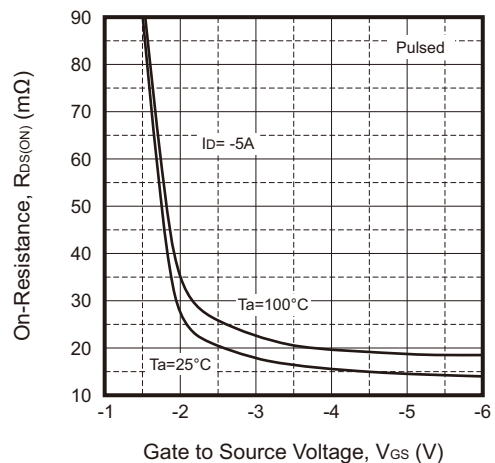


Fig.5 - $I_S - V_{SD}$

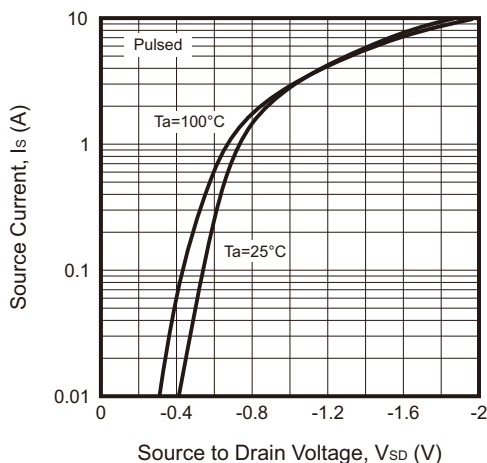
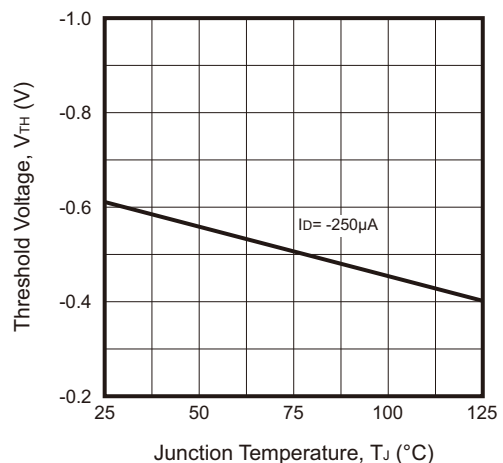
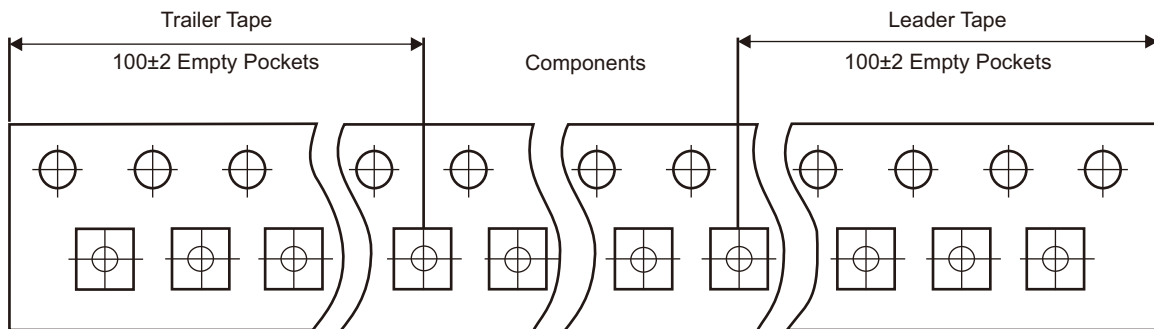
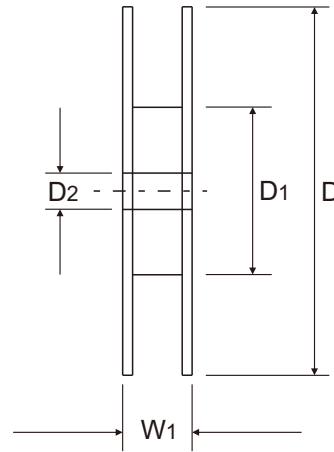
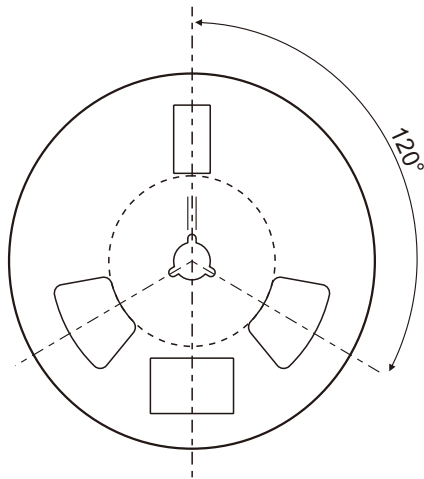
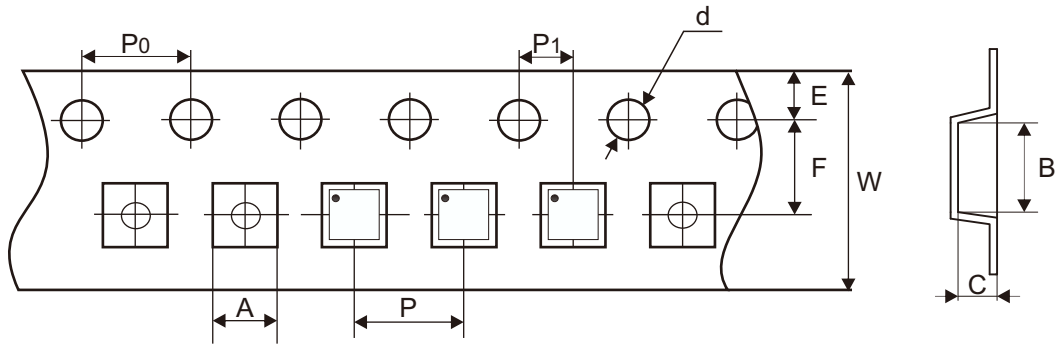


Fig.6 - Threshold Voltage



Reel Taping Specification

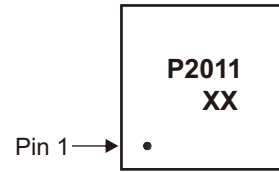


| DFNWB2x2 -6L-J | SYMBOL | A | B | C | d | D | D1 | D2 |
|-------------------|--------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | (mm) | 2.30 ± 0.05 | 2.30 ± 0.05 | 1.10 ± 0.05 | 1.50 ± 0.10 | 180.00 ± 2.00 | 60.00 ± 1.00 | 13.00 ± 1.00 |
| | (inch) | 0.091 ± 0.002 | 0.091 ± 0.002 | 0.043 ± 0.002 | 0.059 ± 0.004 | 7.087 ± 0.079 | 2.362 ± 0.039 | 0.512 ± 0.039 |

| DFNWB2x2 -6L-J | SYMBOL | E | F | P | P0 | P1 | W | W1 |
|-------------------|--------|---------------|---------------|---------------|---------------|---------------|--------------------------|---------------|
| | (mm) | 1.75 ± 0.10 | 3.50 ± 0.10 | 4.00 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.10 | 8.00 + 0.30 - 0.10 | 13.10 ± 1.00 |
| | (inch) | 0.069 ± 0.004 | 0.138 ± 0.004 | 0.157 ± 0.004 | 0.157 ± 0.004 | 0.079 ± 0.004 | 0.315 + 0.012 - 0.004 | 0.516 ± 0.039 |

Marking Code

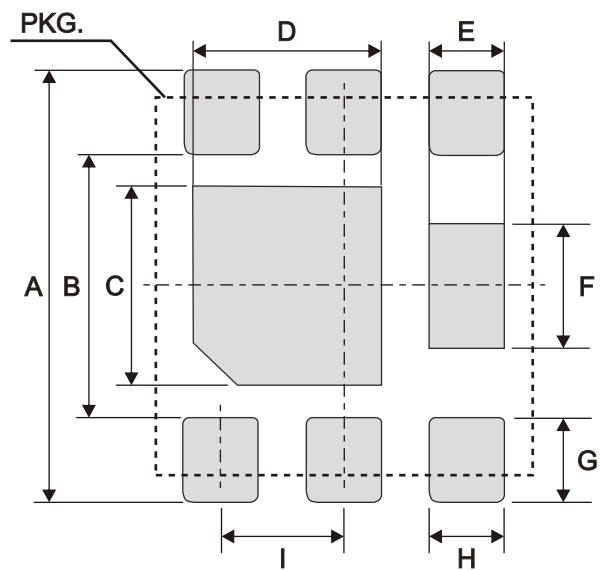
| Part Number | Marking Code |
|---------------|--------------|
| CMSP2011A6-HF | P2011 |



xx = Control code

Suggested P.C.B. PAD Layout

| SIZE | DFNWB2x2-6L-J | |
|------|---------------|--------|
| | (mm) | (inch) |
| A | 2.30 | 0.091 |
| B | 1.40 | 0.055 |
| C | 1.05 | 0.041 |
| D | 1.00 | 0.039 |
| E | 0.40 | 0.016 |
| F | 0.66 | 0.026 |
| G | 0.45 | 0.018 |
| H | 0.40 | 0.016 |
| I | 0.65 | 0.026 |



Standard Packaging

| Case Type | REEL PACK | |
|---------------|------------|------------------|
| | REEL (pcs) | Reel Size (inch) |
| DFNWB2x2-6L-J | 3,000 | 7 |