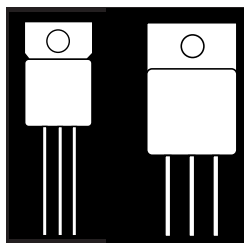


OM1N100SA OM5N100SA OM1N100ST
OM3N100SA OM6N100SA OM3N100ST

POWER MOSFET IN HERMETIC ISOLATED JEDEC PACKAGE



1000V, Up To 6 Amp, N-Channel MOSFET In Hermetic Metal Package

FEATURES

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

DESCRIPTION

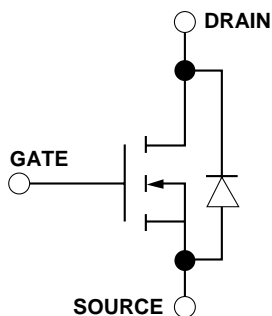
This series of hermetically packaged products feature the latest advanced MOSFET and packaging technology. They are ideally suited for Military requirements where small size, high performance and high reliability are required, and in applications such as switching power supplies, motor controls, inverters, choppers, audio amplifiers and high energy pulse circuits.

MAXIMUM RATINGS

PART NUMBER	$R_{DS(on)}$	I_D
OM1N100SA	8.0	1.0A
OM3N100SA	5.2	3.5A
OM5N100SA	3.0	5.0A
OM6N100SA	2.0	6.0A
OM3N100ST	5.4	3.5A
OM1N100ST	8.2	1.0A

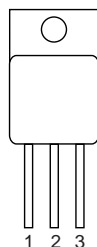
3.1

SCHEMATIC

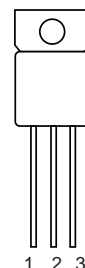


PIN CONNECTION

TO-254AA



TO-257AA



Pin 1: Drain
Pin 2: Source
Pin 3: Gate

ELECTRICAL CHARACTERISTICS: $T_C = 25^\circ$ unless otherwise noted
STATIC P/N OM1N100SA (See Note 3)

ELECTRICAL CHARACTERISTICS: $T_C = 25^\circ$ unless otherwise noted
STATIC P/N OM3N100SA (See Note 3)

Parameter	Min.	Typ.	Max.	Units	Test Conditions
BV_{DSS} Drain-Source Breakdown Voltage	1000			V	$V_{GS} = 0$, $I_D = 250$ mA
$V_{GS(th)}$ Gate-Threshold Voltage	2.0		4.0	V	$V_{DS} = V_{GS}$, $I_D = 250$ mA
I_{GSSF} Gate-Body Leakage Forward			100	nA	$V_{GS} = 20$ V, $V_{DS} = 0$
I_{GSSR} Gate-Body Leakage Reverse			-100	nA	$V_{GS} = -20$ V, $V_{DS} = 0$
I_{DSS} Zero Gate Voltage Drain Current			0.25	mA	$V_{DS} = \text{Max. Rat.}$, $V_{GS} = 0$
			1.0	mA	$V_{DS} = 0.8 \times \text{Max. Rat.}$, $V_{GS} = 0$, $T_C = 125^\circ$ C
$I_{D(on)}$ On-State Drain Current	1.0			A	$V_{DS} > I_{D(on)} \times R_{DS(on)}$ Max. $V_{GS} = 10$ V
$R_{DS(on)}$ Static Drain-Source On-State Resistance ^{1,3}		SA	8.0		$V_{GS} = 10$ V
		ST	8.2		$I_D = .5A$
$R_{DS(on)}$ Static Drain-Source On-State Resistance ^{1,3}		SA	15.0		$V_{GS} = 10$ V
		ST	15.4		$I_D = .5A$, $T_C = 100^\circ$ C

Parameter	Min.	Typ.	Max.	Units	Test Conditions
BV_{DSS} Drain-Source Breakdown Voltage	1000			V	$V_{GS} = 0$, $I_D = 250$ mA
$V_{GS(th)}$ Gate-Threshold Voltage	2.0		4.0	V	$V_{DS} = V_{GS}$, $I_D = 250$ mA
I_{GSSF} Gate-Body Leakage Forward			100	nA	$V_{GS} = 20$ V
I_{GSSR} Gate-Body Leakage Reverse			-100	nA	$V_{GS} = -20$ V
I_{DSS} Zero Gate Voltage Drain Current			0.25	mA	$V_{DS} = \text{Max. Rat.}$, $V_{GS} = 0$
			1.0	mA	$V_{DS} = 0.8 \times \text{Max. Rat.}$, $V_{GS} = 0$, $T_C = 125^\circ$ C
$I_{D(on)}$ On-State Drain Current	3.5			A	$V_{DS} > I_{D(on)} \times R_{DS(on)}$ Max $V_{GS} = 10$ V
$R_{DS(on)}$ Static Drain-Source On-State Resistance ^{1,3}		SA	5.2		$V_{GS} = 10$ V
		ST	5.4		$I_D = .5A$
$R_{DS(on)}$ Static Drain-Source On-State Resistance ^{1,3}		SA	10.0		$V_{GS} = 10$ V
		ST	10.4		$I_D = .5A$, $T_C = 100^\circ$ C

DYNAMIC

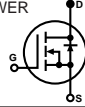
DYNAMIC

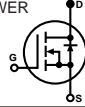
g_{fs} Forward Transductance	1.0			S	$V_{DS} = 10V$, $I_D = 1$ A
C_{iss} Input Capacitance		950		pF	$V_{GS} = 0$
C_{oss} Output Capacitance		110		pF	$V_{DS} = 25$ V
C_{rss} Reverse Transfer Capacitance		40		pF	$f = 1$ MHz
$T_{d(on)}$ Turn-On Delay Time		90		ns	$V_{DD} = 600$ V, $I_D = 3.5$ $R_G = 50\Omega$, $V_{GS} = 10$ V
t_r Rise Time		90		ns	
$T_{d(off)}$ Turn-Off Delay Time		115		ns	
t_f Fall Time		75		ns	

g_{fs} Forward Transductance	1.0			S	$V_{DS} = 10$, $I_D = 1.5$ A
C_{iss} Input Capacitance		950		pF	$V_{GS} = 0$
C_{oss} Output Capacitance		110		pF	$V_{DS} = 25$ V
C_{rss} Reverse Transfer Capacitance		40		pF	$f = 1$ MHz
$T_{d(on)}$ Turn-On Delay Time		90		ns	$V_{DD} = 600$ V, $I_D = 3.5$ $R_G = 50\Omega$, $V_{GS} = 10$ V
t_r Rise Time		90		ns	
$T_{d(off)}$ Turn-Off Delay Time		115		ns	
t_f Fall Time		75		ns	

BODY-DRAIN DIODE RATINGS AND CHARACTERISTICS

BODY-DRAIN DIODE RATINGS AND CHARACTERISTICS

I_S Continuous Source Current (Body Diode)			3.5	A	Modified MOSPOWER symbol showing the integral P-N Junction rectifier. 
I_{SM} Source Current ¹ (Body Diode)			14	A	
V_{SD} Diode Forward Voltage ²			2.5	V	$T_C = 25$ C, $I_S = 3.5$ A, $V_{GS} = 0$
t_{rr} Reverse Recovery Time		900		ns	$I_F = I_S$, $V_{DD} = 100$ V $di_F/ds = 100$ A/ms, $T_J = 150$ C

I_S Continuous Source Current (Body Diode)			3.5	A	Modified MOSPOWER symbol showing the integral P-N Junction rectifier. 
I_{SM} Source Current ¹ (Body Diode)			14	A	
V_{SD} Diode Forward Voltage ²			2.5	V	$T_C = 25$ C, $I_S = 3.5$ A, $V_{GS} = 0$
t_{rr} Reverse Recovery Time		900		ns	$I_F = I_S$, $V_{DD} = 100$ V $di_F/ds = 100$ A/ms, $T_J = 150$ C

1 Pulse Test: Pulse Width 300msec, Duty Cycle 1.5%.

2 Pulse Width limited by safe operating area.

3 OM1N100ST - All characteristics the same except $R_{DS(on)}$

1 Pulse Test: Pulse Width 300msec, Duty Cycle 1.5%.

2 Pulse Width limited by safe operating area.

3 OM3N100ST - All characteristics the same except $R_{DS(on)}$

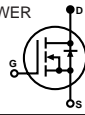
ELECTRICAL CHARACTERISTICS: $T_C = 25^\circ$ unless otherwise noted
STATIC P/N OM5N100SA (See Note 3)

Parameter	Min.	Typ.	Max.	Units	Test Conditions
BV_{DSS} Drain-Source Breakdown Voltage	1000			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	$V_{GS} = 20 \text{ V}$, $V_{DS} = 0$
I_{GSSR} Gate-Body Leakage Reverse			-100	nA	$V_{GS} = -20 \text{ V}$, $V_{DS} = 0$
I_{DSS} Zero Gate Voltage Drain Current			0.25	mA	$V_{DS} = \text{Max. Rat.}$, $V_{GS} = 0$
			1.0	mA	$V_{DS} = 0.8 \times \text{Max. Rat.}$, $V_{GS} = 0$, $T_C = 125^\circ \text{ C}$
$I_{D(on)}$ On-State Drain Current	5.0			A	$V_{DS} > I_{D(on)} \times R_{DS(on)}$ Max., $V_{GS} = 10 \text{ V}$
$R_{DS(on)}$ Static Drain-Source On-State Resistance ¹			3.0		$V_{GS} = 10 \text{ V}$, $I_D = 2.5 \text{ A}$
$R_{DS(on)}$ Static Drain-Source On-State Resistance ¹			6.0		$V_{GS} = 10 \text{ V}$, $I_D = 2.5 \text{ A}$ $T_C = 100 \text{ C}$

DYNAMIC

g_{fs} Forward Transconductance	4.0			S	$V_{DS} = 25 \text{ V}$, $V_{DS(on)}$, $I_D = 2.5 \text{ A}$
C_{iss} Input Capacitance			2600	pF	$V_{GS} = 0$
C_{oss} Output Capacitance			350	pF	$V_{DS} = 25 \text{ V}$
C_{riss} Reverse Transfer Capacitance			150	pF	$f = 1 \text{ MHz}$
$T_{d(on)}$ Turn-On Delay Time			65	ns	$V_{DD} = 800 \text{ V}$, $I_D = 6 \text{ A}$ $R_G = 7 \text{ n}$, $V_{GS} = 10 \text{ V}$
t_r Rise Time			55	ns	
$T_{r(V_{off})}$ Off-Voltage Rise Time			62	ns	
t_f Fall Time			25	ns	

BODY-DRAIN DIODE RATINGS AND CHARACTERISTICS

I_S Continuous Source Current (Body Diode)			6	A	Modified MOSPOWER symbol showing the integral P-N Junction rectifier. 
I_{SM} Source Current ² (Body Diode)			24	A	
V_{SD} Diode Forward Voltage ¹			2.5	V	$T_C = 25 \text{ C}$, $I_S = 6 \text{ A}$, $V_{GS} = 0$
t_{rr} Reverse Recovery Time		1100		ns	$I_F = I_S$, $V_{DD} = 100 \text{ V}$ $dl_F/ds = 100 \text{ A/ms}$

- 1 Pulse Test:** Pulse Width 300msec, Duty Cycle 1.5%.
- Pulse Width limited by safe operating area.
- Also available in a TO258AA, TO259AA and dual 6 pin Sip, S-6 package

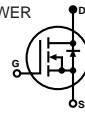
ELECTRICAL CHARACTERISTICS: $T_C = 25^\circ$ unless otherwise noted
STATIC P/N OM6N100SA (See Note 3)

Parameter	Min.	Typ.	Max.	Units	Test Conditions
BV_{DSS} Drain-Source Breakdown Voltage	1000			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	$V_{GS} = 20 \text{ V}$, $V_{DS} = 0$
I_{GSSR} Gate-Body Leakage Reverse			-100	nA	$V_{GS} = -20 \text{ V}$, $V_{DS} = 0$
I_{DSS} Zero Gate Voltage Drain Current			0.25	mA	$V_{DS} = \text{Max. Rat.}$, $V_{GS} = 0$
			1.0	mA	$V_{DS} = 0.8 \times \text{Max. Rat.}$, $V_{GS} = 0$, $T_C = 125^\circ \text{ C}$
$I_{D(on)}$ On-State Drain Current	6.0			A	$V_{DS} > I_{D(on)} \times R_{DS(on)}$ Max., $V_{GS} = 10 \text{ V}$
$R_{DS(on)}$ Static Drain-Source On-State Resistance ¹			2.0		$V_{GS} = 10 \text{ V}$, $I_D = 3.0 \text{ A}$
$R_{DS(on)}$ Static Drain-Source On-State Resistance ¹			4.0		$V_{GS} = 10 \text{ V}$, $I_D = 3.0 \text{ A}$ $T_C = 100^\circ \text{ C}$

DYNAMIC

g_{fs} Forward Transconductance	4.0			S	$V_{DS} = 25 \text{ V}$, $I_D = 3.0 \text{ A}$
C_{iss} Input Capacitance			2600	pF	$V_{GS} = 0$
C_{oss} Output Capacitance			350	pF	$V_{DS} = 25 \text{ V}$
C_{riss} Reverse Transfer Capacitance			150	pF	$f = 1 \text{ MHz}$
$T_{d(on)}$ Turn-On Delay Time			65	ns	$V_{DD} = 800 \text{ V}$, $I_D = 6 \text{ A}$ $R_G = 7 \text{ n}$, $V_{GS} = 10 \text{ V}$
t_r Rise Time			55	ns	
$T_{r(V_{off})}$ Off-Voltage Rise Time			62	ns	
t_f Fall Time			25	ns	

BODY-DRAIN DIODE RATINGS AND CHARACTERISTICS

I_S Continuous Source Current (Body Diode)			6	A	Modified MOSPOWER symbol showing the integral P-N Junction rectifier. 
I_{SM} Source Current ² (Body Diode)			24	A	
V_{SD} Diode Forward Voltage ¹			2.5	V	$T_C = 25 \text{ C}$, $I_S = 6 \text{ A}$, $V_{GS} = 0$
t_{rr} Reverse Recovery Time		1000		ns	$I_F = I_S$, $V_{DD} = 100 \text{ V}$ $dl_F/ds = 100 \text{ A/ms}$, $T_J = 150 \text{ C}$

- 1 Pulse Test:** Pulse Width 300msec, Duty Cycle 1.5%.
- Pulse Width limited by safe operating area.
- Also available in a TO258AA, TO259AA and dual 6 pin Sip, S-6 package

OM1N100SA/ST Series

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

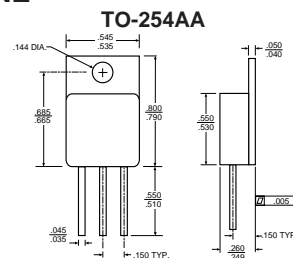
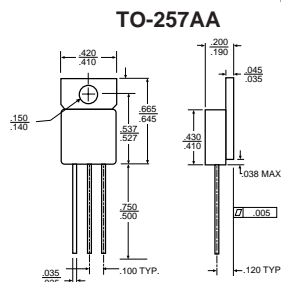
Symbol	Parameter	OM1N100SA	OM3N100SA	OM5N100SA	OM6N100SA	Units
		OM1N100ST	OM3N100ST			
I_{AR}	Avalanche Current (Repetitive or Non-Repetitive) $T_J = 25^\circ\text{C}$ $T_J = 100^\circ\text{C}$	3.5	3.5	6	6	A
		2	2	3.4	3.4	A
E_{AS}	Single Pulse Avalanche Energy Starting $T_J = 25^\circ\text{C}$, $I_D = I_{AR}$, $V_{DD} = 25\text{V}$	130	130	850	850	mJ
E_{AR}	Repetitive Avalanche Energy (Pulse width limited by T_J max, $d < 1\%$)	6	6	16	16	mJ
V_{DS}	Drain-Source Voltage	1000	1000	1000	1000	V
V_{DGR}	Drain-Source Voltage ($R_{GS} = 20\text{k}$)	1000	1000	1000	1000	V
$I_D @ T_C = 25^\circ\text{C}$	Continuous Drain Current	.50	3.5	5.0	6.0	A
$I_D @ T_C = 100^\circ\text{C}$	Continuous Drain Current	.30	2.0	3.1	3.7	A
I_{DM}	Pulsed Drain Current ¹	14	14	24	24	A
V_{GS}	Gate-Source Voltage	± 20	± 20	± 20	± 20	V
$P_D @ T_C = 25^\circ\text{C}$	Maximum Power Dissipation	90	90	130	130	W
$P_D @ T_C = 100^\circ\text{C}$	Maximum Power Dissipation	32	32	51	51	W
Junction-To-Case	Linear Derating Factor	.87	.87	2.10	2.10	$\text{W}/^\circ\text{C}$
Junction-To-Ambient	Linear Derating Factor	.020	.020	.020	.020	$\text{W}/^\circ\text{C}$
T_J	Operating and					
T_{stg}	Storage Temperature Range	-55 to 150	-55 to 150	-55 to 150	-55 to 150	$^\circ\text{C}$
Lead Temperature	(1/16" from case for 10secs.)	300	300	300	300	$^\circ\text{C}$

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

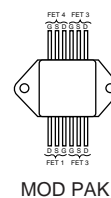
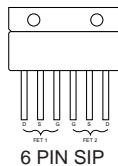
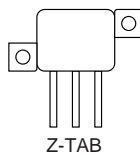
THERMAL RESISTANCE

$R_{\theta JC}$	Junction-To-Case	Max.	1.15	1.15	.48	.48	$^\circ\text{C}/\text{W}$
-----------------	------------------	------	------	------	-----	-----	---------------------------

MECHANICAL OUTLINE



PACKAGE OPTIONS



Standard Products are supplied with glass feedthroughs. For ceramic feedthroughs, add the letter "C" to the part number. Example - OMXXXXCSA
MOSFETs are also available in Z-Pak, dual and quad pak styles. Please call the factory for more information.