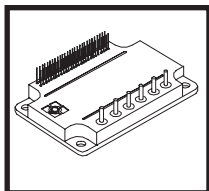


Patent Pending

OM100L60CMIS, OM75L60CMIS, OM75L60CMIB

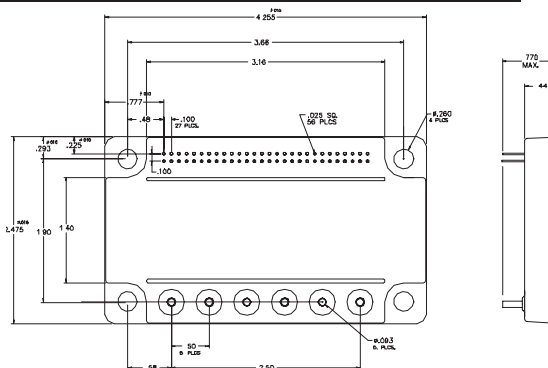
CERMOD™ HERMETIC HIGH POWER MODULES, THREE PHASE BRIDGE, IGBT'S



75 & 100 A, 600V Three Phase Bridge
Configuration in Ceramic to Metal
Sealed Modules

FEATURES

- Rugged, Lightweight Hermetic Ceramic Package
- NPT IGBT Technology
- Soft Recovery Rectifiers
- Zener Gate Protection
- Short Circuit Capability
- -55 C to +150 C Operating Temperature Range
- Hi-Rel Screened Available



DESCRIPTION

CERMOD™ modules are isolated fully hermetic power modules which combine the latest NPT IGBT and Soft Recovery Rectifier technology housed in a low thermal resistance ceramic to metal sealed light weight package. This series of CERMOD™ power modules are offered in a three phase bridge configuration as Phase Leg and chopper configurations. Designed for tough environments, these high power modules are ideally suited in motor control, inverters, switching power supplies, in aerospace, defense, transportation and high power industrial equipment and systems.

GENERAL CHARACTERISTICS @ 25 C

PART NUMBER	V_{CE} , Volts	I_C AMPS	V_{CE} (sat) Volts	CONFIGURATION
OM100L60CMIS	600	100	2.5	3 Phase Bridge
OM75L60CMIS	600	75	2.5	3 Phase Bridge
OM75L60CMIB	600	75	2.5	3 Phase Bridge & Braking Transistor

9 5 R0



205 Crawford Street, Leominster, MA 01453 USA (978) 534-5776 FAX (978) 537-4246
Visit Our Web Site at www.omnirel.com

OM100L60CMIS

ELECTRICAL CHARACTERISTICS: (Tc= 25C unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max	Unit
OFF CHARACTERISTICS					
Collector Emitter Breakdown Voltage, V	V _{CES}	600			V
Zero Gate Voltage Collector Current, I _C	I _{ES}		25		μA
Gate Emitter Leakage Current, I _{GES}	I _{GES}			2	μA
ON CHARACTERISTICS					
Gate Threshold Voltage, V _{GE} , I _C =6mA	V _{GE(TH)}	4.5	6.0	6.5	V
Collector Emitter Saturation Voltage, V _{CE} , I _C =100A	V _{CE(SAT)}		2.0	2.5	V

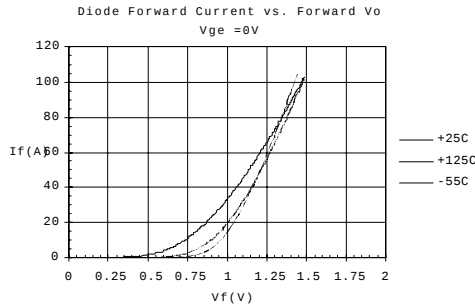
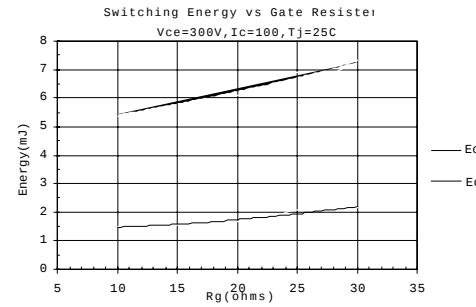
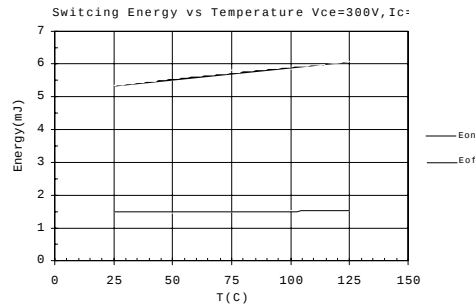
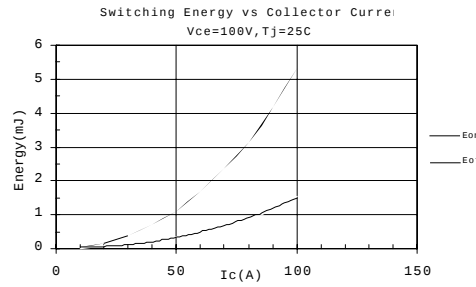
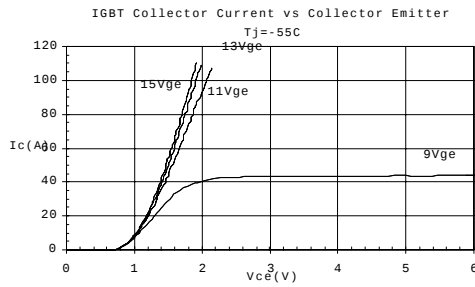
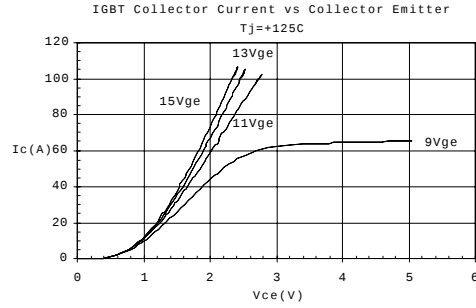
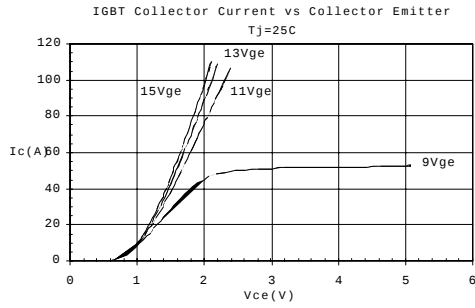
DYNAMIC CHARACTERISTICS					
Fwd. Transconductance	V _{CE} =5V, I _C =100A	g _{fs}		55	S
Input Capacitance	V _{GE} =0	C _{ies}		4.5	nF
Output Capacitance	V _{CE} =25V	C _{oes}		0.7	nF
Rev. Transfer Capacitance	f=1.0MHz	C _{res}		1.7	nF

SWITCHING INDUCTIVE LOAD CHARACTERISTICS					
Turn-On Delay Time	V _{CC} = 300V, I _C =100A V _{GE} = +15/-10V, R ₁₀₀ L=100μH, T _j =125C	t(on)		192	nS
Rise Time		t _r		81	nS
Turn-on Losses		E _{on}		5.4	mJ
Turn-off Delay Time		t _{d(off)}		285	nS
Fall Time		t _f		44	nS
Turn-off Losses		E _{off}		1.4	mJ

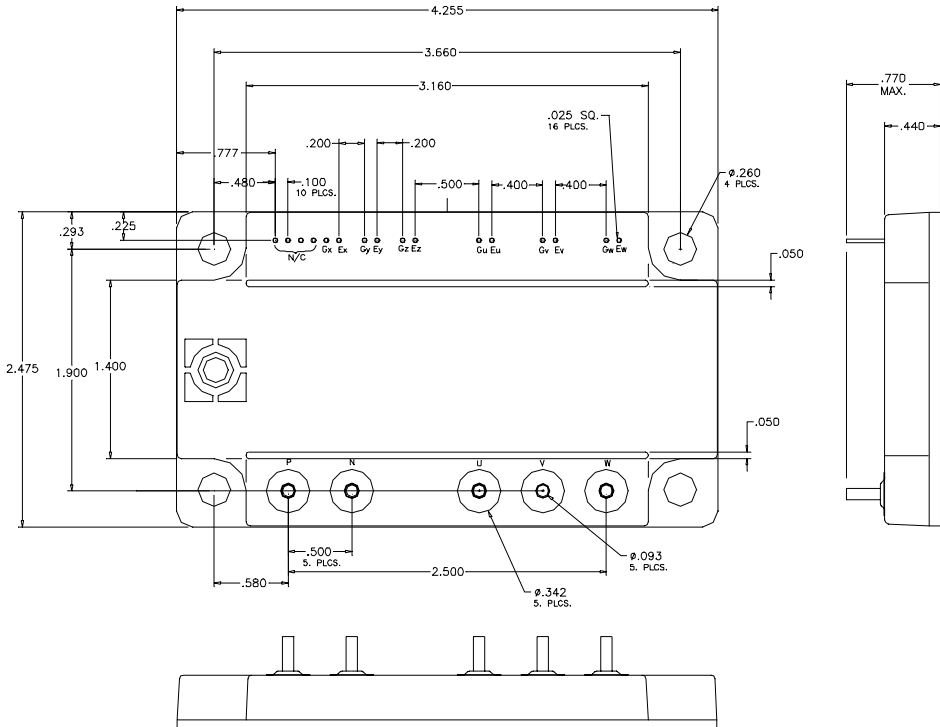
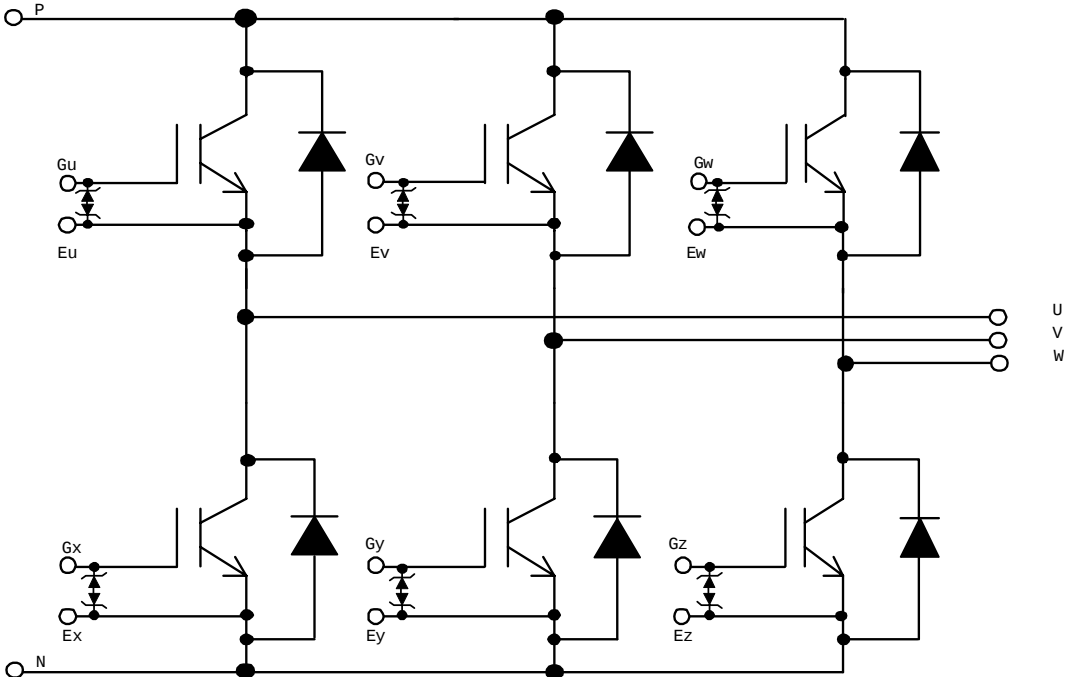
DIODE CHARACTERISTICS						
Maximum Forward Voltage	F=100A, Tj=25 Tj=125C	VF		1.4	1.8	V
				1.5	1.9	
Reverse Recovery Characteristics	VR=300V, Tj=25 F=100A, Tj=125 dI/dt=-1080A/Tj=25C Tj=125C Tj=25C Tj=125C	Qrr		2		μC
				3.7		
		Irr		51		A
				68		
		trr		124		nS
				215		

THERMAL AND MECHANICAL CHARACTERISTICS					
Thermal Resistance, Junction to Case (Per IGBT)	R_{thJC}			0.35	°C/W
Thermal Resistance, Junction to Case (Per Diode)	R_{thJC}			0.6	°C/W
Maximum Junction Temperature	T_{jMAX}			150	°C
Isolation Voltage	V_{isRMS}			-	V
Screw Torque	Mounting		15	20	inlb
Module Weight	-		250		Grams

OM100L60CMIS



OM100L60CMIS



OM75L60CMIS

ELECTRICAL CHARACTERISTICS (Tc= 25°C unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max	Unit
OFF CHARACTERISTICS					
Collector Emitter Breakdown Voltage, V	V _{CES}	600			V
Zero Gate Voltage Collector Current, V _{CE} =600V	I _{CES}		25		μA
Gate Emitter Leakage Current, V _{CE} =-15V, V _{GE} =0V	I _{GES}			2	μA

ON CHARACTERISTICS					
Gate Threshold Voltage, V _{GE} , I _C =6mA	V _{GE(TH)}	4.5	5.8	6.5	V
Collector Emitter Saturation Voltage, I _C =75A	V _{CE(SAT)}		2.5	2.9	V

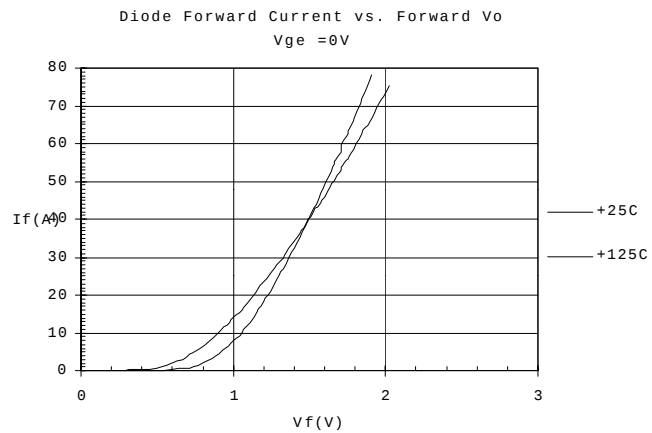
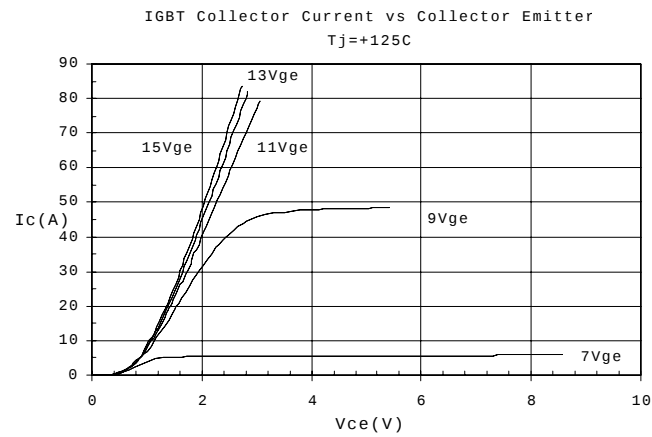
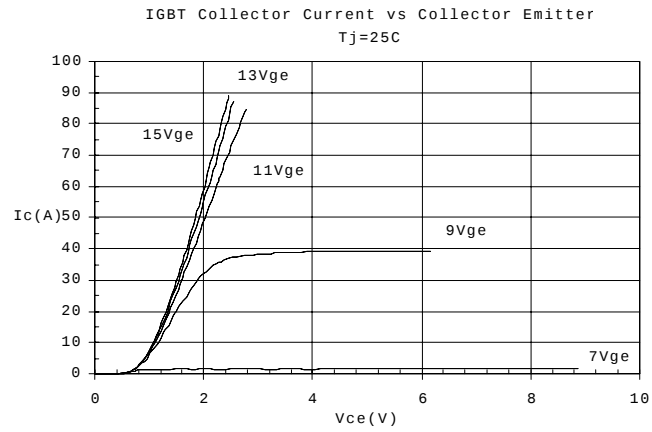
DYNAMIC CHARACTERISTICS					
Fwd. Transconductance	V _{CE} =5V, I _C =75A	g _{fs}		36	S
Input Capacitance	V _{GE} =0	C _{IES}		3.7	nF
Output Capacitance	V _{CE} =25V	C _{OES}		1.1	nF
Rev. Transfer Capacitance	f=1.0MHz	C _{RES}		1.9	nF

SWITCHING INDUCTIVE LOAD CHARACTERISTICS					
Turn-On Delay Time	V _{CC} = 300V, I _C =75A V _{GE} = +15/-10V, R _{thJC} = 10°C/W L=100μH, T _j =125°C	t(on)		60	nS
Rise Time		t _r		65	nS
Turn-on Losses		E _{on}			mJ
Turn-off Delay Time		t _{d(off)}		90	nS
Fall Time		t _f		80	nS
Turn-off Losses		E _{off}			mJ

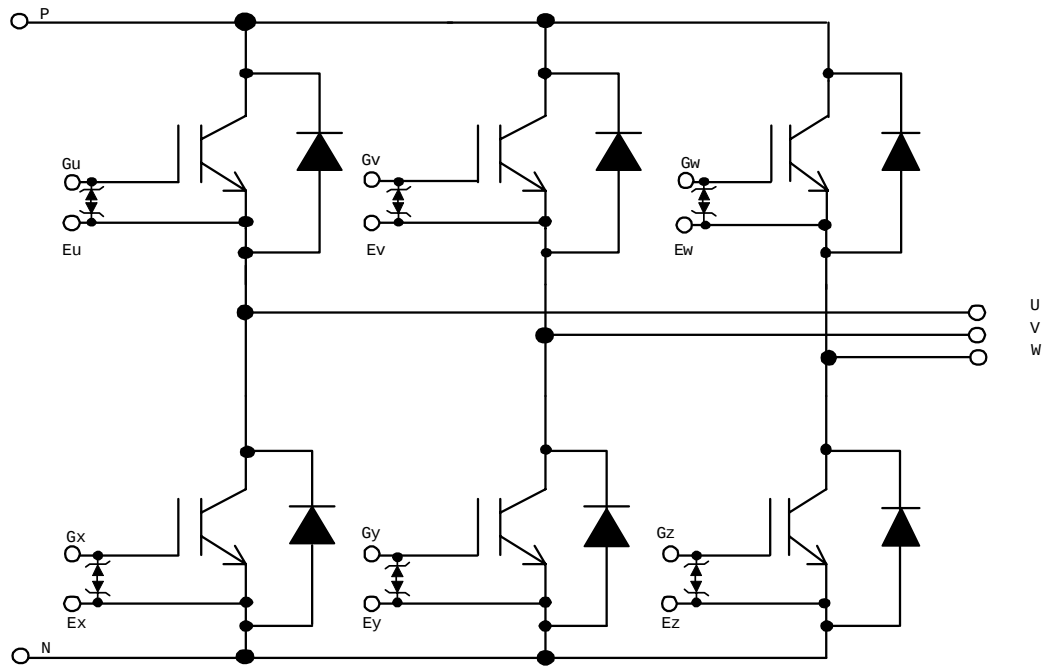
DIODE CHARACTERISTICS					
Maximum Forward Voltage	I _F =75A, T _j =25°C T _j =125°C	V _F		1.4	2.0
Reverse Recovery Characteristics	V _R =300V, T _j =25°C I _F =75A, T _j =125°C dI/dt=-1200A/Tj=25°C	Q _{rr}		4	
				6.5	
		I _{rr}		40	
		t _{rr}		85	

THERMAL AND MECHANICAL CHARACTERISTICS					
Thermal Resistance, Junction to Case (Per IGBT)	R _{thJC}			0.45	°C/W
Thermal Resistance, Junction to Case (Per Diode)	R _{thJC}			0.8	°C/W
Maximum Junction Temperature	T _{jMAX}			150	°C
Isolation Voltage	V _{ISMS}			-	V
Screw Torque	Mounting			15	20
Module Weight	-			250	Grams

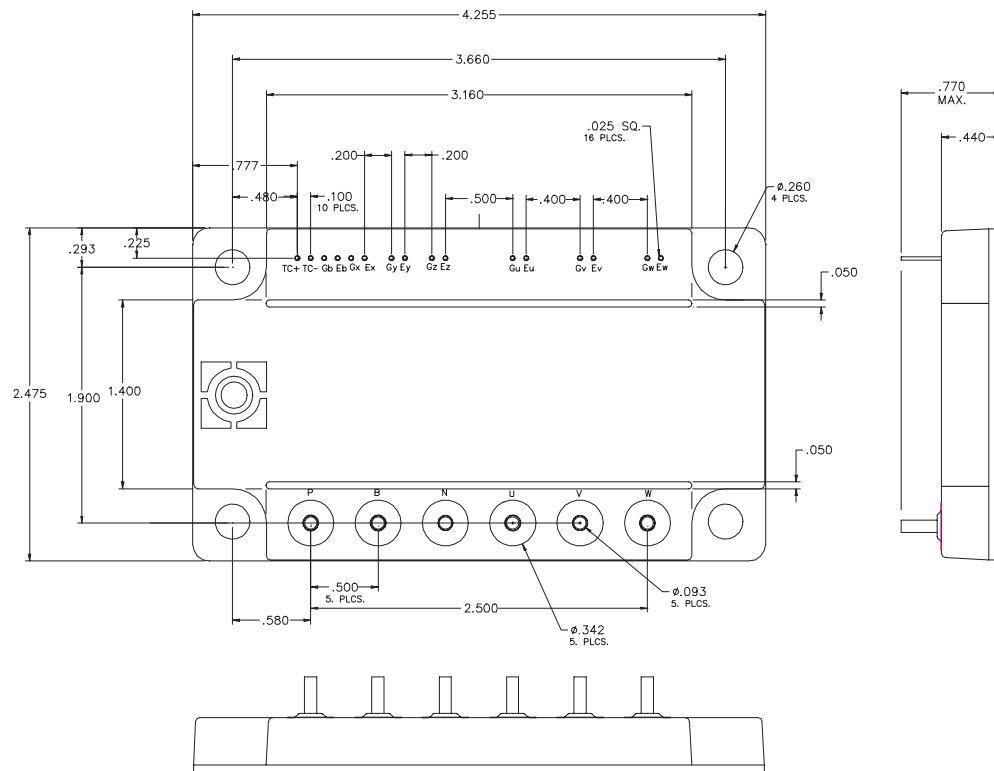
OM75L60CMIS



OM75L60CMIS



Equivalent circuit



OM75L60CMIB

ELECTRICAL CHARACTERISTICS (Tc= 25°C unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max	Unit
OFF CHARACTERISTICS					
Collector Emitter Breakdown Voltage, V_{CE}	V_{CES}	600			V
Zero Gate Voltage Collector Current, I_{CES}	I_{CES}		25		μA
Gate Emitter Leakage Current, I_{GES}	I_{GES}			2	μA
ON CHARACTERISTICS					
Gate Threshold Voltage, V_{GE}	$V_{GE(TH)}$	4.5	5.8	6.5	V
Collector Emitter Saturation Voltage, $V_{CE(SAT)}$	$V_{CE(SAT)}$		2.5	2.9	V

DYNAMIC CHARACTERISTICS

Fwd. Transconductance	$V_{CE}=5V, I_C=75A$	g_{fs}		36	S
Input Capacitance	$V_{GE}=0$	C_{IES}		3.7	nF
Output Capacitance	$V_{CE}=25V$	C_{OES}		1.1	nF
Rev. Transfer Capacitance	$f=1.0MHz$	C_{RES}		1.9	nF

SWITCHING INDUCTIVE LOAD CHARACTERISTICS

Turn-On Delay Time	$V_{CC}=300V, I_C=75A$ $V_{GE}=+15/-10V, R_{GE}=10\Omega$ $L=100\mu H, T_J=125^\circ C$	$t(on)$		60	nS
Rise Time		t_r		65	nS
Turn-on Losses		E_{on}			mJ
Turn-off Delay Time		$t_d(off)$		90	nS
Fall Time		t_f		80	nS
Turn-off Losses		E_{off}			mJ

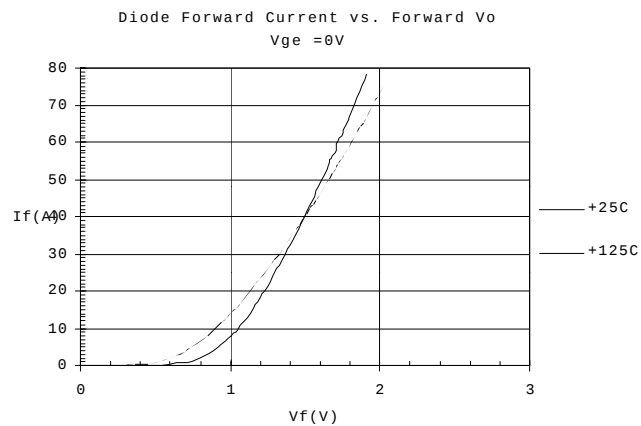
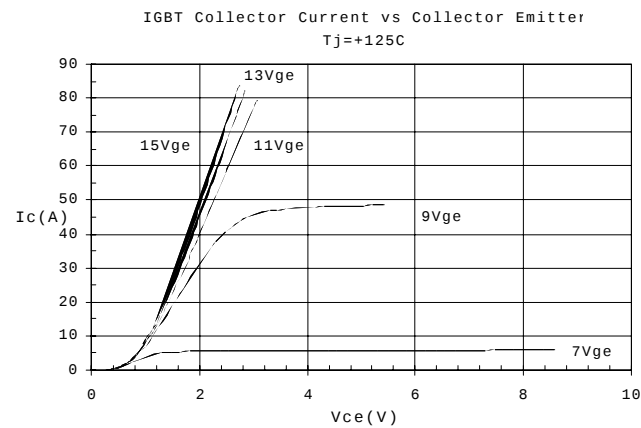
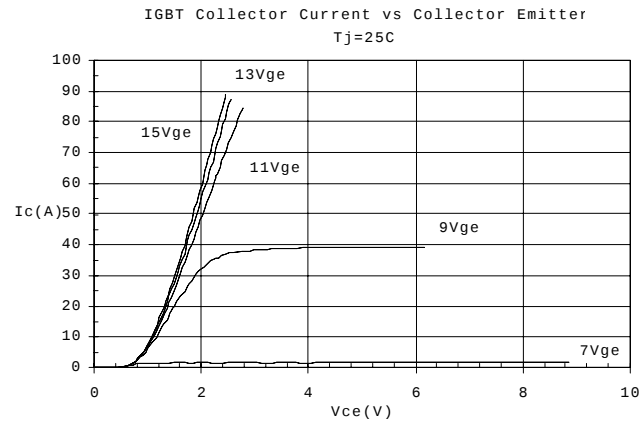
DIODE CHARACTERISTICS

Maximum Forward Voltage	$I_F=75A, T_J=25^\circ C$	V_F		1.4	2.0	V
Reverse Recovery Characteristics	$V_R=300V, T_J=25^\circ C$	Q_{rr}		4		μC
	$I_F=75A, T_J=125^\circ C$			6.5		
	$dI/dt=-1200A/\mu s, T_J=25^\circ C$	I_{rr}		40		A
	$T_J=125^\circ C$					
	$T_J=25^\circ C$	t_{rr}		85		nS
	$T_J=125^\circ C$					

THERMAL AND MECHANICAL CHARACTERISTICS

Thermal Resistance, Junction to Case (Per IGBT)	R_{thJC}			0.45	°C/W
Thermal Resistance, Junction to Case (Per Diode)	R_{thJC}			0.8	°C/W
Maximum Junction Temperature	TjMAX			150	°C
Isolation Voltage	VISMS			-	V
Screw Torque	Mounting	15	20	inlb	
Module Weight	-	250		Grams	

OM75L60CMIB



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