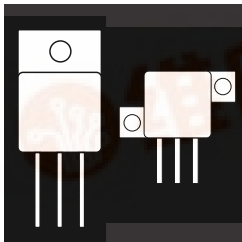


OM6017SA OM6019SA
OM6018SA OM6020SA

POWER MOSFET IN HERMETIC ISOLATED TO-254AA PACKAGE



100V Thru 500V, Up To 25 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 Levels
- Same as IRFM 150 - 450 Series
- Ceramic Feedthroughs Available

DESCRIPTION

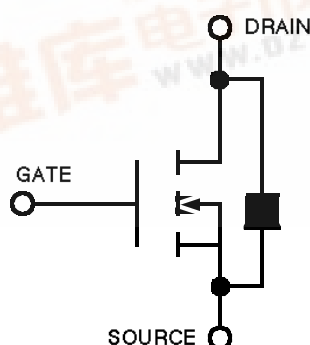
This series of hermetically packaged products feature the latest advanced MOSFET and packaging technology. They are ideally suited for Military requirements where small size, high performance and high reliability are required, and in applications such as switching power supplies, motor controls, inverters,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

MAXIMUM RATINGS @ 25 C

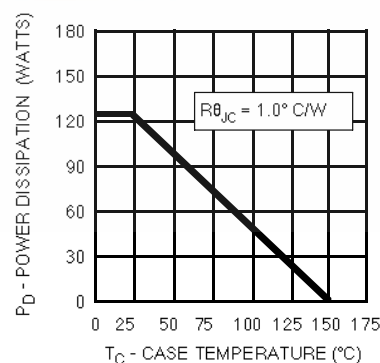
PART NUMBER	V_{DS}	$R_{DS(on)}$	I_D
OM6017SA	100 V	.065	25 A
OM6018SA	200 V	.100	25 A
OM6019SA	400 V	.33	13 A
OM6020SA	500 V	.42	11 A

3.1

SCHEMATIC



POWER RATING



ELECTRICAL CHARACTERISTICS: ($T_C = 25^\circ\text{C}$ unless otherwise noted)
STATIC P/N OM6017SA

Parameter	Min.	Typ.	Max.	Units	Test Conditions
BV_{DSS} Drain-Source Breakdown Voltage	100			V	$V_{GS} = 0$, $I_D = 250\text{ mA}$
$V_{GS(th)}$ Gate-Threshold Voltage	2.0	4.0	4.0	V	$V_{DS} = V_{GS}$, $I_D = 250\text{ mA}$
I_{DSSF} Gate-Body Leakage Forward			100	nA	$V_{GS} = +20\text{ V}$
I_{DSSR} Gate-Body Leakage Reverse			-100	nA	$V_{GS} = -20\text{ V}$
I_{DSS} Zero Gate Voltage Drain		0.1	0.25	mA	$V_{DS} = \text{Max. Rat.}$, $V_{GS} = 0$
Current		0.2	1.0	mA	$V_{DS} = 0.8\text{ Max. Rat.}$, $V_{GS} = 0$, $T_C = 125^\circ\text{C}$
$I_{D(on)}$ On-State Drain Current ¹	35			A	$V_{DS} = 2 V_{DS(on)}$, $V_{GS} = 10\text{ V}$
$V_{DS(on)}$ Static Drain-Source On-State Voltage ¹		1.1	1.3	V	$V_{GS} = 10\text{ V}$, $I_D = 20\text{ A}$
$R_{DS(on)}$ Static Drain-Source On-State Resistance ¹		0.55	0.65		$V_{GS} = 10\text{ V}$, $I_D = 20\text{ A}$
$R_{DS(on)}$ Static Drain-Source On-State Resistance ¹		.09	0.11		$V_{GS} = 10\text{ V}$, $I_D = 20\text{ A}$, $T_C = 125^\circ\text{C}$

DYNAMIC

g_{fs} Forward Transconductance ¹	9.0			S (M)	$V_{DS} = 2 V_{DS(on)}$, $I_D = 20\text{ A}$
C_{iss} Input Capacitance	2700			pF	$V_{GS} = 0$
C_{oss} Output Capacitance	1300			pF	$V_{DS} = 25\text{ V}$
C_{rss} Reverse Transfer Capacitance	470			pF	$f = 1\text{ MHz}$
$t_{d(on)}$ Turn-On Delay Time	28			ns	$V_{DS} = 30\text{ V}$, $I_D @ 20\text{ A}$
t_r Rise Time	45			ns	$R_{\theta} = 5.0\text{ W}$, $V_{GS} = 10\text{ V}$
$t_{d(off)}$ Turn-Off Delay Time	100			ns	(MOSFET switching times are essentially independent of operating temperature.)
t_f Fall Time	50			ns	

BODY-DRAIN DIODE RATINGS AND CHARACTERISTICS

I_S Continuous Source Current (Body Diode)			-40	A	Modified MOSPOWER symbol showing the integral P-N Junction rectifier.
I_{SM} Source Current ¹ (Body Diode)			-160	A	
V_{SD} Diode Forward Voltage ¹			-2.5	V	$T_C = 25^\circ\text{C}$, $I_S = -40\text{ A}$, $V_{GS} = 0$
t_r Reverse Recovery Time	400			ns	$T_J = 150^\circ\text{C}$, $I_F = I_S$, $dI_F/dt = 100\text{ A/ms}$

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

ELECTRICAL CHARACTERISTICS: ($T_C = 25^\circ\text{C}$ unless otherwise noted)
STATIC P/N OM6018SA

Parameter	Min.	Typ.	Max.	Units	Test Conditions
BV_{DSS} Drain-Source Breakdown Voltage	200			V	$V_{GS} = 0$, $I_D = 250\text{ mA}$
$V_{GS(th)}$ Gate-Threshold Voltage	2.0	4.0	4.0	V	$V_{DS} = V_{GS}$, $I_D = 250\text{ mA}$
I_{DSSF} Gate-Body Leakage Forward			100	nA	$V_{GS} = +20\text{ V}$
I_{DSSR} Gate-Body Leakage Reverse			-100	nA	$V_{GS} = -20\text{ V}$
I_{DSS} Zero Gate Voltage Drain		0.1	0.25	mA	$V_{DS} = \text{Max. Rat.}$, $V_{GS} = 0$
Current		0.2	1.0	mA	$V_{DS} = 0.8\text{ Max. Rat.}$, $V_{GS} = 0$, $T_C = 125^\circ\text{C}$
$I_{D(on)}$ On-State Drain Current ¹	30			A	$V_{DS} = 2 V_{DS(on)}$, $V_{GS} = 10\text{ V}$
$V_{DS(on)}$ Static Drain-Source On-State Voltage ¹		1.36	1.60	V	$V_{GS} = 10\text{ V}$, $I_D = 16\text{ A}$
$R_{DS(on)}$ Static Drain-Source On-State Resistance ¹		.085	.100		$V_{GS} = 10\text{ V}$, $I_D = 16\text{ A}$
$R_{DS(on)}$ Static Drain-Source On-State Resistance ¹		0.14	0.17		$V_{GS} = 10\text{ V}$, $I_D = 16\text{ A}$, $T_C = 125^\circ\text{C}$

DYNAMIC

g_{fs} Forward Transconductance ¹	10.0			S (M)	$V_{DS} = 2 V_{DS(on)}$, $I_D = 16\text{ A}$
C_{iss} Input Capacitance	2400			pF	$V_{GS} = 0$
C_{oss} Output Capacitance	600			pF	$V_{DS} = 25\text{ V}$
C_{rss} Reverse Transfer Capacitance	250			pF	$f = 1\text{ MHz}$
$t_{d(on)}$ Turn-On Delay Time	25			ns	$V_{DS} = 75\text{ V}$, $I_D @ 16\text{ A}$
t_r Rise Time	60			ns	$R_{\theta} = 5.0\text{ W}$, $V_{GS} = 10\text{ V}$
$t_{d(off)}$ Turn-Off Delay Time	85			ns	(MOSFET switching times are essentially independent of operating temperature.)
t_f Fall Time	38			ns	

BODY-DRAIN DIODE RATINGS AND CHARACTERISTICS

I_S Continuous Source Current (Body Diode)			-30	A	Modified MOSPOWER symbol showing the integral P-N Junction rectifier.
I_{SM} Source Current ¹ (Body Diode)			-120	A	
V_{SD} Diode Forward Voltage ¹			-2	V	$T_C = 25^\circ\text{C}$, $I_S = -30\text{ A}$, $V_{GS} = 0$
t_r Reverse Recovery Time	350			ns	$T_J = 150^\circ\text{C}$, $I_F = I_S$, $dI_F/dt = 100\text{ A/ms}$

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

ELECTRICAL CHARACTERISTICS: ($T_C = 25^\circ\text{C}$ unless otherwise noted)
STATIC P/N OM6019SA

Parameter	Min.	Typ.	Max.	Units	Test Conditions
BV_{DSS} Drain-Source Breakdown Voltage	400			V	$V_{GS} = 0$, $I_b = 250\text{ mA}$
$V_{GS(th)}$ Gate-Threshold Voltage	2.0		4.0	V	$V_{DS} = V_{GS}$, $I_b = 250\text{ mA}$
I_{GSSF} Gate-Body Leakage Forward			100	nA	$V_{GS} = +20\text{ V}$
I_{GSSR} Gate-Body Leakage Reverse			-100	nA	$V_{GS} = -20\text{ V}$
I_{DSS} Zero Gate Voltage Drain Current		0.1	0.25	mA	$V_{DS} = \text{Max. Rat.}$, $V_{GS} = 0$
		0.2	1.0	mA	$V_{DS} = 0.8\text{ Max. Rat.}$, $V_{GS} = 0$, $T_C = 125^\circ\text{ C}$
$I_{D(on)}$ On-State Drain Current ¹	15			A	$V_{DS} = 2 V_{DS(on)}$, $V_{GS} = 10\text{ V}$
$V_{DS(on)}$ Static Drain-Source On-State Voltage ¹		2.0	2.64	V	$V_{GS} = 10\text{ V}$, $I_b = 8.0\text{ A}$
$R_{DS(on)}$ Static Drain-Source On-State Resistance ¹		0.25	.33		$V_{GS} = 10\text{ V}$, $I_b = 8.0\text{ A}$
$R_{DS(on)}$ Static Drain-Source On-State Resistance ¹		0.50	0.66		$V_{GS} = 10\text{ V}$, $I_b = 8.0\text{ A}$, $T_C = 125\text{ C}$

DYNAMIC

g_{fs} Forward Transductance ¹	6.0			S (M)	$V_{DS} = 2 V_{DS(on)}$, $I_b = 8.0\text{ A}$
C_{iss} Input Capacitance		2900		pF	$V_{GS} = 0$
C_{oss} Output Capacitance		450		pF	$V_{DS} = 25\text{ V}$
C_{res} Reverse Transfer Capacitance		150		pF	$f = 1\text{ MHz}$
$t_{d(on)}$ Turn-On Delay Time		30		ns	$V_{DD} = 200\text{ V}$, $I_b @ 8.0\text{ A}$
t_r Rise Time		40		ns	$R_{\theta} = 5.0\text{ W}$, $V_{GS} = 10\text{ V}$
$t_{d(off)}$ Turn-Off Delay Time		80		ns	(MOSFET switching times are essentially independent of operating temperature.)
t_f Fall Time		30		ns	

BODY-DRAIN DIODE RATINGS AND CHARACTERISTICS

I_S Continuous Source Current (Body Diode)			-15	A	Modified MOSPOWER symbol showing the integral P-N Junction rectifier.
I_{SM} Source Current ¹ (Body Diode)			-60	A	
V_{SD} Diode Forward Voltage ¹			-1.6	V	$T_C = 25\text{ C}$, $I_S = -15\text{ A}$, $V_{GS} = 0$
t_r Reverse Recovery Time		600		ns	$T_J = 100\text{ C}$, $I_F = I_S$, $di_F/ds = 100\text{ A/ms}$

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

ELECTRICAL CHARACTERISTICS: ($T_C = 25^\circ\text{C}$ unless otherwise noted)
STATIC P/N OM6020SA

Parameter	Min.	Typ.	Max.	Units	Test Conditions
BV_{DSS} Drain-Source Breakdown Voltage	500			V	$V_{GS} = 0$, $I_b = 250\text{ mA}$
$V_{GS(th)}$ Gate-Threshold Voltage	2.0		4.0	V	$V_{DS} = V_{GS}$, $I_b = 250\text{ mA}$
I_{GSSF} Gate-Body Leakage Forward			100	nA	$V_{GS} = +20\text{ V}$
I_{GSSR} Gate-Body Leakage Reverse			-100	nA	$V_{GS} = -20\text{ V}$
I_{DSS} Zero Gate Voltage Drain Current		0.1	0.25	mA	$V_{DS} = \text{Max. Rat.}$, $V_{GS} = 0$
		0.2	1.0	mA	$V_{DS} = 0.8\text{ Max. Rat.}$, $V_{GS} = 0$, $T_C = 125^\circ\text{ C}$
$I_{D(on)}$ On-State Drain Current ¹	13			A	$V_{DS} = 2 V_{DS(on)}$, $V_{GS} = 10\text{ V}$
$V_{DS(on)}$ Static Drain-Source On-State Voltage ¹		2.1	2.94	V	$V_{GS} = 10\text{ V}$, $I_b = 7.0\text{ A}$
$R_{DS(on)}$ Static Drain-Source On-State Resistance ¹		0.3	0.42		$V_{GS} = 10\text{ V}$, $I_b = 7.0\text{ A}$
$R_{DS(on)}$ Static Drain-Source On-State Resistance ¹		0.66	0.88		$V_{GS} = 10\text{ V}$, $I_b = 7.0\text{ A}$, $T_C = 125\text{ C}$

DYNAMIC

g_{fs} Forward Transductance ¹	6.0			S (M)	$V_{DS} = 2 V_{DS(on)}$, $I_b = 7.0\text{ A}$
C_{iss} Input Capacitance		2600		pF	$V_{GS} = 0$
C_{oss} Output Capacitance		280		pF	$V_{DS} = 25\text{ V}$
C_{res} Reverse Transfer Capacitance		40		pF	$f = 1\text{ MHz}$
$t_{d(on)}$ Turn-On Delay Time		30		ns	$V_{DD} = 210\text{ V}$, $I_b @ 7.0\text{ A}$
t_r Rise Time		46		ns	$R_{\theta} = 5.0\text{ W}$, $V_{GS} = 10\text{ V}$
$t_{d(off)}$ Turn-Off Delay Time		75		ns	(MOSFET switching times are essentially independent of operating temperature.)
t_f Fall Time		31		ns	

BODY-DRAIN DIODE RATINGS AND CHARACTERISTICS

I_S Continuous Source Current (Body Diode)			-13	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	$T_C = 25\text{ C}$, $I_S = -13\text{ A}$, $V_{GS} = 0$
t_r 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%.

1.

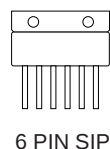
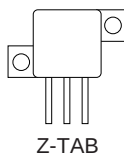
	Parameter	OM6017SA	OM6018SA	OM6019SA	OM6020SA	Units
V _{DS}	Drain-Source Voltage	100	200	400	500	V
V _{DGR}	Drain-Gate Voltage (R _{GS} = 1 M)	100	200	400	500	V
I _D @ T _C = 25°C	Continuous Drain Current ²	±25	±25	±13	±11	A
I _D @ T _C = 100°C	Continuous Drain Current ²	±16	±16	±8	±7	A
I _{DM}	Pulsed Drain Current ¹	±100	±80	±54	±40	A
V _{GS}	Gate-Source Voltage	± 20	± 20	±20	± 20	V
P _D @ T _C = 25°C	Maximum Power Dissipation	125	125	125	125	W
P _D @ T _C = 100°C	Maximum Power Dissipation	50	50	50	50	W
Junction To Case	Linear Derating Factor	1.0	1.0	1.0	1.0	W/°C
Junction To Ambient	Linear Derating Factor	.020	.020	.020	.020	W/°C
T _J	Operating and					
T _{stg}	Storage Temperature Range	-55 to 150	-55 to 150	-55 to 150	-55 to 150	°C
Lead Temperature	(1/16" from case for 10 secs.)	300	300	300	300	°C

2 Package Pin Limitation = 15 Amps

R _{thJC}	Junction-to-Case	1.0	°C/W
R _{thJA}	Junction-to-Ambient	50	°C/W Free Air Operation

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

MOD PAK



NOTES: 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-Tab, dual and quad pak styles - Please call the factory for more information.