



Micro Commercial Components



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MCCD2004

Features

- Advanced trench MOSFET process technology
- Halogen free available upon request by adding suffix "-HF"
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Marking:2004

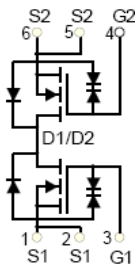
Maximum Ratings @ 25°C Unless Otherwise Specified

| Symbol | Parameter | Rating | Unit |
|------------------|--|-------------|------|
| V _{DS} | Drain-source Voltage | 20 | V |
| I _D | Drain Current-Continuous | 10 | A |
| I _{DM} | Pulsed Drain Current (note1) | 40 | A |
| V _{GS} | Gate-source Voltage | ± 12 | V |
| R _{θJA} | Thermal Resistance Junction to Ambient | 125 | °C/W |
| T _J | Operating Junction Temperature | -55 to +150 | °C |
| T _{STG} | Storage Temperature | -55 to +150 | °C |

Notes:

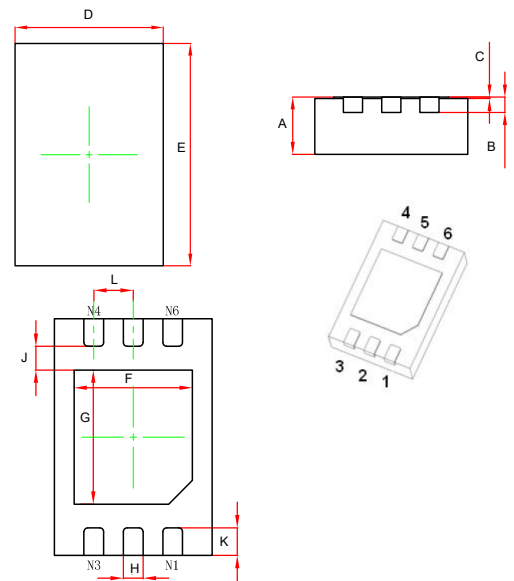
1. Repetitive Rating: Pulse width limited by junction temperature.

Equivalent Circuit



Dual N-Channel Power MOSFET

DFN2030-6



| DIM | Dimensions | | | | NOTE |
|-----|------------|-------|-----------|-------|------|
| | INCHES | | MM | | |
| | MIN | MAX | MIN | MAX | |
| A | 0.028 | .032 | 0.700 | 0.800 | |
| B | 0.008REF. | | 0.203REF. | | |
| C | 0.000 | 0.002 | 0.000 | 0.050 | |
| D | 0.077 | 0.081 | 1.950 | 2.050 | |
| E | 0.116 | 0.120 | 2.950 | 3.050 | |
| F | 0.055 | 0.063 | 1.400 | 1.600 | |
| G | 0.063 | 0.071 | 1.600 | 1.800 | |
| H | 0.008 | 0.012 | 0.200 | 0.300 | |
| J | 0.008 | --- | 0.200 | --- | |
| K | 0.018 | 0.026 | 0.300 | 0.400 | |
| L | 0.020TYP. | | 0.500TYP. | | |

ELECTRICAL CHARACTERISTICS(T_a=25°C unless otherwise specified)

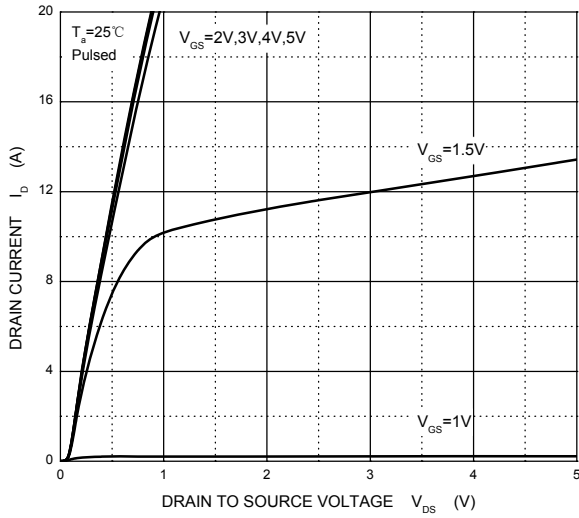
| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|-------------------------------------|----------------------|---|-----|------|-----|------|
| STATIC PARAMETERS | | | | | | |
| Drain-source breakdown voltage | V _{(BR)DSS} | V _{GS} = 0V, I _D =250μA | 20 | | | V |
| Zero gate voltage drain current | I _{DSS} | V _{DS} =16V, V _{GS} = 0V | | | 1 | μA |
| Gate-body leakage current | I _{GSS} | V _{GS} =±10V, V _{DS} = 0V | | | ±10 | μA |
| Gate threshold voltage (note 1) | V _{GS(th)} | V _{DS} =V _{GS} , I _D =250μA | 0.5 | | 1 | V |
| Drain-source on-resistance (note 1) | R _{DS(on)} | V _{GS} =10V, I _D =8A | | | 10 | mΩ |
| | | V _{GS} =4.5V, I _D =5A | | | 12 | mΩ |
| | | V _{GS} =3.8V, I _D =5A | | | 13 | mΩ |
| | | V _{GS} =2.5V, I _D =4A | | | 17 | mΩ |
| Forward tranconductance (note 1) | g _{FS} | V _{DS} =5V, I _D =8A | | 36 | | S |
| Diode forward voltage(note 1) | V _{SD} | I _S =1A, V _{GS} = 0V | | | 1 | V |
| DYNAMIC PARAMETERS (note 2) | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} =10V, V _{GS} =0V, f =1MHz | | 1955 | | pF |
| Output Capacitance | C _{oss} | | | 220 | | pF |
| Reverse Transfer Capacitance | C _{rss} | | | 180 | | pF |
| Total gate charge | Q _g | V _{DS} =10V, V _{GS} =4.5V, I _D =8A | | 18.5 | | nC |
| Gate-source charge | Q _{gs} | | | 2 | | nC |
| Gate-drain charge | Q _{gd} | | | 5.1 | | nC |
| SWITCHING PARAMETERS(note 2) | | | | | | |
| Turn-on delay time | t _{d(on)} | V _{GS} =10V, V _{DD} =10V, R _L =1.2Ω, R _{GEN} =3Ω | | 3 | | ns |
| Turn-on rise time | t _r | | | 7.4 | | ns |
| Turn-off delay time | t _{d(off)} | | | 55 | | ns |
| Turn-off fall time | t _f | | | 12.3 | | ns |

Notes :

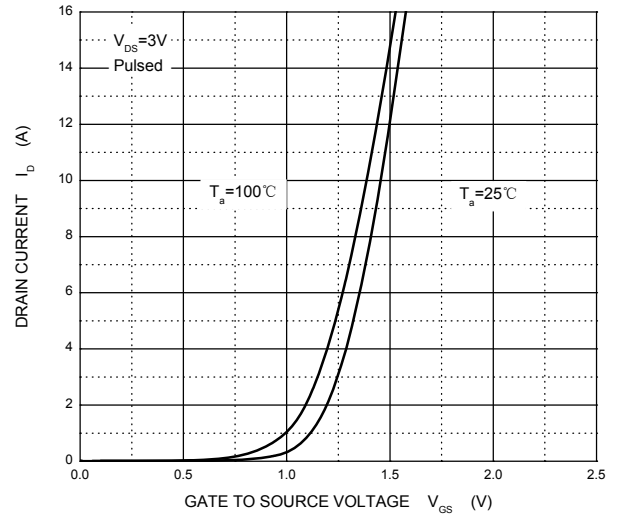
1. Pulse Test : Pulse width≤300μs, duty cycle≤0.5%.
2. Guaranteed by design, not subject to production testing.

Typical Characteristics

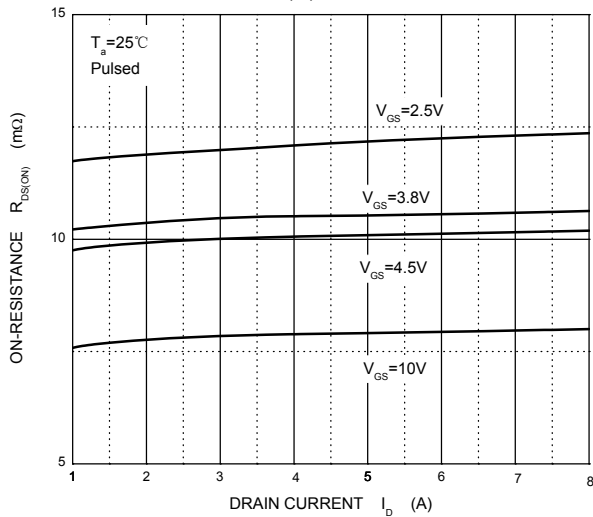
Output Characteristics



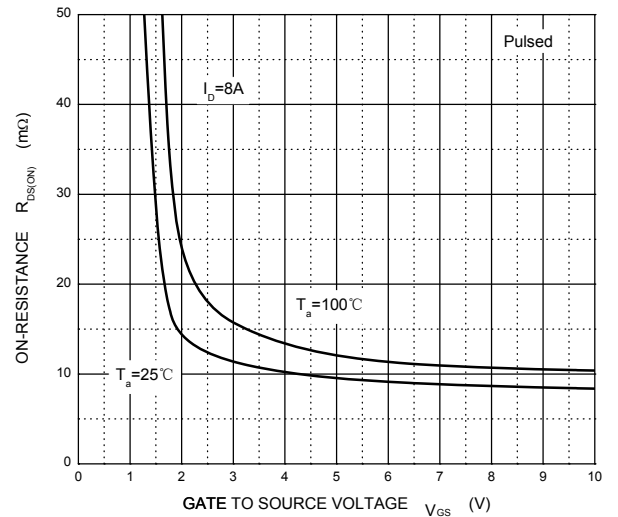
Transfer Characteristics



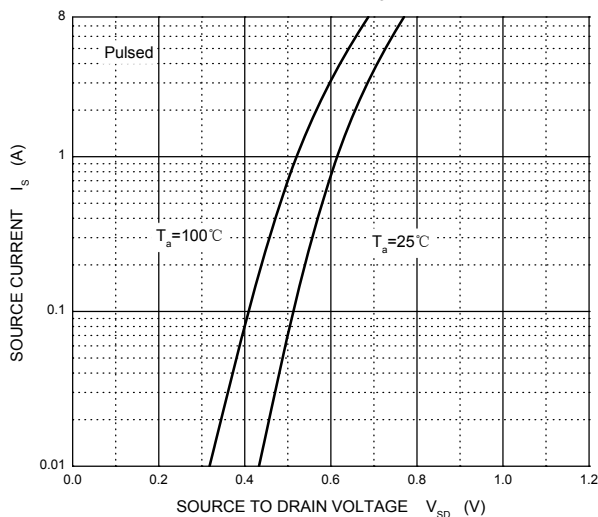
$R_{DS(ON)}$ — I_D



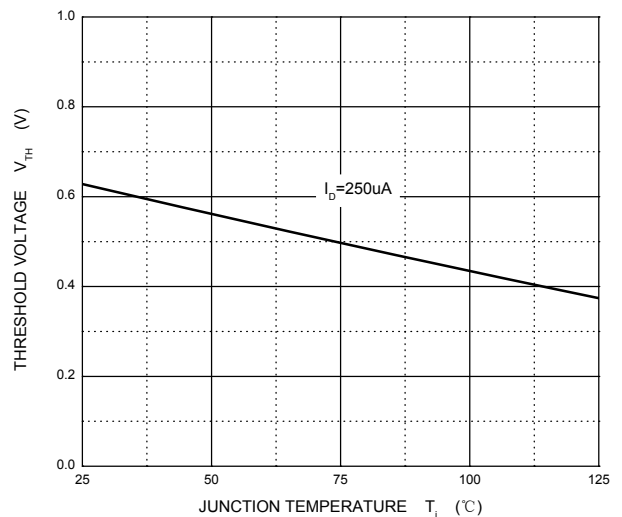
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



Threshold Voltage





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Ordering Information :

| Device | Packing |
|----------------|-----------------------|
| Part Number-TP | Tape&Reel: 3Kpcs/Reel |

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

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