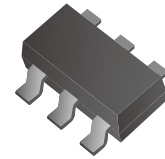


CMS03P06T6-HF

P-Channel
RoHS Device
Halogen Free



Features

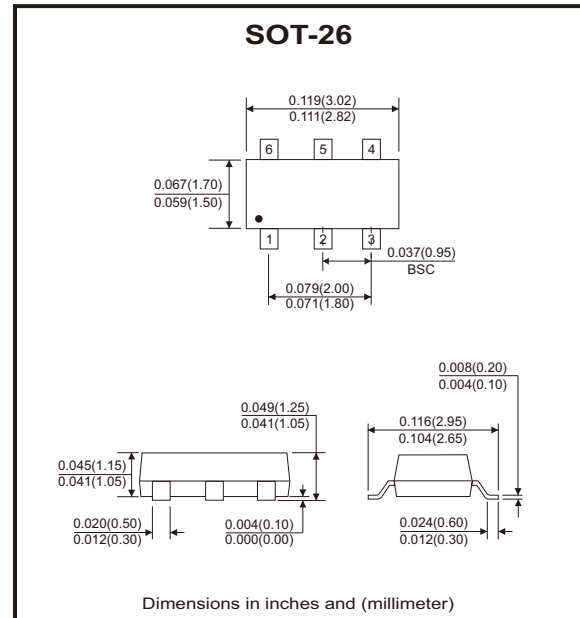
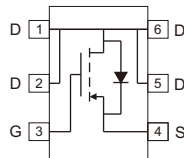
- Low on resistance.
- Low gate charge.
- Fast switching characteristic.

Mechanical data

- Case: SOT-26, molded plastic.
- Mounting position: Any.

Circuit Diagram

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



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

| Parameter | Conditions | Symbol | Value | Unit |
|--|---|-----------------------------------|-------------|------|
| Drain-source voltage | | V _{DS} | -60 | V |
| Gate-source voltage | | V _{GS} | ±20 | |
| Continuous drain current | V _{GS} = -10V, T _C = 25°C (Note 1) | I _D | -3.8 | A |
| | V _{GS} = -10V, T _C = 100°C (Note 1) | I _D | -2.4 | |
| | V _{GS} = -10V, T _A = 25°C (Note 2) | I _D | -3 | |
| | V _{GS} = -10V, T _A = 70°C (Note 2) | I _D | -2.4 | |
| Pulsed drain current | (Note 3) | I _{DM} | -15 | A |
| Continuous body diode forward current | T _C = 25°C (Note 1) | I _S | -2.5 | A |
| Total power dissipation | T _C = 25°C (Note 1) | P _D | 3.1 | W |
| | T _C = 100°C (Note 1) | P _D | 1.2 | |
| | T _A = 25°C (Note 2) | P _D | 2 | |
| | T _A = 70°C (Note 2) | P _D | 1.3 | |
| Operating junction and storage temperature range | | T _J , T _{STG} | -55 to +150 | °C |
| Thermal resistance junction-case | | R _{θJC} | 40 | °C/W |
| Thermal resistance junction-ambient | (Note 2) | R _{θJA} | 63 | |

- Notes: 1. The power dissipation P_D is based on T_{J(MAX)}=150°C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.
2. The value of R_{θJA} is measured with the device mounted on 1 in² FR-4 board with 2oz. copper, in a still air environment with T_A=25°C. The power dissipation P_D is based on R_{θJA} and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.
3. Repetitive rating, pulse width limited by junction temperature T_{J(MAX)}=150°C. Ratings are based on low frequency and low duty cycles to keep initial T_J=25°C.

Electrical Characteristics (at T_A=25°C unless otherwise noted)

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|-----------------------------------|---------------------|--|-----|-------|------|------|
| Static | | | | | | |
| Drain-source breakdown voltage | BV _{DSS} | V _{GS} = 0V, I _D = -250μA | -60 | | | V |
| Gate threshold voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = -250μA | -1 | | -2.5 | V |
| Forward transconductance | g _{fs} | V _{DS} = -15V, I _D = -3A | | 5.5 | | S |
| Gate-source leakage current | I _{GSS} | V _{GS} = ±20V, V _{DS} = 0V | | | ±100 | nA |
| Drain-source leakage current | I _{DSS} | V _{DS} = -48V, V _{GS} = 0V | | | -1 | μA |
| Static drain-source on-resistance | R _{DS(on)} | V _{GS} = -10V, I _D = -3A | | 79 | 104 | mΩ |
| | | V _{GS} = -4.5V, I _D = -2A | | 135 | 190 | |
| Dynamic | | | | | | |
| Input capacitance | C _{iSS} | V _{DS} = -30V, V _{GS} = 0V, f = 1MHz | | 500 | | pF |
| Output capacitance | C _{oss} | | | 51 | | |
| Reverse transfer capacitance | C _{rss} | | | 37 | | |
| Gate resistance | R _g | f = 1MHz | | 6.6 | | Ω |
| Total gate charge (Note 1,2) | Q _g | V _{DS} = -30V, I _D = -3A, V _{GS} = -10V | | 11 | | nC |
| Gate-source charge (Note 1,2) | Q _{gs} | | | 2 | | |
| Gate-drain charge (Note 1,2) | Q _{gd} | | | 3.2 | | |
| Turn-on delay time (Note 1,2) | t _{d(on)} | V _{DS} = -30V, I _D = -3A, V _{GS} = -10V R _{GS} = 3Ω | | 6.4 | | nS |
| Rise time (Note 1,2) | t _r | | | 17 | | |
| Turn-off delay time (Note 1,2) | t _{d(off)} | | | 25 | | |
| Fall time (Note 1,2) | t _f | | | 7.2 | | |
| Source-drain diode | | | | | | |
| Diode forward voltage (Note 1) | V _{SD} | I _S = -3A, V _{GS} = 0V | | -0.84 | -1.2 | V |
| Reverse recovery time | t _{rr} | I _F = -3A, dI _F /dt = 100A/μs | | 13 | | nS |
| Reverse recovery charge | Q _{rr} | | | | 8 | |

Notes: 1. Pulse width ≤ 300μs, duty cycle ≤ 2%.
2. Independent of operating temperature.

Rating and Characteristic Curves (CMS03P06T6-HF)

Fig.1 - Typical Output Characteristics

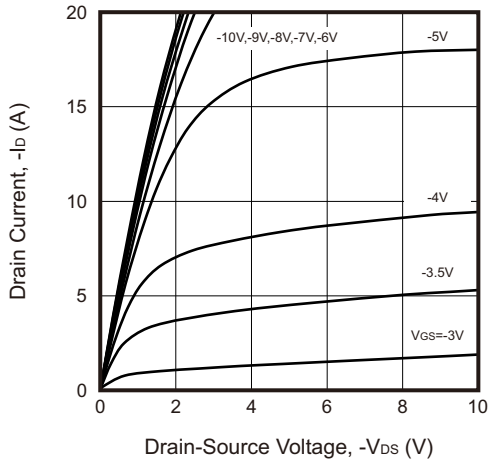


Fig.2 - Breakdown Voltage vs Ambient Temperature

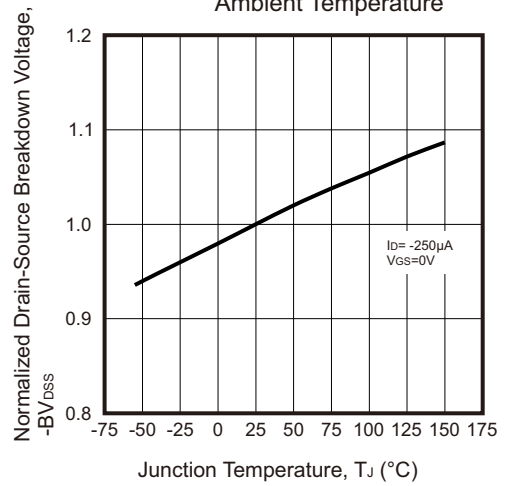


Fig.3 - Static Drain-Source On-State Resistance vs Drain Current

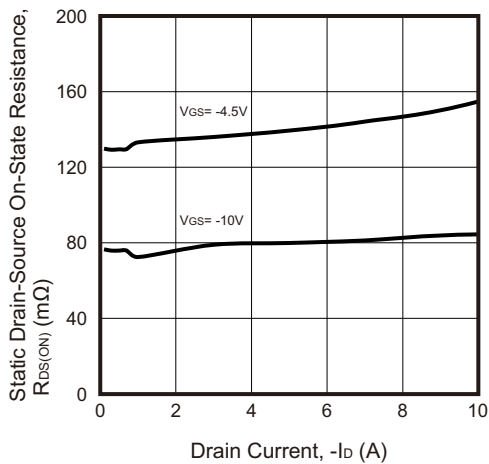


Fig.4 - Body Diode Current vs Source-Drain Voltage

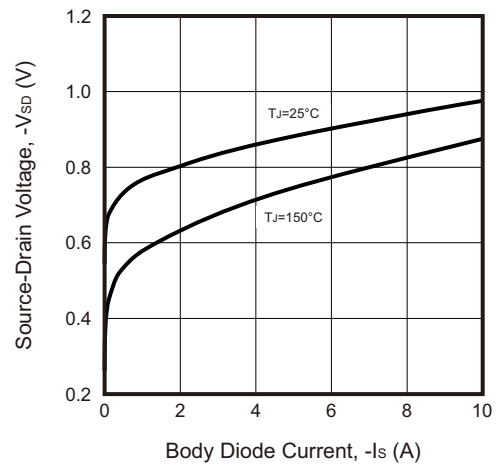


Fig.5 - Static Drain-Source On-State Resistance vs Gate-Source Voltage

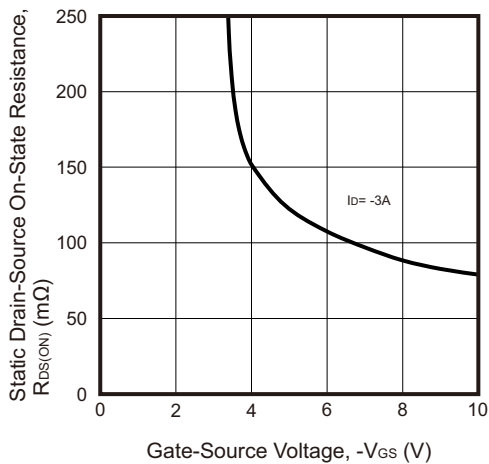
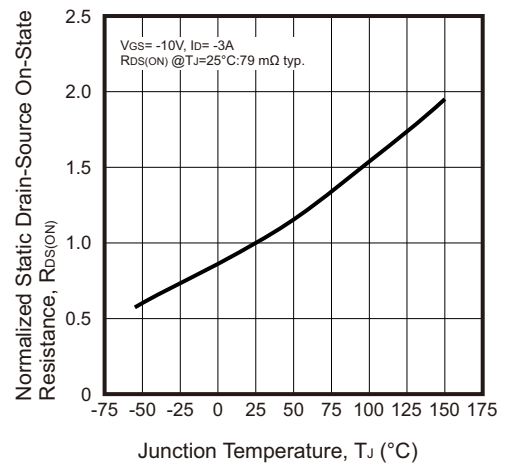


Fig.6 - Drain-Source On-State Resistance vs Junction Temperature



Rating and Characteristic Curves (CMS03P06T6-HF)

Fig.7 - Capacitance vs Drain-to-Source Voltage

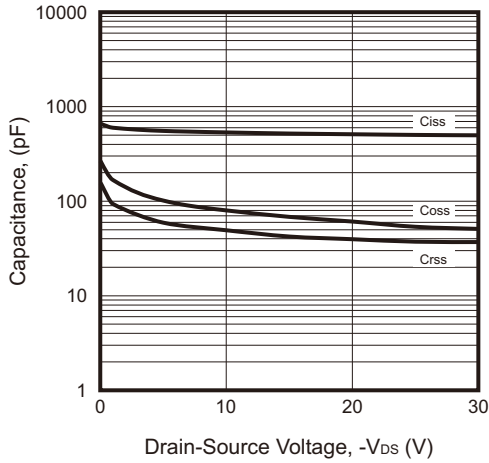


Fig.8 - Threshold Voltage vs Junction Temperature

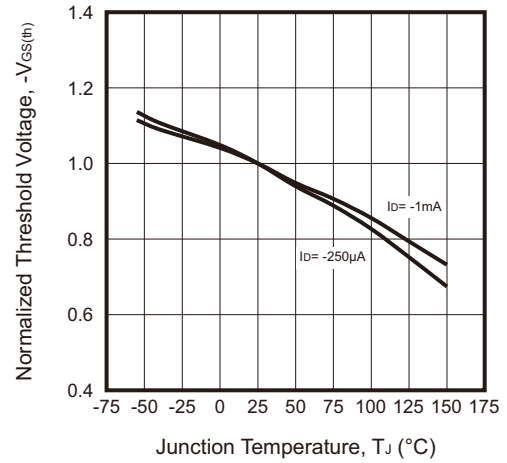


Fig.9 - Forward Transfer Admittance vs Drain Current

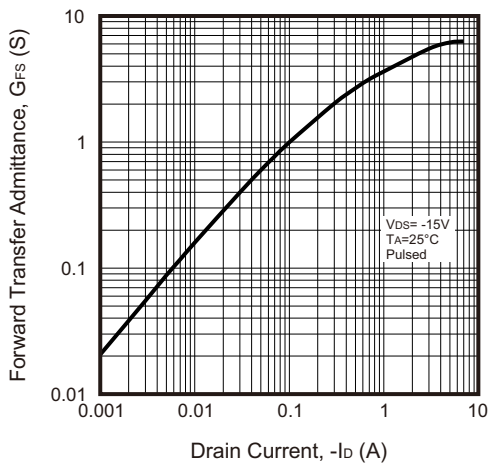


Fig.10 - Gate Charge Characteristics

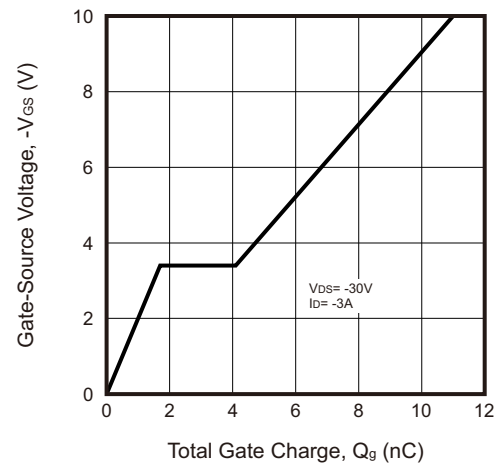


Fig.11 - Maximum Safe Operating Area

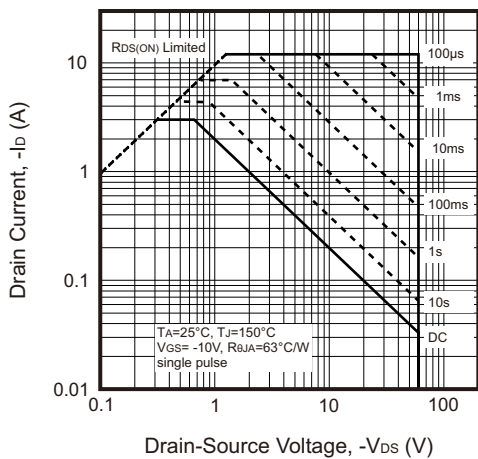
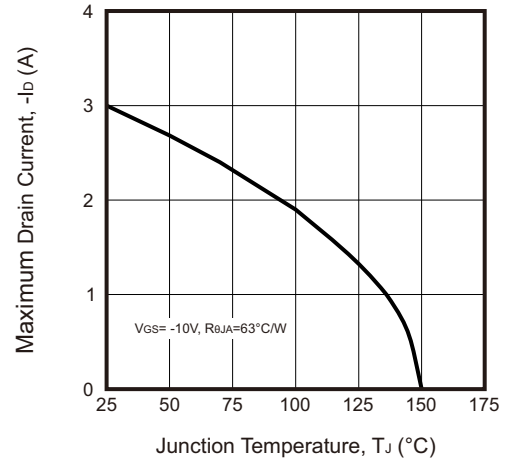
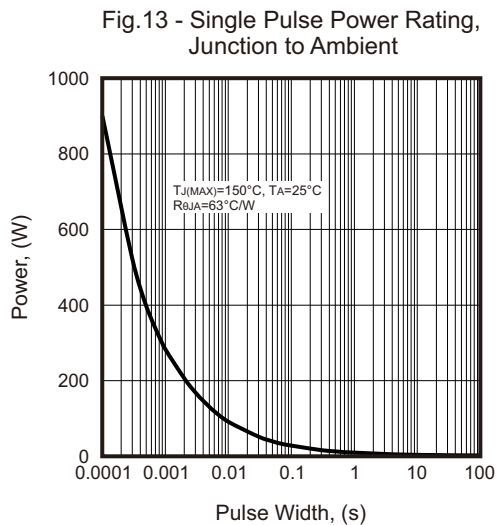


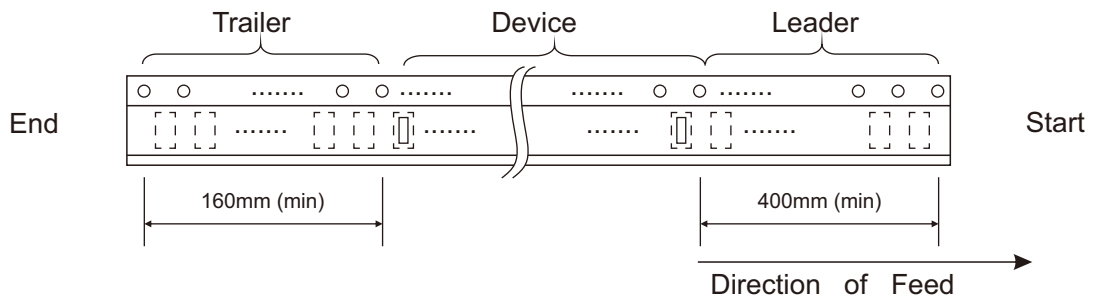
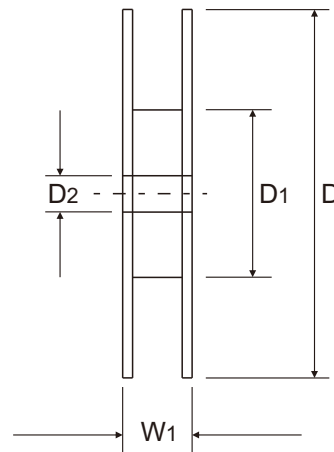
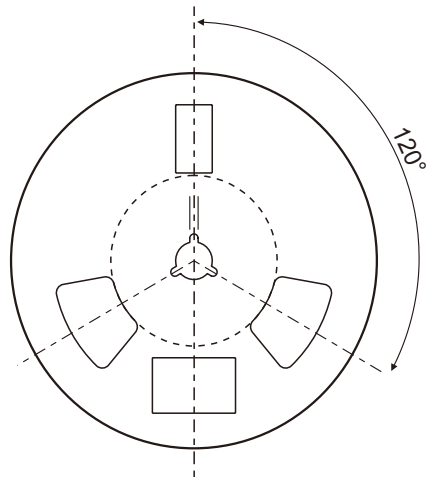
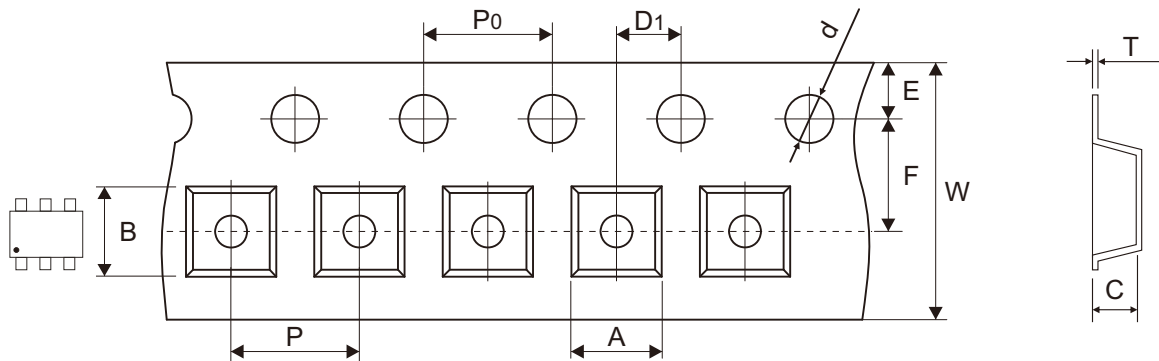
Fig.12 - Maximum Drain Current vs Junction Temperature



Rating and Characteristic Curves (CMS03P06T6-HF)



Reel Taping Specification

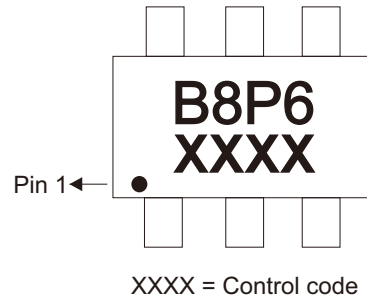


| SOT-26 | SYMBOL | A | B | C | d | D | D1 | D2 |
|--------|--------|---------------|---------------|---------------|---------------|---------------|--------------------------|---------------|
| | (mm) | 3.17 ± 0.10 | 3.23 ± 0.10 | 1.37 ± 0.10 | 1.55 ± 0.05 | 178 ± 1.00 | 60.00 + 1.00 - 0.00 | 13.50 ± 0.50 |
| | (inch) | 0.125 ± 0.004 | 0.127 ± 0.004 | 0.054 ± 0.004 | 0.061 ± 0.002 | 7.008 ± 0.039 | 2.362 + 0.039 - 0.000 | 0.512 ± 0.020 |

| SOT-26 | SYMBOL | E | F | P | P0 | P1 | T | W | W1 |
|--------|--------|---------------|---------------|---------------|---------------|---------------|---------------|--------------------------|---------------|
| | (mm) | 1.75 ± 0.10 | 3.50 ± 0.05 | 4.00 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.05 | 0.229 ± 0.039 | 8.00 + 0.30 - 0.10 | 12.00 ± 0.05 |
| | (inch) | 0.069 ± 0.004 | 0.138 ± 0.002 | 0.157 ± 0.004 | 0.157 ± 0.004 | 0.079 ± 0.002 | 0.009 ± 0.002 | 0.315 + 0.012 - 0.004 | 0.472 ± 0.002 |

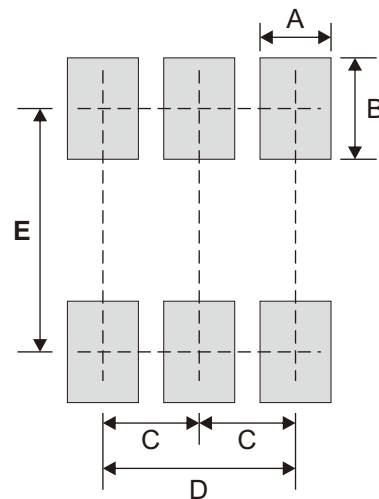
Marking Code

| Part Number | Marking Code |
|---------------|--------------|
| CMS03P06T6-HF | B8P6 XXXX |



Suggested P.C.B. PAD Layout

| SIZE | SOT-26 | |
|------|--------|--------|
| | (mm) | (inch) |
| A | 0.70 | 0.028 |
| B | 1.00 | 0.039 |
| C | 0.95 | 0.037 |
| D | 1.90 | 0.075 |
| E | 2.40 | 0.094 |



Standard Packaging

| Case Type | REEL PACK | |
|-----------|--------------|------------------|
| | REEL (pcs) | Reel Size (inch) |
| SOT-26 | 3000 | 7 |