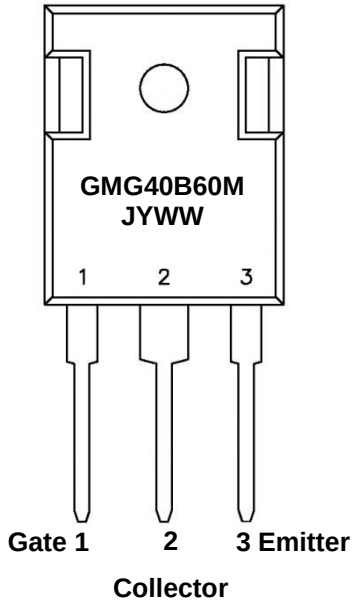
Features

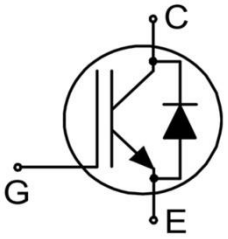
- Trench Field Stop technology
- Fast Switching Characteristics
- Low Turnoff Voltage Spike
- Ultrafast Recovery Didoe embeded
- Low Forward Voltage
- Low Leakage Current

Applications

- Uninterruptable Power System, UPS
- General Purpose Frequency Conversion

Marking Information and Pin Assignment – TO-247 (Top View)





J: Assembly / Test Site Code
Y: Year
WW: Week

Order Information

Ordering Number	Package	Shipping
GMG40B60MTD3T	TO-247	50 Units/Tube. 40 Tubes/Box, 4 Boxes/Carton

Absolute Maximum Ratings (Note 1)

SYMBOL	PARAMETER		RATINGS	UNITS
V_{CES}	Collector to Emitter Voltage		600	V
I_C	Collector Current	T_C = 25°C	80	A
		T_C = 100°C	40	
I_{CP} (Note 2)	Collector Pulse Current		120	A
I_{RBSOA} (Note 2)	RBSOA Current $V_{CE} \leq$ 600V, $T_J \leq$ 150°C, tp = 1μs		120	A
I_F	Diode Forward Current	T_C = 25°C	80	A
		T_C = 100°C	40	
I_{CF} (Note 2)	Diode Pulse Current		150	A
t_{SC}	Short Circuit Withstand Duration, V_{GE}=15V, V_{CC}=400V, $T_J \leq$ 150°C		10	μs
V_{GE}	Gate-Emmiter Voltage		± 20	V
P_{TOT}	Power dissipation,	T_C = 25°C	280	W
		T_C = 100°C	110	
T_J	Maximum IGBT Junction Temperature		-55 ~ 150	°C
T_{stg}	Storage Temperature Range		-55 ~ 150	°C

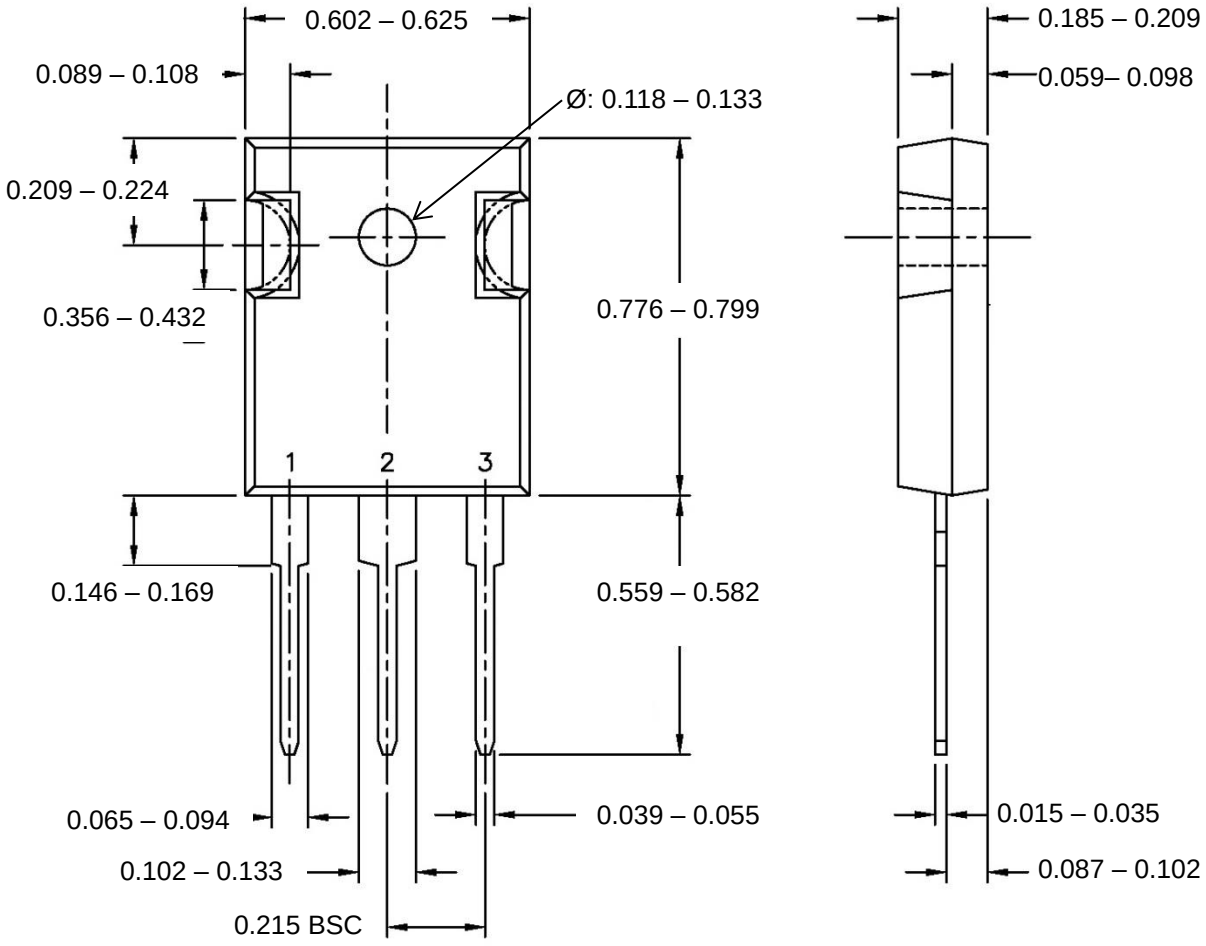
Note 1 Compliance to JESD-022
Note 2 Simulated Results
Note 3 Short Circuit < 1000 times, Short Circuit Interval: > 1s

Electrical Characteristics (T_J = 25°C, unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Statistic Characteristic						
Collector to Emitter Breakdown Voltage	$V_{BR,CE}$	V_{GE}=0V, I_C=250μA	600			V
Collector to Emitter Saturation Voltage	$V_{CE,SAT}$	V_{GE}=15V, I_C=40A		1.8	2.3	V
		V_{GE}=15V, I_C=40A, T_J = 150°C		2.3		
Diode Forward Voltage	V_F	V_{GE}=0V I_F=40A		1.5		V
Gate Threshold Voltage	V_{GE}	I_C=1mA, V_{CE}=V_{GE}	5.0	5.9	7.0	V
Collector Leakage Current	I_{CES}	V_{CE}=600V, V_{GE}=0V			0.1	mA
		V_{CE}=600V, V_{GE}=0V, T_J=150°C			4	
Gate Leakage Current	I_{GES}	V_{GE}=20V, V_{CE}=0V			250	nA
Transconductance	g_{FS}	V_{CE}=20V, I_C=40A		20		S
Dynamic Characteristic						
Input Capacitance	C_{ISS}	V_{CE}=30V, V_{GE}=0V, f=1MHz		3155		pF
Output Capacitance	C_{OSS}			175		pF
Reverse Transfer Capacitance	C_{RES}			81.5		pF
Gate Charge	Q_G	V_{CC}=600V, I_C=40A, V_{GE}=15V		165		nC
IGBT Switching Characteristic						
Turn ON Delay time	$t_{D(ON)}$	V_{CC}=400V, I_C=40A, V_{GE}=0/15V, R_G=10Ω, inductive load		36		ns
Rise Time	t_r			52		
Turn OFF delay time	$t_{D(OFF)}$			210		
Fall Time	t_f			62		
Turn ON Energy Loss	E_{ON}			2.5		mJ
Turn OFF Energy Loss	E_{OFF}			0.8		
Switching Energy Loss	E_{ts}			3.3		
Turn ON Delay time	$t_{D(ON)}$	V_{CC}=400V, I_C=40A, V_{GE}=0/15V, R_G=10Ω, , T_J = 150°C inductive load		72		ns
Rise Time	t_r			71		
Turn OFF delay time	$t_{D(OFF)}$			300		
Fall Time	t_f			120		
Turn ON Energy Loss	E_{ON}			2.8		mJ
Turn OFF Energy Loss	E_{OFF}			1.3		
Switching Energy Loss	E_{ts}			4.1		
Diode Switching Characteristic						
Reverse Recovery Time	t_{rr}	V_R=400V, I_F=40A, dI_F/dt = 200A/μs		75		ns
Reverse Recovery Charge	Q_{rr}			0.22		μC
Reverse Recovery Peak Current	I_{rrm}			6.5		A

Package Dimension – TO247

Unite: Inches



Ordering Number

GM	G	40B60M	TD3	T
APM Gamma Micro	Product Category	Short Description	Package Type	Shipping Type
	Discrete IGBT	40: I_C = 40A 120: V_{CE} = 600V	TD3: 3L TO247	T: Tube

Note:

Green products:

- Halogen free(Br or Cl does not exceed 900ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500ppm by weight)