

1MBH08D-120

Molded IGBT

1200V / 8A Molded Package

■ 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

■ 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

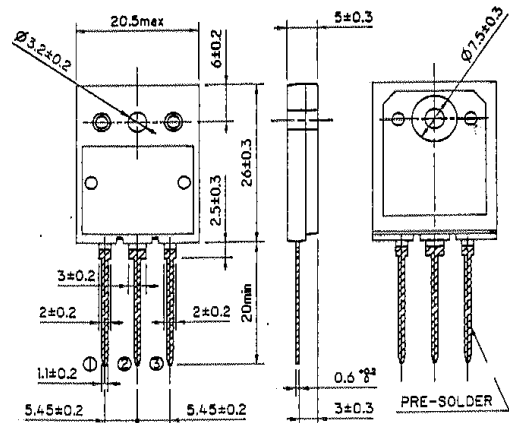
● Electrical characteristics (at Tc=25°C unless otherwise specified)

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	μs
		t _f	—	0.5	(Half Bridge)	
	Turn-on time	t _{on}	—	0.16	V _{CC} =600V, I _C =8A	μs
		t _r	—	0.11	V _{GE} =+15V	
FWD forward on voltage	V _F	t _{off}	—	0.30	R _G =20 ohm	μs
		t _f	—	0.50	(Half Bridge)	
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

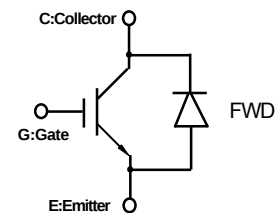
■ Outline drawings, mm TO-3PL



CONNECTION

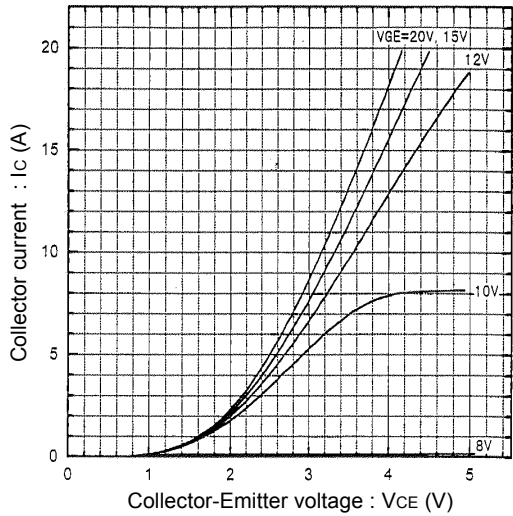


■ Equivalent Circuit Schematic

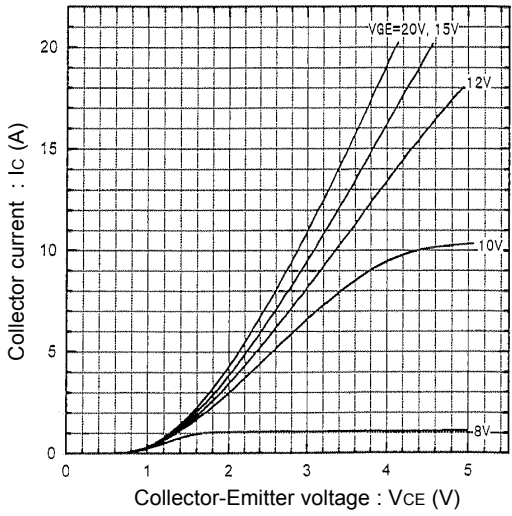


Characteristics

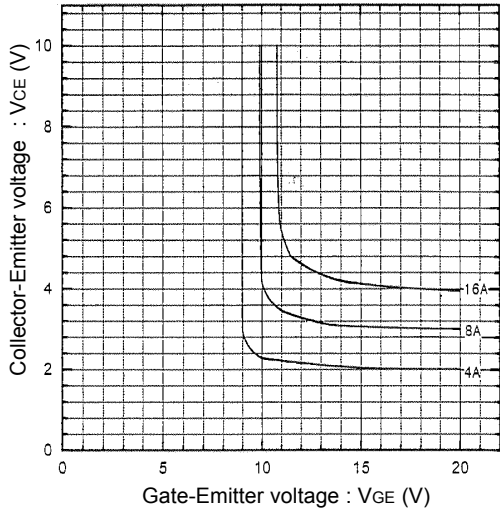
Collector current vs. Collector-Emitter voltage
Tj=25°C



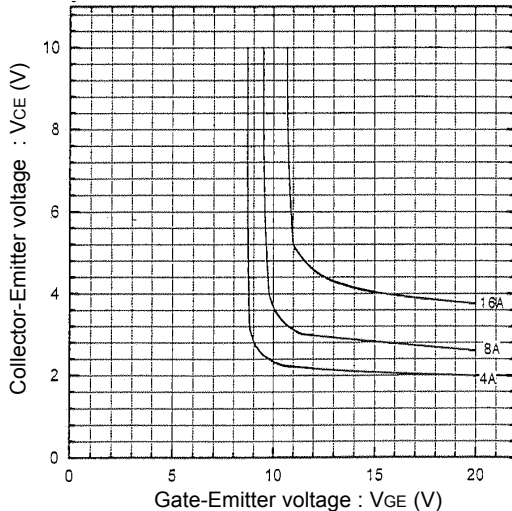
Collector current vs. Collector-Emitter voltage
Tj=125°C



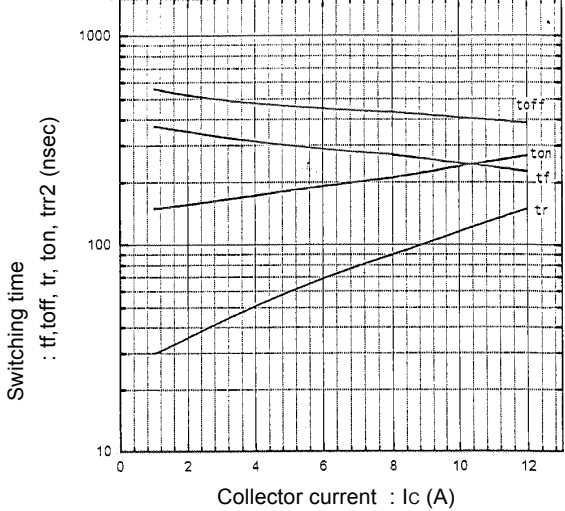
Collector-Emitter voltage vs. Gate-Emitter voltage
Tj=25°C



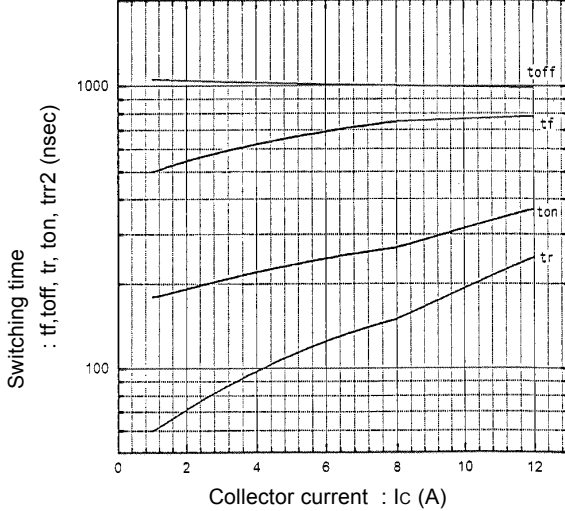
Collector-Emitter voltage vs. Gate-Emitter voltage
Tj=125°C



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



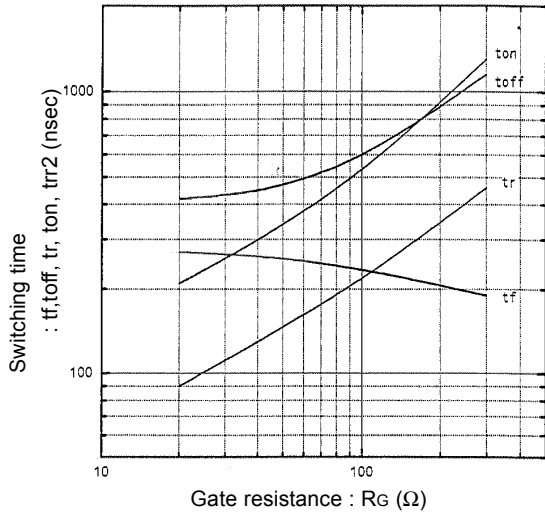
Switching time vs. Collector current
VCC=600V, RG=20Ω, VGE=±15V, Tj=125°C



■ Characteristics

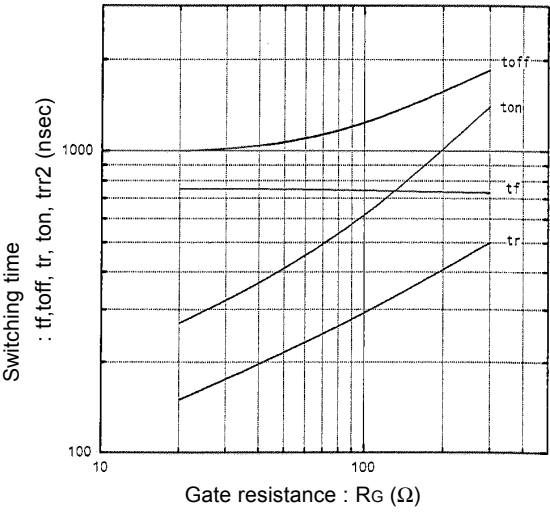
Switching time vs. R_G

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



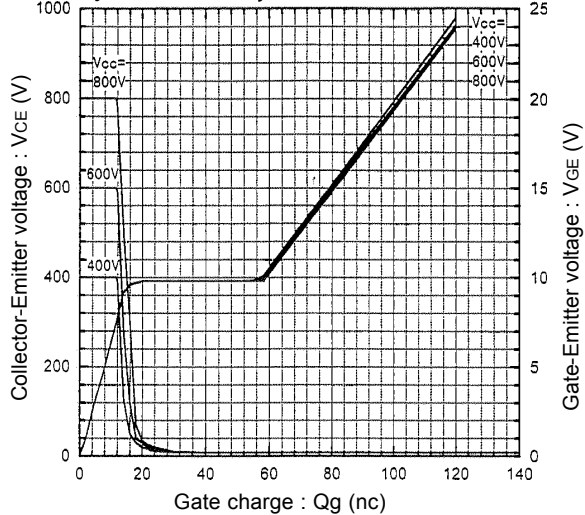
Switching time vs. R_G

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



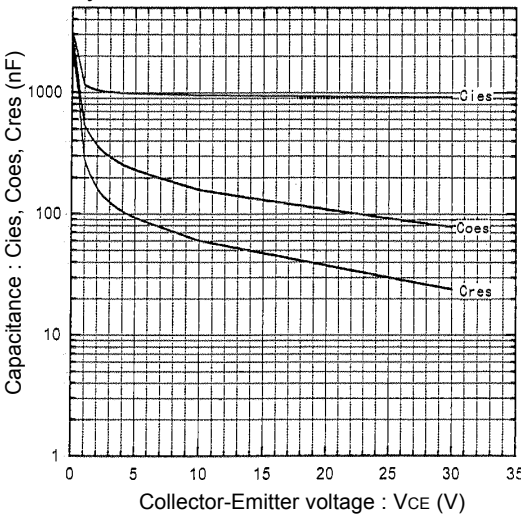
Dynamic input characteristics

$T_J=25^\circ C$



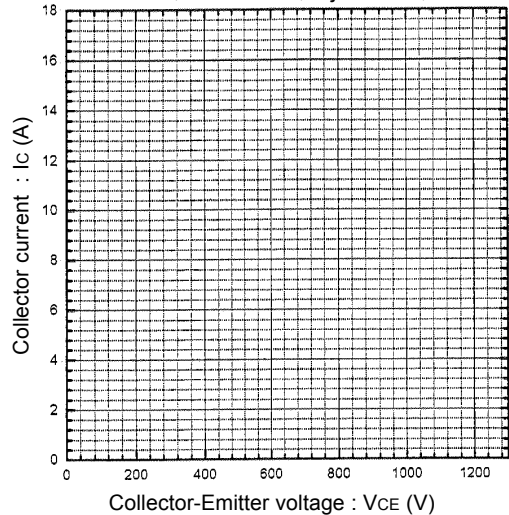
Capacitance vs. Collector-Emitter voltage

$T_J=25^\circ C$



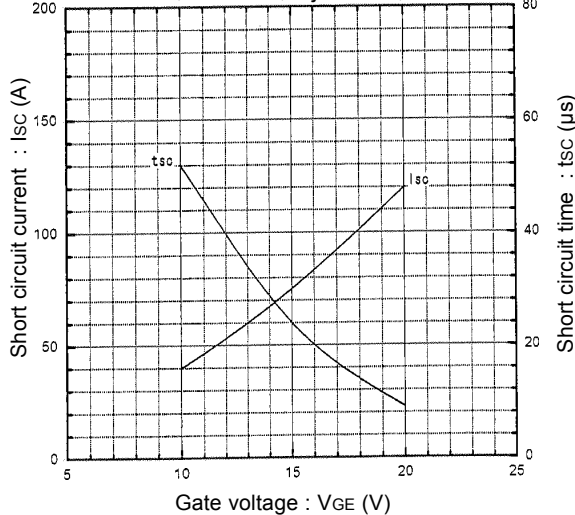
Reverse Biased Safe Operating Area

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



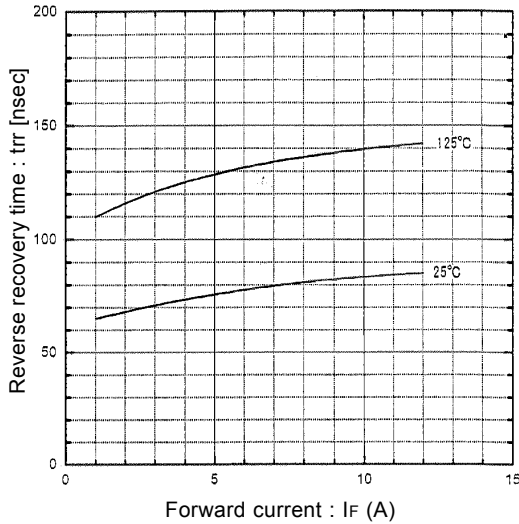
Typical short circuit capability

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

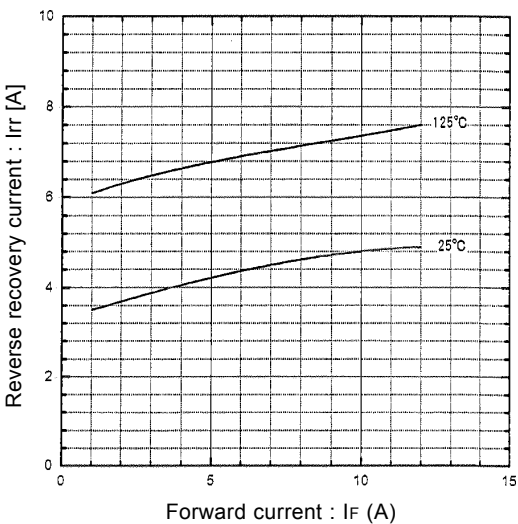


Characteristics

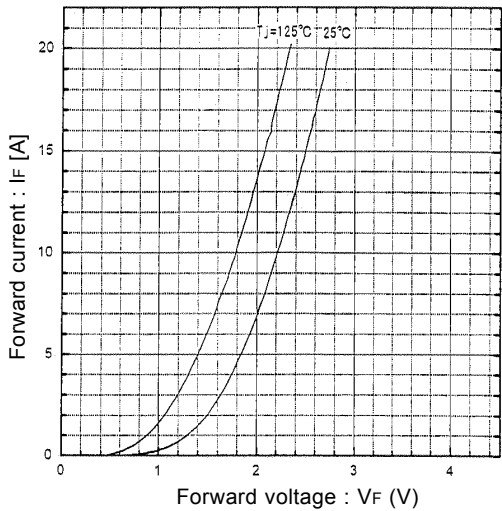
Reverse recovery time vs. Forward current
VR=200V, -di/dt=100A/μsec



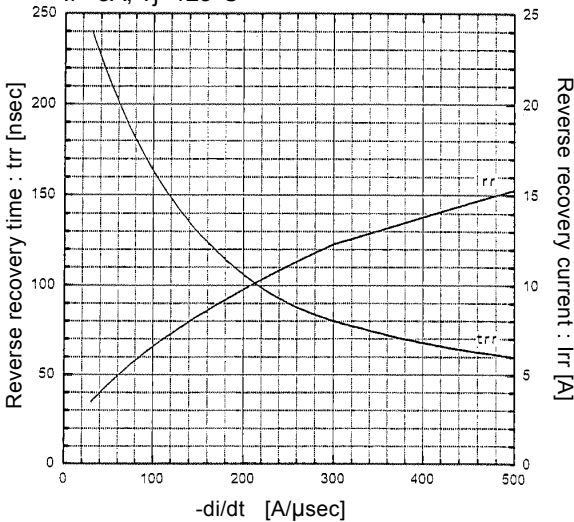
Reverse recovery current vs. Forward current
VR=200V, -di/dt=100A/μsec



Forward Voltage vs. Forward current



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



Transient thermal resistance

