

描述 / Descriptions

P 沟道 TO-220AB封装场效应管。

P-CHANNEL MOSFET in a TO-220AB Plastic Package

特征 / Features

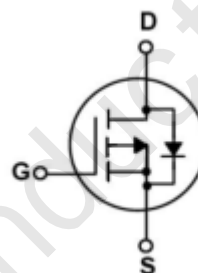
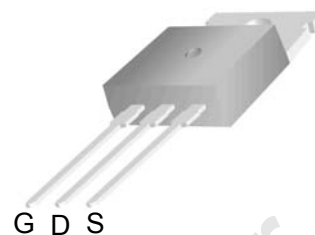
大电流输出能力。无卤产品。

High Current Capability. HF Product.

用途 / Applications

交流负载开关, 蓄电池充电/放电保护。

AC-in load switch, Battery protection charge/discharge.


极限参数 / Absolute Maximum Ratings(Ta=25°C)

| 参数 Parameter | 符号 Symbol | 数值 Rating | 单位 Unit |
|--|------------------------------|---------------------|------------------|
| Drain-Source Voltage | V_{DSS} | -60 | V |
| Drain Current | $I_D(T_c=25^\circ\text{C})$ | -20 | A |
| Drain Current - Pulsed | I_{DM} | -80 | A |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Avalanche Current | I_{AS} | 13.8 | A |
| Avalanche energy L=0.5mH | E_{AS} | 65 | mJ |
| Power Dissipation | $P_D(T_c=25^\circ\text{C})$ | 20 | W |
| | $P_D(T_c=100^\circ\text{C})$ | 10 | W |
| Junction and Storage Temperature Range | T_j, T_{stg} | -55~150 | $^\circ\text{C}$ |
| Maximum Junction-to-Ambient | $R_{\theta JA}$ | $t \leq 10\text{s}$ | 30 |
| Maximum Junction-to-Ambient | | Steady-State | 60 |
| Maximum Junction-to-Case | $R_{\theta JC}$ | Steady-State | 7.5 |

电性能参数 / Electrical Characteristics(Ta=25°C)

| 参数 Parameter | 符号 Symbol | 测试条件 Test Conditions | 最小值 Min | 典型值 Typ | 最大值 Max | 单位 Unit |
|-----------------------------------|---------------|---|------------|------------|------------|------------|
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS}=0V$ $I_D=-250\mu A$ | -60 | -70 | | V |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=-60V$ $V_{GS}=0V$ | | | -1.0 | μA |
| | | $V_{DS}=-60V$ $V_{GS}=0V$ $T_J=55^\circ C$ | | | -5.0 | μA |
| Gate-Body Leakage Current Forward | I_{GSS} | $V_{GS}=\pm 20V$ $V_{DS}=0V$ | | | ± 0.1 | μA |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}$ $I_D=250\mu A$ | -1 | -1.7 | -2.5 | V |
| Static Drain-Source On-Resistance | $R_{DS(on)1}$ | $V_{GS}=-10V$ $I_D=-20A$ | | 87 | 92 | m Ω |
| | $R_{DS(on)2}$ | $V_{GS}=-4.5V$ $I_D=-10A$ | | 98 | 102 | m Ω |
| Diode Forward Voltage | V_{SD} | $I_S=-1A$ $V_{GS}=0V$ | | -0.7 | -1.2 | V |

| 参数 Parameter | 符号 Symbol | 测试条件 Test Conditions | 最小值 Min | 典型值 Typ | 最大值 Max | 单位 Unit |
|------------------------------------|--------------|--|------------|------------|------------|------------|
| Input Capacitance | C_{iss} | $V_{DS}=-25V$ $V_{GS}=0V$ $f=1.0MHz$ | | 1650 | | pF |
| Output Capacitance | C_{oss} | | | 330 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 205 | | |
| Gate resistance | R_g | $V_{GS}=0V$ $V_{DS}=0V$ $f=1MHz$ | | 6.4 | | Ω |
| Total Gate Charge | $Q_g(10V)$ | $V_{GS}=-10V$ $V_{DS}=-30V$ $I_D=-12A$ | | 7.5 | | nC |
| Total Gate Charge | $Q_g(4.5V)$ | | | 3.8 | | |
| Gate Source Charge | Q_{gs} | | | 1.2 | | |
| Gate Drain Charge | Q_{gd} | | | 1.9 | | |
| Turn-On Delay Time | $t_{d(on)}$ | $V_{GS}=-10V$ $V_{DS}=-30V$ $R_L=2.5\Omega$ $R_{GEN}=3\Omega$ | | 4.2 | | ns |
| Turn-On Rise Time | t_r | | | 3.4 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 16 | | |
| Turn-Off Fall Time | t_f | | | 2 | | |
| Body Diode Reverse Recovery Time | t_{rr} | $I_F=-12A$ $di/dt=500A/ms$ | | 27 | | ns |
| Body Diode Reverse Recovery Charge | Q_{rr} | $I_F=-12A$ $di/dt=500A/ms$ | | 30 | | nC |

电参数曲线图 / Electrical Characteristic Curve

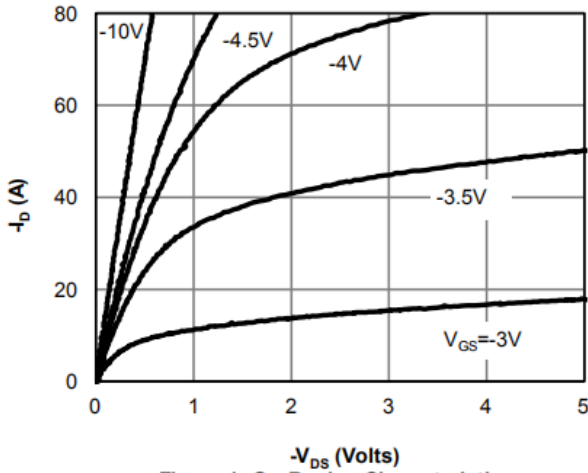


Figure 1: On-Region Characteristics

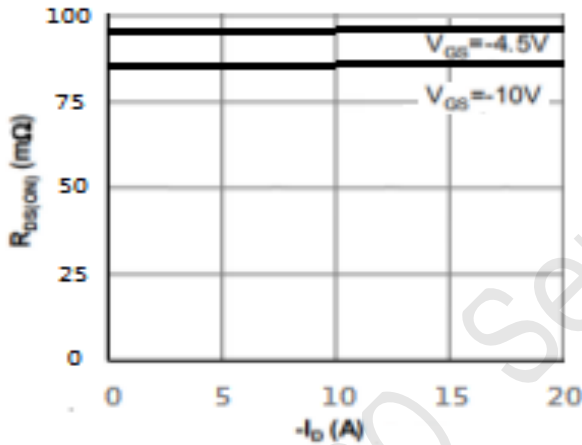
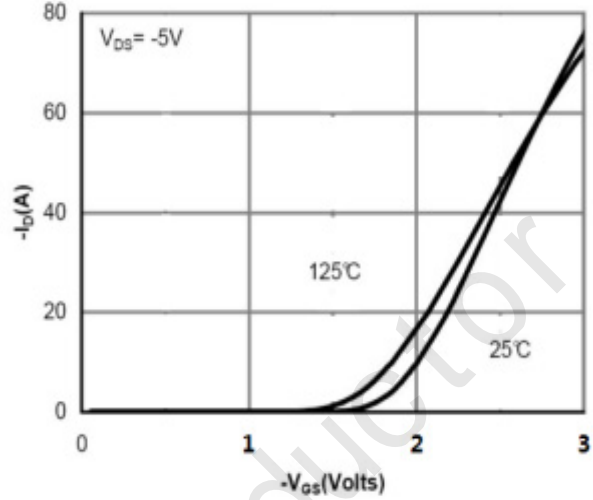


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

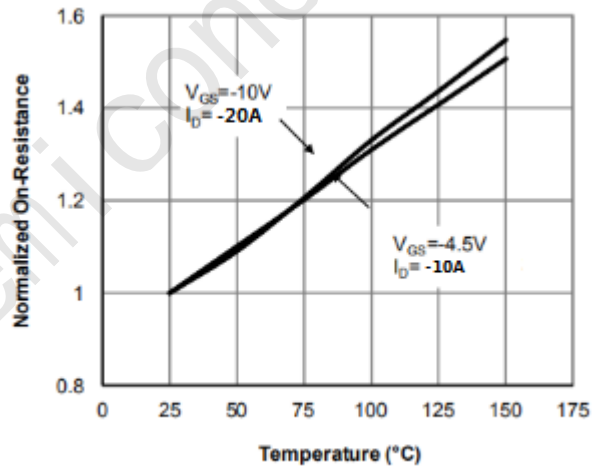


Figure 4: On-Resistance vs. Junction Temperature

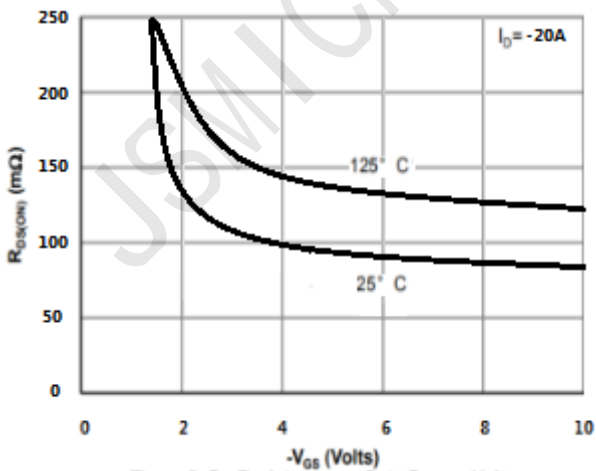


Figure 5: On-Resistance vs. Gate-Source Voltage

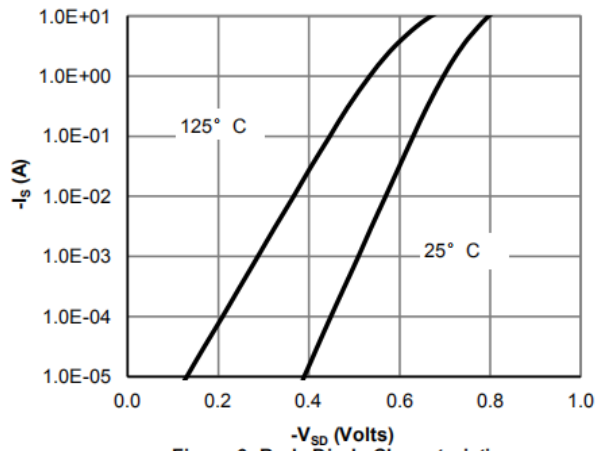


Figure 6: Body-Diode Characteristics

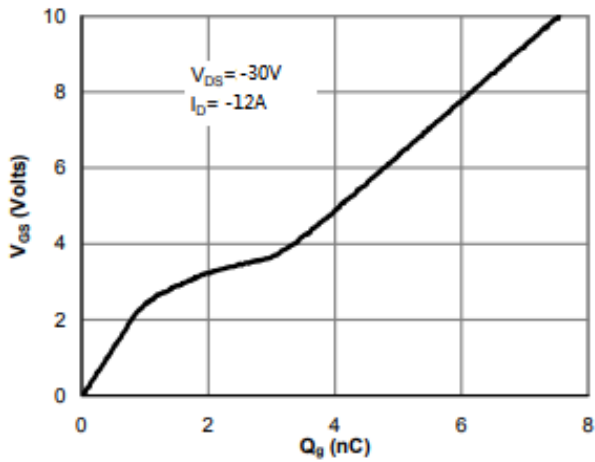


Figure 7: Gate-Charge Characteristics

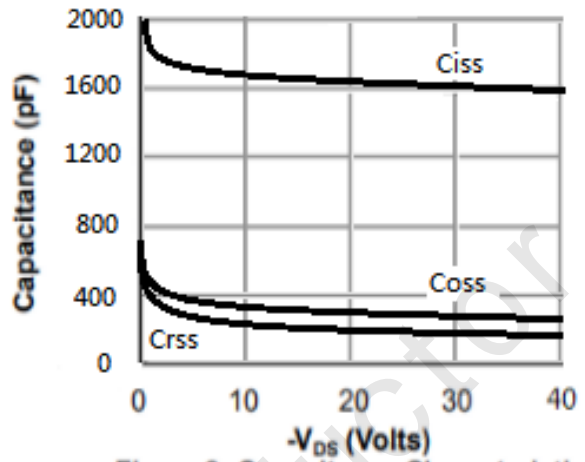


Figure 8: Capacitance Characteristics

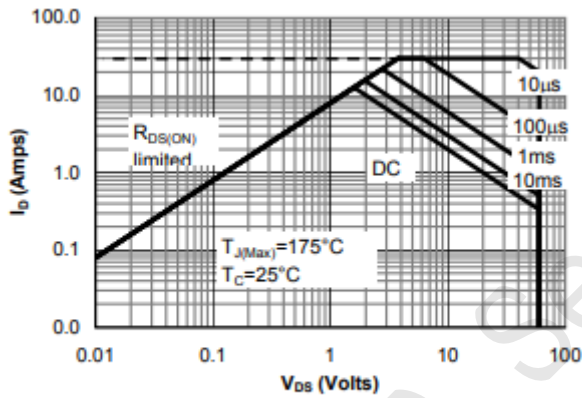


Figure 9: Maximum Forward Biased Safe Operating Area

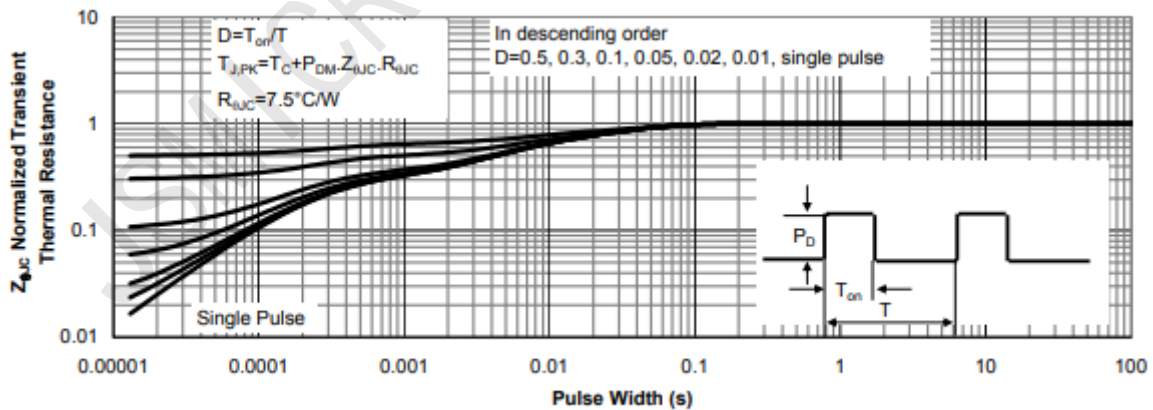
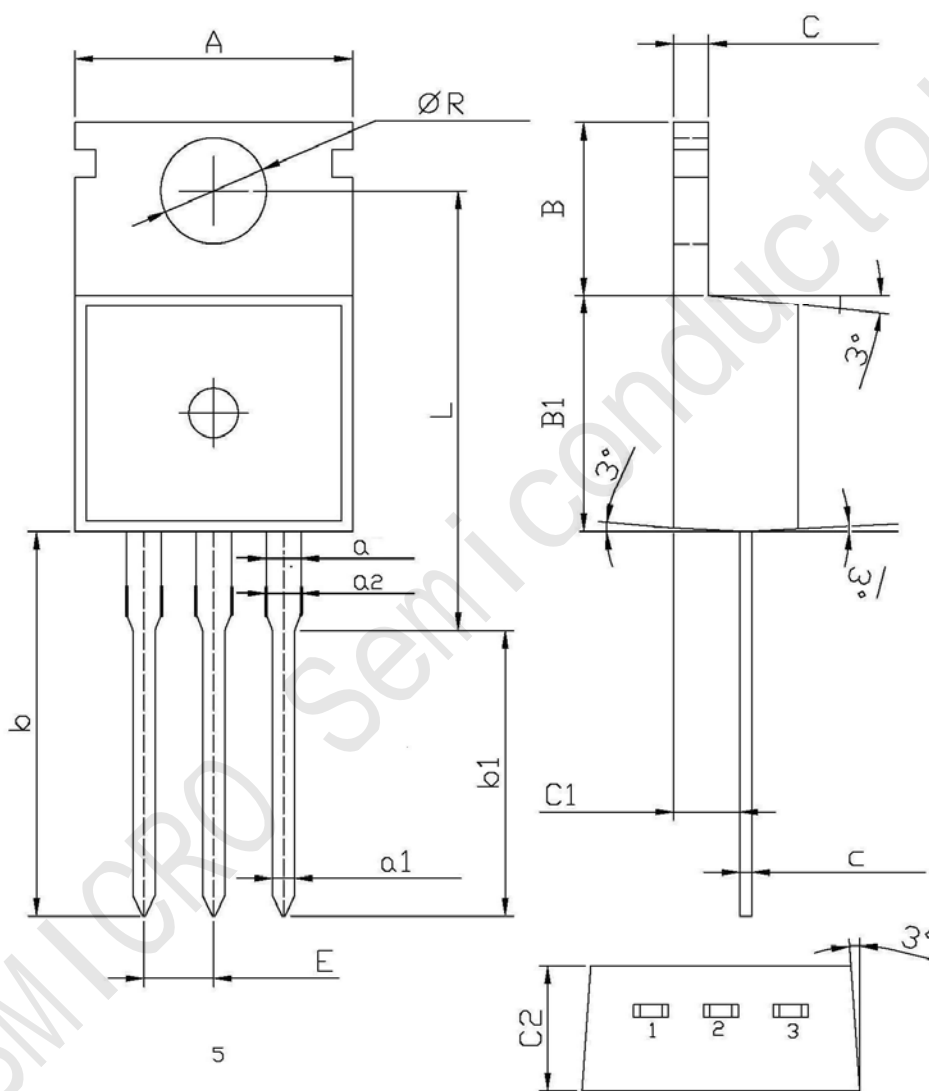


Figure 10 : Normalized Maximum Transient Thermal Impedance

外形尺寸图 / Package Dimensions

TO-220

单位: mm



| Symbol | Dimensions In Millimeters | | Symbol | Dimensions In Millimeters | |
|--------|---------------------------|------|--------|---------------------------|-----|
| | Min | Max | | Min | Max |
| A | 9.8 | 10.2 | C | 1.2 | 1.4 |
| R | 3.56 | 3.64 | B | 6.3 | 6.7 |
| L | 15.7 | 16.1 | B1 | 9.0 | 9.4 |
| b | 12.6 | 13.6 | C1 | 2.2 | 2.6 |
| b1 | 9.6 | 10.6 | a1 | 0.7 | 0.9 |
| a | 1.22 | 1.32 | c | 0.4 | 0.6 |
| E | 2.34 | 2.74 | C2 | 4.3 | 4.7 |
| Q2 | 1.25 | 1.45 | | | |