

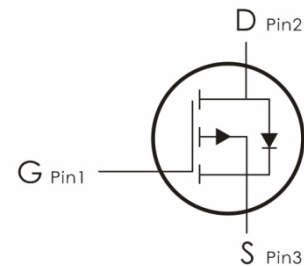
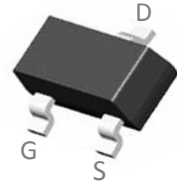
Description:

This P-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=-30V, I_D=-4.1A, R_{DS(ON)}<55m\ \Omega @V_{GS}=-10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra $R_{DS(ON)}$.
- 5) Excellent package for good heat dissipation.



Package Marking and Ordering Information:

| Part NO. | Marking | Package | Packing |
|----------|---------|---------|---------------|
| DO3407B | 3407B | SOT-23 | 3000 pcs/Reel |

Absolute Maximum Ratings: ($T_A=25^\circ\text{C}$ unless otherwise noted)

| Symbol | Parameter | Ratings | Units |
|----------------|--|-------------|------------------|
| V_{DS} | Drain-Source Voltage | -30 | V |
| V_{GS} | Gate-Source Voltage | ± 20 | V |
| I_D | Continuous Drain Current- $T_A=25^\circ\text{C}$ | -4.1 | A |
| | Continuous Drain Current- $T_A=70^\circ\text{C}$ | -2.7 | |
| I_{DM} | Pulsed Drain Current ¹ | -16.4 | |
| P_D | Power Dissipation | 1.3 | W |
| T_J, T_{STG} | Operating and Storage Junction Temperature Range | -55 to +150 | $^\circ\text{C}$ |

Thermal Characteristics:

| Symbol | Parameter | Max | Units |
|-----------------|--|-----|---------------------------|
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient ² | 96 | $^\circ\text{C}/\text{W}$ |

Electrical Characteristics: ($T_A=25^\circ\text{C}$ unless otherwise noted)

| Symbol | Parameter | Conditions | Min | Typ | Max | Units |
|---|---|--|-----|------|-----------|------------------|
| Off Characteristics | | | | | | |
| BV_{DSS} | Drain-Source Breakdown Voltage | $V_{GS}=0V, I_D=-250\ \mu\text{A}$ | -30 | --- | --- | V |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{GS}=0V, V_{DS}=-30V$ | --- | --- | -1 | μA |
| I_{GSS} | Gate-Source Leakage Current | $V_{GS}=\pm 20V, V_{DS}=0V$ | --- | --- | ± 100 | nA |
| On Characteristics | | | | | | |
| $V_{GS(th)}$ | Gate-Source Threshold Voltage | $V_{GS}=V_{DS}, I_D=-250\ \mu\text{A}$ | -1 | -1.5 | -2.5 | V |
| $R_{DS(on)}$ | Drain-Source On Resistance ³ | $V_{GS}=-10V, I_D=-4A$ | --- | 37 | 55 | $\text{m}\Omega$ |
| | | $V_{GS}=-4.5V, I_D=-3A$ | --- | 50 | 70 | |
| Dynamic Characteristics | | | | | | |
| C_{iss} | Input Capacitance | $V_{DS}=-15V, V_{GS}=0V, f=1\text{MHz}$ | --- | 575 | --- | pF |
| C_{oss} | Output Capacitance | | --- | 65 | --- | |
| C_{rss} | Reverse Transfer Capacitance | | --- | 58 | --- | |
| Switching Characteristics | | | | | | |
| $t_{d(on)}$ | Turn-On Delay Time | $V_{DD}=-15V, V_{GS}=-10V$ $R_{GEN}=2.5\ \Omega, I_D=-1A$ | --- | 3 | --- | ns |
| t_r | Rise Time | | --- | 2 | --- | ns |
| $t_{d(off)}$ | Turn-Off Delay Time | | --- | 26 | --- | ns |
| t_f | Fall Time | | --- | 14 | --- | ns |
| Q_g | Total Gate Charge | | --- | 12.5 | --- | nC |
| Q_{gs} | Gate-Source Charge | $V_{GS}=-10V, V_{DS}=-15V,$ | --- | 2.2 | --- | nC |
| Q_{gd} | Gate-Drain "Miller" Charge | $I_D=-4.1A$ | --- | 2.1 | --- | nC |
| Drain-Source Diode Characteristics | | | | | | |
| V_{SD} | Source-Drain Diode Forward Voltage | $V_{GS}=0V, I_S=-4.1A$ | --- | -0.8 | -1.2 | V |
| I_S | Continuous Drain Current | $V_D=V_G=0V$ | --- | --- | -4.8 | A |
| I_{SM} | Pulsed Drain Current | | --- | --- | -16.4 | A |

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. $R_{\theta JA}$ is measured with the device mounted on a 1inch² pad of 2oz copper FR4 PCB
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$.

Typical Characteristics: (T_c=25°C unless otherwise noted)

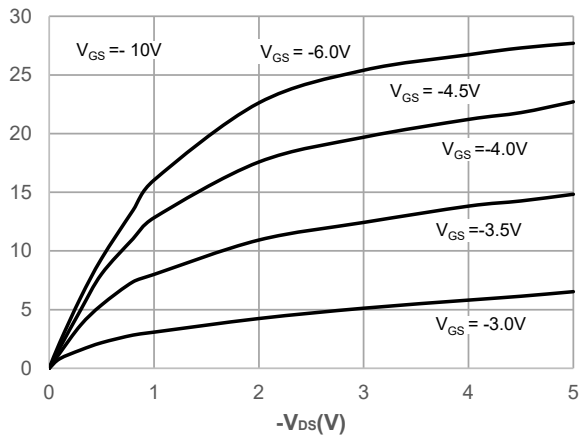


Figure 1: Output Characteristics

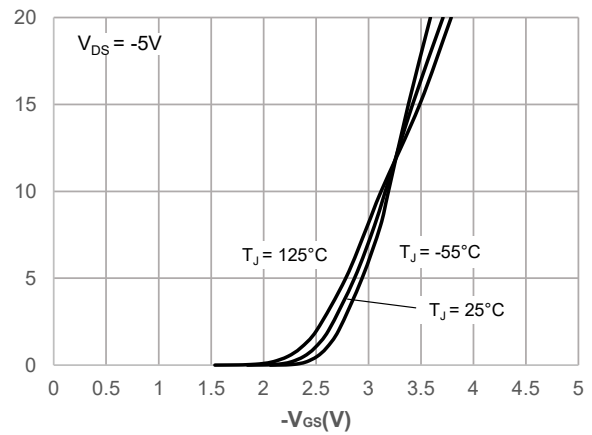


Figure 2: Typical Transfer Characteristics

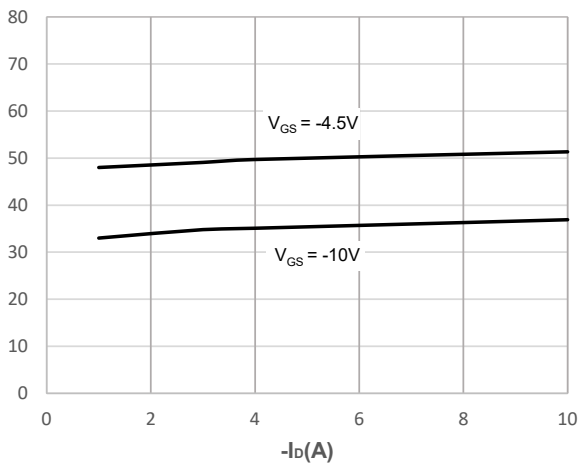


Figure 3: On-resistance vs. Drain Current

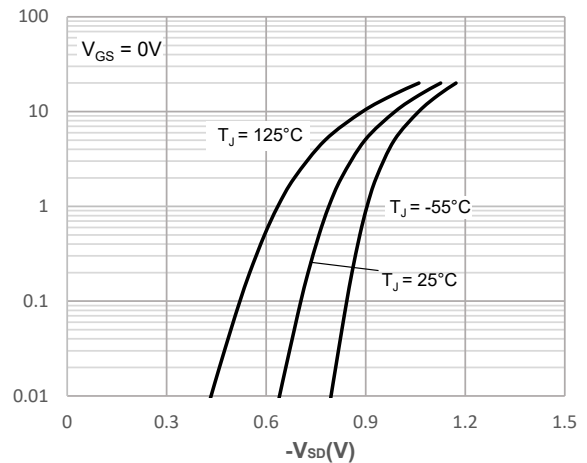


Figure 4: Body Diode Characteristics

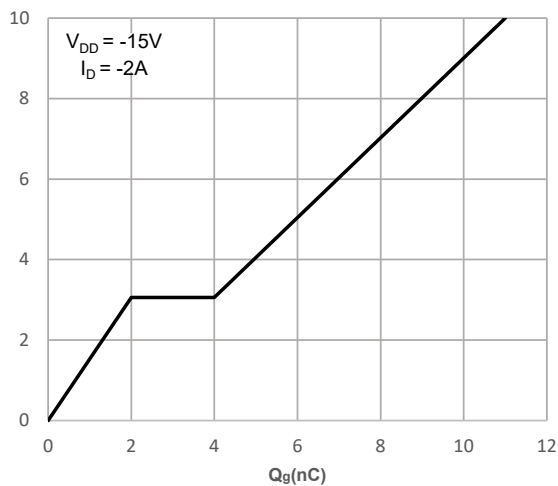


Figure 5: Gate Charge Characteristics

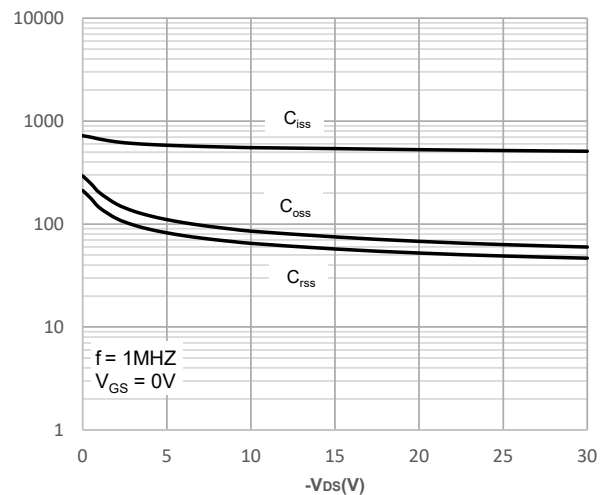


Figure 6: Capacitance Characteristics

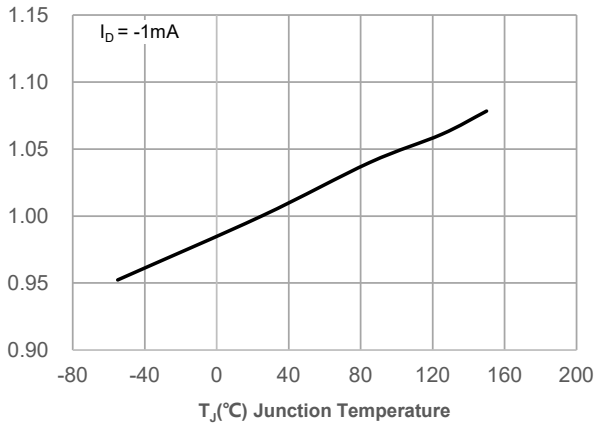


Figure 7: Normalized Breakdown voltage vs. Junction Temperature

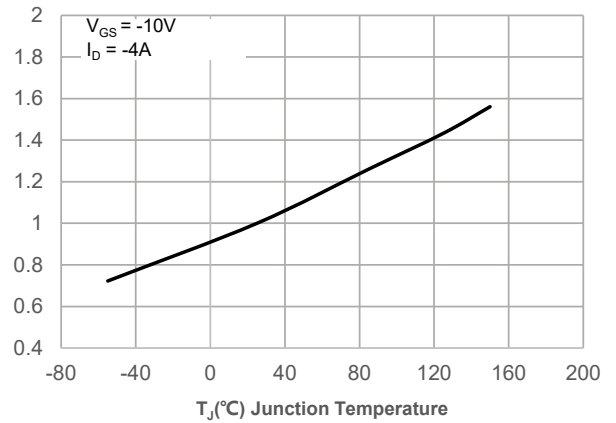


Figure 8: Normalized on Resistance vs. Junction Temperature

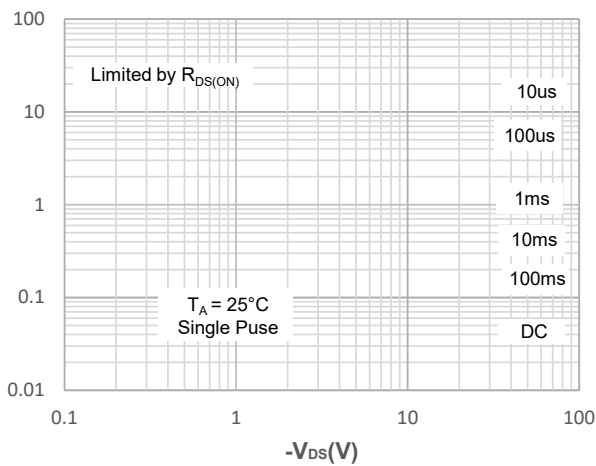


Figure 9: Maximum Safe Operating Area

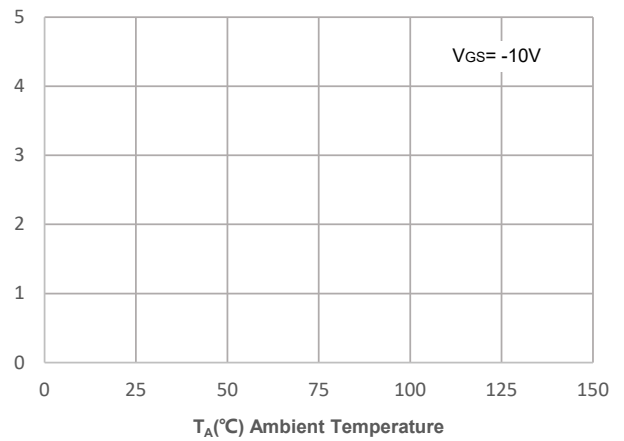


Figure 10: Maximum Continuous Drian Current vs. Ambient Temperature

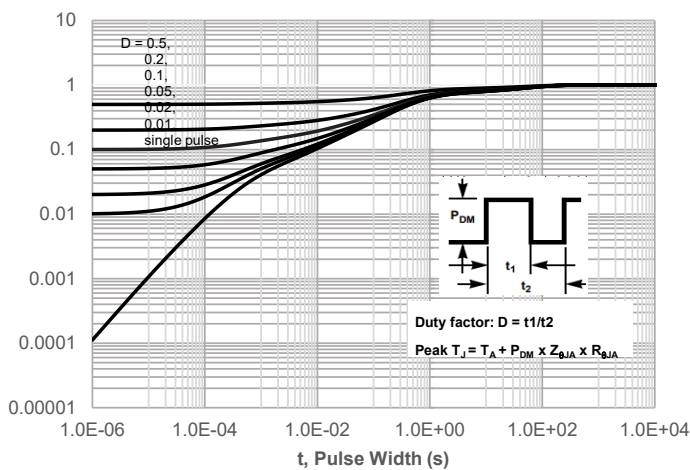


Figure 11: Normalized Maximum Transient Thermal Impedance

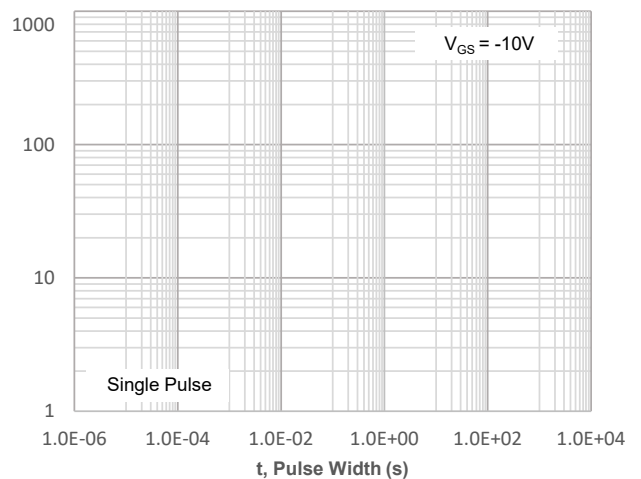
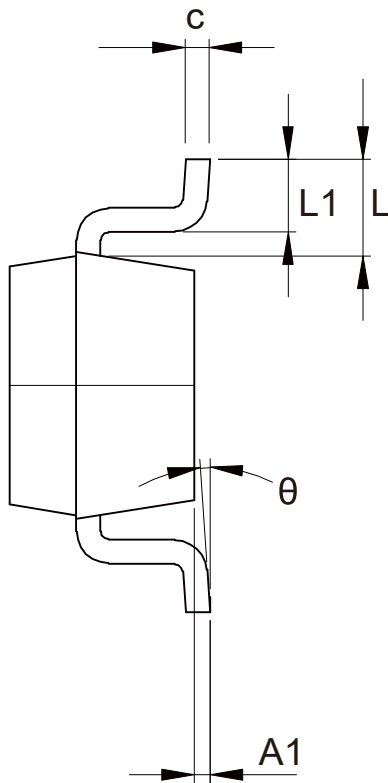
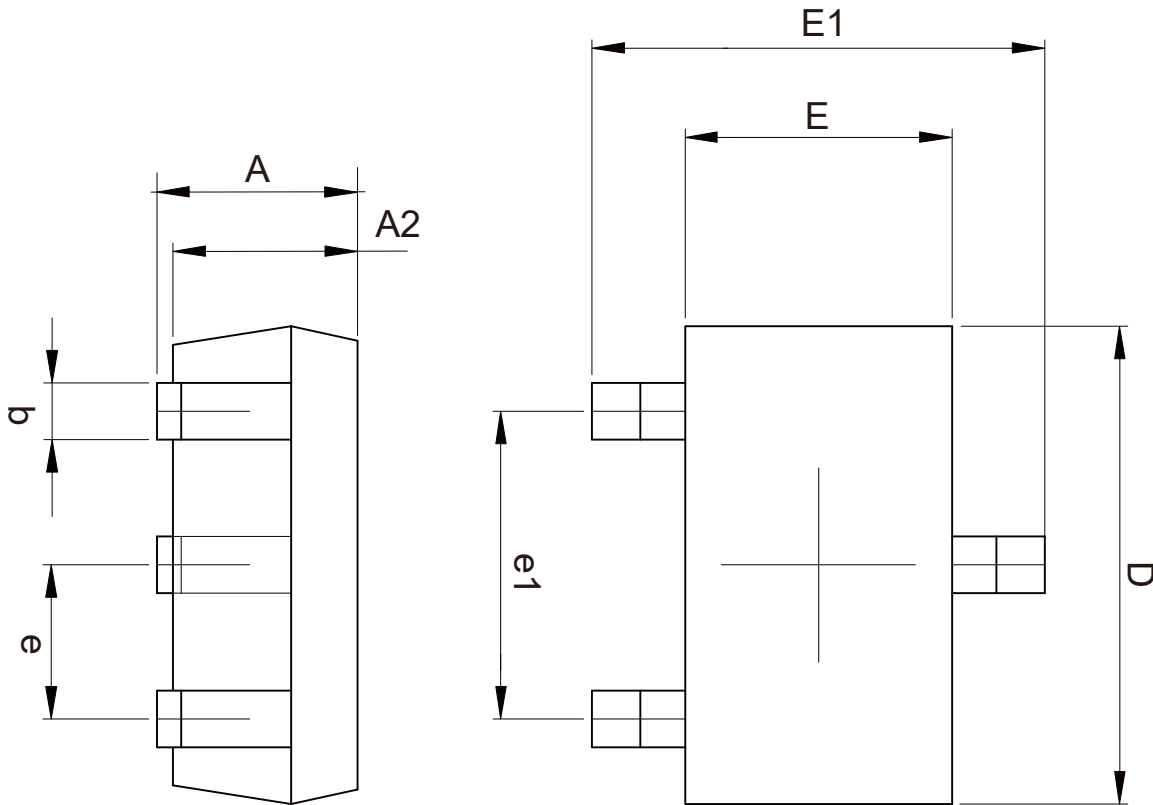


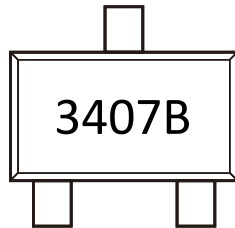
Figure 12: Peak Current Capacity

SOT-23-3 Package Outline Data



| COMMON DIMENSIONS | | | |
|---------------------------|----------|-------|-------|
| CUNITS MEASURE=MILLIMETER | | | |
| SYMBOL | MIN | NOM | MAX |
| A | 1.050 | --- | 1.300 |
| A1 | 0.000 | --- | 0.200 |
| A2 | 1.050 | --- | 1.200 |
| b | 0.300 | 0.400 | 0.500 |
| c | 0.100 | --- | 0.200 |
| D | 2.820 | 2.900 | 3.020 |
| E | 1.500 | 1.600 | 1.700 |
| E1 | 2.650 | 2.800 | 2.950 |
| e | 0.950TYP | | |
| e1 | 1.800 | 1.900 | 2.000 |
| L | 0.6REF | | |
| L1 | 0.300 | 0.450 | 0.600 |
| theta | 0° | -- | 8° |

Unit:mm

Marking Information:**Previous Version**

| Version | Date | Subjects (major changes since last revision) |
|---------|------------|--|
| 2.0 | 2024-06-08 | Release of final version |

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