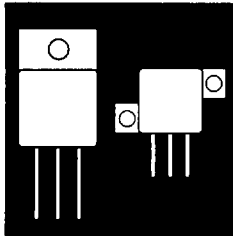


POWER MOSFET IN HERMETIC ISOLATED TO-254AA PACKAGE



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

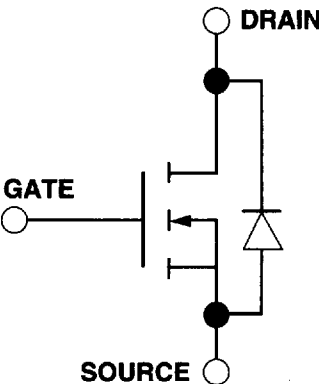
This series of hermetically packaged products feature the latest advanced MOSFET and packaging technology. The device breakdown ratings provide a substantial voltage margin for stringent applications such as 270 VDC aircraft power and/or rectified 230 VAC power (line operation). They are ideally suited 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 Ω	11A
OM11N55	550V	.44 Ω	11A

3.1

SCHEMATIC



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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	$V_{GS} = 0$, $I_D = 250 \mu A$
$V_{GS(th)}$ Gate-Threshold Voltage	2.0		4.0	V	$V_{DS} = V_{GS}$, $I_D = 250 \mu A$
I_{GSSF} Gate-Body Leakage			± 100	nA	$V_{GS} = \pm 20$ V
I_{DSS} Zero Gate Voltage Drain Current	0.1 0.2	0.25 1.0		mA 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	$V_{DS} \geq I_{D(on)} \times R_{DS(on)}$, $V_{GS} = 10$ V
$V_{DS(on)}$ Static Drain-Source On-State Voltage ¹			3.1	V	$V_{GS} = 10$ V, $I_D = 5.5$ A
$R_{DS(on)}$ Static Drain-Source On-State Resistance ¹		.47	.50	Ω	$V_{GS} = 10$ V, $I_D = 5.5$ A
$R_{DS(on)}$ Static Drain-Source On-State Resistance ¹			1.0	Ω	$V_{GS} = 10$ V, $I_D = 5.5$ A, $T_C = 125^\circ \text{C}$

DYNAMIC

g_{fs} Forward Transconductance ¹	5.0			S(r)	$V_{DS} \geq 2 V_{DS(on)}$, $I_D = 5.5$ A
C_{iss} Input Capacitance		3000		pF	$V_{GS} = 0$
C_{oss} Output Capacitance		440		pF	$V_{DS} = 25$ V
C_{rsw} Reverse Transfer Capacitance		220		pF	$f = 1$ MHz
$T_{d(on)}$ Turn-On Delay Time		55		ns	$V_{DS} = 210$ V, $I_D = 7.0$ A
t_r Rise Time		75		ns	$R_g = 5 \Omega$, $R_L = 30 \Omega$
$T_{d(off)}$ 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	$T_C = 25^\circ \text{C}$, $I_S = -11$ A, $V_{GS} = 0$
t_r Reverse Recovery Time		700		ns	$T_J = 150^\circ \text{C}$, $I_F = I_S$, $dI_F/dt = 100 \text{ A}/\mu\text{s}$

1 Pulse Test: Pulse Width $\leq 300 \mu\text{sec}$, Duty Cycle $\leq 2\%$.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	$V_{GS} = 0$, $I_D = 250 \mu A$
$V_{GS(th)}$ Gate-Threshold Voltage	2.0		4.0	V	$V_{DS} = V_{GS}$, $I_D = 250 \mu A$
I_{GSSF} Gate-Body Leakage			± 100	nA	$V_{GS} = \pm 20$ V
I_{DSS} Zero Gate Voltage Drain Current	0.1 0.2	0.25 1.0		mA 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	$V_{DS} \geq I_{D(on)} \times R_{DS(on)}$, $V_{GS} = 10$ V
$V_{DS(on)}$ Static Drain-Source On-State Voltage ¹			3.3	V	$V_{GS} = 10$ V, $I_D = 5.5$ A
$R_{DS(on)}$ Static Drain-Source On-State Resistance ¹		.37	.44	Ω	$V_{GS} = 10$ V, $I_D = 5.5$ A
$R_{DS(on)}$ Static Drain-Source On-State Resistance ¹			.88	Ω	$V_{GS} = 10$ V, $I_D = 5.5$ A, $T_C = 125^\circ \text{C}$

DYNAMIC

g_{fs} Forward Transconductance ¹	5.0			S(r)	$V_{DS} \geq 2 V_{DS(on)}$, $I_D = 5.5$ A
C_{iss} Input Capacitance		3000		pF	$V_{GS} = 0$
C_{oss} Output Capacitance		440		pF	$V_{DS} = 25$ V
C_{rsw} Reverse Transfer Capacitance		220		pF	$f = 1$ MHz
$T_{d(on)}$ Turn-On Delay Time		55		ns	$V_{DS} = 210$ V, $I_D = 7.0$ A
t_r Rise Time		75		ns	$R_g = 5 \Omega$, $R_L = 30 \Omega$
$T_{d(off)}$ 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	$T_C = 25^\circ \text{C}$, $I_S = -11$ A, $V_{GS} = 0$
t_r Reverse Recovery Time		700		ns	$T_J = 150^\circ \text{C}$, $I_F = I_S$, $dI_F/dt = 100 \text{ A}/\mu\text{s}$

1 Pulse Test: Pulse Width $\leq 300 \mu\text{sec}$, Duty Cycle $\leq 2\%$.

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

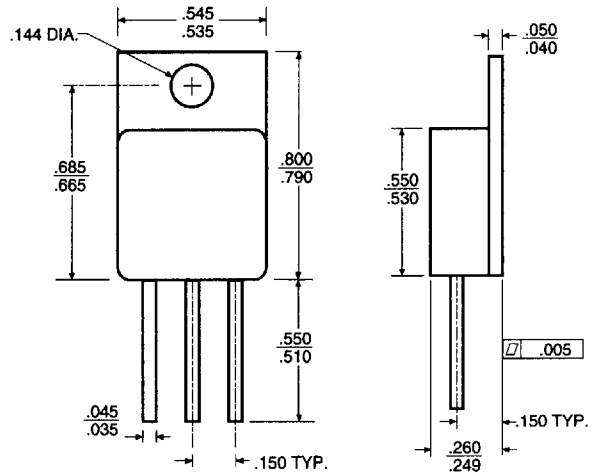
Symbol	Parameter	OM11N60	OM11N55	Units
V_{DS}	Drain-Source Voltage	600	550	V
V_{GS}	Gate-Source Voltage ($R_{GS} = 1.0\text{ M}\Omega$)	600	550	V
I_D	Continuous Drain Current @ $T_C = 25^\circ\text{C}$	11	11	A
I_D	Continuous Drain Current @ $T_C = 100^\circ\text{C}$	7.2	7.2	A
I_{DM}	Pulsed Drain Current 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 (1/16" from case for 10 sec.)	300	300	$^\circ\text{C}$

¹ **Pulse Test:** Pulse width $\leq 300\text{ }\mu\text{sec}$. Duty Cycle $\leq 2\%$.

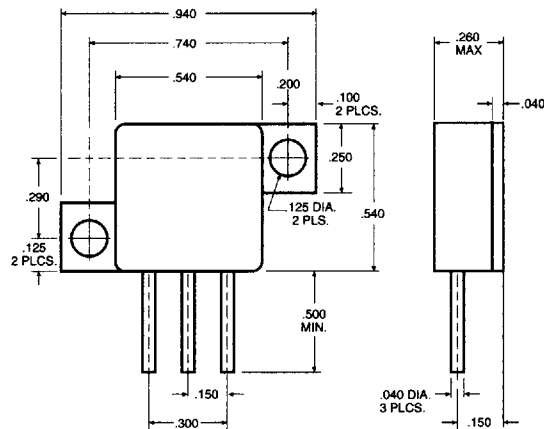
THERMAL RESISTANCE (Maximum at $T_A = 25^\circ\text{C}$)

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

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**

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