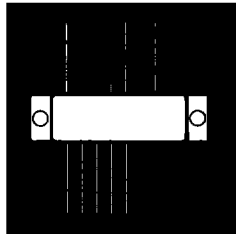


FOUR UNCOMMITTED MOSFETS IN ONE HERMETIC ISOLATED PACKAGE



Four Uncommitted 100 V To 500 V, 4 To 8 Amp. N-Channel Power MOSFETs In One Package

FEATURES

- Isolated Hermetic Metal Package
- Small Mechanical Outline
- Fast Switching, Low Drive Current
- Ease Of Paralleling For Added Power
- Low $R_{DS(on)}$
- Available Hi-Rel Screened To MIL-S-19500, TX, TXV And S Levels

DESCRIPTION

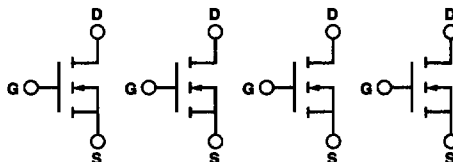
This series of hermetically packaged products feature the latest advanced MOSFET and packaging technology. They are ideally suited for Military requirements where small size, high performance and high reliability are required, and in applications such as switching power supplies, motor controls, inverters,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

MAXIMUM RATINGS (Per Device)

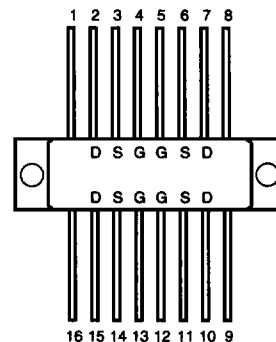
PART NUMBER	V_{DS}	$R_{DS(on)}$	I_D
OM6405SD	100 V	.20 Ω	14 A
OM6406SD	200 V	.44 Ω	9 A
OM6407SD	400 V	1.05 Ω	5.5 A
OM6408SD	500 V	1.60 Ω	4.5 A

2.1

SCHEMATIC



PIN CONNECTION



Pin 1, 8, 9 & 16 Are Uncommitted.

**ELECTRICAL CHARACTERISTICS: (T_c = 25°C unless otherwise noted)
STATIC P/N OM6405SD (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 _{DSS} Gate-Body Leakage (OM6101)		± 500		nA	V _{GS} = ± 12.8 V
I _{DSS} Gate-Body Leakage (OM6001)		± 100		nA	V _{GS} = ± 20 V
I _{DSS} 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	14			A	V _{DS} ≥ 2 V _{DSS(on)} , V _{GS} = 10 V
V _{DS(on)} Static Drain-Source On-State Voltage ¹		1.2	1.60	V	V _{GS} = 10 V, I _b = 8 A
R _{DSS(on)} Static Drain-Source On-State Resistance ¹		0.20		Ω	V _{GS} = 10 V, I _b = 8 A
R _{D(on)} Static Drain-Source On-State Resistance ¹		0.40		Ω	V _{GS} = 10 V, I _b = 8 A, T _c = 125°C

DYNAMIC

g _m	Forward Transconductance ¹	4.0		S(D)	V _{DS} ≥ 2 V _{DSS(on)} , I _b = 8 A
C _{iss} Input Capacitance	750			pF	V _{GS} = 0
C _{oss} Output Capacitance	250			pF	V _{DS} = 25 V
C _{rss} Reverse Transfer Capacitance	100			pF	f = 1 MHz
t _{turn(on)} Turn-On Delay Time	15			ns	V _{DS} = 30 V, I _b = 8 A
t _r Rise Time	35			ns	R _θ = 7.5 Ω, V _{GS} = 10 V
t _{turn(off)} Turn-Off Delay Time	38			ns	
t _f Fall Time	23			ns	

BODY-DRAIN DIODE RATINGS AND CHARACTERISTICS

I _S	Continuous Source Current (Body Diode)	-14	A	Modified MOSPOWER symbol showing the integral P-N Junction rectifier.
I _{SM} <th>Source Current¹ (Body Diode)</th> <td>-56</td> <td>A</td> <td></td>	Source Current ¹ (Body Diode)	-56	A	
V _{SD} <th>Diode Forward Voltage¹</th> <td>-2.5</td> <td>V</td> <td>T_c = 25°C, I_S = -14 A, V_{GS} = 0</td>	Diode Forward Voltage ¹	-2.5	V	T _c = 25°C, I _S = -14 A, V _{GS} = 0
t _r <th>Reverse Recovery Time</th> <td>100</td> <td>ns</td> <td>T_c = 25°C, I_S = -12 A, V_{GS} = 0</td>	Reverse Recovery Time	100	ns	T _c = 25°C, I _S = -12 A, V _{GS} = 0
				T _J = 150°C, I _r = I _S , dI _r /ds = 100 A/μs

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

**ELECTRICAL CHARACTERISTICS: (T_c = 25°C unless otherwise noted)
STATIC P/N OM6406SD (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 _{DSS} Gate-Body Leakage (OM6102)		± 500		nA	V _{GS} = ± 12.8 V
I _{DSS} Gate-Body Leakage (OM6002)		± 100		nA	V _{GS} = ± 20 V
I _{DSS} 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	9.0			A	V _{DS} ≥ 2 V _{DSS(on)} , V _{GS} = 10 V
V _{DS(on)} Static Drain-Source On-State Voltage ¹		1.25	2.2	V	V _{GS} = 10 V, I _b = 5.0 A
R _{DSS(on)} Static Drain-Source On-State Resistance ¹		0.44		Ω	V _{GS} = 10 V, I _b = 5.0 A
R _{D(on)} Static Drain-Source On-State Resistance ¹		0.88		Ω	V _{GS} = 10 V, I _b = 5.0 A, T _c = 125°C

DYNAMIC

g _m	Forward Transconductance ¹	3.0	5.8	S(D)	V _{DS} ≥ 2 V _{DSS(on)} , I _b = 5.0 A
C _{iss} Input Capacitance	780			pF	V _{GS} = 0
C _{oss} Output Capacitance	150			pF	V _{DS} = 25 V
C _{rss} Reverse Transfer Capacitance	55			pF	f = 1 MHz
t _{turn(on)} Turn-On Delay Time	9			ns	V _{DS} = 75V, I _b = 5.0 A
t _r Rise Time	18			ns	R _θ = 7.5 Ω, V _{GS} = 10 V
t _{turn(off)} Turn-Off Delay Time	45			ns	
t _f Fall Time	27			ns	

BODY-DRAIN DIODE RATINGS AND CHARACTERISTICS

I _S	Continuous Source Current (Body Diode)	-9	A	Modified MOSPOWER symbol showing the integral P-N Junction rectifier.
I _{SM} <th>Source Current¹ (Body Diode)</th> <td>-36</td> <td>A</td> <td></td>	Source Current ¹ (Body Diode)	-36	A	
V _{SD} <th>Diode Forward Voltage¹</th> <td>-2</td> <td>V</td> <td>T_c = 25°C, I_S = -9 A, V_{GS} = 0</td>	Diode Forward Voltage ¹	-2	V	T _c = 25°C, I _S = -9 A, V _{GS} = 0
t _r <th>Reverse Recovery Time</th> <td>250</td> <td>ns</td> <td>T_c = 25°C, I_S = -8 A, V_{GS} = 0</td>	Reverse Recovery Time	250	ns	T _c = 25°C, I _S = -8 A, V _{GS} = 0
				T _J = 150°C, I _r = I _S , dI _r /ds = 100 A/μs

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

**ELECTRICAL CHARACTERISTICS: (T_C = 25°C unless otherwise noted)
STATIC P/N OM6407SD (400V)**

Parameter	Min.	Typ.	Max.	Units	Test Conditions
BV _{DSS} Drain-Source Breakdown Voltage	400			V	V _{GS} = 0, I _B = 250 μA
V _{GS(th)} Gate-Threshold Voltage	2.0	4.0	4.0	V	V _{DS} = V _{GS} , I _B = 250 μA
I _{DSS} Gate-Body Leakage (OM6103)			± 500	nA	V _{GS} = ± 12.8 V
I _{DSS} Gate-Body Leakage (OM6003)			± 100	nA	V _{GS} = ± 20 V
I _{DSS} Zero Gate Voltage Drain Current	0.1	0.25	0.25	mA	V _{GS} = Max. Rat., V _{DS} = 0
I _{DSS} Current	0.2	1.0	1.0	mA	V _{GS} = 0.8 Max. Rat., V _{DS} = 0, T _C = 125°C
I _{ON(ON)} On-State Drain Current ¹	5.5			A	V _{GS} ≥ 2 V _{DSS(ON)} , V _{DS} = 10 V
V _{DSS(ON)} Static Drain-Source On-State Voltage ¹		2.4	3.15	V	V _{GS} = 10 V, I _B = 3.0 A
R _{DSS(ON)} Static Drain-Source On-State Resistance ¹			1.05	Ω	V _{GS} = 10 V, I _B = 3.0 A
R _{DSS(ON)} Static Drain-Source On-State Resistance ¹			2.0	Ω	V _{GS} = 10 V, I _B = 3.0 A, T _C = 125°C

DYNAMIC

Parameter	Min.	Typ.	Max.	Units	Test Conditions
G _{th} Forward Transconductance ¹	3.0	3.6		S(t)	V _{GS} ≥ 2 V _{DSS(ON)} , I _B = 3.0 A
C _{iss} Input Capacitance		700		pF	V _{GS} = 0
C _{oss} Output Capacitance		70		pF	V _{GS} = 25 V
C _{res} Reverse Transfer Capacitance		20		pF	f = 1 MHz
t _{turn(ON)} Turn-On Delay Time		18		ns	V _{DS} = 175 V, I _B = 3.0 A
t _r Rise Time		20		ns	R _θ = 10 Ω, V _{GS} = 10 V
t _{turn(OFF)} Turn-Off Delay Time		40		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)			-5.5	A	Modified MOSPOWER symbol showing the integral P-N Junction rectifier.
I _{SM} Source Current ¹ (Body Diode)			-22	A	
V _{SD} Diode Forward Voltage ¹			-1.6	V	T _C = 25°C, I _S = -5.5 A, V _{GS} = 0
t _r Reverse Recovery Time		470		ns	T _C = 25°C, I _S = -4.5 A, V _{GS} = 0, T _J = 150°C, I _F = I _S , dI _F /dt = 100 A/μs

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

**ELECTRICAL CHARACTERISTICS: (T_C = 25°C unless otherwise noted)
STATIC P/N OM6408SD (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	4.0	V	V _{DS} = V _{GS} , I _B = 250 μA
I _{DSS} Gate-Body Leakage (OM6104)			± 500	nA	V _{GS} = ± 12.8 V
I _{DSS} Gate-Body Leakage (OM6004)			± 100	nA	V _{GS} = ± 20 V
I _{DSS} Zero Gate Voltage Drain Current	0.1	0.25	0.25	mA	V _{GS} = Max. Rat., V _{DS} = 0
I _{DSS} Current	0.2	1.0	1.0	mA	V _{GS} = 0.8 Max. Rat., V _{DS} = 0, T _C = 125°C
I _{ON(ON)} On-State Drain Current ¹	4.5			A	V _{GS} ≥ 2 V _{DSS(ON)} , V _{DS} = 10 V
V _{DSS(ON)} Static Drain-Source On-State Voltage ¹		3.25	4.00	V	V _{GS} = 10 V, I _B = 2.5 A
R _{DSS(ON)} Static Drain-Source On-State Resistance ¹			1.6	Ω	V _{GS} = 10 V, I _B = 2.5 A
R _{DSS(ON)} Static Drain-Source On-State Resistance ¹			2.9	Ω	V _{GS} = 10 V, I _B = 2.5 A, T _C = 125°C

DYNAMIC

Parameter	Min.	Typ.	Max.	Units	Test Conditions
G _{th} Forward Transconductance ¹	2.5	2.8		S(t)	V _{GS} ≥ 2 V _{DSS(ON)} , I _B = 2.5 A
C _{iss} Input Capacitance		700		pF	V _{GS} = 0
C _{oss} Output Capacitance		90		pF	V _{GS} = 25 V
C _{res} Reverse Transfer Capacitance		30		pF	f = 1 MHz
t _{turn(ON)} Turn-On Delay Time		18		ns	V _{DS} = 225 V, I _B = 2.5 A
t _r Rise Time		20		ns	R _θ = 7.5 Ω, V _{GS} = 10 V
t _{turn(OFF)} Turn-Off Delay Time		42		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)			-4.5	A	Modified MOSPOWER symbol showing the integral P-N Junction rectifier.
I _{SM} Source Current ¹ (Body Diode)			-18	A	
V _{SD} Diode Forward Voltage ¹			-1.4	V	T _C = 25°C, I _S = -4.5 A, V _{GS} = 0
t _r Reverse Recovery Time		430		ns	T _C = 25°C, I _S = -4 A, V _{GS} = 0, T _J = 150°C, I _F = I _S , dI _F /dt = 100 A/μs

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

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

Parameter (Per Device)	OM6405	OM6406	OM6407	OM6408	Units
V_{DS} Drain-Source Voltage	100	200	400	500	V
V_{DGR} Drain-Gate Voltage ($R_{GS} = 1\text{ M}\Omega$)	100	200	400	500	V
$I_D @ T_C = 25^\circ\text{C}$ Continuous Drain Current ²	± 14	± 9	± 5.5	± 4.5	A
$I_D @ T_C = 100^\circ\text{C}$ Continuous Drain Current ²	± 9.3	± 6	± 3.5	± 3	A
I_{DM} Pulsed Drain Current ¹	± 30	± 25	± 20	± 18	A
V_{GS} Gate-Source Voltage	± 20	± 20	± 20	± 20	V
$P_D @ T_C = 25^\circ\text{C}$ Maximum Power Dissipation	50	50	50	50	W
$P_D @ T_C = 100^\circ\text{C}$ Maximum Power Dissipation	20	20	20	20	W
Junction-To-Case Linear Derating Factor ¹	0.4	0.4	0.4	0.4	W/ $^\circ\text{C}$
Junction-To-Ambient Linear Derating Factor	.0125	.0125	.0125	.0125	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 10 secs.)	300	300	300	300	$^\circ\text{C}$

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

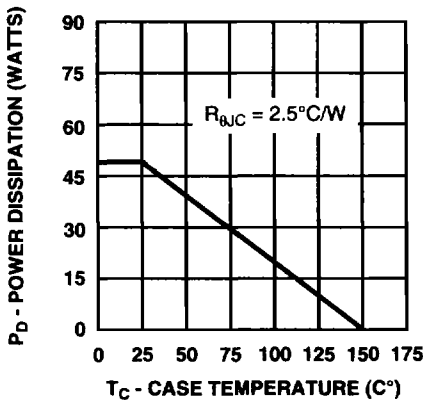
2 Package Pin Limitation = 16 Amps

THERMAL RESISTANCE (Per Device)

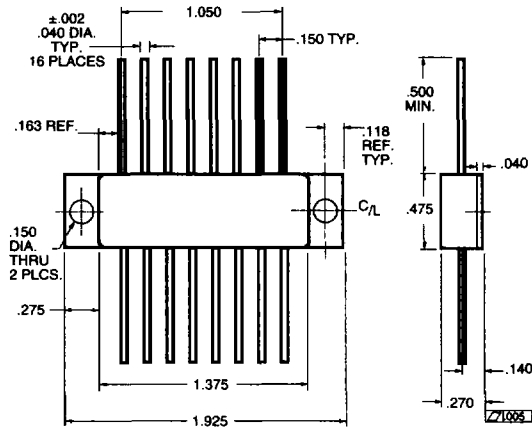
$R_{\theta JC}$ Junction-to-Case	2.5	$^\circ\text{C/W}$
$R_{\theta JA}$ Junction-to-Ambient	80	$^\circ\text{C/W}$ Free Air Operation

2.1

POWER DERATING



MECHANICAL OUTLINE



Unless otherwise specified, the general tolerance is $\pm .010$.