



Micro Commercial Components



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MCS2010

Dual N-Channel MOSFET

Features

- TrenchFET Power MOSFET
- Excellent $R_{DS(ON)}$ and low gate charge
- Halogen free available upon request by adding suffix "-HF"
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Marking: S2010

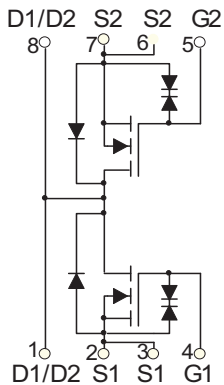
Maximum Ratings @ 25°C Unless Otherwise Specified

| Symbol | Parameter | Rating | Unit |
|-----------------|--|-------------|---------------|
| V_{DS} | Drain-source Voltage | 20 | V |
| I_D | Drain Current-Continuous | 10 | A |
| I_{DM} | Pulsed Drain Current (note1) | 36 | A |
| V_{GS} | Gate-source Voltage | ± 10 | V |
| $R_{\theta JA}$ | Thermal Resistance Junction to Ambient | 125 | $^{\circ}C/W$ |
| T_J | Operating Junction Temperature | -55 to +150 | $^{\circ}C$ |
| T_{STG} | Storage Temperature | -55 to +150 | $^{\circ}C$ |

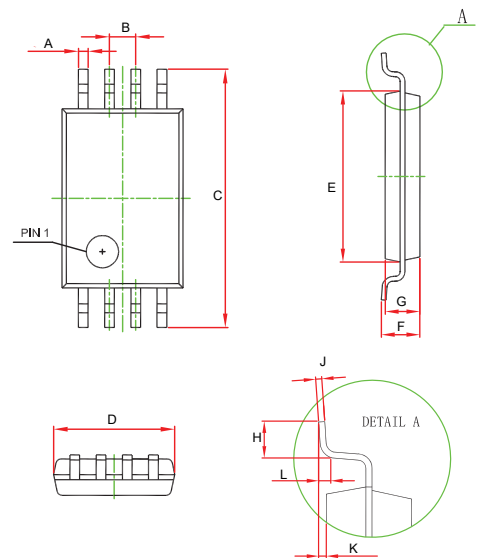
Notes:

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

Equivalent Circuit



TSSOP-8



| DIM | Dimensions | | | | NOTE |
|-----|------------|-------|-----------|-------|------|
| | INCHES | | MM | | |
| | MIN | MAX | MIN | MAX | |
| A | 0.007 | .012 | 0.190 | 0.300 | |
| B | 0.026BSC. | | 0.650BSC. | | |
| C | 0.246 | 0.258 | 6.250 | 6.550 | |
| D | 0.114 | 0.122 | 2.900 | 3.100 | |
| E | 0.169 | 0.177 | 4.300 | 4.500 | |
| F | --- | 0.047 | --- | 1.200 | |
| G | 0.031 | 0.039 | 0.800 | 1.000 | |
| H | 0.020 | 0.028 | 0.500 | 0.700 | |
| J | 0.004 | 0.008 | 0.090 | 0.200 | |
| K | 0.002 | 0.006 | 0.050 | 0.150 | |
| L | 0.010TYP. | | 0.250TYP. | | |

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

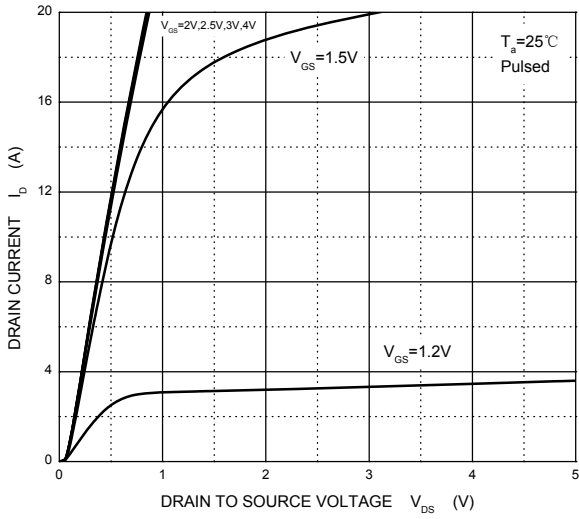
| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|--------------------------------------|----------------------|---|------|-----|------|------|
| STATIC PARAMETERS | | | | | | |
| Drain-source breakdown voltage | V _{(BR)DSS} | V _{GS} = 0V, I _D =250μA | 20 | | | V |
| Zero gate voltage drain current | I _{DSS} | V _{DS} =20V, V _{GS} = 0V | | | 1 | μA |
| Gate-body leakage current | I _{GSS} | V _{GS} =±10V, V _{DS} = 0V | | | ±10 | μA |
| Gate threshold voltage (note 3) | V _{GS(th)} | V _{DS} =V _{GS} , I _D =250μA | 0.3 | | 1 | V |
| Drain-source on-resistance(note 3) | R _{DS(on)} | V _{GS} =4.5V, I _D =10A | 5.5 | | 9.5 | mΩ |
| | | V _{GS} =4V, I _D =10A | 5.8 | | 10 | mΩ |
| | | V _{GS} =3.5V, I _D =9A | | | 10.5 | mΩ |
| | | V _{GS} =3.1V, I _D =9A | 3 | | 11.5 | mΩ |
| | | V _{GS} =2.5V, I _D =8A | 8 | | 13 | mΩ |
| Forward tranconductance(note 3) | g _{FS} | V _{DS} =5V, I _D =10A | | 65 | | S |
| Diode forward voltage (note 3) | V _{SD} | I _S =1A, V _{GS} = 0V | | | 1 | V |
| DYNAMIC PARAMETERS (note 4) | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} =10V, V _{GS} =0V, f =1MHz | 1000 | | 1510 | pF |
| Output Capacitance | C _{oss} | | 150 | | 290 | pF |
| Reverse Transfer Capacitance | C _{rss} | | 100 | | 235 | pF |
| SWITCHING PARAMETERS (note 4) | | | | | | |
| Turn-on delay time | t _{d(on)} | V _{GS} =4.5V, V _{DS} =10V, R _{GEN} =3Ω, R _L =1 Ω | | 1.1 | | ns |
| Turn-on rise time | t _r | | | 2.6 | | ns |
| Turn-off delay time | t _{d(off)} | | | 7 | | ns |
| Turn-off fall time | t _f | | | 7.4 | | ns |
| Total Gate Charge | Q _g | V _{DS} =10V, V _{GS} =4.5V I _D =10A | 10 | | 15 | nC |
| Gate-Source Chage | Q _{gs} | | | 5.5 | | nC |
| Gage-Drain Charge | Q _{gd} | | | 6.5 | | nC |

Notes :

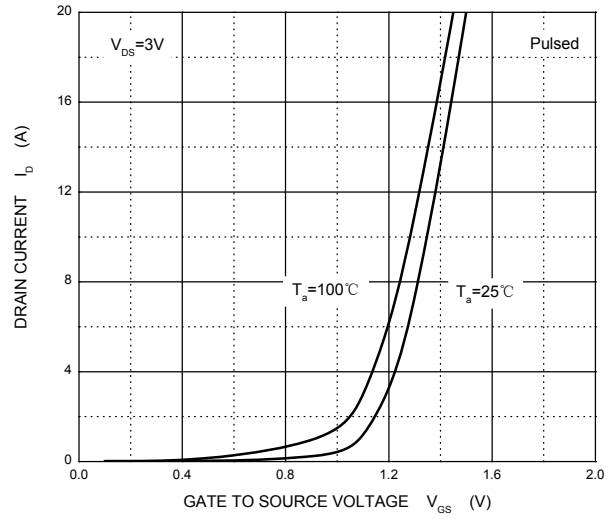
- 1.Repetitive rating: Pluse width limited by maximum junction temperature
- 2.Surface mounted on FR4 board, t ≤10 sec.
3. Pulse test : Pulse width ≤300μs, duty cycle ≤2%.
4. Guaranteed by design, not subject to production.

Typical Characteristics

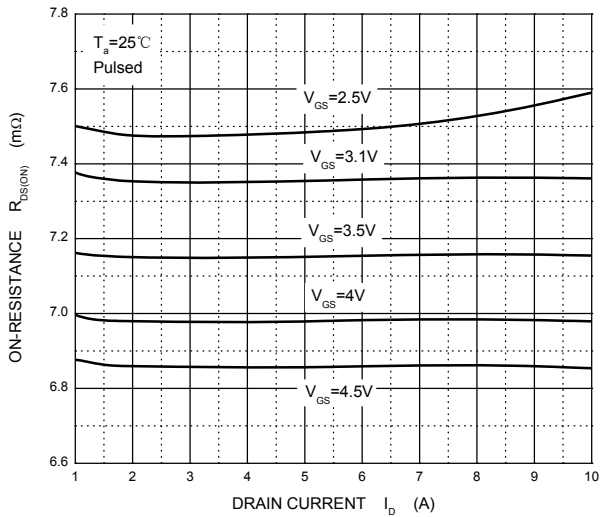
Output Characteristics



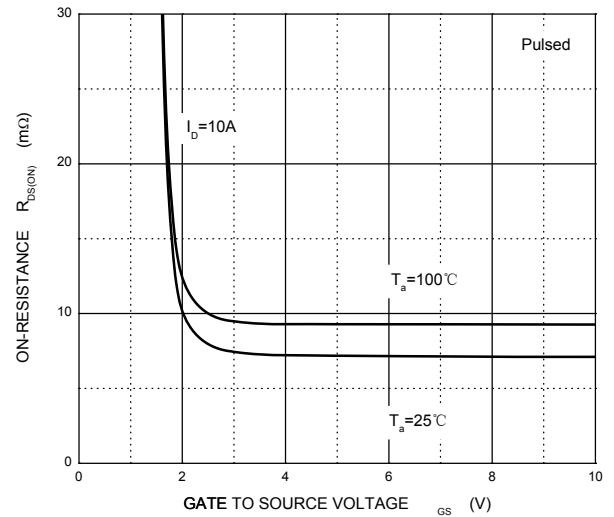
Transfer Characteristics



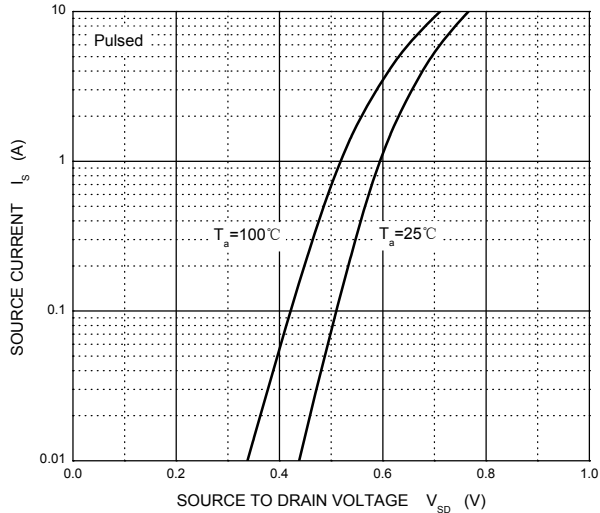
$R_{DS(ON)}$ — I_D



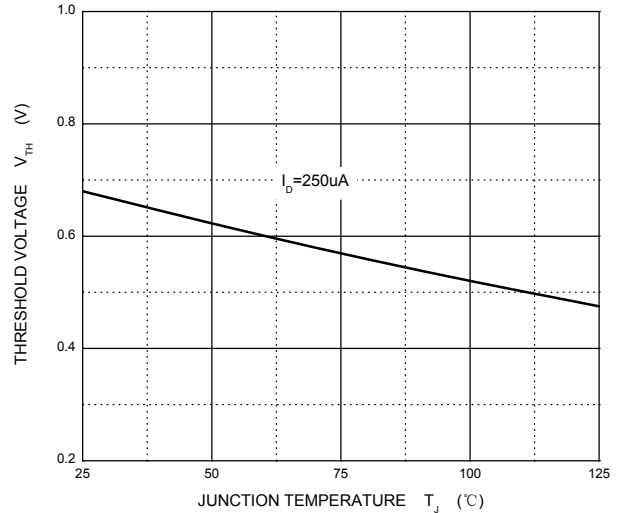
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



Threshold Voltage





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Ordering Information :

| Device | Packing |
|----------------|----------------------|
| Part Number-TP | Tape&Reel:5Kpcs/Reel |

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

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