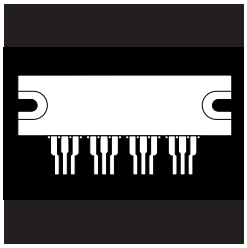
FOUR UNCOMMITTED POWER MOSFETS IN ISOLATED LOW PROFILE PLASTIC PACKAGE



Four Uncommitted 100V To 1000V, Up To 30A N-Channel Power MOSFETs In One Package

FEATURES

- Isolated High Density Package
- High Current
- Fast Switching, Low Drive Current
- Ease of Paralleling For Added Power
- Low $R_{DS(on)}$
- P-Channel Also Available (up to 200V)

DESCRIPTION

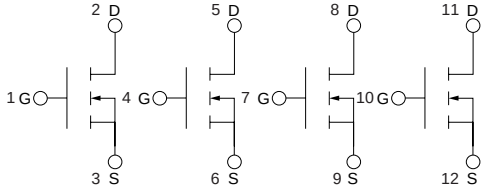
This series of Industrial products feature the latest advanced MOSFET and packaging technology. They are ideally suited where small size, high performance and high reliability are required, in applications such as switching power supplies, motor controls, inverters, choppers, audio amplifiers and high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

MAXIMUM RATINGS (Per MOSFET)

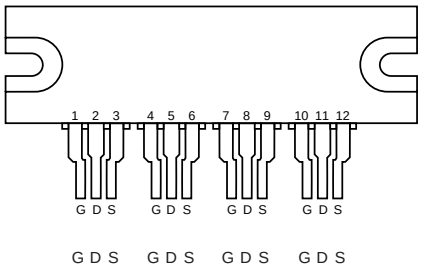
PART NUMBER	V_{DS}	$R_{DS(on)}$	I_D
OM6223SP2	100V	.065	30A
OM6224SP2	200V	0.1	25A
OM6225SP2	500V	0.4	12A
OM6226SP2	1000V	3	4A

3.1

SCHEMATIC



PIN CONNECTION



Omnirel

ELECTRICAL CHARACTERISTICS: Per MOSFET
OM6223SP2 (100V) (T_C = 25° unless otherwise noted)

Characteristic		Symbol	Min.	Max.	Units
OFF CHARACTERISTICS					
Drain-Source Breakdown Voltage (V_{GS} = 0, I_D = 0.25mA)		$V_{(BR)DSS}$	100	-	Vdc
Zero Gate Voltage Drain Current		I_{DSS}			mAdc
(V_{DS} = Rated V_{DSS}, V_{GS} = 0)			-	0.2	
(V_{DS} = Rated V_{DSS}, V_{GS} = 0, T_J = 125°C)			-	1	
Gate-Body Leakage Current, Forward (V_{GSF} = 20 Vdc, V_{DS} = 0)		I_{GSSF}	-	100	nAdc
Gate-Body Leakage Current, Reverse (V_{GSR} = 20 Vdc, V_{DS} = 0)		I_{GSSR}	-	100	nAdc
ON CHARACTERISTICS*					
Gate Threshold Voltage		$V_{GS(th)}$			Vdc
(V_{DS} = V_{GS}, I_D = 1mA)			2	4	
(T_J = 100°C)			1.5	3.5	
Static Drain-Source On-Resistance (V_{GS} = 10 Vdc, I_D = 20 Adc)		$r_{DS(on)}$	-	0.065	Ohm
Drain-Source-On-Voltage (V_{GS} = 10 V)		$V_{DS(on)}$			Vdc
(I_D = 30 Adc)			-	2.3	
(I_D = 20 Adc, T_J = 100°C)			-	2.6	
Forward Transconductance (V_{DS} = 15 V, I_D = 20A)		g_{FS}	10	-	mhos
DYNAMIC CHARACTERISTICS					
Input Capacitance	(V_{DS} = 25V,	C_{iss}	2800 (Typ)	-	pF
Output Capacitance	V_{GS} = 0,	C_{oss}	1200 (Typ)	-	
Reverse Transfer Capacitance	f = 1MHz)	C_{rss}	400 (Typ)	-	
SWITCHING CHARACTERISTICS* (T_J = 100°C)					
Turn-On Delay Time	(V_{DD} = 50V,	$t_{d(on)}$	-	40	ns
Rise Time	I_D = 20A,	t_r	-	120	
Turn-Off Delay Time	R_{gen} = 4.7 Ohms)	$t_{d(off)}$	-	150	
Fall Time		t_f	-	100	
Total Gate Charge	(V_{DS} = 80V,	Q_g	105 (Typ)	130	nC
Gate-Source Charge	I_D = 30A,	Q_{gs}	15 (Typ)	28	
Gate-Drain Charge	V_{GS} = 10V)	Q_{gd}	45 (Typ)	70	
SOURCE-DRAIN DIODE CHARACTERISTICS*					
Forward On-Voltage	(I_S = 30A,	V_{SD}	-	2.2	Vdc
Forward Turn-On Time	V_{GS} = 0)	t_{on}	Limited By Stray Inductance		
Reverse Recovery Time		t_{rr}	200 (Typ)	-	ns

***Pulse Test:** Pulse Width = 300μs, Duty Cycle 2%.

ELECTRICAL CHARACTERISTICS: Per MOSFET
OM6224SP2 (200V) (T_C = 25° unless otherwise noted)

Characteristic		Symbol	Min.	Max.	Units
OFF CHARACTERISTICS					
Drain-Source Breakdown Voltage (V_{GS} = 0, I_D = 0.25mA)		$V_{(BR)DSS}$	200	-	Vdc
Zero Gate Voltage Drain Current		I_{DSS}			mAdc
(V_{DS} = Rated V_{DSS}, V_{GS} = 0)			-	0.2	
(V_{DS} = Rated V_{DSS}, V_{GS} = 0, T_J = 125°C)			-	1	
Gate-Body Leakage Current, Forward (V_{GSF} = 20 Vdc, V_{DS} = 0)		I_{GSSF}	-	100	nAdc
Gate-Body Leakage Current, Reverse (V_{GSR} = 20 Vdc, V_{DS} = 0)		I_{GSSR}	-	100	nAdc
ON CHARACTERISTICS*					
Gate Threshold Voltage		$V_{GS(th)}$			Vdc
(V_{DS} = V_{GS}, I_D = 1mA)			2	4	
(T_J = 100°C)			1.5	3.5	
Static Drain-Source On-Resistance (V_{GS} = 10 Vdc, I_D = 16 Adc)		$r_{DS(on)}$	-	0.1	Ohm
Drain-Source-On-Voltage (V_{GS} = 10 V)		$V_{DS(on)}$			Vdc
(I_D = 25 Adc)			-	3.5	
(I_D = 16 Adc, T_J = 100°C)			-	3.2	
Forward Transconductance (V_{DS} = 15 V, I_D = 16A)		g_{FS}	10	-	mhos
DYNAMIC CHARACTERISTICS					
Input Capacitance	(V_{DS} = 25V,	C_{iss}	2850 (Typ)	-	pF
Output Capacitance	V_{GS} = 0,	C_{oss}	700 (Typ)	-	
Reverse Transfer Capacitance	f = 1MHz)	C_{rss}	170 (Typ)	-	
SWITCHING CHARACTERISTICS* (T_J = 100°C)					
Turn-On Delay Time	(V_{DD} = 100V,	$t_{d(on)}$	-	40	ns
Rise Time	I_D = 16A,	t_r	-	90	
Turn-Off Delay Time	R_{gen} = 4.7 Ohms)	$t_{d(off)}$	-	150	
Fall Time		t_f	-	100	
Total Gate Charge	(V_{DS} = 100V,	Q_g	85 (Typ)	130	nC
Gate-Source Charge	I_D = 25A,	Q_{gs}	15 (Typ)	28	
Gate-Drain Charge	V_{GS} = 10V)	Q_{gd}	40 (Typ)	65	
SOURCE-DRAIN DIODE CHARACTERISTICS*					
Forward On-Voltage	(I_S = 25A,	V_{SD}	-	2	Vdc
Forward Turn-On Time	V_{GS} = 0)	t_{on}	Limited By Stray Inductance		
Reverse Recovery Time		t_{rr}	200 (Typ)	-	ns

***Pulse Test:** Pulse Width = 300μs, Duty Cycle 2%.

ELECTRICAL CHARACTERISTICS: Per MOSFET
OM6225SP2 (500V) (T_C = 25° unless otherwise noted)

Characteristic		Symbol	Min.	Max.	Units
OFF CHARACTERISTICS					
Drain-Source Breakdown Voltage (V_{GS} = 0, I_D = 0.25mA)		$V_{(BR)DSS}$	500	-	Vdc
Zero Gate Voltage Drain Current		I_{DSS}			mAdc
(V_{DS} = Rated V_{DSS}, V_{GS} = 0)			-	0.2	
(V_{DS} = Rated V_{DSS}, V_{GS} = 0, T_J = 125°C)			-	1	
Gate-Body Leakage Current, Forward (V_{GSF} = 20 Vdc, V_{DS} = 0)		I_{GSSF}	-	100	nAdc
Gate-Body Leakage Current, Reverse (V_{GSR} = 20 Vdc, V_{DS} = 0)		I_{GSSR}	-	100	nAdc
ON CHARACTERISTICS*					
Gate Threshold Voltage		$V_{GS(th)}$			Vdc
(V_{DS} = V_{GS}, I_D = 1mA)			2	4.5	
(T_J = 100°C)			1.5	4	
Static Drain-Source On-Resistance (V_{GS} = 10 Vdc, I_D = 7 Adc)		$r_{DS(on)}$	-	0.4	Ohm
Drain-Source-On-Voltage (V_{GS} = 10 V)		$V_{DS(on)}$			Vdc
(I_D = 12 Adc)			-	6	
(I_D = 7 Adc, T_J = 100°C)			-	5.4	
Forward Transconductance (V_{DS} = 15 V, I_D = 7A)		g_{FS}	4	-	mhos
DYNAMIC CHARACTERISTICS					
Input Capacitance	(V_{DS} = 25V,	C_{iss}	2300 (Typ)	-	pF
Output Capacitance	V_{GS} = 0,	C_{oss}	330 (Typ)	-	
Reverse Transfer Capacitance	f = 1MHz)	C_{rss}	155 (Typ)	-	
SWITCHING CHARACTERISTICS* (T_J = 100°C)					
Turn-On Delay Time	(V_{DD} = 250V,	$t_{d(on)}$	-	40	ns
Rise Time	I_D = 7A,	t_r	-	65	
Turn-Off Delay Time	R_{gen} = 4.7 Ohms)	$t_{d(off)}$	-	150	
Fall Time		t_f	-	80	
Total Gate Charge	(V_{DS} = 250V,	Q_g	110 (Typ)	160	nC
Gate-Source Charge	I_D = 12A,	Q_{gs}	14 (Typ)	25	
Gate-Drain Charge	V_{GS} = 10V)	Q_{gd}	60 (Typ)	95	
SOURCE-DRAIN DIODE CHARACTERISTICS*					
Forward On-Voltage	(I_S = 12A,	V_{SD}	1.1 (Typ)	2	Vdc
Forward Turn-On Time	V_{GS} = 0)	t_{on}	Limited By Stray Inductance		
Reverse Recovery Time		t_{rr}	1200 (Typ)	-	ns

***Pulse Test:** Pulse Width = 300μs, Duty Cycle 2%.

ELECTRICAL CHARACTERISTICS: Per MOSFET
OM6226SP2 (1000V) (T_C = 25° unless otherwise noted)

Characteristic		Symbol	Min.	Max.	Units
OFF CHARACTERISTICS					
Drain-Source Breakdown Voltage (V_{GS} = 0, I_D = 0.25mA)		$V_{(BR)DSS}$	1000	-	Vdc
Zero Gate Voltage Drain Current		I_{DSS}			mAdc
(V_{DS} = Rated V_{DSS}, V_{GS} = 0)			-	0.2	
(V_{DS} = Rated V_{DSS}, V_{GS} = 0, T_J = 125°C)			-	1	
Gate-Body Leakage Current, Forward (V_{GSF} = 20 Vdc, V_{DS} = 0)		I_{GSSF}	-	100	nAdc
Gate-Body Leakage Current, Reverse (V_{GSR} = 20 Vdc, V_{DS} = 0)		I_{GSSR}	-	100	nAdc
ON CHARACTERISTICS*					
Gate Threshold Voltage		$V_{GS(th)}$			Vdc
(V_{DS} = V_{GS}, I_D = 1mA)			2	4.5	
(T_J = 100°C)			1.5	4	
Static Drain-Source On-Resistance (V_{GS} = 10 Vdc, I_D = 2.5 Adc)		$r_{DS(on)}$	-	3	Ohm
Drain-Source-On-Voltage (V_{GS} = 10 V)		$V_{DS(on)}$			Vdc
(I_D = 4 Adc)			-	15	
(I_D = 2.5 Adc, T_J = 100°C)			-	12.5	
Forward Transconductance (V_{DS} = 15 V, I_D = 2.5A)		g_{FS}	2	-	mhos
DYNAMIC CHARACTERISTICS					
Input Capacitance	(V_{DS} = 25V,	C_{iss}	2200 (Typ)	-	pF
Output Capacitance	V_{GS} = 0,	C_{oss}	220 (Typ)	-	
Reverse Transfer Capacitance	f = 1MHz)	C_{rss}	100 (Typ)	-	
SWITCHING CHARACTERISTICS* (T_J = 100°C)					
Turn-On Delay Time	(V_{DD} = 250V,	$t_{d(on)}$	-	40	ns
Rise Time	I_D = 2.5A,	t_r	-	60	
Turn-Off Delay Time	R_{gen} = 4.7 Ohms)	$t_{d(off)}$	-	160	
Fall Time		t_f	-	80	
Total Gate Charge	(V_{DS} = 400V,	Q_g	110 (Typ)	140	nC
Gate-Source Charge	I_D = 4A,	Q_{gs}	14 (Typ)	25	
Gate-Drain Charge	V_{GS} = 10V)	Q_{gd}	50 (Typ)	90	
SOURCE-DRAIN DIODE CHARACTERISTICS*					
Forward On-Voltage	(I_S = 4A,	V_{SD}	-	1.6	Vdc
Forward Turn-On Time	V_{GS} = 0)	t_{on}	Limited By Stray Inductance		
Reverse Recovery Time		t_{rr}	1.2 (Typ)	-	µs

***Pulse Test:** Pulse Width = 300μs, Duty Cycle 2%.

ABSOLUTE MAXIMUM RATINGS: (T_C = 25°C unless otherwise noted)

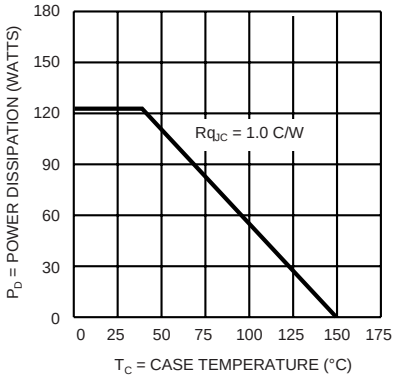
	Parameter	OM6223	OM6224	OM6225	OM6226	Units
V_{DS}	Drain-Source Voltage	100	200	500	1000	V
V_{DGR}	Drain-Gate Voltage (R_{GS} = 1M)	100	200	500	1000	V
I_D @ T_C = 25°C	Continuous Drain Current	30	25	12	4	A
V_{GS}	Continuous Gate-Source Voltage	±20	±20	±20	±20	V
V_{GSM}	Gate-Source Voltage					
	Non-Repetitive (t_p 50μs)	±40	±40	±40	±40	V
I_{DM}	Pulsed Drain Current[1]	90	50	60	15	A
P_D @ T_C = 25°C	Max. Power Dissipation	125	125	125	125	W
P_D @ T_C = 100°C	Max. Power Dissipation	50	50	50	50	W
Junction to Case	Linear Derating Factor[1]	1.0	1.0	1.0	1.0	W/°C
Junction to Ambient	Linear Derating Factor	.025	.025	.025	.025	W/°C
T_J	Operating and	-65 to	-65 to	-65 to	-65 to	
T_{stg}	Storage Temperature Range	125	125	125	125	°C
Lead Temperature	($^1/_8$" from case for 5 seconds)	225	225	225	225	°C

1 Pulse Test: Pulse Width 300*m*sec, Duty Cycle 2%.

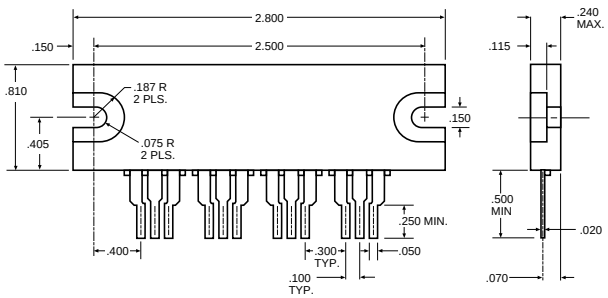
THERMAL RESISTANCE (MAXIMUM) at T_A = 25°C

R_{thJC}	Junction-to-Case	1.0	°C/W
R_{thJA}	Junction-to-Ambient	40	°C/W Free Air Operation

POWER DERATING



MECHANICAL OUTLINE



All Dimensions are ±.010 Unless Otherwise Specified.

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