

Features

- Low RDS(on) & FOM
- Extremely Low Switching Loss
- Excellent Stability and Uniformity
- Fast Switching and Soft Recovery
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)
- Halogen Free. "Green" Device (Note 1)
- Epoxy Meets UL 94 V-0 Flammability Rating

Maximum Ratings

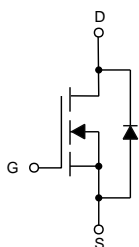
- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 62°C/W Junction to Ambient^(Note 2)
- Thermal Resistance: 0.65°C/W Junction to Case

| Parameter | Symbol | Value |
|---|----------------------|-------|
| Drain-source Voltage | V _{DS} | 100V |
| Gate-source Voltage | V _{GS} | ±20V |
| Continuous Drain Current ^(Note 3) , T _C =25°C | I _D | 130A |
| Pulsed Drain Current ^(Note 4) , T _C =25°C | I _{D,pluse} | 390A |
| Power Dissipation ^(Note 5) , T _C =25°C | P _D | 192W |
| Single Pulsed Avalanche Energy ^(Note 6) | E _{AS} | 500mJ |

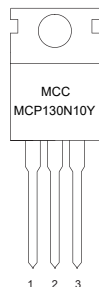
Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

- 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.
- Calculated Continuous Current Based on Maximum Allowable Junction Temperature.
- Repetitive Rating: Pulse Width Limited By Max. Junction Temperature.
- P_d is Based on Max. Junction Temperature, Using Junction-Case Thermal Resistance.
- V_{DD}=50V, R_G=25Ω, L=0.5mH, Starting T_J=25°C.

Internal Structure and Marking Code

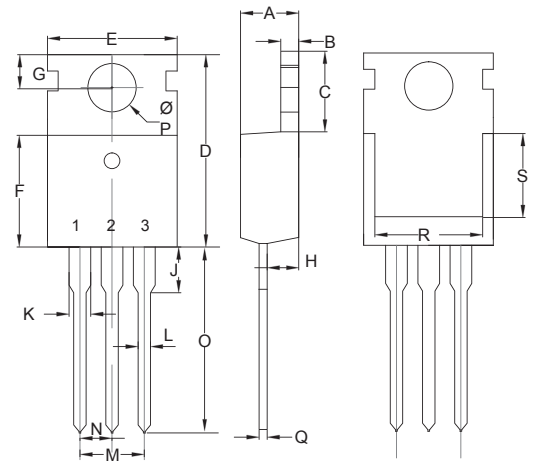


1. Gate
2. Drain
3. Source



**N-Channel
MOSFET**

TO-220AB(H)



| DIM | INCHES | | MM | | NOTE |
|-----|--------|-------|-------|-------|------|
| | MIN | MAX | MIN | MAX | |
| A | 0.172 | 0.188 | 4.37 | 4.77 | |
| B | 0.049 | 0.057 | 1.25 | 1.45 | |
| C | 0.246 | 0.270 | 6.25 | 6.85 | |
| D | 0.594 | 0.634 | 15.10 | 16.10 | |
| E | 0.382 | 0.406 | 9.70 | 10.30 | |
| F | 0.346 | 0.370 | 8.80 | 9.40 | |
| G | 0.102 | 0.118 | 2.60 | 3.00 | |
| H | 0.087 | 0.102 | 2.20 | 2.60 | |
| J | ---- | 0.134 | ---- | 3.40 | |
| K | 0.046 | 0.058 | 1.17 | 1.47 | |
| L | 0.028 | 0.037 | 0.70 | 0.95 | |
| M | 0.200 | | 5.08 | | TYP. |
| N | 0.100 | | 2.54 | | TYP. |
| O | 0.502 | 0.543 | 12.75 | 13.80 | |
| P | 0.134 | 0.150 | 3.40 | 3.80 | Φ |
| Q | 0.016 | 0.026 | 0.40 | 0.65 | |
| R | 0.276 | ---- | 7.00 | ---- | |
| S | 0.217 | ---- | 5.50 | ---- | |

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|------------------------------------|---------------|--|-----|--------|-----------|------------|
| Static Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=250\mu A$ | 100 | | | V |
| Gate-Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 1.2 | 2 | 4 | V |
| Gate-Body Leakage Current | I_{GSS} | $V_{DS}=0V, V_{GS}=\pm 20V$ | | | ± 100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=100V, V_{GS}=0V$ | | | 1 | μA |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}=10V, I_D=60A$ | | 4.0 | 4.6 | m Ω |
| Dynamic Characteristics | | | | | | |
| Drain-Source On-Voltage | C_{ISS} | $V_{GS}=0V, V_{DS}=50V, f=1MHz$ | | 6124.6 | | pF |
| Output Capacitance | C_{OSS} | | | 792.3 | | pF |
| Reverse Transfer Capacitance | C_{RSS} | | | 15.1 | | pF |
| Turn-On Delay time | $t_{d(on)}$ | $V_{GS}=10V, V_{DS}=50V, R_G=2.2\Omega, I_D=22A$ | | 28.2 | | ns |
| Rise Time | t_r | | | 7.5 | | ns |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 81.9 | | ns |
| Fall Time | t_f | | | 20.1 | | ns |
| Gate Charge Characteristics | | | | | | |
| Total Gate Charge | Q_g | $I_D=22A, V_{DS}=50V, V_{GS}=10V$ | | 101.6 | | nC |
| Gate-Source Charge | Q_{gs} | | | 20.6 | | nC |
| Gate-Drain Charge | Q_{gd} | | | 28.7 | | nC |
| Gate Plateau Voltage | $V_{plateau}$ | | | 4.2 | | V |
| Body Diode Characteristics | | | | | | |
| Diode Forward Current | I_S | $V_{GS}<V_{th}$ | | | 130 | A |
| Pulsed Source Current | I_{SP} | | | | 390 | A |
| Diode Forward Voltage | V_{SD} | $I_S=20A, V_{GS}=0V$ | | | 1.3 | V |
| Reverse Recovery Time | t_{rr} | $I_S=10A, di/dt=100A/\mu s$ | | 82.1 | | ns |
| Reverse Recovery Charge | Q_{rr} | | | | 248.4 | nC |
| Peak Reverse Recovery Current | I_{rrm} | | | | 4.9 | A |

Curve Characteristics

Fig. 1 - Typical Output Characteristics

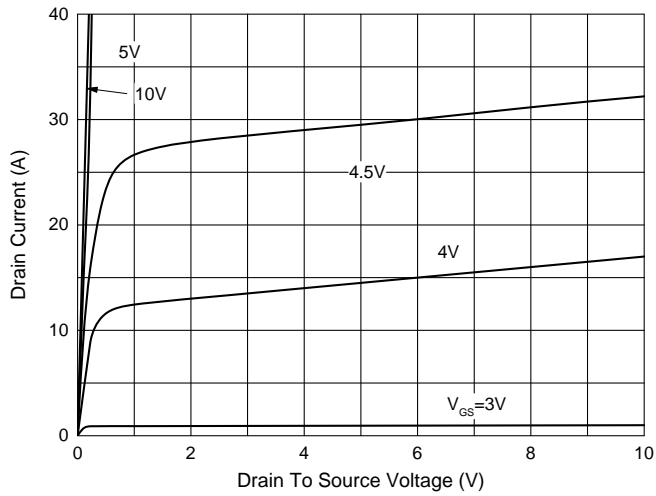


Fig. 2 - Transfer Characteristics

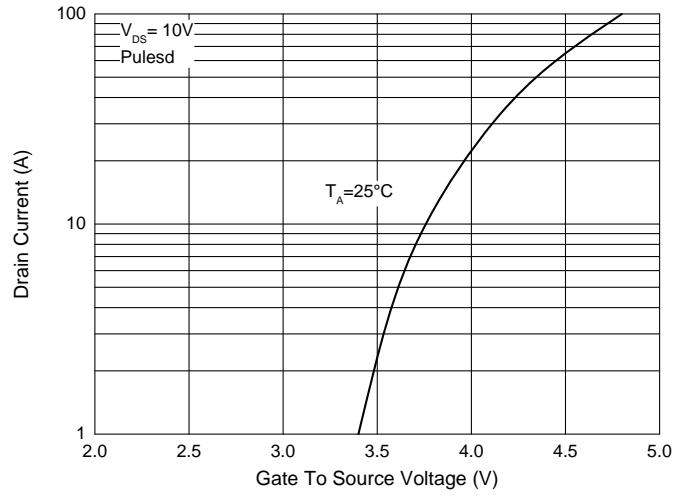


Fig. 3 - Capacitance Characteristics

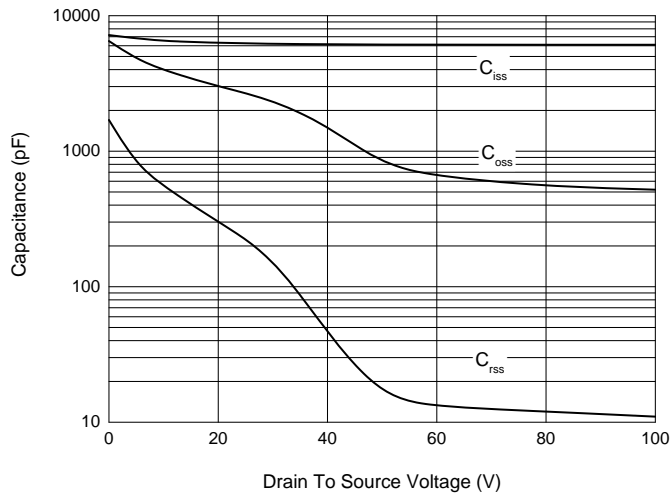


Fig. 4 - Total Gate Charge Characteristics

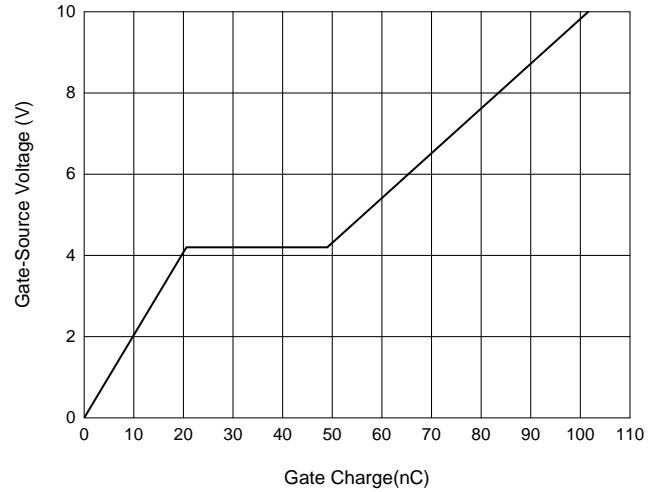


Fig. 5 - $I_S - V_{SD}$

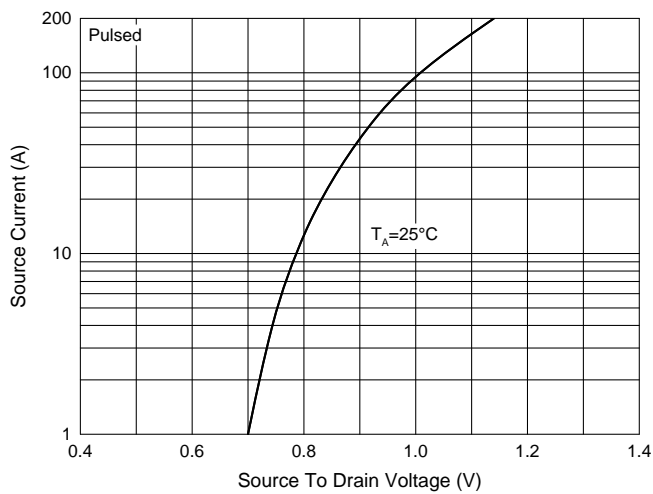
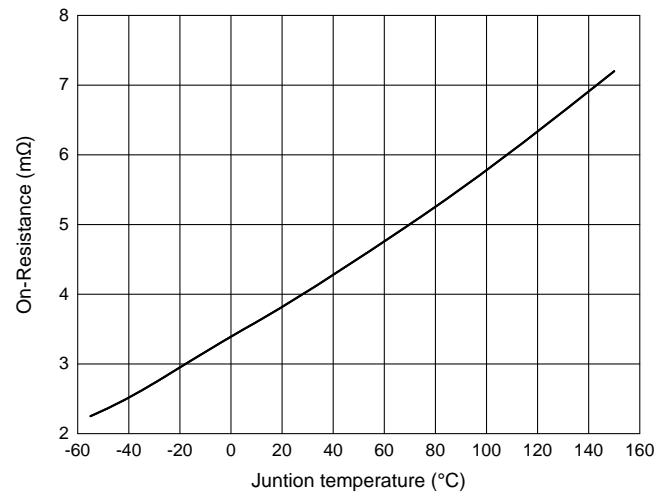


Fig. 6 - On-Resistance Characteristics



Ordering Information

| Device | Packing |
|----------------|---|
| Part Number-BP | Bulk:50pcs/Tube, 1Kpcs/Box,5Kpcs/Carton |

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