

2MBI300P-140

IGBT Module P-Series

1400V / 300A 2 in one-package



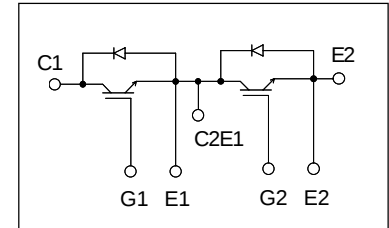
■ Features

- Small temperature dependence of the turn-off switching loss
- Easy to connect in parallel
- Wide RBSOA (square up to 2 time of rated current) and high short-circuit withstand capability
- Low loss and soft-switching (reduction of EMI noise)

■ Applications

- General purpose inverter
- AC and DC Servo drive amplifier
- Uninterruptible power supply

■ Equivalent Circuit Schematic



■ Maximum ratings and characteristics

● Absolute maximum ratings (at Tc=25°C unless otherwise specified)

Item		Symbol	Conditions	Rating	Unit	
Collector-Emitter voltage		V _{CES}	1400		V	
Gate-Emitter voltage		V _{GES}	±20		V	
Collector current		I _c	Continuous	T _c =25°C	400	A
				T _c =80°C	300	
		I _{cp}	1ms	T _c =25°C	800	
				T _c =80°C	600	
		-I _c			300	
		-I _c pulse			600	
Collector Power Dissipation		P _c	1 device	2500	W	
Junction temperature		T _j	+150		°C	
Storage temperature		T _{stg}	-40 to +125			
Isolation voltage	between terminal and copper base *1		V _{iso}	AC:1min.	2500	VAC
Screw Torque		Mounting *2		3.5	N·m	
		Terminals *3		4.5		

*1: All terminals should be connected together when isolation test will be done.

*2: Recommendable value : 2.5 to 3.5 N·m(M5) *3: Recommendable value : 3.5 to 4.5 N·m(M6)

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

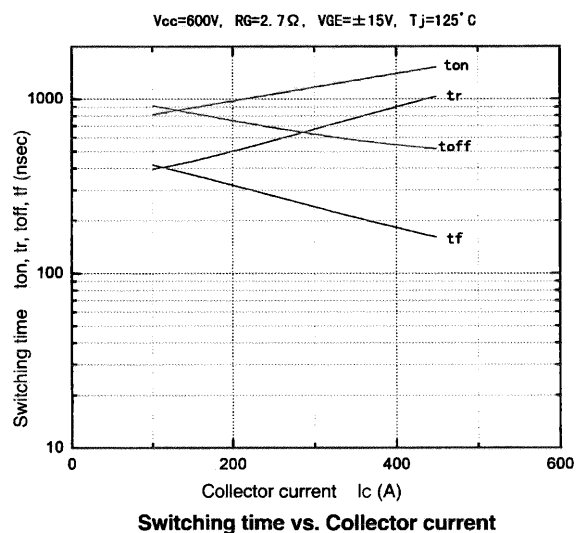
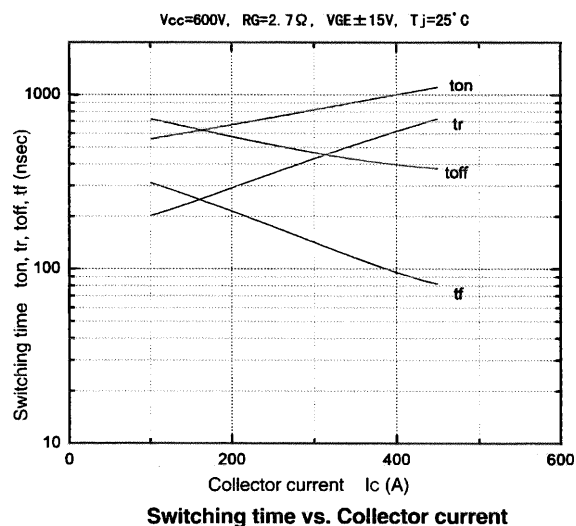
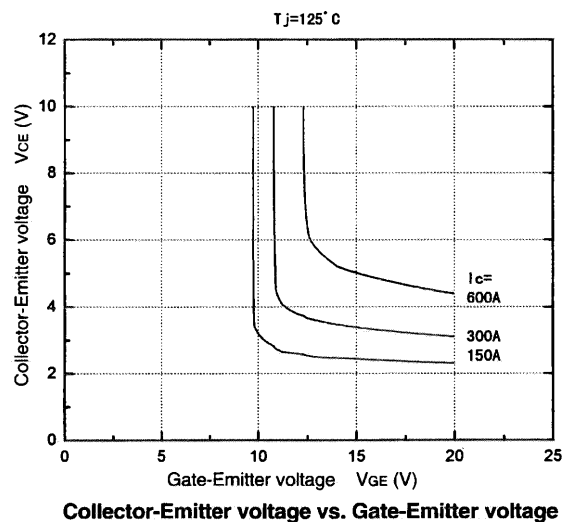
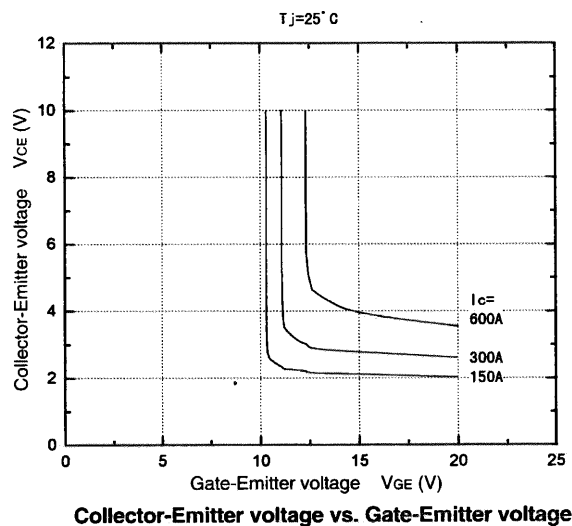
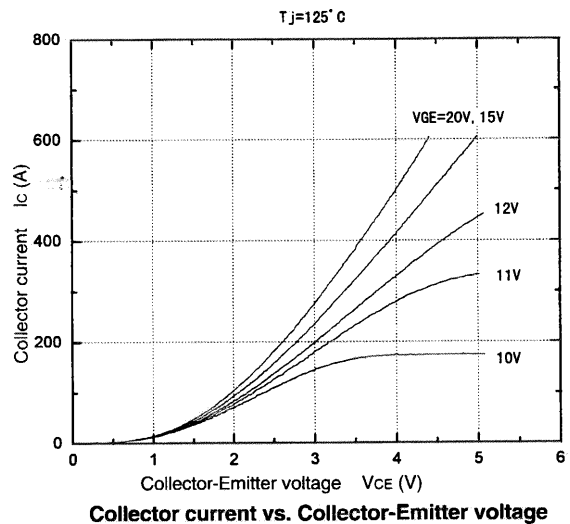
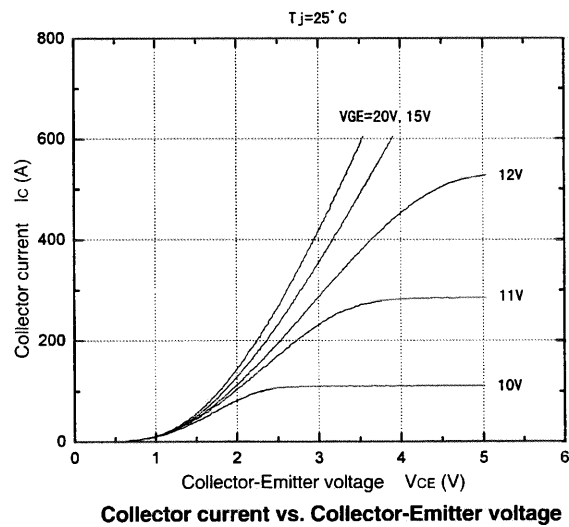
Item	Symbols	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Zero gate voltage collector current	I _{CES}	V _{GE} =0V, V _{CE} =1400V	—	—	3.0	mA
Gate-Emitter leakage current	I _{GES}	V _{CE} =0V, V _{GE} =±20V	—	—	600	nA
Gate-Emitter threshold voltage	V _{GE(th)}	V _{CE} =20V, I _c =300mA	6.0	8.0	9.0	V
Collector-Emitter saturation voltage	V _{CE(sat)}	V _{GE} =15V, I _c =300A, T _j =25°C	—	2.7	3.0	V
		V _{GE} =15V, I _c =300A, T _j =125°C	—	3.3	—	
Input capacitance	C _{ies}	V _{CE} =10V	—	30000	—	pF
Output capacitance	C _{oes}	V _{GE} =0V	—	4500	—	
Reverse transfer capacitance	C _{res}	f=1MHz	—	2000	—	
Turn-on time	t _{on}	V _{CC} =600V	—	—	1.20	μs
	t _r	I _c =300A	—	—	0.60	
Turn-off time	t _{off}	V _{GE} =±15V	—	—	1.00	
	t _f	R _G = 2.7 Ω	—	—	0.30	
Diode forward on voltage	V _F	I _F =300A, V _{GE} =0V	—	2.4	3.3	V
Reverse recovery time	t _{rr}	I _F =300A	—	—	0.35	μs

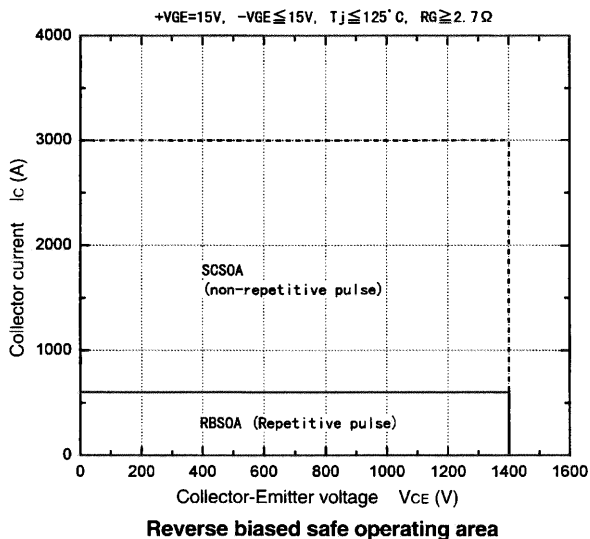
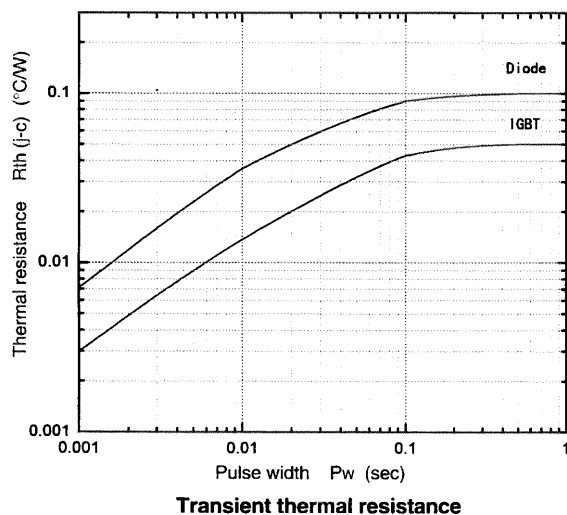
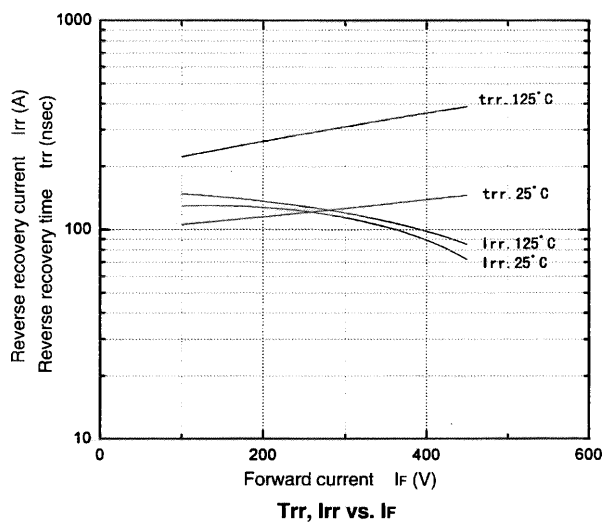
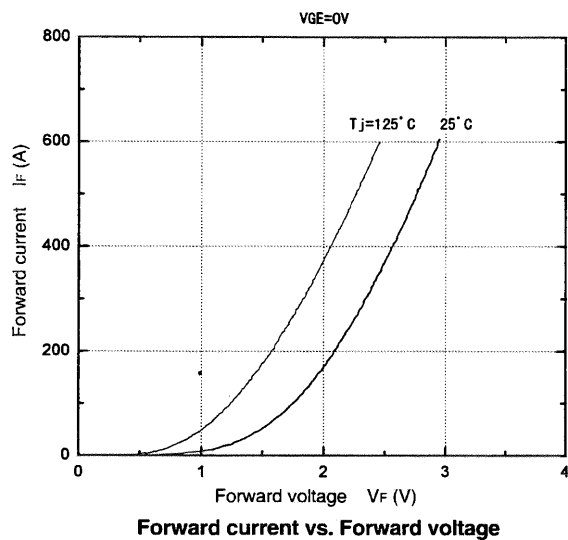
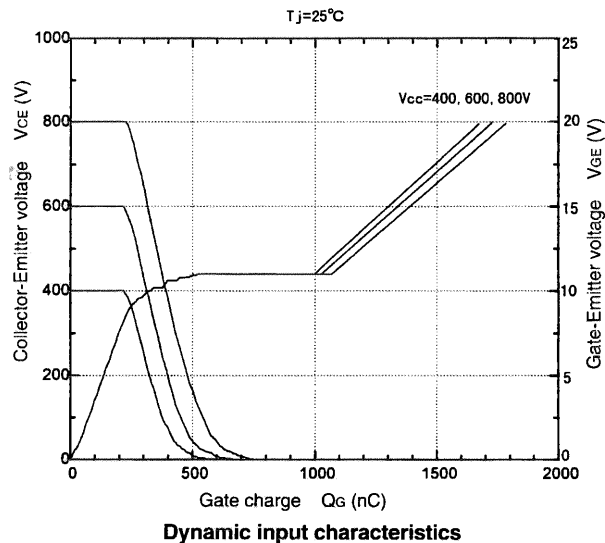
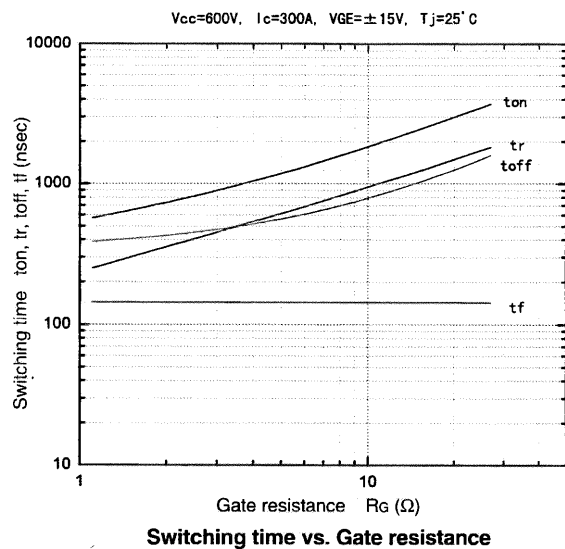
● Thermal resistance characteristics

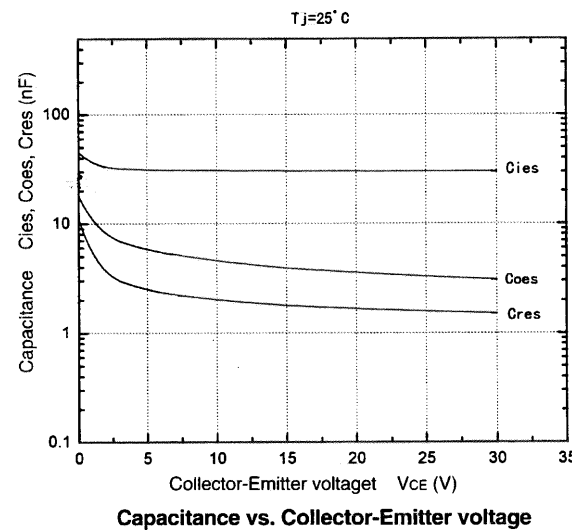
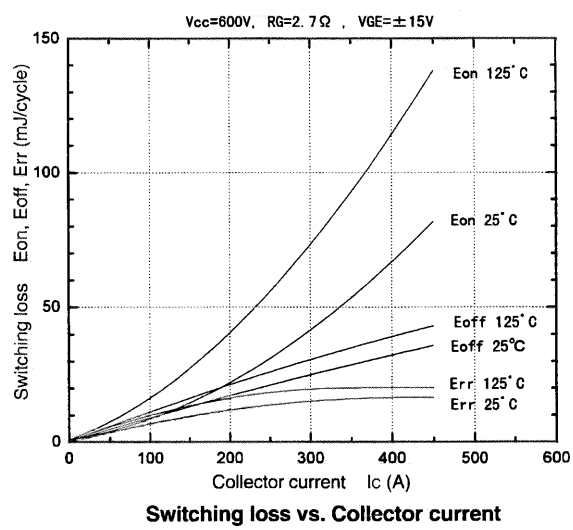
Items	Symbols	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Thermal resistance	R _{th(j-c)}	IGBT	—	—	0.05	°C/W
	R _{th(j-c)}	Diode	—	—	0.10	°C/W
Contact Thermal resistance	R _{th(c-f)*4}	the base to cooling fin	—	0.0167	—	°C/W

*4: This is the value which is defined mounting on the additional cooling fin with thermal compound.

Characteristics (Representative)







■ Outline Drawings, mm

M238

