



Micro Commercial Components



Micro Commercial Components
20736 Marilla Street Chatsworth
CA 91311
Phone: (818) 701-4933
Fax: (818) 701-4939

MCDS04N60

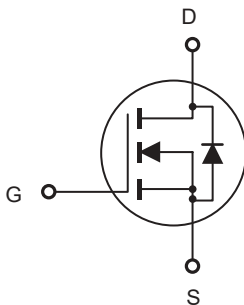
Features

- High Current Rating
- Lower Capacitance
- Lower $R_{DS(ON)}$
- Lower Total Gate Charge
- Tighter VSD Specifications
- Avalanche Energy Specified
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1

Maximum Ratings @ 25°C Unless Otherwise Specified

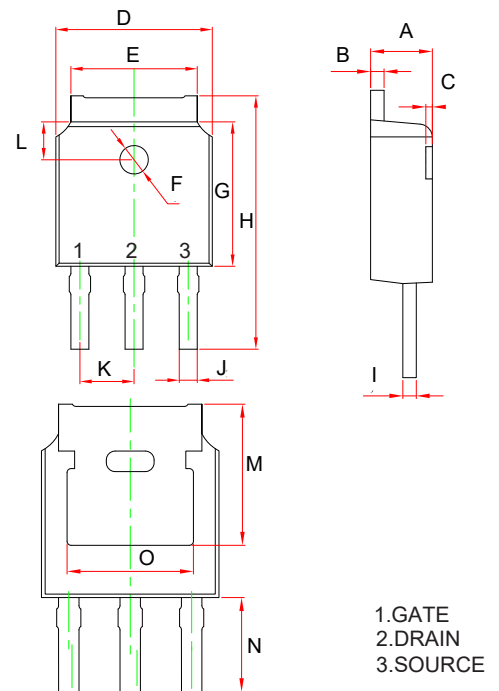
| Symbol | Parameter | Rating | Unit |
|-----------------|---|-------------|------|
| V_{DS} | Drain-source Voltage | 600 | V |
| I_D | Drain Current-Continuous | 4.0 | A |
| I_S | Continuous Drain-Source Diode Forward Current | 4.0 | A |
| V_{GS} | Gate-source Voltage | ± 30 | V |
| E_{AS} | Single Pulsed Avalanche Energy(note1) | 260 | mJ |
| $R_{\theta JA}$ | Thermal Resistance Junction to Ambient | 100 | °C/W |
| T_J | Operating Junction Temperature | -55 to +150 | °C |
| T_{STG} | Storage Temperature | -55 to +150 | °C |
| T_L | Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds | 260 | °C |

Internal Block Diagram



N-Channel Enhancement Mode Field Effect Transistor

TO-251S



| DIM | INCHES | | MM | | NOTE |
|-----|-----------|------|-----------|------|------|
| | MIN | MAX | MIN | MAX | |
| A | .087 | .094 | 2.20 | 2.40 | |
| B | .018 | .023 | 0.46 | 0.58 | |
| C | .000 | .012 | 0.00 | 0.30 | |
| D | .256 | .264 | 6.50 | 6.70 | |
| E | .201 | .215 | 5.10 | 5.46 | |
| F | .043 | .051 | 1.10 | 1.30 | Φ |
| G | .236 | .244 | 6.00 | 6.20 | |
| H | .409 | .433 | 10.4 | 11.0 | |
| I | .018 | .023 | 0.46 | 0.58 | |
| J | .026 | .034 | 0.66 | 0.86 | |
| K | .086 | .094 | 2.19 | 2.39 | |
| L | 0.063REF. | | 1.600REF. | | |
| M | 0.211REF. | | 5.350REF. | | |
| N | 0.138REF. | | 3.500REF. | | |
| O | 0.190REF. | | 4.830REF. | | |

Electrical characteristics (T_a=25°C unless otherwise noted)

| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|---|----------------------|---|-----|-----|------|------|
| Off characteristics | | | | | | |
| Drain-source breakdown voltage | V _{(BR)DSS} | V _{GS} = 0V, I _D =250μA | 600 | | | V |
| Drain-source diode forward voltage(note2) | V _{SD} | V _{GS} = 0V, I _S =4.0A | | | 1.5 | |
| Zero gate voltage drain current | I _{DSS} | V _{DS} =600V, V _{GS} =0V | | | 25 | μA |
| Gate-body leakage current, forward(note2) | I _{GSSF} | V _{DS} =0V, V _{GS} =30V | | | 100 | nA |
| Gate-body leakage current, reverse(note2) | I _{GSSR} | V _{DS} =0V, V _{GS} =-30V | | | -100 | |
| On characteristics (note2) | | | | | | |
| Gate-threshold voltage | V _{GS(th)} | V _{DS} =V _{GS} , I _D =250μA | 2.0 | | 4.0 | V |
| Static drain-source on-resistance | R _{DS(on)} | V _{GS} =10V, I _D =2.0A | | 2.0 | 3.0 | Ω |
| Forward transconductance | g _{fs} | V _{DS} =50V, I _D =2A | 2.0 | 2.6 | | S |
| Dynamic characteristics (note 3) | | | | | | |
| Input capacitance | C _{iss} | V _{DS} =25V,V _{GS} =0V,f =1MHz | | 540 | 760 | pF |
| Output capacitance | C _{oss} | | | 125 | 180 | |
| Reverse transfer capacitance | C _{rss} | | | 8.0 | 20 | |
| Switching characteristics | | | | | | |
| Total gate charge | Q _g | V _{DS} =480V,V _{GS} =10V,I _D =4.0A | | 5.0 | 10 | nC |
| Gate-source charge | Q _{gs} | | | 2.7 | | |
| Gate-drain charge | Q _{gd} | | | 2.0 | | |
| Turn-on delay time (note3) | t _{d(on)} | V _{DD} =300V, V _{GS} =10V, R _G =9.1. , I _D =4.0A | | 12 | 20 | ns |
| Turn-on rise time (note3) | t _r | | | 7.0 | 10 | |
| Turn-off delay time (note3) | t _{d(off)} | | | 19 | 40 | |
| Turn-off fall time (note3) | t _f | | | 10 | 20 | |

Notes :

1. L=30mH, I_L=4 A, V_{DD}=100V, V_{GS}=10V, R_G=25Ω, Starting T_J=25°C.
2. Pulse Test : Pulse width≤300μs, duty cycle ≤2%.
3. These parameters have no way to verify.



Ordering Information :

| Device | Packing |
|----------------|----------------|
| Part Number-BP | Bulk;4Kpcs/Box |

IMPORTANT NOTICE

Micro Commercial Components Corp. reserves the right to make changes without further notice to any product herein to make corrections, modifications , enhancements , improvements , or other changes . **Micro Commercial Components Corp .** does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights ,nor the rights of others . The user of products in such applications shall assume all risks of such use and will agree to hold **Micro Commercial Components Corp .** and all the companies whose products are represented on our website, harmless against all damages.

LIFE SUPPORT

MCC's products are not authorized for use as critical components in life support devices or systems without the express written approval of Micro Commercial Components Corporation.

CUSTOMER AWARENESS

Counterfeiting of semiconductor parts is a growing problem in the industry. Micro Commercial Components (MCC) is taking strong measures to protect ourselves and our customers from the proliferation of counterfeit parts. MCC strongly encourages customers to purchase MCC parts either directly from MCC or from Authorized MCC Distributors who are listed by country on our web page cited below. Products customers buy either from MCC directly or from Authorized MCC Distributors are genuine parts, have full traceability, meet MCC's quality standards for handling and storage. **MCC will not provide any warranty coverage or other assistance for parts bought from Unauthorized Sources.** MCC is committed to combat this global problem and encourage our customers to do their part in stopping this practice by buying direct or from authorized distributors.