

2MBI300P-140

IGBT Modules

IGBT Modules P series

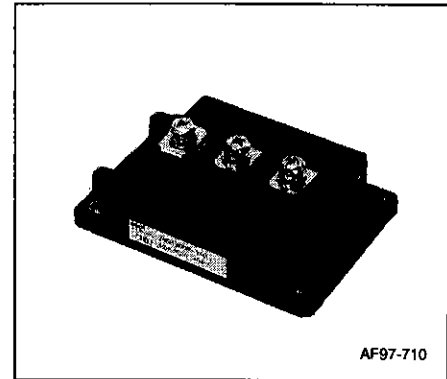
1400V / 300A 2 in one-package

■ Features

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

■ Applications

- General purpose inverters
- AC servo systems (Drive unit)
- UPS (Uninterruptible Power Supply)

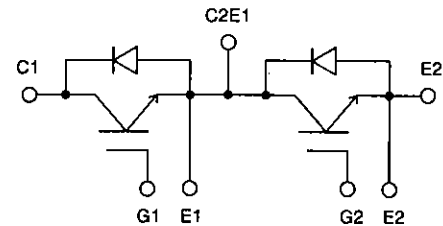


■ Maximum ratings and characteristics

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

Item	Symbol	Rating	Unit	
Collector-Emitter voltage	V _{CE} S	1400	V	
Gate-Emitter voltage	V _{GE} S	±20	V	
Collector current	Continuous	T _c =25°C	I _c 400	A
		T _c =80°C	300	
	1ms	T _c =25°C	I _c pulse 800	
		T _c =80°C	600	
	Continuous	-I _c	300	
1ms	-I _c pulse	600		
Max power dissipation	P _c	2500	W	
Operating temperature	T _J	+150	°C	
Storage temperature	T _{stg}	-40 to +125	°C	
Isolation voltage	V _{is}	2500 AC (1min.)	V	
Screw torque	Mounting *1	3.5	N·m	
	Terminals *2	4.5		

■ Equivalent circuit



Recommendable value

*1 2.5 to 3.5 N·m (M5 or M6) *2 3.5 to 4.5 N·m (M6)

● Electrical ratings and characteristics (T_J =25°C unless otherwise specified)

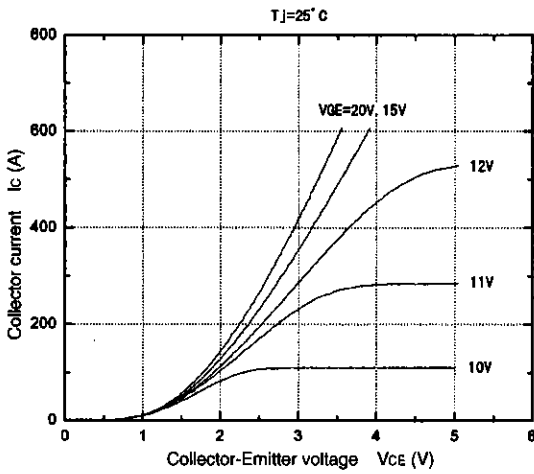
Item	Symbol	Characteristics			Conditions	Unit
		Min.	Typ.	Max.		
Zero gate voltage collector current	I _{CE} S	-	-	3.0	V _{GE} =0V, V _{CE} =1400V	mA
Gate-Emitter leakage current	I _{GE} S	-	-	600	V _{CE} =0V, V _{GE} =±20V	nA
Gate-Emitter threshold voltage	V _{GE} (th)	6.0	8.0	9.0	V _{CE} =20V, I _c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

● Thermal resistance characteristics

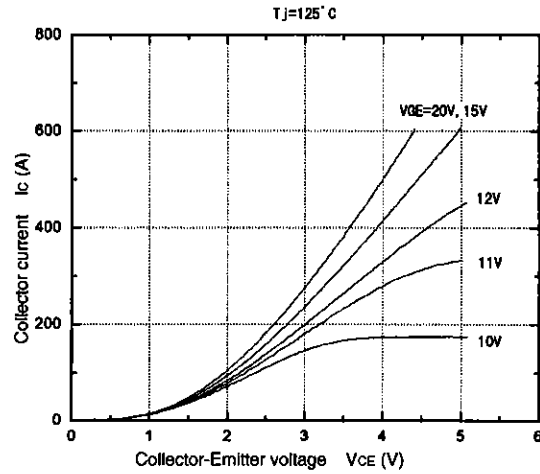
Item	Symbol	Characteristics			Conditions	Unit
		Min.	Typ.	Max.		
Thermal resistance	R _{th} (j-c)	-	-	0.05	IGBT	°C/W
	R _{th} (j-c)	-	-	0.1	Diode	
	R _{th} (c-f)*	-	0.0167	-	the base to cooling fin	

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

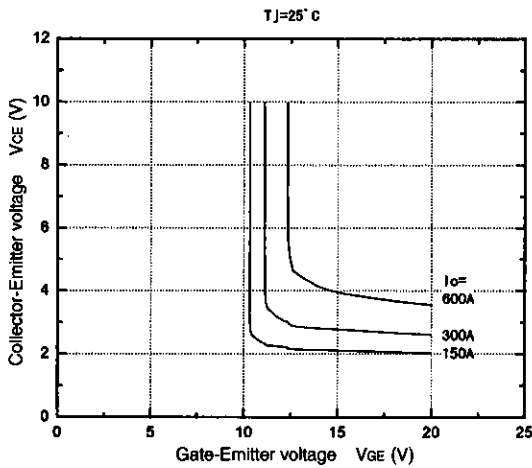
■ Characteristics



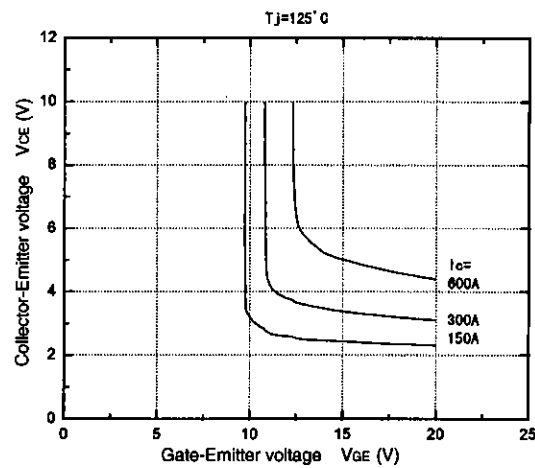
Collector current vs. Collector-Emitter voltage



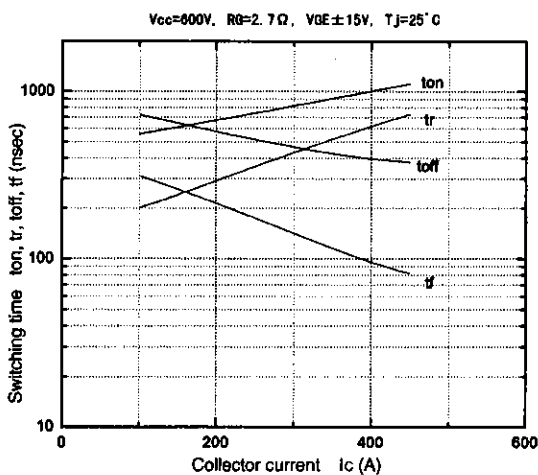
Collector current vs. Collector-Emitter voltage



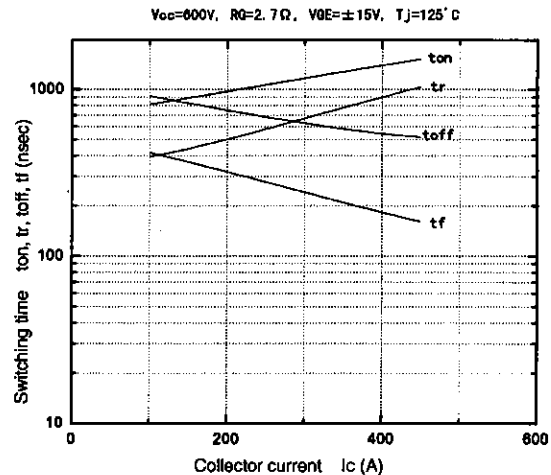
Collector-Emitter voltage vs. Gate-Emitter voltage



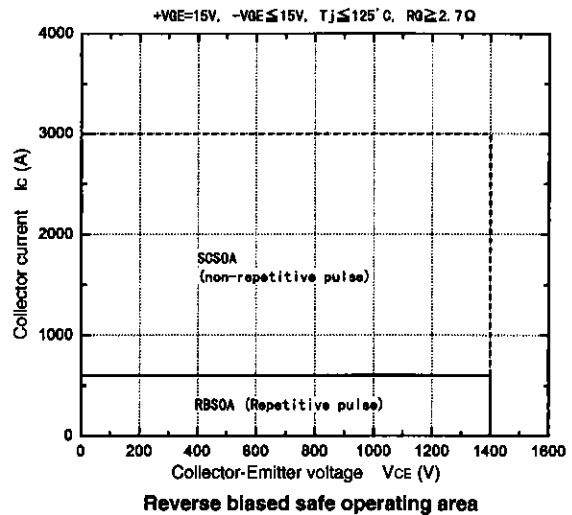
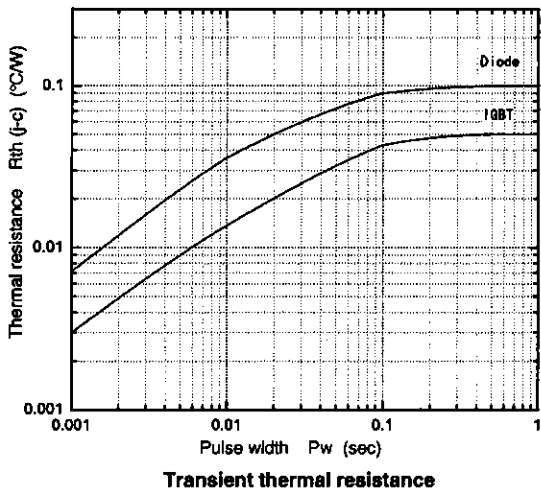
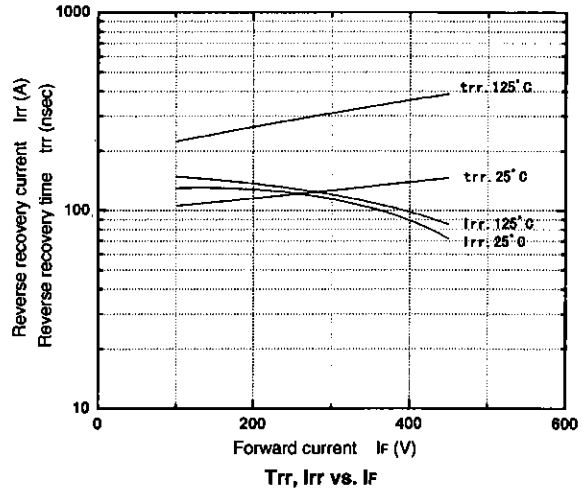
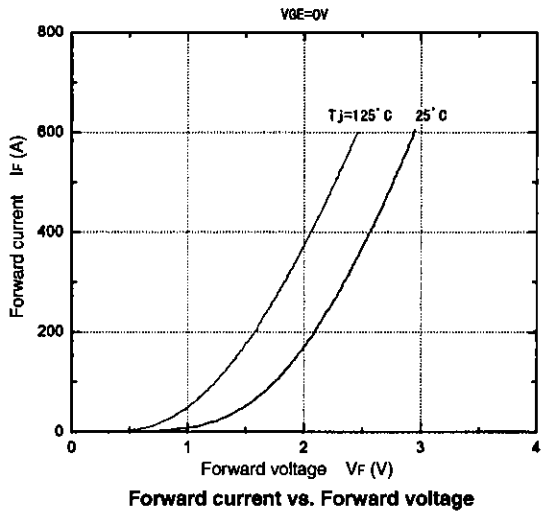
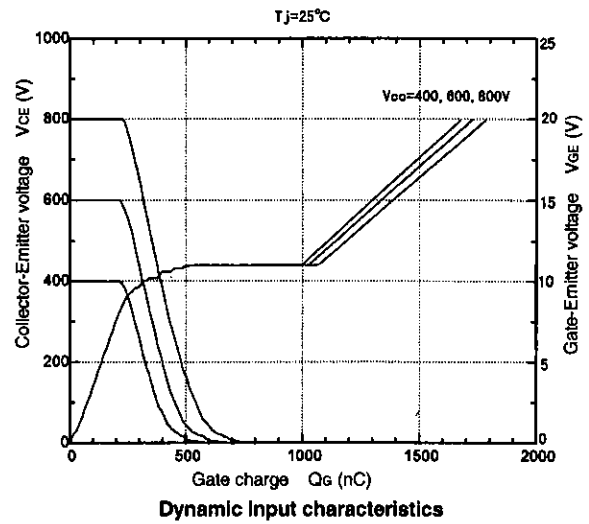
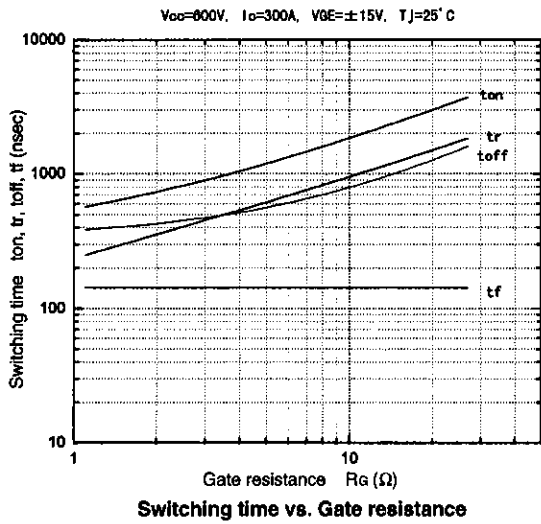
Collector-Emitter voltage vs. Gate-Emitter voltage

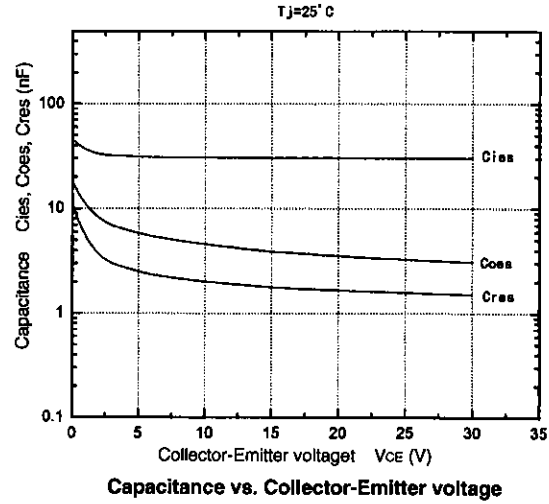
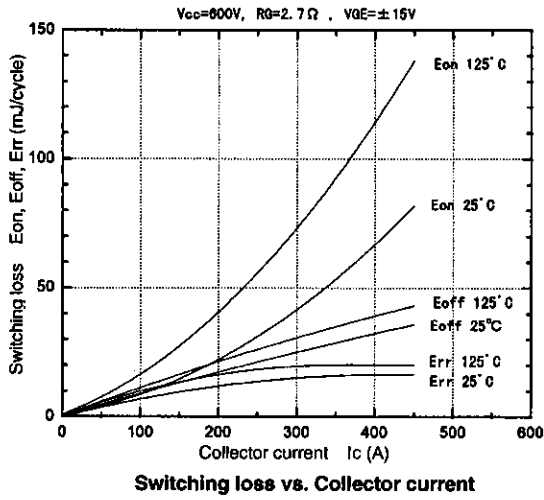


Switching time vs. Collector current



Switching time vs. Collector current





■ Outline drawings, mm

M238

