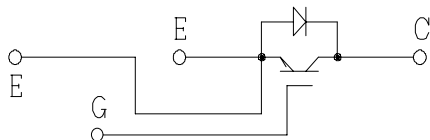


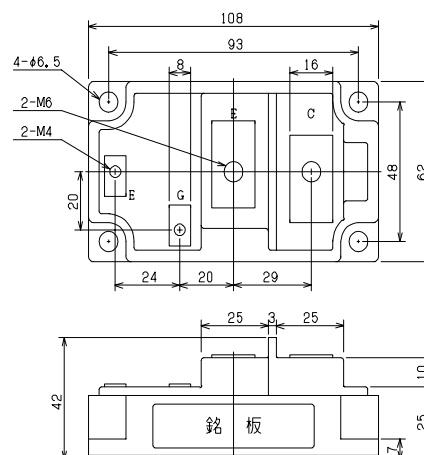
IGBT MODULE Single 400A 600V

PHMB400A6

CIRCUIT



OUTLINE DRAWING



Dimension(mm)

Approximate Weight : 500g

MAXIMUM RATINGS (T_c=25°C)

Item	Symbol	PHMB400A6	Unit
Collector-Emitter Voltage	V _{CEs}	600	V
Gate - Emitter Voltage	V _{GES}	+/- 20	V
Collector Current	DC	I _C	400
	1 ms	I _{CP}	800
Collector Power Dissipation	P _C	1470	W
Junction Temperature Range	T _j	-40 to +150	°C
Storage Temperature Range	T _{stg}	-40 to +125	°C
Isolation Voltage Terminal to Base AC, 1 min.)	V _{ISO}	2500	V
Mounting Torque	Module Base to Heatsink	F _{TOR}	3
		M4	1.4
	Bus Bar to Main Terminals	M6	3

ELECTRICAL CHARACTERISTICS (T_c=25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Emitter Cut-Off Current	I _{CEs}	V _{CE} =600V, V _{GE} =0V	-	-	4.0	mA
Gate-Emitter Leakage Current	I _{GES}	V _{GE} =+/- 20V, V _{CE} =0V	-	-	1.0	μA
Collector-Emitter Saturation Voltage	V _{CE(sat)}	I _C =400A, V _{GE} =15V	-	2.1	2.6	V
Gate-Emitter Threshold Voltage	V _{GE(th)}	V _{CE} =5V, I _C =400mA	4.0	-	8.0	V
Input Capacitance	C _{ies}	V _{CE} =10V, V _{GE} =0V, f=1MHz	-	40,000	-	pF
Switching Time	Rise Time	t _r	V _{CC} = 300V			μs
	Turn-on Time	t _{on}	R _L = 0.75 ohm			
	Fall Time	t _f	R _G = 1.6 ohm			
	Turn-off Time	t _{off}	V _{GE} = +/- 15V			

FREE WHEELING DIODES RATINGS & CHARACTERISTICS (T_c=25°C)

Item	Symbol	Rated Value	Unit
Forward Current	DC	I _F	400
	1 ms	I _{FM}	800

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Peak Forward Voltage	V _F	I _F =400A, V _{GE} =0V	-	1.9	2.4	V
Reverse Recovery Time	t _{rr}	I _F =400A, V _{GE} =-10V, di/dt=400A/μs	-	0.15	0.25	μs

THERMAL CHARACTERISTICS

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Thermal Impedance	IGBT	R _{th(j-c)}	-	-	0.085	°C/W
	DIODE		-	-	0.20	

PHMB400A6

Fig.1- Output Characteristics (Typical)

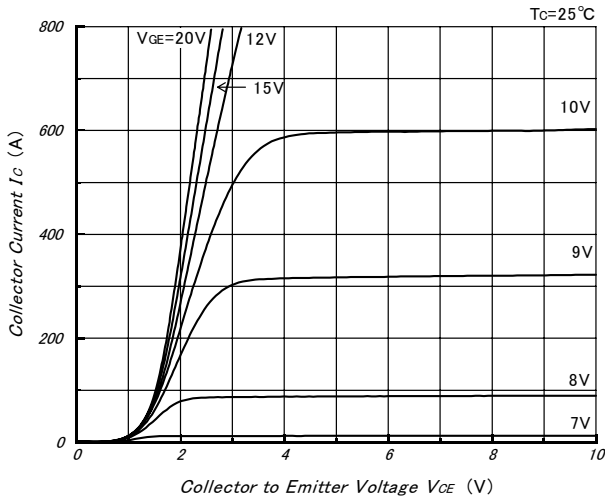


Fig.2- Collector to Emitter On Voltage vs. Gate to Emitter Voltage (Typical)

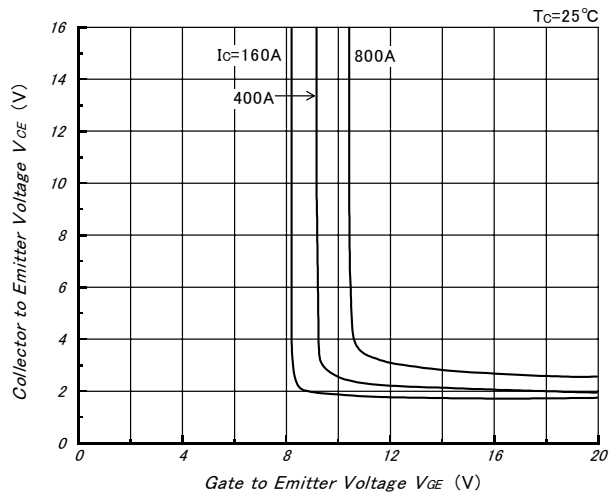


Fig.3- Collector to Emitter On Voltage vs. Gate to Emitter Voltage (Typical)

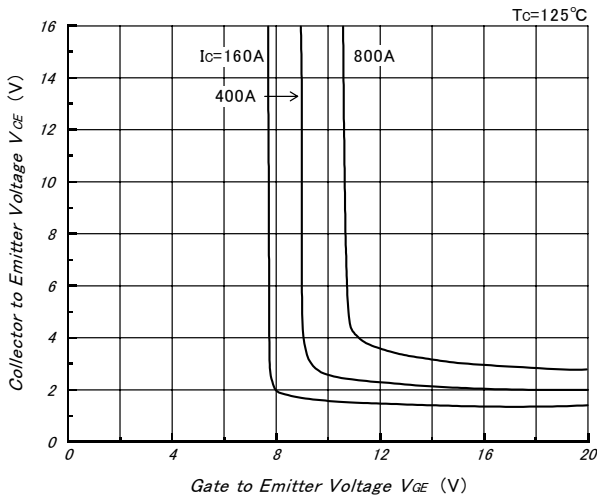


Fig.4- Gate Charge vs. Collector to Emitter Voltage (Typical)

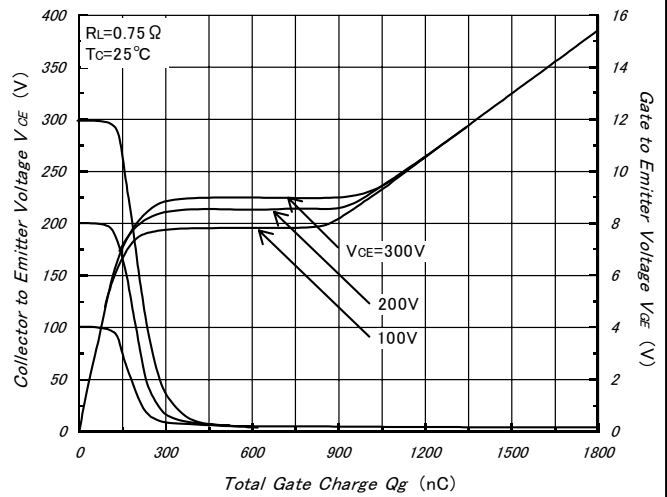


Fig.5- Capacitance vs. Collector to Emitter Voltage (Typical)

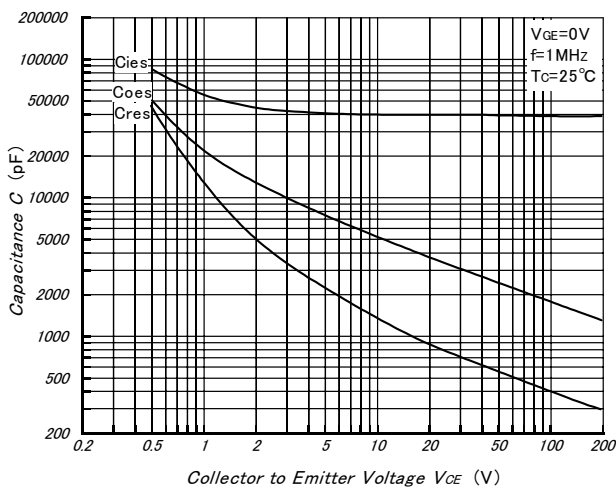
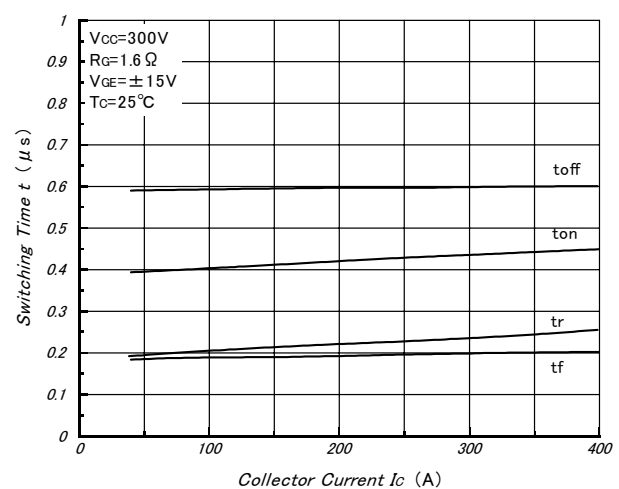


Fig.6- Collector Current vs. Switching Time (Typical)



PHMB400A6

Fig.7- Series Gate Impedance vs. Switching Time (Typical)

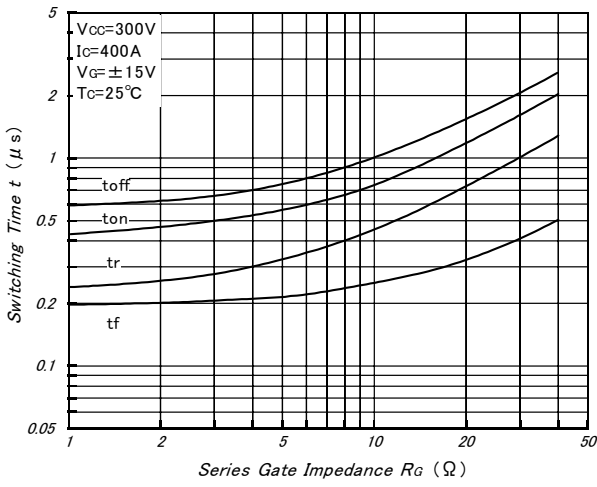


Fig.8- Forward Characteristics of Free Wheeling Diode (Typical)

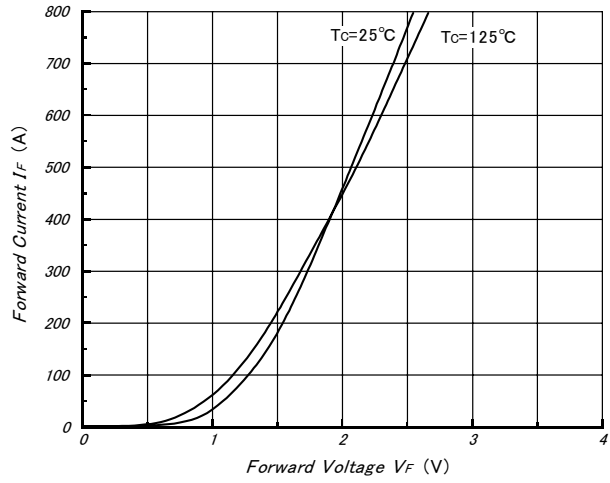


Fig.9- Reverse Recovery Characteristics (Typical)

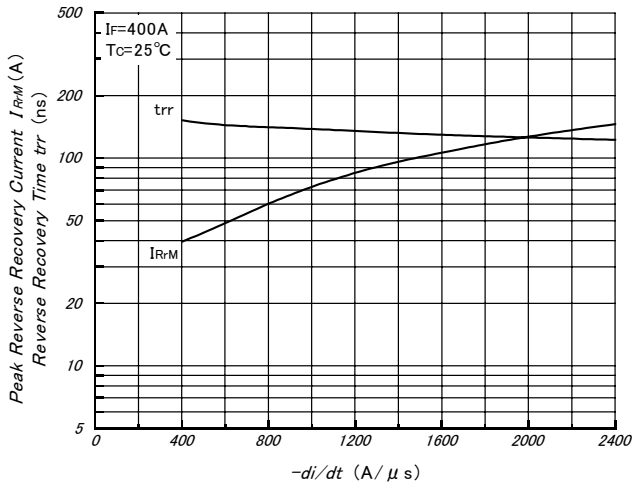


Fig.10- Reverse Bias Safe Operating Area (Typical)

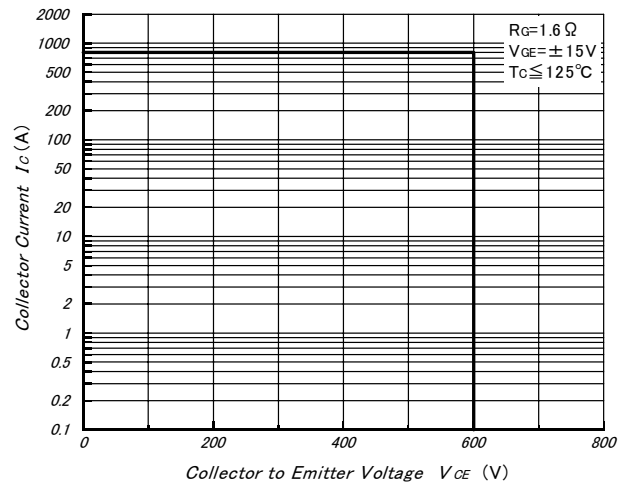


Fig.11- Transient Thermal Impedance

