

# 6MBI35S-140

## IGBT Modules

### IGBT MODULE ( S series) 1400V / 35A 6 in one-package

#### ■ Features

- Compact Package
- P.C.Board Mount Module
- Low VCE(sat)

#### ■ Applications

- Inverter for Motor drive
- AC and DC Servo drive amplifier
- Uninterruptible power supply
- Industrial machines, such as Welding machines

#### ■ Maximum ratings and characteristics

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

Item	Symbol	Rating	Unit		
Collector-Emitter voltage	V <sub>CES</sub>	1400	V		
Gate-Emitter voltage	V <sub>GES</sub>	±20	V		
Collector current	Continuous	T <sub>j</sub> =25°C	I <sub>c</sub>	50	A
		T <sub>j</sub> =75°C		35	
	1ms	T <sub>j</sub> =25°C	I <sub>c</sub> pulse	100	A
		T <sub>j</sub> =75°C		70	
	1ms		-I <sub>c</sub>	35	A
		-I <sub>c</sub> pulse	70	A	
Max. power dissipation (1 device)	P <sub>c</sub>	240	W		
Operating temperature	T <sub>j</sub>	+150	°C		
Storage temperature	T <sub>stg</sub>	-40 to +125	°C		
Isolation voltage *1	V <sub>is</sub>	AC 2500 (1min.)	V		
Screw torque	Mounting *2	3.5	N·m		

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

\*2: Recommendable value : 2.5 to 3.5 N·m (M5)

##### ● Electrical characteristics (at T<sub>j</sub>=25°C unless otherwise specified)

Item	Symbol	Characteristics			Conditions	Unit	
		Min.	Typ.	Max.			
Zero gate voltage collector current	I <sub>CES</sub>	-	-	1.0	V <sub>GE</sub> =0V, V <sub>CES</sub> =1400V	mA	
Gate-Emitter leakage current	I <sub>GES</sub>	-	-	0.2	V <sub>CES</sub> =0V, V <sub>GE</sub> =±20V	µA	
Gate-Emitter threshold voltage	V <sub>GE(th)</sub>	5.5	7.2	8.5	V <sub>CES</sub> =20V, I <sub>c</sub> =35mA	V	
Collector-Emitter saturation voltage	V <sub>CES(sat)</sub>	-	2.4	2.75	T <sub>j</sub> =25°C	V <sub>GE</sub> =15V, I <sub>c</sub> =35A	V
		-	3.0	-	T <sub>j</sub> =125°C		
Input capacitance	C <sub>ies</sub>	-	4200	-	V <sub>GE</sub> =0V	pF	
Output capacitance	C <sub>oes</sub>	-	875	-	V <sub>CES</sub> =10V		
Reverse transfer capacitance	C <sub>res</sub>	-	770	-	f=1MHz		
Turn-on time	t <sub>on</sub>	-	0.35	1.2	V <sub>CC</sub> =800V	µs	
	t <sub>r</sub>	-	0.25	0.6	I <sub>c</sub> =35A		
	t <sub>r(i)</sub>	-	0.1	-	V <sub>GE</sub> =±15V		
Turn-off time	t <sub>off</sub>	-	0.45	1.0	R <sub>G</sub> =33Ω		
	t <sub>f</sub>	-	0.08	0.3			
Diode forward on voltage	V <sub>F</sub>	-	2.6	3.4	T <sub>j</sub> =25°C	I <sub>F</sub> =35A, V <sub>GE</sub> =0V	V
		-	2.2	-	T <sub>j</sub> =125°C		
Reverse recovery time	t <sub>rr</sub>	-	-	0.35	I <sub>F</sub> =35A	µs	

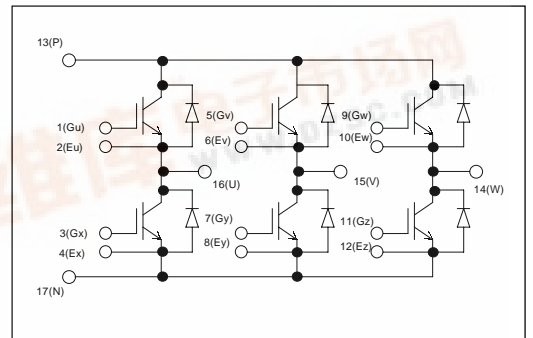
##### ● Thermal resistance characteristics

Item	Symbol	Characteristics			Conditions	Unit
		Min.	Typ.	Max.		
Thermal resistance	R <sub>th(j-c)</sub>	-	-	0.52	IGBT	°C/W
	R <sub>th(j-c)</sub>	-	-	0.90	FWD	°C/W
	R <sub>th(c-f)*2</sub>	-	0.05	-	the base to cooling fin	°C/W

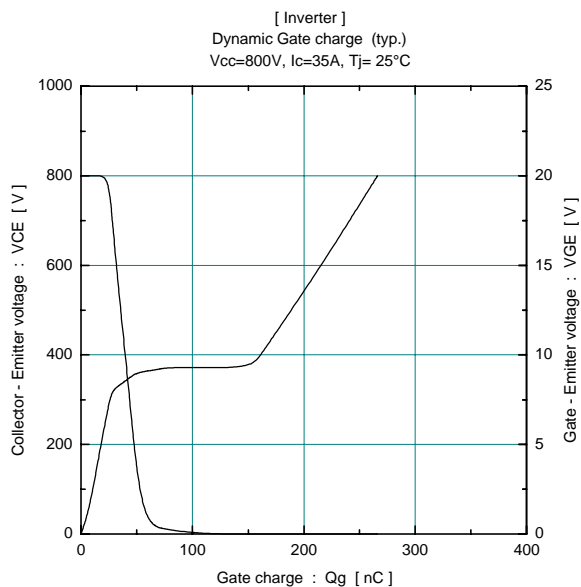
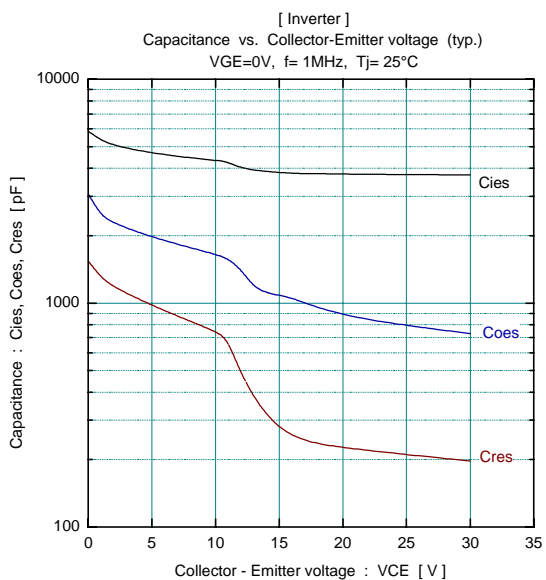
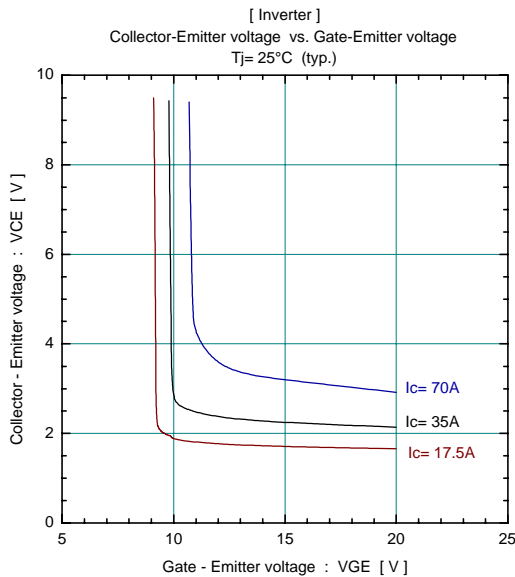
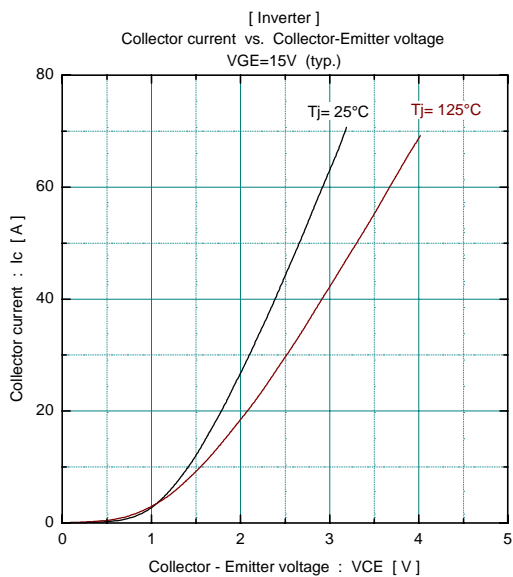
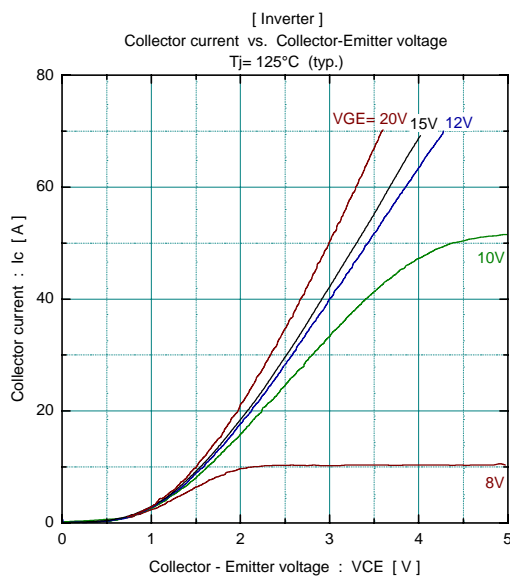
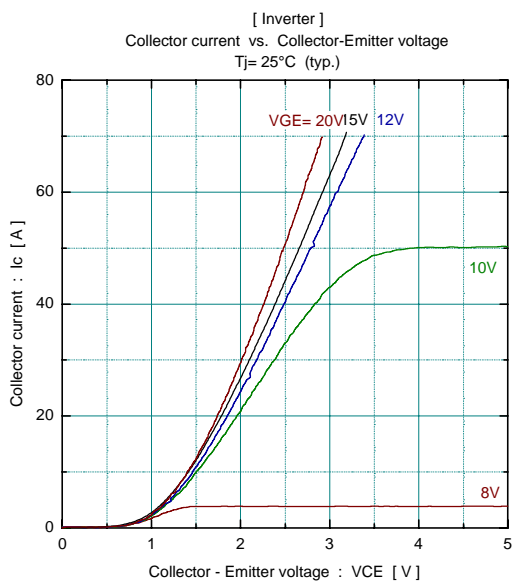
\*2: This is the value which is defined mounting on the additional cooling fin with thermal compound

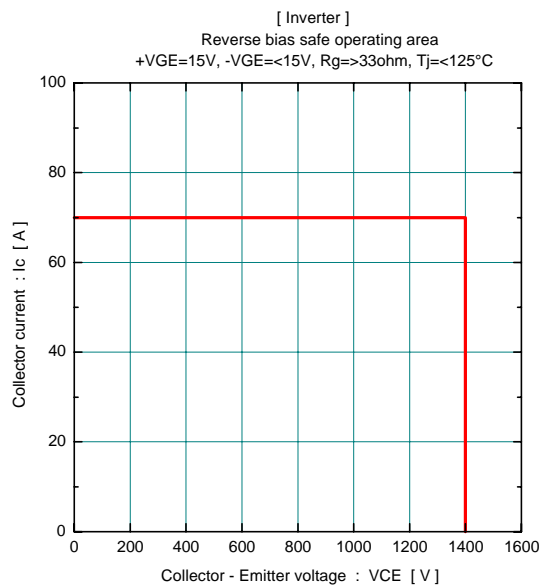
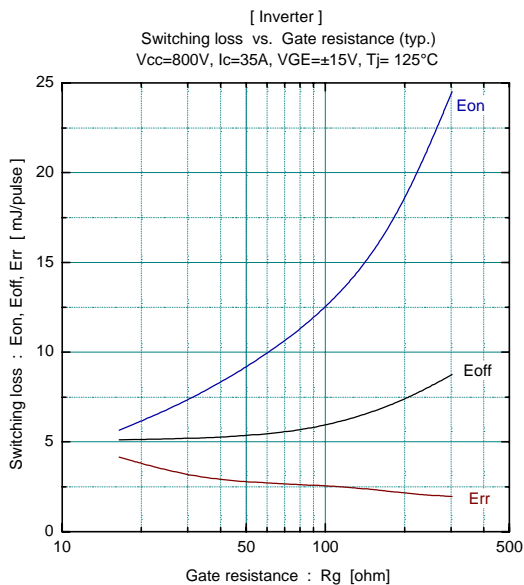
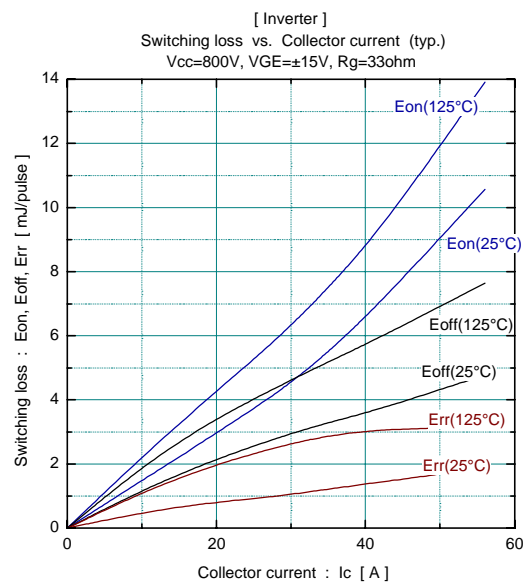
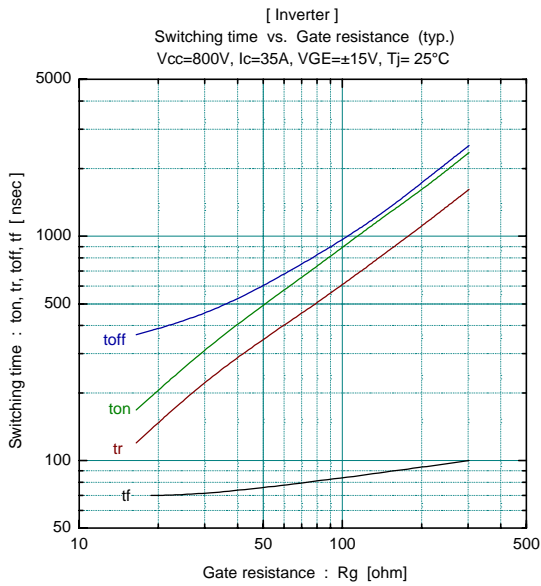
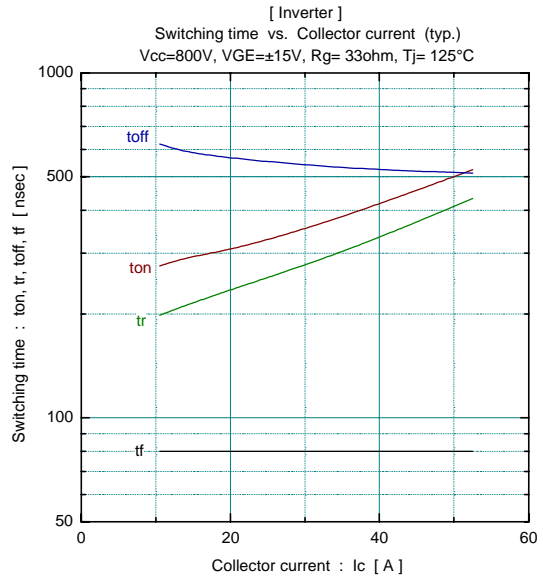
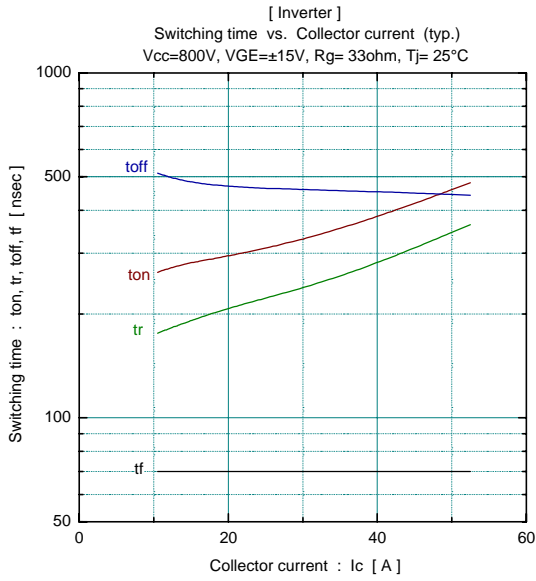


#### ■ Equivalent Circuit Schematic

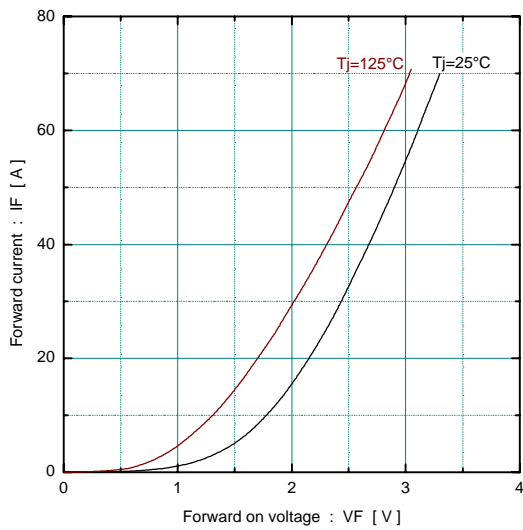


Characteristics

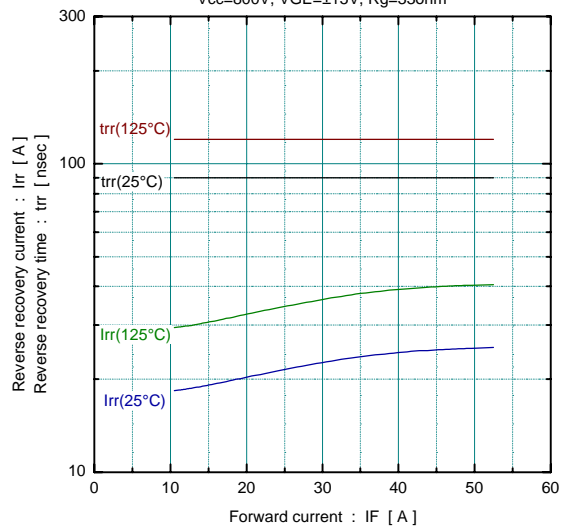




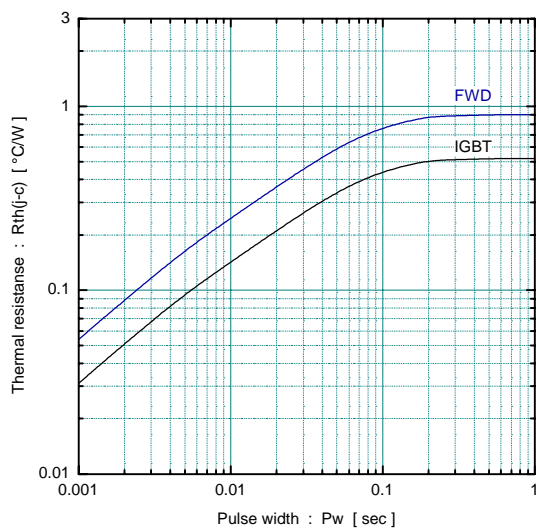
Forward current vs. Forward on voltage (typ.)



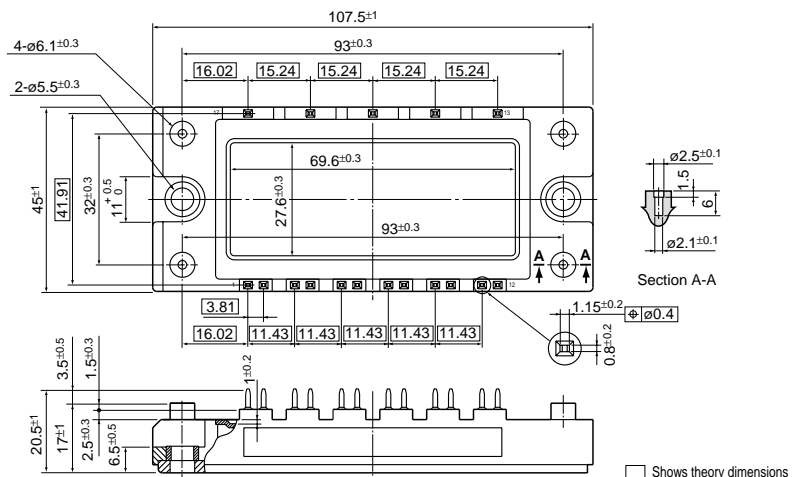
Reverse recovery characteristics (typ.)  
Vcc=800V, VGE=±15V, Rg=33ohm



Transient thermal resistance



■ Outline Drawings, mm



mass : 180g