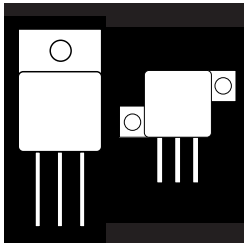


POWER MOSFET IN HERMETIC ISOLATED TO-254AA PACKAGE



600V & 550V, 11 Amp, N-Channel MOSFET In Hermetic Metal Package

FEATURES

- Isolated Hermetic Metal Package
- Fast Switching
- Low $R_{DS(on)}$
- Available Screened To MIL-S-19500, TX, TXV And S
- Ceramic Feedthroughs Also Available

DESCRIPTION

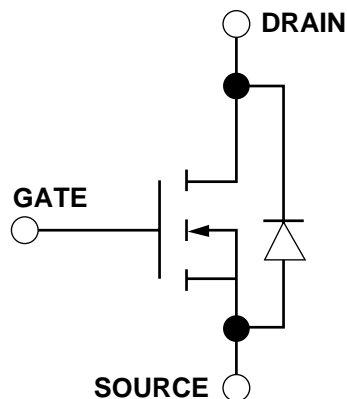
This series of hermetically packaged products feature the latest advanced MOSFET and packaging technology. The device breakdown ratings provide a substantial voltage margin for stringent applications such as 270 VDC aircraft power and/or rectified 230 VAC power (line operation). They are ideally suited for Military requirements where small size, high performance and high reliability are required, and in applications such as switching power supplies, motor controls, inverters, choppers, audio amplifiers and high energy pulse circuits.

MAXIMUM RATINGS

| PART NUMBER | V_{DS} | $R_{DS(on)}$ | $I_{D(MAX)}$ |
|-------------|----------|--------------|--------------|
| OM11N60 | 600V | .50 | 11A |
| OM11N55 | 550V | .44 | 11A |

3.1

SCHEMATIC



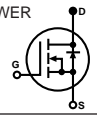
**ELECTRICAL CHARACTERISTICS: $T_C = 25^\circ$ unless otherwise noted
STATIC P/N OM11N60SA**

| Parameter | Min. | Typ. | Max. | Units | Test Conditions |
|---|------|------------|-------------|-------|--|
| BV_{DSS} Drain-Source Breakdown Voltage | 600 | | | V | $V_{GS} = 0, I_D = 250 \text{ mA}$ |
| $V_{GS(th)}$ Gate-Threshold Voltage | 2.0 | | 4.0 | V | $V_{DS} = V_{GS}, I_D = 250 \text{ mA}$ |
| I_{GSS} Gate-Body Leakage | | | ± 100 | nA | $V_{GS} = \pm 20 \text{ V}$ |
| I_{DSS} Zero Gate Voltage Drain Current | | 0.1 0.2 | 0.25 1.0 | mA | $V_{DS} = \text{Max. Rat.}, V_{GS} = 0$ $V_{DS} = 0.8 \text{ Max. Rat.}, V_{GS} = 0, T_C = 125^\circ \text{ C}$ |
| $I_{D(on)}$ On-State Drain Current ¹ | 11.0 | | | A | $V_{DS} > I_{D(on)} \times R_{DS(on)}, V_{GS} = 10 \text{ V}$ |
| $V_{DS(on)}$ Static Drain-Source On-State Voltage ¹ | | | 3.1 | V | $V_{GS} = 10 \text{ V}, I_D = 5.5 \text{ A}$ |
| $R_{DS(on)}$ Static Drain-Source On-State Resistance ¹ | | .47 | .50 | | $V_{GS} = 10 \text{ V}, I_D = 5.5 \text{ A}$ |
| $R_{DS(on)}$ Static Drain-Source On-State Resistance ¹ | | | 1.0 | | $V_{GS} = 10 \text{ V}, I_D = 5.5 \text{ A}, T_C = 125 \text{ C}$ |

DYNAMIC

| | | | | | |
|--|-----|------|--|------|--|
| g_{fs} Forward Transconductance ¹ | 5.0 | | | S(M) | $V_{DS} = 2 V_{DS(on)}, I_D = 5.5 \text{ A}$ |
| C_{iss} Input Capacitance | | 3000 | | pF | $V_{GS} = 0$ |
| C_{oss} Output Capacitance | | 440 | | pF | $V_{DS} = 25 \text{ V}$ |
| C_{riss} Reverse Transfer Capacitance | | 220 | | pF | $f = 1 \text{ MHz}$ |
| $T_{d(on)}$ Turn-On Delay Time | | 55 | | ns | $V_{DD} = 210 \text{ V}, I_D @ 7.0 \text{ A}$ |
| t_r Rise Time | | 75 | | ns | $R_g = 5 \text{ } \omega, R_L = 30 \text{ } \omega$ |
| $T_{d(off)}$ Turn-Off Delay Time | | 225 | | ns | (MOSFET) switching times are essentially independent of operating temperature. |
| t_f Fall Time | | 135 | | ns | |

BODY-DRAIN DIODE RATINGS AND CHARACTERISTICS

| | | | | | |
|---|--|-----|-------|----|--|
| I_S Continuous Source Current (Body Diode) | | | - 11 | A | Modified MOSPOWER symbol showing the integral P-N Junction rectifier.  |
| I_{SM} Source Current ¹ (Body Diode) | | | - 52 | A | |
| V_{SD} Diode Forward Voltage ¹ | | | - 1.4 | V | $T_C = 25 \text{ C}, I_S = -11 \text{ A}, V_{GS} = 0$ |
| t_{rr} Reverse Recovery Time | | 700 | | ns | $T_J = 150 \text{ C}, I_F = I_S, di_F/ds = 100 \text{ A/ms}$ |

1 Pulse Test: Pulse Width 300msec, Duty Cycle 2%.

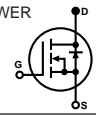
**ELECTRICAL CHARACTERISTICS: $T_C = 25^\circ$ unless otherwise noted
STATIC P/N OM11N55SA**

| Parameter | Min. | Typ. | Max. | Units | Test Conditions |
|---|------|------------|-------------|-------|--|
| BV_{DSS} Drain-Source Breakdown Voltage | 550 | | | V | $V_{GS} = 0, I_D = 250 \text{ mA}$ |
| $V_{GS(th)}$ Gate-Threshold Voltage | 2.0 | | 4.0 | V | $V_{DS} = V_{GS}, I_D = 250 \text{ mA}$ |
| I_{GSSF} Gate-Body Leakage Forward | | | ± 100 | nA | $V_{GS} = \pm 20 \text{ V}$ |
| I_{DSS} Zero Gate Voltage Drain Current | | 0.1 0.2 | 0.25 1.0 | mA | $V_{DS} = \text{Max. Rat.}, V_{GS} = 0$ $V_{DS} = 0.8 \text{ Max. Rat.}, V_{GS} = 0, T_C = 125^\circ \text{ C}$ |
| $I_{D(on)}$ On-State Drain Current ¹ | 11.0 | | | A | $V_{DS} > I_{D(on)} \times R_{DS(on)}, V_{GS} = 10 \text{ V}$ |
| $V_{DS(on)}$ Static Drain-Source On-State Voltage ¹ | | | 3.3 | V | $V_{GS} = 10 \text{ V}, I_D = 5.5 \text{ A}$ |
| $R_{DS(on)}$ Static Drain-Source On-State Resistance ¹ | | .37 | .44 | | $V_{GS} = 10 \text{ V}, I_D = 5.5 \text{ A}$ |
| $R_{DS(on)}$ Static Drain-Source On-State Resistance ¹ | | | .88 | | $V_{GS} = 10 \text{ V}, I_D = 5.5 \text{ A}, T_C = 125 \text{ C}$ |

DYNAMIC

| | | | | | |
|--|-----|------|--|------|--|
| g_{fs} Forward Transconductance ¹ | 5.0 | | | S(M) | $V_{DS} = 2 V_{DS(on)}, I_D = 5.5 \text{ A}$ |
| C_{iss} Input Capacitance | | 3000 | | pF | $V_{GS} = 0$ |
| C_{oss} Output Capacitance | | 440 | | pF | $V_{DS} = 25 \text{ V}$ |
| C_{riss} Reverse Transfer Capacitance | | 220 | | pF | $f = 1 \text{ MHz}$ |
| $T_{d(on)}$ Turn-On Delay Time | | 55 | | ns | $V_{DD} = 210 \text{ V}, I_D @ 7.0 \text{ A}$ |
| t_r Rise Time | | 75 | | ns | $R_g = 5 \text{ } \omega, R_L = 30 \text{ } \omega$ |
| $T_{d(off)}$ Turn-Off Delay Time | | 225 | | ns | (MOSFET) switching times are essentially independent of operating temperature. |
| t_f Fall Time | | 135 | | ns | |

BODY-DRAIN DIODE RATINGS AND CHARACTERISTICS

| | | | | | |
|---|--|-----|-------|----|--|
| I_S Continuous Source Current (Body Diode) | | | - 11 | A | Modified MOSPOWER symbol showing the integral P-N Junction rectifier.  |
| I_{SM} Source Current ¹ (Body Diode) | | | - 52 | A | |
| V_{SD} Diode Forward Voltage ¹ | | | - 1.4 | V | $T_C = 25 \text{ C}, I_S = -11 \text{ A}, V_{GS} = 0$ |
| t_{rr} Reverse Recovery Time | | 700 | | ns | $T_J = 150 \text{ C}, I_F = I_S, di_F/ds = 100 \text{ A/ms}$ |

1 Pulse Test: Pulse Width 300msec, Duty Cycle 2%.

OM11N60SA - OM11N55SA

ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

| Symbol | Parameter | OM11N60 | OM11N55 | Units |
|----------------|---|------------|---------|---------------------|
| V_{DGR} | Drain Source Voltage | 600 | 550 | V |
| V_{DS} | Drain Gate Voltage ($R_{GS} = 1.0 \text{ M}$) | 600 | 550 | V |
| I_D | Continuous Drain Current @ $T_C = 25^\circ\text{C}$ | 11 | 11 | A |
| I_D | Continuous Drain Current @ $T_C = 100^\circ\text{C}$ | 7.2 | 7.2 | A |
| I_{DM} | Pulsed Drain Current ¹ | 52 | 52 | A |
| P_D | Max. Power Dissipation @ $T_C = 25^\circ\text{C}$ | 125 | 125 | W |
| P_D | Max. Power Dissipation @ $T_C = 100^\circ\text{C}$ | 50 | 50 | W |
| | Linear Derating Factor Jct. to Case | 1.0 | 1.0 | W/ $^\circ\text{C}$ |
| | Linear Derating Factor Jct. to Ambient | .020 | .020 | W/ $^\circ\text{C}$ |
| T_J, T_{stg} | Operating and Storage Temp. Range | -55 to 150 | | $^\circ\text{C}$ |
| | Lead Temperature <small>(1/16" from case for 10 sec.)</small> | 300 | 300 | $^\circ\text{C}$ |

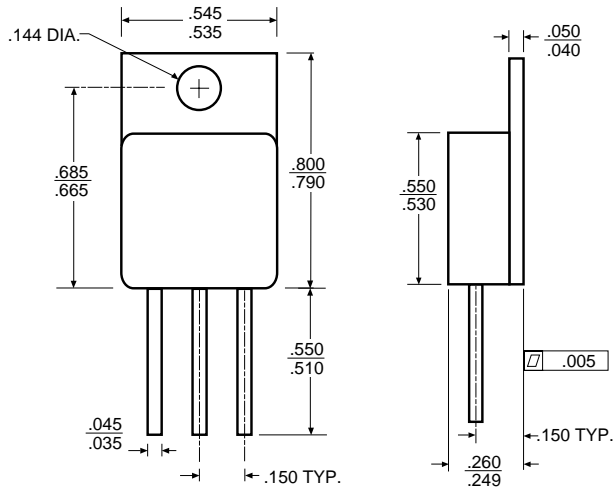
1 Pulse Test: Pulse width 300 μsec . Duty Cycle 2%.

THERMAL RESISTANCE (Maximum at $T_A = 25^\circ\text{C}$)

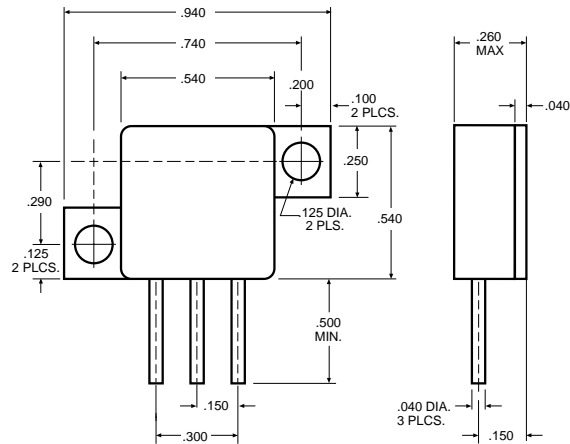
| | | | | |
|------------|--|-----|-----|---------------------------|
| R_{thJC} | Junction-to-Case | 1.0 | 1.0 | $^\circ\text{C}/\text{W}$ |
| R_{thJA} | Junction-to-Ambient (Free Air Operation) | 50 | 50 | $^\circ\text{C}/\text{W}$ |

3.1

MECHANICAL OUTLINES



TO-254 AA Package



Omnirel AZ Package

For Z-Pack configuration, add letter "Z" to part number, **Example - OMXXXXSAZ**

Standard Products are supplied with glass feedthroughs, for ceramic feedthroughs, add letter "C" to part number, **Example - OMXXXXCSA**