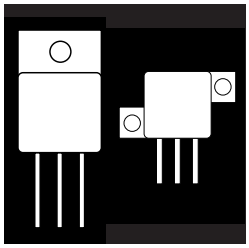
POWER MOSFETS IN HERMETIC ISOLATED JEDEC TO-258AA SIZE 6 DIE



400V Thru 1000V, Up To 26 Amp N-Channel, Size 6 MOSFETs, High Energy Capability

FEATURES

- Isolated Hermetic Metal Package
- Size 6 Die, High Energy
- Fast Switching, Low Drive Current
- Ease of Paralleling For Added Power
- Low $R_{DS(on)}$
- Available 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. This series also features avalanche high energy capability at elevated temperatures.

MAXIMUM RATINGS

PART NUMBER	V_{DS}	$R_{DS(ON)}$	I_D (Amp)
OM6025SC/OM6032SC	400	.20	24
OM6026SC/OM6031SC	500	.27	22
OM6027SC/OM6028SC	1000	1.30	10

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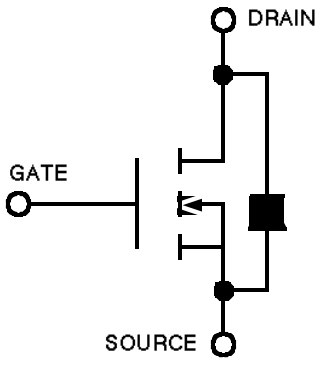
SCHEMATIC



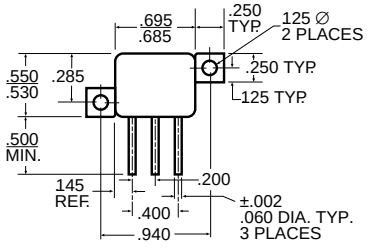
ABSOLUTE MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)

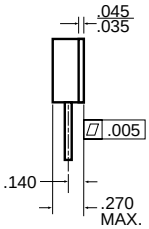
	Parameter	OM6025SC	OM6026SC	OM6027SC	Units
		OM6032SC	OM6031SC	OM6028SC	
V_{DS}	Drain-Source Voltage	400	500	1000	V
V_{DGR}	Drain-Gate Voltage (R_{GS} = 1 M)	400	500	1000	V
I_D @ T_C = 25°C	Continuous Drain Current	24	22	10	A
I_{DM}	Pulsed Drain Current	92	85	40	A
P_D @ T_C = 25°C	Maximum Power Dissipation	165	165	165	W
	Derate Above 25°C Ambient	.025	.025	.025	W/°C
W_{DSS} (1)	Single Pulse Energy Drain To Source @ 25°C	1000	1200	1000	mJ
T_J T_{stg}	Operating and Storage Temperature Range	-55 to 150	-55 to 150	-55 to 150	°C
Lead Temperature	(1/8" from case for 5 secs.)	275	275	275	°C

Note 1: V_{DD} = 50V, I_D = as noted

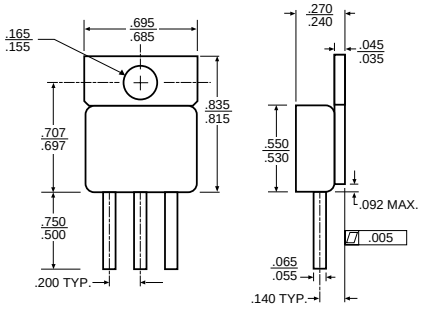
THERMAL RESISTANCE (MAXIMUM) at T_A = 25°C				
R_{thJC}	Junction-to-Case	.76	°C/W	
R_{thJA}	Junction-to-Ambient	40	°C/W	Free Air Operation
	Derate above 25°C T_C	1.32	W/°C	

MECHANICAL OUTLINES



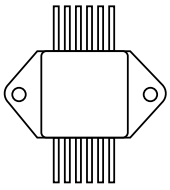


OM6028SC, OM6031SC, OM6032SC

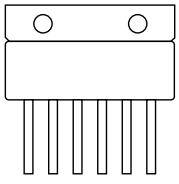


OM6025SC, OM6026SC, OM6027SC

PACKAGE OPTIONS



MOD PAK



6 PIN SIP

NOTE: MOSFETs are also available in Z-Tab, dual and quad pak styles - Please call the factory for more information.

ELECTRICAL CHARACTERISTICS: OM6025SC, OM6032SC (T_C = 25° unless otherwise noted)

Characteristic		Symbol	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage (V_{GS} = 0, I_D = 0.25 mA)		$V_{(BR)DSS}$	400	-	-	Vdc
Zero Gate Voltage Drain		I_{DSS}				mAdc
(V_{DS} = 400 V, V_{GS} = 0)			-	-	0.25	
(V_{DS} = 400 V, V_{GS} = 0, T_J = 125° C)			-	-	1.0	
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 = 0.25 mAdc			2.0	3.0	4.0	
(T_J = 125° C)			1.5	-	3.5	
Static Drain-Source On-Resistance (V_{GS} = 10 Vdc, I_D = 12 Adc)		$r_{DS(on)}$	-	-	0.20	Ohm
Drain-Source On-Voltage (V_{GS} = 10 Vdc)		$V_{DS(on)}$				Vdc
(I_D = 24 A)			-	-	5.4	
(I_D = 12 A, T_J = 125° C)			-	-	5.4	
Forward Transconductance (V_{DS} = 15 Vdc, I_D = 12 Adc)		g_{FS}	14	-	-	mhos
DYNAMIC CHARACTERISTICS						
Input Capacitance	(V_{DS} = 25 V, V_{GS} = 0,	C_{iss}	-	5600	-	pF
Output Capacitance	f = 1.0 MHz)	C_{oss}	-	78	-	
Transfer Capacitance		C_{rss}	-	230	-	
SWITCHING CHARACTERISTICS						
Turn-On Delay Time		$t_{d(on)}$	-	70	-	ns
Rise Time	(V_{DD} = 250 V, I_D = 24 A,	t_r	-	190	-	
Turn-Off Delay Time	R_{gen} = 4.3 ohms)	$t_{d(off)}$	-	160	-	
Fall Time		t_f	-	160	-	
Total Gate Charge	(V_{DS} = 400 V, I_D = 24 A,	Q_g	-	110	140	nC
Gate-Source Charge	V_{GS} = 10 V)	Q_{gs}	-	20	-	
Gate-Drain Charge		Q_{gd}	-	55	-	
SOURCE DRAIN DIODE CHARACTERISTICS						
Forward On-Voltage		V_{SD}	-	1.1	1.6	Vdc
Forward Turn-On Time	(I_S = 24 A, d/dt = 100 A/µs)	t_{on}		**		ns
Reverse Recovery Time		t_{rr}	-	500	1000	

ELECTRICAL CHARACTERISTICS: OM6026SC, OM6031SC (T_C = 25° unless otherwise noted)

Characteristic		Symbol	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage (V_{GS} = 0, I_D = 0.25 mA)		$V_{(BR)DSS}$	500	-	-	Vdc
Zero Gate Voltage Drain		I_{DSS}				mAdc
(V_{DS} = 500 V, V_{GS} = 0)			-	-	0.25	
(V_{DS} = 500 V, V_{GS} = 0, T_J = 125° C)			-	-	1.0	
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 = 0.25 mAdc			2.0	3.0	4.0	
(T_J = 125° C)			1.5	-	3.5	
Static Drain-Source On-Resistance (V_{GS} = 10 Vdc, I_D = 11 Adc)		$r_{DS(on)}$	-	-	0.27	Ohm
Drain-Source On-Voltage (V_{GS} = 10 Vdc)		$V_{DS(on)}$				Vdc
(I_D = 22 A)			-	-	8.0	
(I_D = 11 A, T_J = 125° C)			-	-	8.0	
Forward Transconductance (V_{DS} = 15 Vdc, I_D = 11 Adc)		g_{FS}	13	-	-	mhos
DYNAMIC CHARACTERISTICS						
Input Capacitance	(V_{DS} = 25 V, V_{GS} = 0,	C_{iss}	-	5600	-	pF
Output Capacitance	f = 1.0 MHz)	C_{oss}	-	680	-	
Transfer Capacitance		C_{rss}	-	200	-	
SWITCHING CHARACTERISTICS						
Turn-On Delay Time		$t_{d(on)}$	-	70	-	ns
Rise Time	(V_{DD} = 250 V, I_D = 22 A,	t_r	-	190	-	
Turn-Off Delay Time	R_{gen} = 4.3 ohms)	$T_{d(off)}$	-	160	-	
Fall Time		t_f	-	160	-	
Total Gate Charge	(V_{DS} = 400 V, I_D = 22 A,	Q_g	-	115	140	nC
Gate-Source Charge	V_{GS} = 10 V)	Q_{gs}	-	20	-	
Gate-Drain Charge		Q_{gd}	-	60	-	
SOURCE DRAIN DIODE CHARACTERISTICS						
Forward On-Voltage		V_{SD}	-	1.1	1.6	Vdc
Forward Turn-On Time	(I_S = 22 A, d/dt = 100 A/µs)	t_{on}		**		ns
Reverse Recovery Time		t_{rr}	-	500	1000	

* Indicates Pulse Test = 300 µsec, Duty Cycle = 2%
** Limited by circuit inductance

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ELECTRICAL CHARACTERISTICS: OM6027SC, OM6028SC (T_C = 25° unless otherwise noted)

Characteristic		Symbol	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage (V_{GS} = 0, I_D = 0.25 mA)		$V_{(BR)DSS}$	1000	-	-	Vdc
Zero Gate Voltage Drain		I_{DSS}				mAdc
(V_{DS} = 1000 V, V_{GS} = 0)			-	-	0.25	
(V_{DS} = 1000 V, V_{GS} = 0, T_J = 125° C)			-	-	1.0	
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 = 0.25 mAdc			2.0	3.0	4.0	
(T_J = 125° C)			1.5	-	3.5	
Static Drain-Source On-Resistance (V_{GS} = 10 Vdc, I_D = 5 Adc)		$r_{DS(on)}$	-	-	1.3	Ohm
Drain-Source On-Voltage (V_{GS} = 10 Vdc)		$V_{DS(on)}$				Vdc
(I_D = 10 A)			-	-	15	
(I_D = 5 A, T_J = 125° C)			-	-	15.3	
Forward Transconductance (V_{DS} = 15 Vdc, I_D = 5 Adc)		g_{FS}	5.0	-	-	mhos
DYNAMIC CHARACTERISTICS						
Input Capacitance	(V_{DS} = 25 V, V_{GS} = 0, f = 1.0 MHz)	C_{iss}	-	3900	-	pF
Output Capacitance		C_{oss}	-	300	-	
Transfer Capacitance		C_{rss}	-	65	-	
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	(V_{DD} = 250 V, I_D = 5 A, R_{gen} = 4.3 ohms)	$t_{d(on)}$	-	40	-	ns
Rise Time		t_r	-	100	-	
Turn-Off Delay Time		$t_{d(off)}$	-	100	-	
Fall Time		t_f	-	100	-	
Total Gate Charge	(V_{DS} = 400 V, I_D = 10 A, V_{GS} = 10 V)	Q_g	-	100	140	nC
Gate-Source Charge		Q_{gs}	-	20	-	
Gate-Drain Charge		Q_{gd}	-	40	-	
SOURCE DRAIN DIODE CHARACTERISTICS						
Forward On-Voltage	(I_S = 10 A, d/dt = 100 A/µs)	V_{SD}	-	-	1.5	Vdc
Forward Turn-On Time		t_{on}		**		ns
Reverse Recovery Time		t_{rr}	-	600	1000	

* Indicates Pulse Test = 300 µsec, Duty Cycle = 2%
** Limited by circuit inductance

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