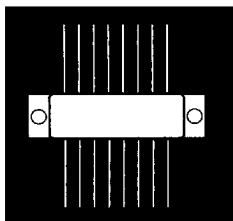


FOUR UNCOMMITTED MOSFETS IN ONE HERMETIC ISOLATED PACKAGE



**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

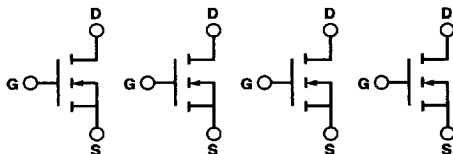
This series of hermetically packaged products feature the latest advanced MOSFET and packaging technology. They are ideally suited for Military requirements where small size, high performance and high reliability are required, and in applications such as switching power supplies, motor controls, inverters,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

MAXIMUM RATINGS (Per Device)

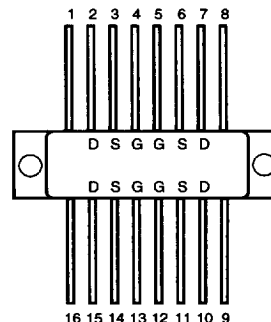
PART NUMBER	V_{DS}	$R_{DS(on)}$	I_D
OM6405SD	100 V	.20 Ω	14 A
OM6406SD	200 V	.44 Ω	9 A
OM6407SD	400 V	1.05 Ω	5.5 A
OM6408SD	500 V	1.60 Ω	4.5 A

2.1

SCHEMATIC



PIN CONNECTION



Pin 1, 8, 9 & 16 Are Uncommitted.

6789073 0001098 887

4 11 R3
Supersedes 8 10 R2

2.1 - 111

Omnirel

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 _D = 250 μA
V _{GS(th)} Gate-Threshold Voltage	2.0	4.0		V	V _{DS} = V _{GS} , I _D = 250 μA
I _{GSS} Gate-Body Leakage (OM6101)			± 500	nA	V _{GS} = ± 12.8 V
I _{BSS} 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 _{ON(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 _D = 8 A
R _{DS(on)} Static Drain-Source On-State Resistance ¹		0.20		Ω	V _{GS} = 10 V, I _D = 8 A
R _{DS(on)} Static Drain-Source On-State Resistance ¹			0.40	Ω	V _{GS} = 10 V, I _D = 8 A, T _C = 125°C

DYNAMIC

g _{fs} Forward Transconductance ¹	4.0			S (Ω)	V _{DS} ≥ 2 V _{DSS(on)} , I _D = 8 A
C _{iss} Input Capacitance		750		pF	V _{GS} = 0
C _{oss} Output Capacitance		250		pF	V _{GS} = 25 V
C _{rss} Reverse Transfer Capacitance		100		pF	f = 1 MHz
t _{don} Turn-On Delay Time		15		ns	V _{DD} = 30 V, I _D = 8 A
t _r Rise Time		35		ns	R _θ = 7.5 Ω, V _{GS} = 10 V
t _{doff} 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} Source Current ¹ (Body Diode)		-56		A	
V _{SD} Diode Forward Voltage ¹			-2.5	V	T _C = 25°C, I _S = -14 A, V _{GS} = 0 T _C = 25°C, I _S = -12 A, V _{GS} = 0
t _{rr} Reverse Recovery Time	100			ns	T _J = 150°C, I _F = I _S , dI _F /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 _D = 250 μA
V _{GS(th)} Gate-Threshold Voltage	2.0		4.0	V	V _{DS} = V _{GS} , I _D = 250 μA
I _{GSS} Gate-Body Leakage (OM6102)			± 500	nA	V _{GS} = ± 12.8 V
I _{BSS} 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 _{ON(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 _D = 5.0 A
R _{DS(on)} Static Drain-Source On-State Resistance ¹			0.44	Ω	V _{GS} = 10 V, I _D = 5.0 A
R _{DS(on)} Static Drain-Source On-State Resistance ¹			0.88	Ω	V _{GS} = 10 V, I _D = 5.0 A, T _C = 125°C

DYNAMIC

g _{fs} Forward Transconductance ¹	3.0	5.8		S (Ω)	V _{DS} ≥ 2 V _{DSS(on)} , I _D = 5.0 A
C _{iss} Input Capacitance		780		pF	V _{GS} = 0
C _{oss} Output Capacitance		150		pF	V _{GS} = 25 V
C _{rss} Reverse Transfer Capacitance		55		pF	f = 1 MHz
t _{don} Turn-On Delay Time		9		ns	V _{DD} = 75V, I _D = 5.0 A
t _r Rise Time		18		ns	R _θ = 7.5 Ω, V _{GS} = 10 V
t _{doff} 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} Source Current ¹ (Body Diode)		-36		A	
V _{SD} Diode Forward Voltage ¹			-2	V	T _C = 25°C, I _S = -9 A, V _{GS} = 0 T _C = 25°C, I _S = -8 A, V _{GS} = 0
t _{rr} Reverse Recovery Time		250		ns	T _J = 150°C, I _F = I _S , dI _F /ds = 100 A/μs

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

**ELECTRICAL CHARACTERISTICS: ($T_C = 25^\circ\text{C}$ unless otherwise noted)
STATIC P/N OM6407SD (400V)**

Parameter	Min.	Typ.	Max.	Units	Test Conditions
BV_{DS} Drain-Source Breakdown Voltage	400			V	$V_{GS} = 0$, $I_D = 250\ \mu\text{A}$
$V_{DS(on)}$ Gate-Threshold Voltage	2.0		4.0	V	$V_{DS} = V_{GS}$, $I_D = 250\ \mu\text{A}$
I_{DSS} Gate-Body Leakage (OM6103)			± 500	nA	$V_{GS} = \pm 12.8\ \text{V}$
I_{DSS} Gate-Body Leakage (OM6003)			± 100	nA	$V_{GS} = \pm 20\ \text{V}$
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	$V_{DS} = 0.8\ \text{Max. Rat.}$, $V_{GS} = 0$, $T_C = 125^\circ\text{C}$
$I_{ON(ON)}$ On-State Drain Current ¹	5.5			A	$V_{DS} \geq 2\ V_{DS(on)}$, $V_{GS} = 10\ \text{V}$
$V_{DS(on)}$ Static Drain-Source On-State Voltage ¹		2.4	3.15	V	$V_{GS} = 10\ \text{V}$, $I_D = 3.0\ \text{A}$
$R_{DS(on)}$ Static Drain-Source On-State Resistance ¹			1.05	Ω	$V_{GS} = 10\ \text{V}$, $I_D = 3.0\ \text{A}$
$R_{DS(on)}$ Static Drain-Source On-State Resistance ¹			2.0	Ω	$V_{GS} = 10\ \text{V}$, $I_D = 3.0\ \text{A}$, $T_C = 125^\circ\text{C}$

DYNAMIC

g_{fs} Forward Transconductance ¹	3.0	3.6		S(τ)	$V_{DS} \geq 2\ V_{DS(on)}$, $I_D = 3.0\ \text{A}$
C_{iss} Input Capacitance		700		pF	$V_{GS} = 0$
C_{oss} Output Capacitance		70		pF	$V_{DS} = 25\ \text{V}$
C_{rss} Reverse Transfer Capacitance		20		pF	$f = 1\ \text{MHz}$
$t_{d(on)}$ Turn-On Delay Time		18		ns	$V_{DD} = 175\ \text{V}$, $I_D = 3.0\ \text{A}$
t_r Rise Time		20		ns	$R_g = 10\ \Omega$, $V_{GS} = 10\ \text{V}$
$t_{d(off)}$ Turn-Off Delay Time		40		ns	
t_f Fall Time		25		ns	

BODY-DRAIN DIODE RATINGS AND CHARACTERISTICS

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		$T_C = 25^\circ\text{C}$, $I_S = -5.5\ \text{A}$, $V_{GS} = 0$ $T_C = 25^\circ\text{C}$, $I_S = -4.5\ \text{A}$, $V_{GS} = 0$
t_r Reverse Recovery Time		470	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: ($T_C = 25^\circ\text{C}$ unless otherwise noted)
STATIC P/N OM6408SD (500V)**

Parameter	Min.	Typ.	Max.	Units	Test Conditions
BV_{DS} Drain-Source Breakdown Voltage	500			V	$V_{GS} = 0$, $I_D = 250\ \mu\text{A}$
$V_{DS(on)}$ Gate-Threshold Voltage	2.0		4.0	V	$V_{DS} = V_{GS}$, $I_D = 250\ \mu\text{A}$
I_{DSS} Gate-Body Leakage (OM6104)			± 500	nA	$V_{GS} = \pm 12.8\ \text{V}$
I_{DSS} Gate-Body Leakage (OM6004)			± 100	nA	$V_{GS} = \pm 20\ \text{V}$
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	$V_{DS} = 0.8\ \text{Max. Rat.}$, $V_{GS} = 0$, $T_C = 125^\circ\text{C}$
$I_{ON(ON)}$ On-State Drain Current ¹	4.5			A	$V_{DS} \geq 2\ V_{DS(on)}$, $V_{GS} = 10\ \text{V}$
$V_{DS(on)}$ Static Drain-Source On-State Voltage ¹		3.25	4.00	V	$V_{GS} = 10\ \text{V}$, $I_D = 2.5\ \text{A}$
$R_{DS(on)}$ Static Drain-Source On-State Resistance ¹			1.6	Ω	$V_{GS} = 10\ \text{V}$, $I_D = 2.5\ \text{A}$
$R_{DS(on)}$ Static Drain-Source On-State Resistance ¹			3.3	Ω	$V_{GS} = 10\ \text{V}$, $I_D = 2.5\ \text{A}$, $T_C = 125^\circ\text{C}$

DYNAMIC

g_{fs} Forward Transconductance ¹	2.5	2.8		S(τ)	$V_{DS} \geq 2\ V_{DS(on)}$, $I_D = 2.5\ \text{A}$
C_{iss} Input Capacitance		700		pF	$V_{GS} = 0$
C_{oss} Output Capacitance		90		pF	$V_{DS} = 25\ \text{V}$
C_{rss} Reverse Transfer Capacitance		30		pF	$f = 1\ \text{MHz}$
$t_{d(on)}$ Turn-On Delay Time		18		ns	$V_{DD} = 225\ \text{V}$, $I_D = 2.5\ \text{A}$
t_r Rise Time		20		ns	$R_g = 7.5\ \Omega$, $V_{GS} = 10\ \text{V}$
$t_{d(off)}$ Turn-Off Delay Time		42		ns	
t_f Fall Time		25		ns	

BODY-DRAIN DIODE RATINGS AND CHARACTERISTICS

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		$T_C = 25^\circ\text{C}$, $I_S = -4.5\ \text{A}$, $V_{GS} = 0$ $T_C = 25^\circ\text{C}$, $I_S = -4\ \text{A}$, $V_{GS} = 0$
t_r Reverse Recovery Time		430	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°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 MΩ)	100	200	400	500	V
I _D @ T _C = 25°C	Continuous Drain Current ²	±14	±9	±5.5	±4.5	A
I _D @ T _C = 100°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°C	Maximum Power Dissipation	50	50	50	50	W
P _D @ T _C = 100°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/°C
Junction-To-Ambient	Linear Derating Factor	.0125	.0125	.0125	.0125	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

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

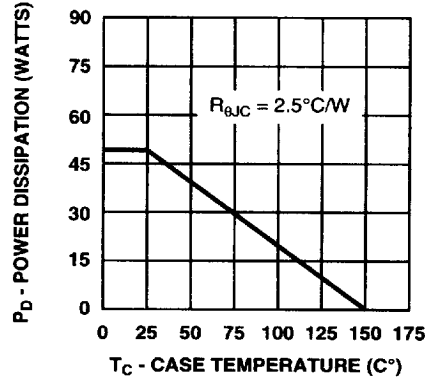
2 Package Pin Limitation = 16 Amps

THERMAL RESISTANCE (Per Device)

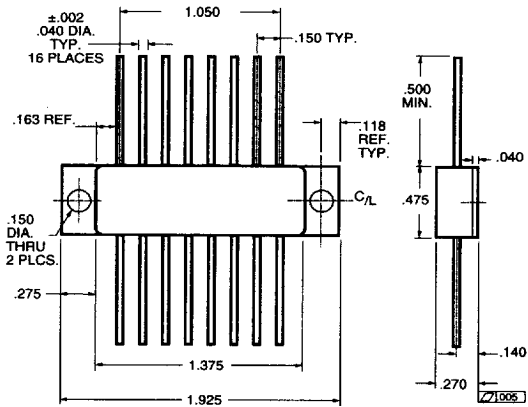
R _{thJC}	Junction-to-Case	2.5	°C/W
R _{thJA}	Junction-to-Ambient	80	°C/W Free Air Operation

2.1

POWER DERATING



MECHANICAL OUTLINE



Unless otherwise specified, the general tolerance is ±.010.

2.1-114