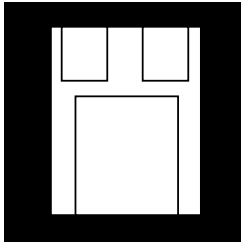


POWER MOSFET IN HERMETIC SURFACE MOUNT PACKAGE



100V Thru 1000V, Up To 30 Amp, N-Channel MOSFET In A Surface Mount Package

FEATURES

- Surface Mount Hermetic Package
- High Current/Low $R_{DS(on)}$
- Fast Switching, Low Drive Current
- Ease of Paralleling For Added Power
- Small Size
- Available Screened to MIL-S-19500, TX, TXV, S Levels

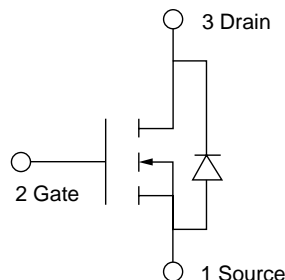
DESCRIPTION

This series of hermetic surface mount product features the latest advanced MOSFET and packaging technology. They are ideally suited for Military surface mount 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 AT $T_C = 25^\circ\text{C}$

PART NUMBER	V_{DS}	$R_{DS(on)}$	I_D
OM6034NM	100V	.065	35A
OM6035NM	200V	.095	30A
OM6036NM	500V	0.4	15A
OM6037NM	1000V	3	5A

SCHEMATIC



3.5

**ELECTRICAL CHARACTERISTICS: (T_C = 25°C unless otherwise noted)
STATIC P/N OM6034NM (100V)**

Parameter	Min.	Typ.	Max.	Units	Test Conditions
BV _{DSS} Drain-Source Breakdown Voltage	100			V	V _{GS} = 0, I _b = 250 μA
V _{GS(th)} Gate-Threshold Voltage	2.0		4.0	V	V _{DS} = V _{GS} , I _b = 250 μA
I _{SSM} Gate-Body Leakage (OM6105)			± 500	nA	V _{GS} = ± 12.8 V
I _{SS} Gate-Body Leakage (OM6005)			± 100	nA	V _{GS} = ± 20 V
I _{BSS} Zero Gate Voltage Drain Current		0.1	0.25	mA	V _{DS} = Max. Rat., V _{GS} = 0
Current		0.2	1.0	mA	V _{DS} = 0.8 Max. Rat., V _{GS} = 0, T _C = 125°C
I _{D(on)} On-State Drain Current ¹	35			A	V _{DS} = 2 V _{DSS(on)} , V _{GS} = 10 V
V _{DS(on)} Static Drain-Source On-State Voltage ¹		1.1	1.3	V	V _{GS} = 10 V, I _b = 20 A
R _{DS(on)} Static Drain-Source On-State Resistance ¹		.055	.065		V _{GS} = 10 V, I _b = 20 A
R _{DS(EN)} Static Drain-Source On-State Resistance ¹		.09	0.11		V _{GS} = 10 V, I _b = 20 A, T _C = 125°C

DYNAMIC

g _s	9.0	10	S(f)	
Forward Transductance ¹				V _{DS} = 2 V _{DSS(on)} , I _b = 20 A
C _{iss} Input Capacitance	2700		pF	V _{GS} = 0
C _{oss} Output Capacitance	1300		pF	V _{DS} = 25 V
C _{rss} Reverse Transfer Capacitance	470		pF	f = 1 MHz
t _{don} Turn-On Delay Time	28		ns	V _{DS} = 30 V, I _b = 20 A
t _r Rise Time	45		ns	R _{θj} = 5.0 Ω, V _{GS} = 10 V
t _{d(off)} Turn-Off Delay Time	100		ns	
t _f Fall Time	50		ns	

BODY-DRAIN DIODE RATINGS AND CHARACTERISTICS

I _S	-40	A		Modified MOSPOWER symbol showing the integral P-N Junction rectifier.
Continuous Source Current (Body Diode)				
I _{SM} Source Current ¹ (Body Diode)	-160	A		
V _{SD} Diode Forward Voltage ¹	-2.5	V		T _C = 25°C, I _S = -40 A, V _{GS} = 0
t _r Reverse Recovery Time	400	ns		T _J = 150°C, I _F = I _S , dI _F /dI _S = 100 A/μs

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

**ELECTRICAL CHARACTERISTICS: (T_C = 25°C unless otherwise noted)
STATIC P/N OM6035NM (200V)**

Parameter	Min.	Typ.	Max.	Units	Test Conditions
BV _{DSS} Drain-Source Breakdown Voltage	200			V	V _{GS} = 0, I _b = 250 μA
V _{GS(th)} Gate-Threshold Voltage	2.0		4.0	V	V _{DS} = V _{GS} , I _b = 250 μA
I _{SSM} Gate-Body Leakage (OM6106)			± 500	nA	V _{GS} = ± 12.8 V
I _{SS} Gate-Body Leakage (OM6006)			± 100	nA	V _{GS} = ± 20 V
I _{BSS} Zero Gate Voltage Drain Current		0.1	0.25	mA	V _{DS} = Max. Rat., V _{GS} = 0
Current		0.2	1.0	mA	V _{DS} = 0.8 Max. Rat., V _{GS} = 0, T _C = 125°C
I _{D(on)} On-State Drain Current ¹	30			A	V _{DS} = 2 V _{DSS(on)} , V _{GS} = 10 V
V _{DS(on)} Static Drain-Source On-State Voltage ¹		1.36	1.52	V	V _{GS} = 10 V, I _b = 16 A
R _{DS(on)} Static Drain-Source On-State Resistance ¹		.085	.095		V _{GS} = 10 V, I _b = 16 A
R _{DS(EN)} Static Drain-Source On-State Resistance ¹		0.14	0.17		V _{GS} = 10 V, I _b = 16 A, T _C = 125°C

DYNAMIC

g _s	10.0	12.5	S(f)	
Forward Transductance ¹				V _{DS} = 2 V _{DSS(on)} , I _b = 16 A
C _{iss} Input Capacitance	2400		pF	V _{GS} = 0
C _{oss} Output Capacitance	600		pF	V _{DS} = 25 V
C _{rss} Reverse Transfer Capacitance	250		pF	f = 1 MHz
t _{don} Turn-On Delay Time	25		ns	V _{DS} = 75 V, I _b = 16 A
t _r Rise Time	60		ns	R _{θj} = 5.0 Ω, V _{GS} = 10 V
t _{d(off)} Turn-Off Delay Time	85		ns	
t _f Fall Time	38		ns	

BODY-DRAIN DIODE RATINGS AND CHARACTERISTICS

I _S	-30	A		Modified MOSPOWER symbol showing the integral P-N Junction rectifier.
Continuous Source Current (Body Diode)				
I _{SM} Source Current ¹ (Body Diode)	-120	A		
V _{SD} Diode Forward Voltage ¹	-2	V		T _C = 25°C, I _S = -30 A, V _{GS} = 0
t _r Reverse Recovery Time	350	ns		T _J = 150°C, I _F = I _S , dI _F /dI _S = 100 A/μs

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



**ELECTRICAL CHARACTERISTICS: (T_c = 25°C unless otherwise noted)
STATIC P/N OM6036NM (500V)**

Parameter	Min.	Typ.	Max.	Units	Test Conditions
BV _{DSS} Drain-Source Breakdown Voltage	500			V	V _{GS} = 0, I _b = 250 μA
V _{GS(th)} Gate-Threshold Voltage	2.0	4.0		V	V _{DS} = V _{GS} , I _b = 250 μA
I _{GSSF} Gate-Body Leakage (OM6108)		± 500		nA	V _{GS} = ± 12.8 V
I _{GSSR} Gate-Body Leakage (OM6008)		± 100		nA	V _{GS} = ± 20 V
I _{BSS} Zero Gate Voltage Drain Current	0.1	0.25		mA	V _{DS} = Max. Rat., V _{GS} = 0
	0.2	1.0		mA	V _{DS} = 0.8 Max. Rat., V _{GS} = 0, T _c = 125°C
I _{D(on)} On-State Drain Current ¹	13			A	V _{DS} = 2 V _{DSS(on)} , V _{GS} = 10 V
V _{DS(on)} Static Drain-Source On-State Voltage ¹	2.1	2.8		V	V _{GS} = 10 V, I _b = 7.0 A
R _{DS(on)} Static Drain-Source On-State Resistance ¹	0.3	0.4			V _{GS} = 10 V, I _b = 7.0 A
R _{DS(eff)} Static Drain-Source On-State Resistance ¹	0.66	0.88			V _{GS} = 10 V, I _b = 7.0 A, T _c = 125°C

DYNAMIC

Parameter	Min.	Typ.	Max.	Units	Test Conditions
g _{fs} Forward Transconductance ¹	5.0	7.2		S(Ω)	V _{DS} = 2 V _{DSS(on)} , I _b = 7.0 A
C _{iss} Input Capacitance	2600			pF	V _{GS} = 0
C _{oss} Output Capacitance	280			pF	V _{DS} = 25 V
C _{rss} Reverse Transfer Capacitance	40			pF	f = 1 MHz
t _{d(on)} Turn-On Delay Time	30			ns	V _{DS} = 210 V, I _b = 7.0 A
t _r Rise Time	46			ns	R _g = 5.0 Ω, V _{GS} = 10 V
t _{f(off)} Turn-Off Delay Time	75			ns	
t _f Fall Time	31			ns	

BODY-DRAIN DIODE RATINGS AND CHARACTERISTICS

Parameter	Min.	Typ.	Max.	Units	Test Conditions
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	T _c = 25°C, I _S = -13 A, V _{GS} = 0
V _{SD} Diode Forward Voltage ¹			- 1.4	V	T _J = 150°C, I _F = I _S
t _r Reverse Recovery Time		700		ns	dI _F /dS = 100 A/μs

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

**ELECTRICAL CHARACTERISTICS: T_c = 25° unless otherwise noted
STATIC P/N OM6037NM (1000V)**

Parameter	Min.	Typ.	Max.	Units	Test Conditions
BV _{DSS} Drain-Source Breakdown Voltage	1000			V	V _{GS} = 0, I _b = 250 μA
V _{GS(th)} Gate-Threshold Voltage	2.0	4.0		V	V _{DS} = V _{GS} , I _b = 250 μA
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 _{BSS} Zero Gate Voltage		0.25		mA	V _{DS} = Max. Rat., V _{GS} = 0
Drain Current		1.0		mA	V _{DS} = 0.8 x Max. Rat., T _c = 125°C
I _{D(on)} On-State Drain Current	5.0			A	V _{DS} > I _{D(on)} x R _{DS(on)} Max., V _{GS} = 10 V
R _{DS(on)} Static Drain-Source On-State Resistance ¹		3.0			V _{GS} = 10 V, I _b = 2.5 A
R _{DS(eff)} Static Drain-Source On-State Resistance ¹		6.0			V _{GS} = 10 V, I _b = 2.5 A, T _c = 100°C

DYNAMIC

Parameter	Min.	Typ.	Max.	Units	Test Conditions
g _{fs} Forward Transconductance ¹	4.0			S(Ω)	V _{DS} = 25 V _{DSS(on)} , I _b = 2.5 A
C _{iss} Input Capacitance			2600	pF	V _{GS} = 0
C _{oss} Output Capacitance			350	pF	V _{DS} = 25 V
C _{rss} Reverse Transfer Capacitance			150	pF	f = 1 MHz
T _{d(on)} Turn-On Delay Time			65	ns	
t _r Rise Time			55	ns	
T _{r(off)} Off-Voltage Rise Time			62	ns	
t _f Fall Time			25	ns	

BODY-DRAIN DIODE RATINGS AND CHARACTERISTICS

Parameter	Min.	Typ.	Max.	Units	Test Conditions
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	T _c = 25°C, I _S = 6 A, V _{GS} = 0
V _{SD} Diode Forward Voltage ¹			2.5	V	I _F = I _S , V _{DS} = 100 V
t _r Reverse Recovery Time		1100		ns	dI _F /dS = 100 A/μs

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



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

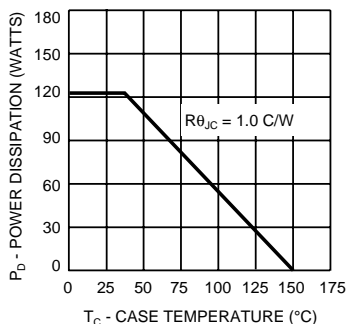
Parameter	OM6034	OM6035	OM6036	OM6037	Units
V_{DS} Drain-Source Voltage	100	200	500	1000	V
V_{DGR} Drain-Gate Voltage ($R_{GS} = 1M$)	100	200	500	1000	V
$I_D @ T_c = 25^\circ\text{C}$ Continuous Drain Current	30	25	11	4	A
V_{GS} Continuous Gate-Source Voltage	± 20	± 20	± 20	± 20	V
V_{GSM} Gate-Source Voltage Non-Repetitive ($t_p = 50 \mu\text{s}$)	± 40	± 40	± 40	± 40	V
I_{DM} Pulsed Drain Current ¹	105	60	65	17	A
$P_D @ T_c = 25^\circ\text{C}$ Max. Power Dissipation	100	100	100	100	W
$P_D @ T_c = 100^\circ\text{C}$ Max. Power Dissipation	35	35	35	35	W
Junction to Case Linear Derating Factor ¹	1.0	1.0	1.0	1.0	W/ $^\circ\text{C}$
Junction to Ambient Linear Derating Factor	.025	.025	.025	.025	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 (At case for 5 seconds)	225	225	225	225	$^\circ\text{C}$

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

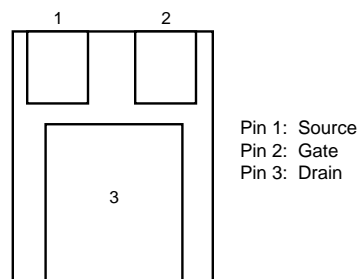
THERMAL RESISTANCE (MAXIMUM) at $T_A = 25^\circ\text{C}$

$R_{\theta JC}$ Junction-to-Case	1.0	$^\circ\text{C/W}$
$R_{\theta JA}$ Junction-to-Ambient	40	$^\circ\text{C/W}$ Free Air Operation

POWER DERATING



PIN CONNECTION



MECHANICAL OUTLINE

