

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|------------------------|----------------|-------|------|
| Drain Source Voltage | V_{DSS} | 50 | V |
| Gate-Source Voltage | V_{GSS} | ±20 | V |
| Drain Current (Note 6) | Ι _D | 500 | mA |

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Total Power Dissipation (Note 5) | P _D | 370 | mW |
| Thermal Resistance, Junction to Ambient (Note 5) | $R_{	heta JA}$ | 344 | °C/W |
| Total Power Dissipation (Note 6) | P _D | 540 | mW |
| Thermal Resistance, Junction to Ambient (Note 6) | $R_{	heta JA}$ | 236 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

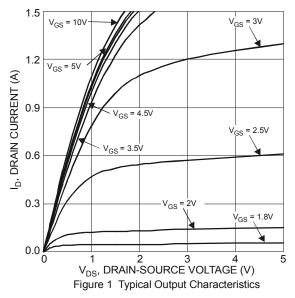
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

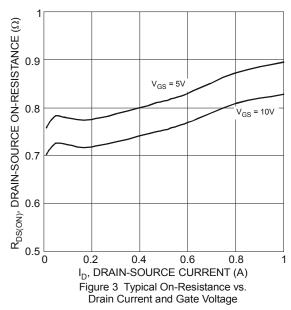
| | , | | r | | r | r |
|------------------------------------|---------------------|-----|-----|-----|------|--|
| Characteristic | Symbol | Min | Тур | Max | Unit | Test Condition |
| OFF CHARACTERISTICS (Note 7) | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | 50 | _ | _ | V | $V_{GS} = 0V, I_D = 250\mu A$ |
| Zero Gate Voltage Drain Current | I _{DSS} | _ | _ | 1.0 | μA | V _{DS} = 50V, V _{GS} = 0V |
| Gate-Body Leakage | I _{GSS} | _ | _ | 10 | μA | $V_{GS} = \pm 20V, V_{DS} = 0V$ |
| ON CHARACTERISTICS (Note 7) | | | | | | |
| Gate Threshold Voltage | V _{GS(th)} | 0.8 | _ | 1.5 | V | $V_{DS} = V_{GS}, I_{D} = 250 \mu A$ |
| | | _ | _ | 1.6 | | $V_{GS} = 10V, I_D = 500mA$ |
| Static Drain-Source On-Resistance | R _{DS(ON)} | _ | _ | 2.5 | Ω | $V_{GS} = 4.5V, I_D = 200mA$ |
| | | _ | _ | 4.5 | | $V_{GS} = 2.5V, I_D = 100mA$ |
| Source-Drain Diode Forward Voltage | V _{SD} | _ | _ | 1.4 | V | V _{GS} = 0V, I _S = 500mA |
| DYNAMIC CHARACTERISTICS (Note 8) | | | | ÷ | - | |
| Input Capacitance | C _{iss} | _ | 46 | _ | pF | V _{DS} = 25V, V _{GS} = 0V -f = 1.0MHz |
| Output Capacitance | Coss | _ | 5.3 | | pF | |
| Reverse Transfer Capacitance | C _{rss} | _ | 4.0 | | pF | |
| Total Gate Charge | Qg | _ | 0.6 | _ | nC | V _{GS} = 4.5V, V _{DS} = 10V, I _D = 250mA |
| Gate-Source Charge | Q _{gs} | _ | 0.2 | | nC | |
| Gate-Drain Charge | Q_{gd} | _ | 0.1 | | nC | |
| Turn-On Delay Time | t _{D(on)} | _ | 2.7 | _ | ns | $V_{DD} = 30V, V_{GS} = 10V,$ $R_{G} = 25\Omega, I_{D} = 200mA$ |
| Turn-On Rise Time | t _r | | 2.5 | | ns | |
| Turn-Off Delay Time | t _{D(off)} | _ | 19 | _ | ns | |
| Turn-Off Fall Time | t _f | | 11 | | ns | |

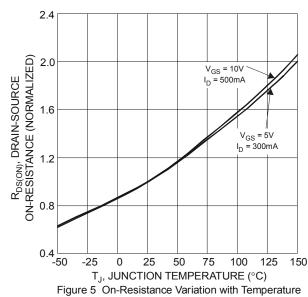
Notes:

- 5. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout
- 6. Device mounted on FR-4 substrate PC board, 2oz copper, with thermal vias to bottom layer 1inch square copper plate 7. Short duration pulse test used to minimize self-heating effect.
- 8. Guaranteed by design. Not subject to product testing.





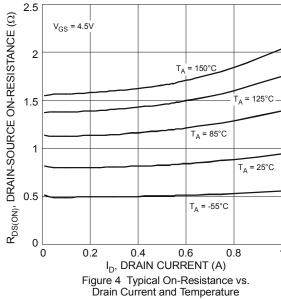




ID, DRAIN CURRENT (A) 0.6 0.4 $T_A = 85^{\circ}C$ T_A = 125°C 0.2 Γ_Δ = 25°C = -55°C 0 _ 0.5 2 2.5 3 1 1.5 3.5 4 V_{GS} , GATE-SOURCE VOLTAGE (V) Figure 2 Typical Transfer Characteristics 2.5 $V_{GS} = 4.5V$

 $V_{DS} = 5V$

8.0



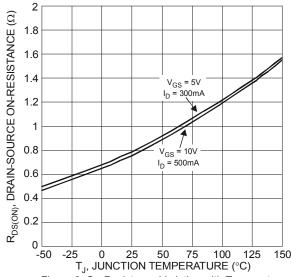


Figure 6 On-Resistance Variation with Temperature



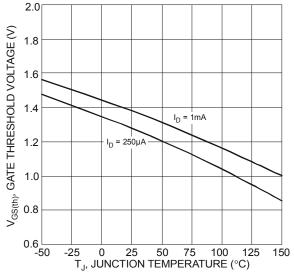
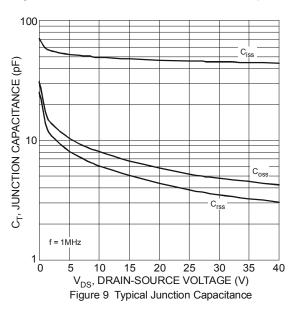
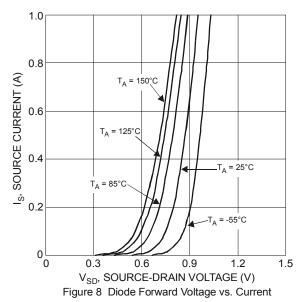
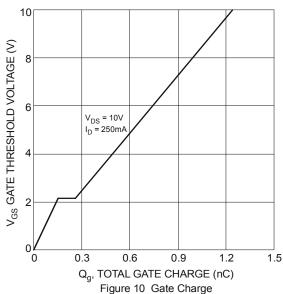


Figure 7 Gate Threshold Variation vs. Ambient Temperature

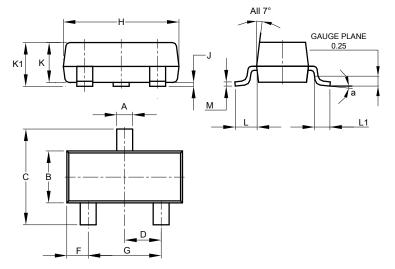






Package Outline Dimensions

Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.

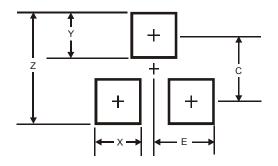


| SOT23 | | | | |
|----------------------|-------|-------|-------|--|
| Dim | Min | Max | Тур | |
| Α | 0.37 | 0.51 | 0.40 | |
| В | 1.20 | 1.40 | 1.30 | |
| С | 2.30 | 2.50 | 2.40 | |
| D | 0.89 | 1.03 | 0.915 | |
| F | 0.45 | 0.60 | 0.535 | |
| G | 1.78 | 2.05 | 1.83 | |
| Н | 2.80 | 3.00 | 2.90 | |
| J | 0.013 | 0.10 | 0.05 | |
| K | 0.890 | 1.00 | 0.975 | |
| K1 | 0.903 | 1.10 | 1.025 | |
| L | 0.45 | 0.61 | 0.55 | |
| L1 | 0.25 | 0.55 | 0.40 | |
| М | 0.085 | 0.150 | 0.110 | |
| α 8° | | | | |
| All Dimensions in mm | | | | |



Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



| Dimensions | Value (in mm) |
|------------|---------------|
| Z | 2.9 |
| X | 0.8 |
| Y | 0.9 |
| С | 2.0 |
| E | 1.35 |

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