

Description

This 30V 217A N-Channel MOSFET in a TO-220 Plastic Package.

Features

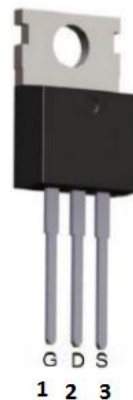
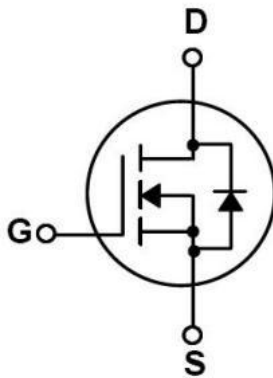
- Ultra Low On-Resistanc
- Fast switching
- Halogen-Free Product

Applications

- These devices are well suited for high efficient switched mode power supplies
- Active power factor correction
- Electronic lamp ballast based on half bridge topology

| V_{DSS} | $R_{DS(on)}$ Typ | I_D |
|-----------|------------------|-------|
| 30V | 1.8m Ω | 217A |

Equivalent Circuit & Pinning



Absolute Maximum Ratings(Ta=25°C)

| Parameter | Symbol | Rating | Unit |
|--|-----------------------------|------------|------|
| Drain-Source Voltage | V_{DS} | 30 | V |
| Drain Current | $I_D(T_C=25^\circ\text{C})$ | 217 | A |
| Pulsed Drain Current | I_{DM} | 770 | A |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Single Pulsed Avalanche Energy L=0.5mH | E_{AS} | 590 | mJ |
| Avalanche Current | I_{AS} | 33.5 | A |
| Total Power Dissipation | $P_D(T_C=25^\circ\text{C})$ | 150 | W |
| Junction and Storage Temperature Range | T_J, T_{STG} | -55 to 150 | °C |
| Thermal Resistance-Junction to Ambient | $t \leq 10\text{s}$ | 15 | °C/W |
| | Steady-State | 60 | |
| Thermal Resistance-Junction to Case | Steady-State | 0.8 | |

Electrical Characteristics(Ta=25°C)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|-----------------------------------|--------------|---|-----|------|-----------|------------|
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS}=0V$ $I_D=250\mu A$ | 30 | 35 | | V |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=30V$ $V_{GS}=0V$ | | | 1 | μA |
| Gate-Body Leakage Current Forward | I_{GSS} | $V_{GS}=\pm 20V$ $V_{DS}=0V$ | | | ± 100 | nA |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}$ $I_D=250\mu A$ | 1 | 1.5 | 3 | V |
| Static Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}=10V$ $I_D=20A$ | | 1.8 | 2 | m Ω |
| | | $V_{GS}=4.5V$ $I_D=10A$ | | 2.5 | 3 | |
| Forward On Voltage | V_{SD} | $V_{GS}=0V$ $I_S=1A$ | | | 1.2 | V |
| Input Capacitance | C_{iss} | $V_{DS}=25V$ $V_{GS}=0V$ $f=1\text{MHz}$ | | 5700 | | pF |
| Output Capacitance | C_{oss} | | | 610 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 460 | | |

Electrical Characteristics(Ta=25°C)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---------------------|--------------------|--|-----|------|-----|----------|
| Gate resistance | R_g | $f=1\text{MHz}$ | | 1.5 | | Ω |
| Total Gate Charge | $Q_g(10\text{V})$ | $V_{GS}=10\text{V}$ $V_{DS}=20\text{V}$ $I_D=20\text{A}$ | | 67 | | nC |
| Total Gate Charge | $Q_g(4.5\text{V})$ | | | 29 | | |
| Gate Source Charge | Q_{gs} | | | 16.7 | | |
| Gate Drain Charge | Q_{gd} | | | 4.8 | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{GS}=10\text{V}$ $V_{DS}=20\text{V}$ $R_L=1\Omega$ $R_{GEN}=3\Omega$ | | 12.7 | | ns |
| Turn-On Rise Time | t_r | | | 9.5 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 58 | | |
| Turn-Off Fall Time | t_f | | | 11 | | |

Electrical Characteristic Curve

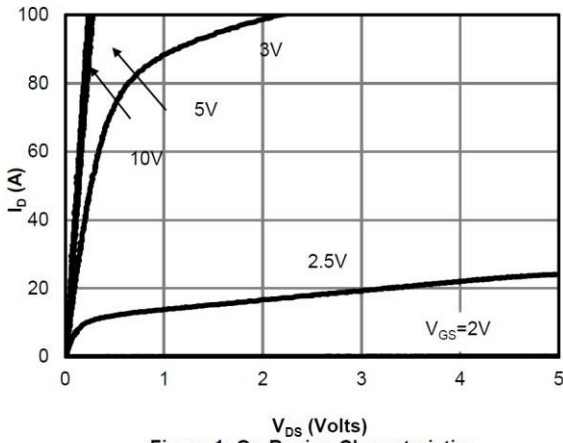


Figure 1: On-Region Characteristics

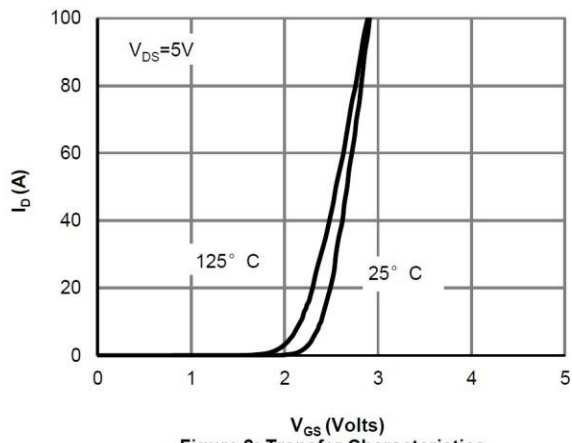


Figure 2: Transfer Characteristics

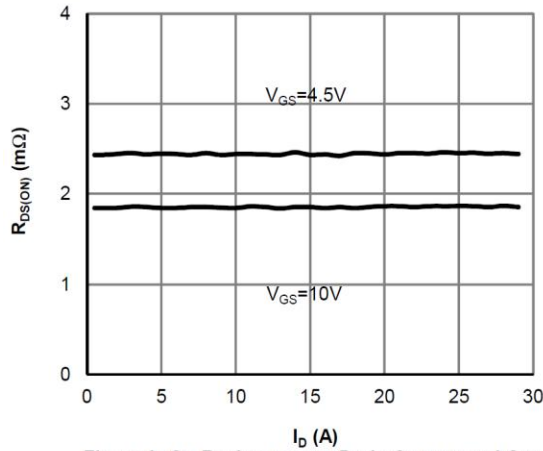


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

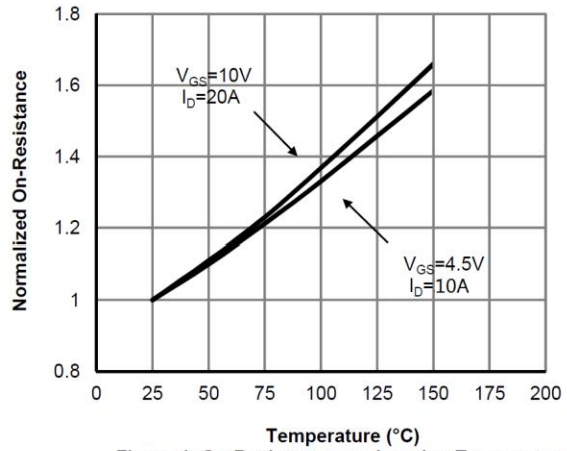


Figure 4: On-Resistance vs. Junction Temperature

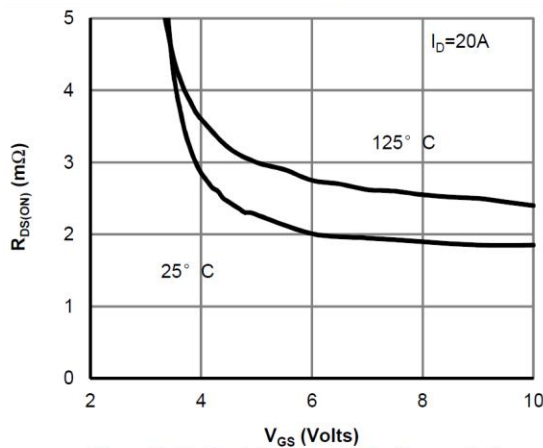


Figure 5: On-Resistance vs. Gate-Source Voltage

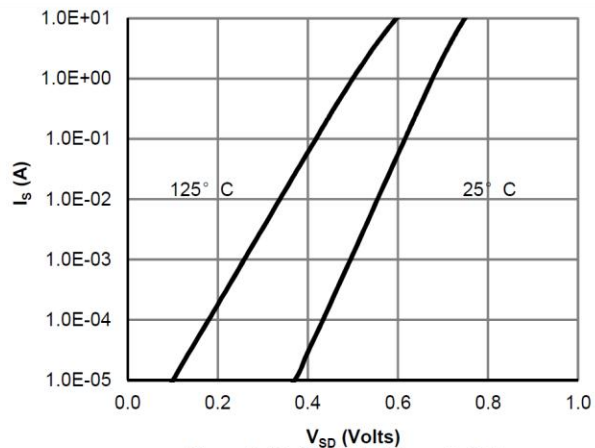


Figure 6: Body-Diode Characteristics

Electrical Characteristic Curve

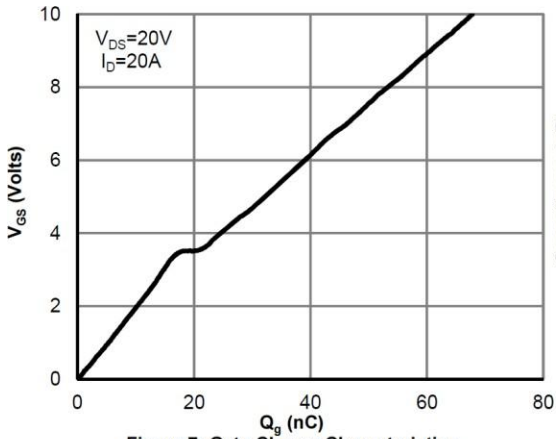


Figure 7: Gate-Charge Characteristics

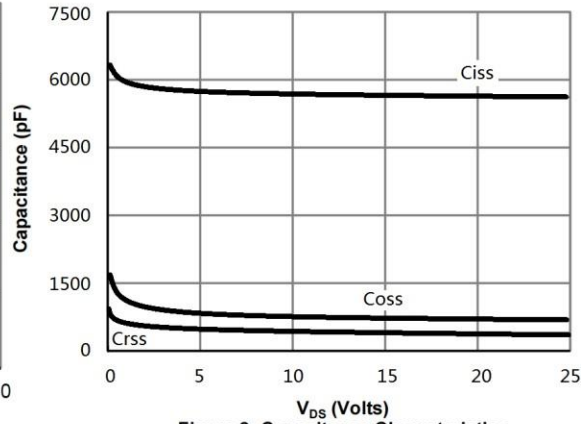


Figure 8: Capacitance Characteristics

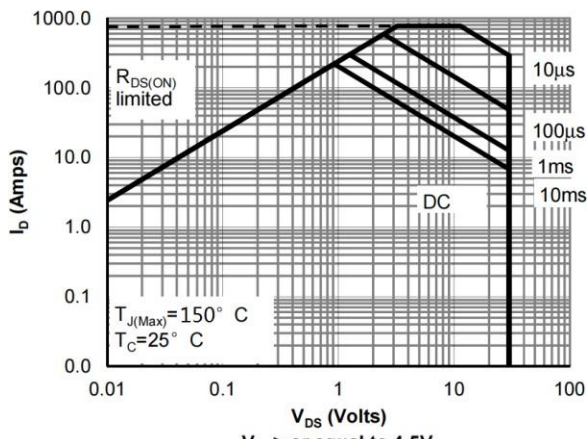


Figure 9: Maximum Forward Biased Safe Operating Area

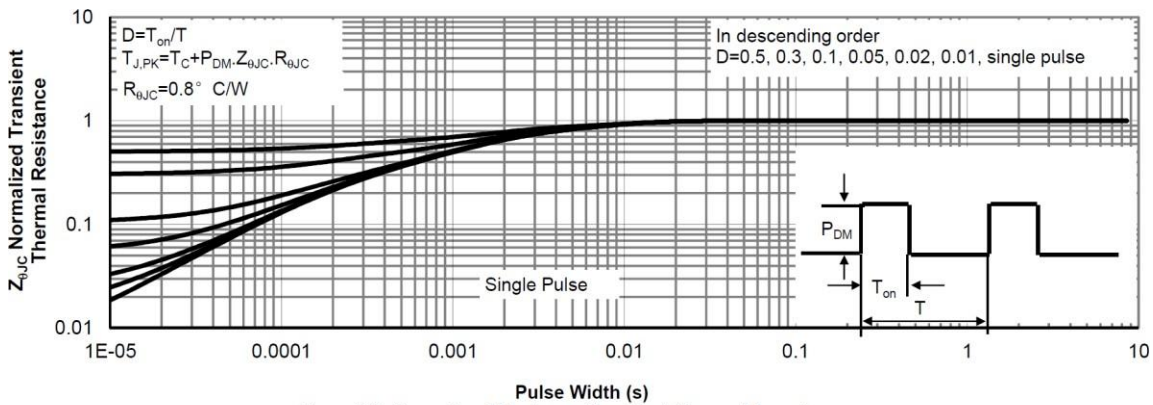
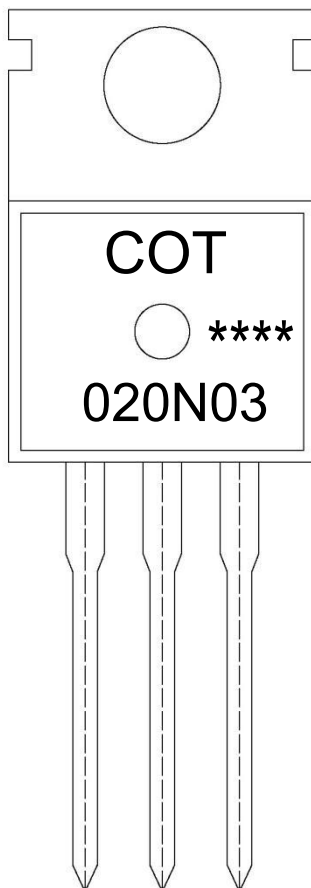


Figure 10: Normalized Maximum Transient Thermal Impedance

Marking Instructions



Note:

COT: Company Logo.

020N03: Product Type.

****: Lot No. Code, code change with Lot No.

Packaging SPEC.

BULK AND TUBE INFOMATIONS

| Package Type | Units | | | | | Dimension (unit: mm ³) | | |
|--------------|-----------|----------------|-----------------|-----------------------|-----------------|------------------------------------|-------------|-------------|
| | Units/Bag | Bags/Inner Box | Units/Inner Box | Inner Boxes/Outer Box | Units/Outer Box | Bag | Inner Box | Outer Box |
| TO-220/F | 200 | 10 | 2,000 | 5 | 10,000 | 135×190 | 237×172×102 | 560×245×195 |

| Package Type | Units | | | | | Dimension (unit: mm ³) | | |
|--------------|------------|-----------------|-----------------|-----------------------|-----------------|------------------------------------|------------|-------------|
| | Units/Tube | Tubes/Inner Box | Units/Inner Box | Inner Boxes/Outer Box | Units/Outer Box | Tube | Inner Box | Outer Box |
| TO-220/F | 50 | 20 | 1,000 | 5 | 5,000 | 532×31.4×5.5 | 555×164×50 | 575×290×180 |

Package Outline Dimensions

TO-220

单位: mm

