

1MBH08D-120

Molded IGBT

1200V / 8A Molded Package

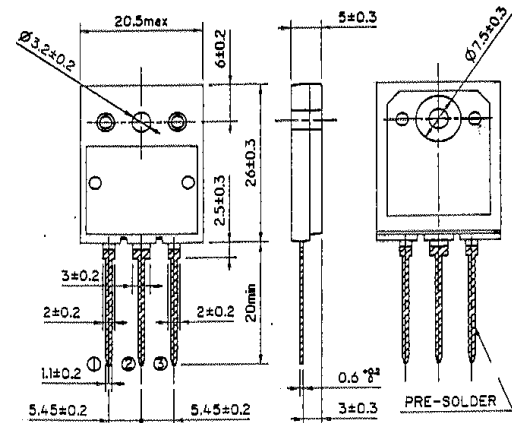
■ Outline drawings, mm TO-3PL

■ Features

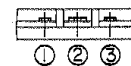
- Small molded package
- Low power loss
- Soft switching with low switching surge and noise
- High reliability, high ruggedness (RBSOA, SCSOA etc.)
- Comprehensive line-up

■ Applications

- Inverter for Motor drive
- AC and DC Servo drive amplifier
- Uninterruptible power supply



CONNECTION



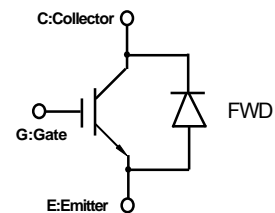
- ① GATE
- ② COLLECTOR
- ③ EMITTER

■ Maximum ratings and characteristics

● Absolute maximum ratings (Tc=25°C)

Item	Symbol	Rating	Unit		
Collector-Emitter voltage	V _{CES}	1200	V		
Gate-Emitter voltage	V _{GES}	±20	V		
Collector current	DC	T _c =25°C	I _{c25}	15	A
		T _c =105°C	I _{c105}	8	A
	1ms	T _c =25°C	I _{cp}	39	A
Max. power dissipation (IGBT)	P _c	135	W		
Max. power dissipation (FWD)	P _c	85	W		
Operating temperature	T _j	+150	°C		
Storage temperature	T _{stg}	-40 to +150	°C		
Screw torque	-	70	N·m		

■ Equivalent Circuit Schematic



● Electrical characteristics (at Tc=25°C unless otherwise specified)

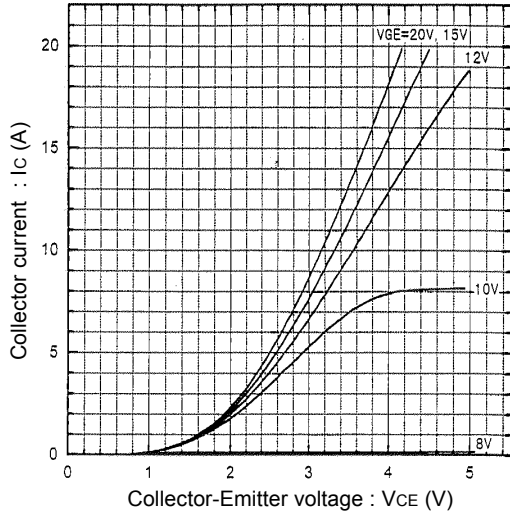
Item	Symbol	Characteristics			Conditions	Unit	
		Min.	Typ.	Max.			
Zero gate voltage collector current	I _{CES}	-	-	1.0	V _{GE} =0V, V _{CE} =1200V	mA	
Gate-Emitter leakage current	I _{GES}	-	-	20	V _{CE} =0V, V _{GE} =±20V	µA	
Gate-Emitter threshold voltage	V _{GE(th)}	5.5	-	8.5	V _{CE} =20V, I _c =8mA	V	
Collector-Emitter saturation voltage	V _{CE(sat)}	-	-	3.5	V _{GE} =15V, I _c =8A	V	
Input capacitance	C _{ies}	-	1000	-	V _{GE} =0V	pF	
Output capacitance	C _{oes}	-	160	-	V _{CE} =10V		
Reverse transfer capacitance	C _{res}	-	60	-	f=1MHz		
Switching Time	Turn-on time	t _{on}	-	-	1.2	V _{CC} =600V, I _c =8A	µs
		t _r	-	-	0.6	V _{GE} =±15V	
	Turn-off time	t _{off}	-	-	1.5	R _G =200 ohm	(Half Bridge)
		t _f	-	-	0.5		
	Turn-on time	t _{on}	-	0.16	-	V _{CC} =600V, I _c =8A	µs
		t _r	-	0.11	-	V _{GE} =+15V	
Turn-off time	t _{off}	-	0.30	-	R _G =20 ohm	(Half Bridge)	
	t _f	-	-	0.50			
FWD forward on voltage	V _F	-	-	3.0	I _F =8A	V	
Reverse recovery time	t _{rr}	-	-	0.35	I _F =8A, V _{GE} =-10V, V _R =200V, di/dt=100A/µs	µs	

● Thermal resistance characteristics

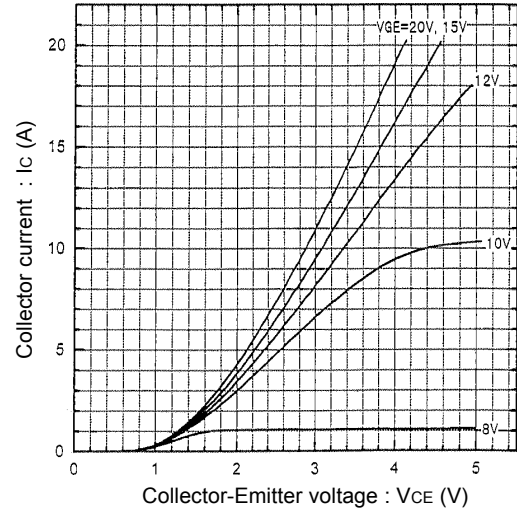
Item	Symbol	Characteristics			Conditions	Unit
		Min.	Typ.	Max.		
Thermal resistance	R _{th(j-c)}	-	-	0.92	IGBT	°C/W
	R _{th(j-c)}	-	-	1.47	FWD	°C/W

Characteristics

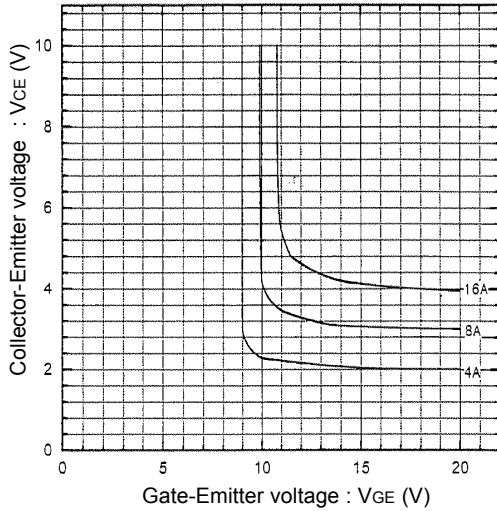
Collector current vs. Collector-Emitter voltage
Tj=25°C



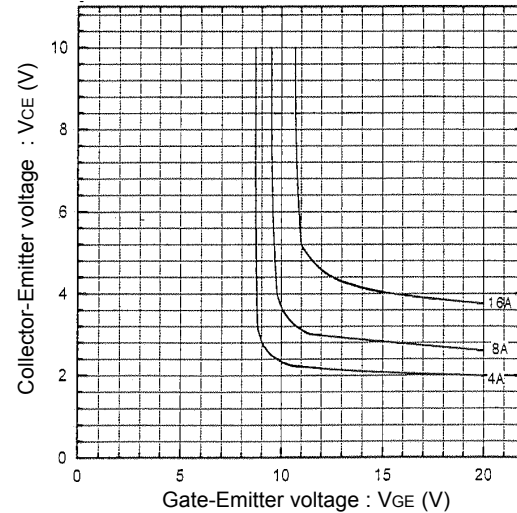
Collector current vs. Collector-Emitter voltage
Tj=125°C



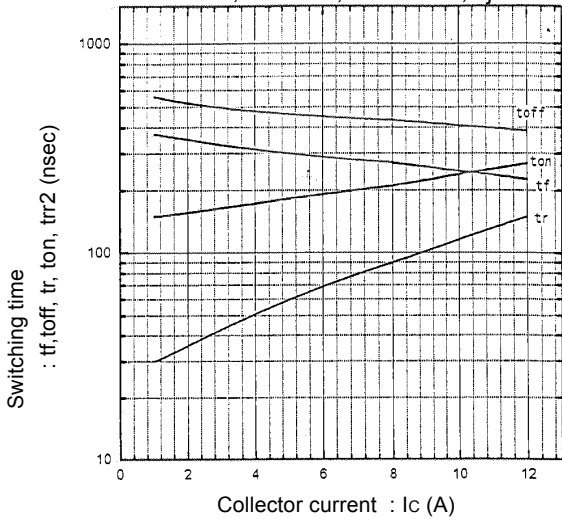
Collector-Emitter voltage vs. Gate-Emitter voltage
Tj=25°C



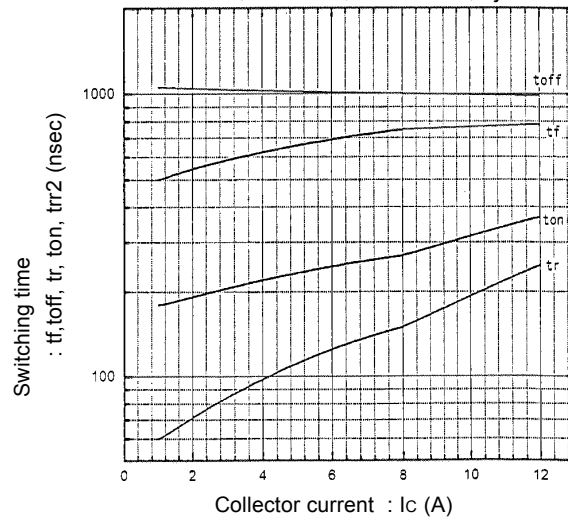
Collector-Emitter voltage vs. Gate-Emitter voltage
Tj=125°C



Switching time vs. Collector current
VCC=600V, RG=20Ω, VGE=±15V, Tj=25°C

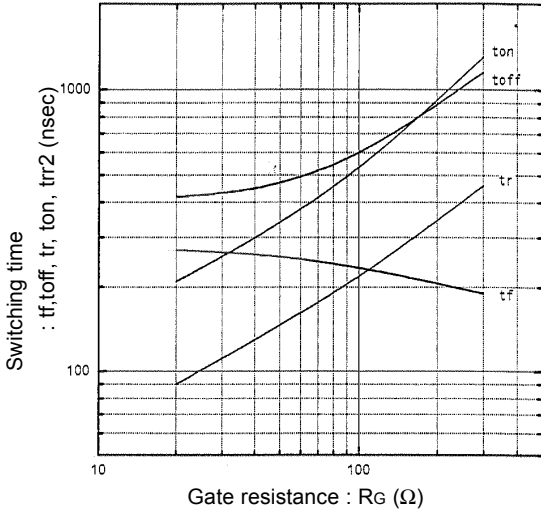


Switching time vs. Collector current
VCC=600V, RG=20Ω, VGE=±15V, Tj=125°C

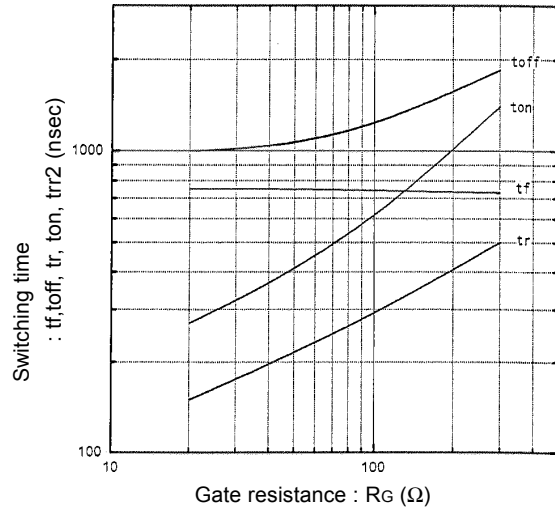


Characteristics

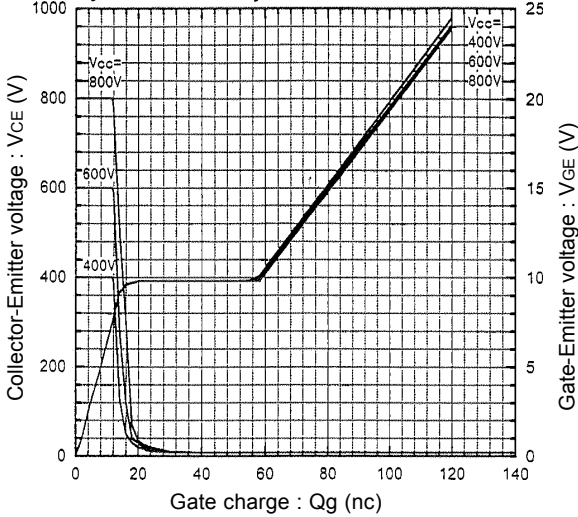
Switching time vs. R_G
 $V_{CC}=600V, I_C=8A, V_{GE}=\pm 15V, T_J=25^\circ C$



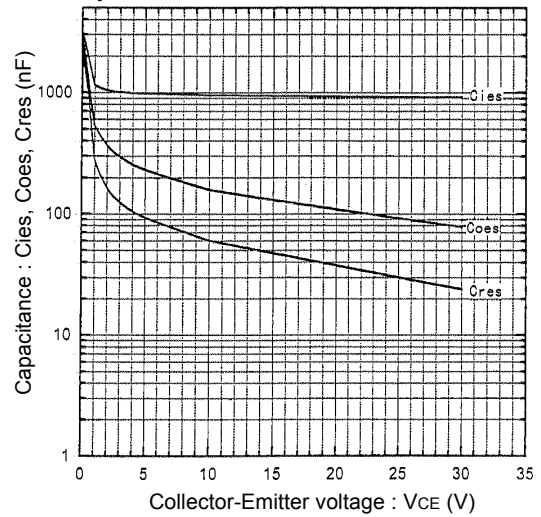
Switching time vs. R_G
 $V_{CC}=600V, I_C=8A, V_{GE}=\pm 15V, T_J=125^\circ C$



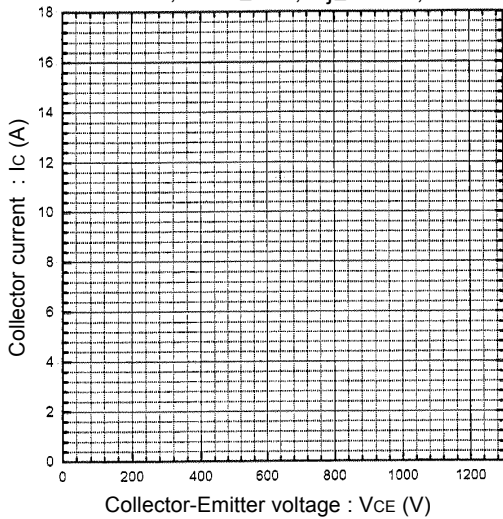
Dynamic input characteristics
 $T_J=25^\circ C$



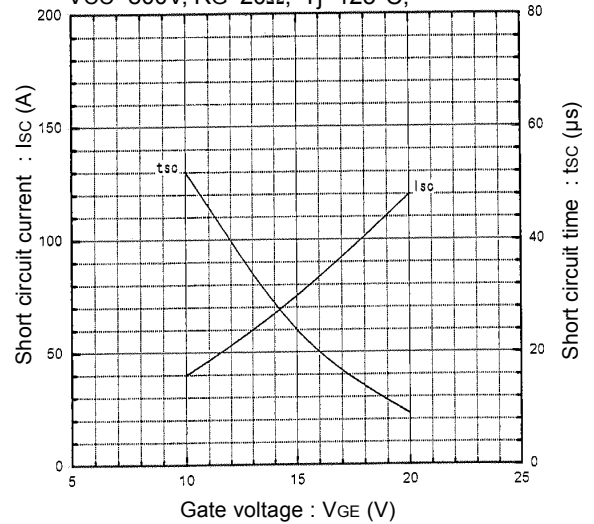
Capacitance vs. Collector-Emitter voltage
 $T_J=25^\circ C$



Reverse Biased Safe Operating Area
 $+V_{GE}=15V, -V_{GE}\leq 15V, T_J\leq 125^\circ C, R_G\geq 20\Omega$

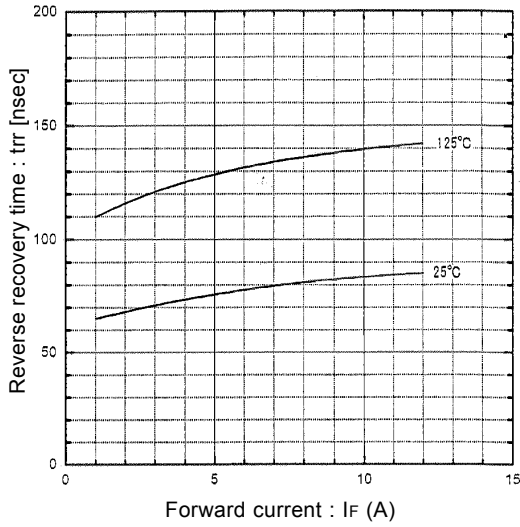


Typical short circuit capability
 $V_{CC}=800V, R_G=20\Omega, T_J=125^\circ C,$

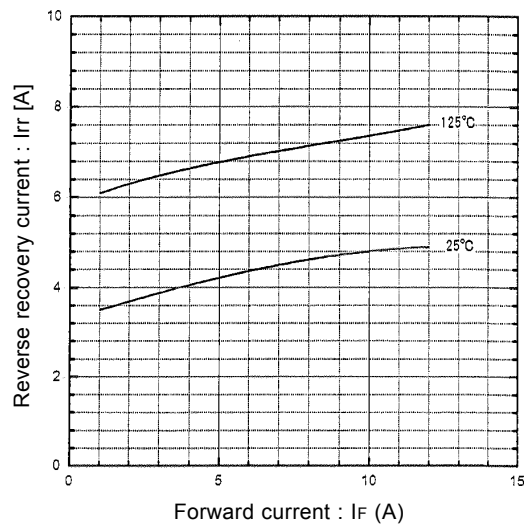


■ Characteristics

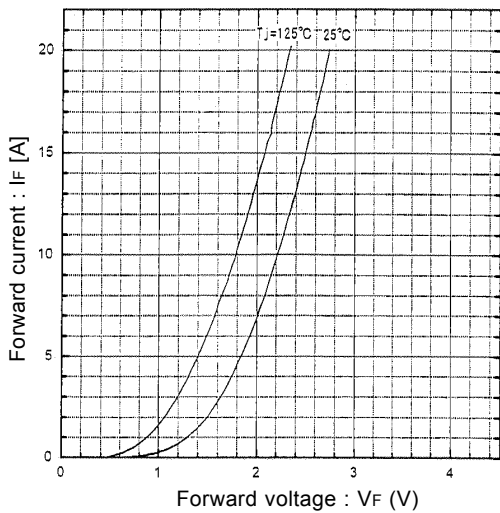
Reverse recovery time vs. Forward current
VR=200V, -di/dt=100A/μsec



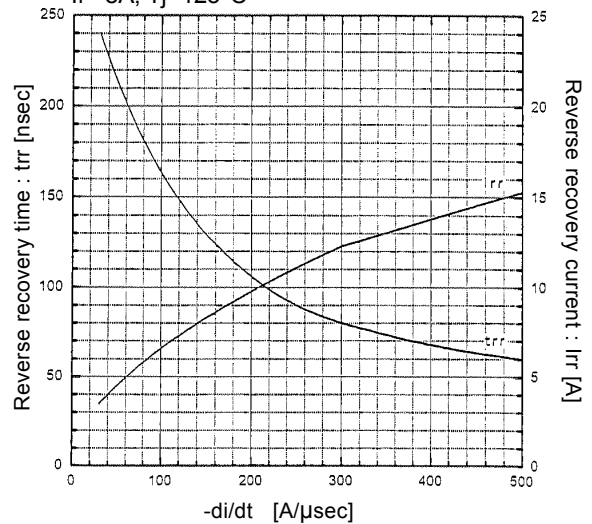
Reverse recovery current vs. Forward current
VR=200V, -di/dt=100A/μsec



Forward Voltage vs. Forward current



Reverse recovery characteristics vs. -di/dt
IF=8A, Tj=125°C



Transient thermal resistance

