

### Diode Module with Brake

Diode:1600V / 100A, IGBT:1400A/75A

#### ■ Features

- Compact Package
- P.C. Board Mount Module
- Converter Diode Bridge Dynamic Brake Circuit

#### ■ Applications

- Inverter for Motor Drive
- AC and DC Servo Drive Amplifier
- Uninterruptible Power Supply

#### ■ Maximum ratings and characteristics

##### ● Absolute maximum ratings (Tc=25°C unless without specified)

Item	Symbol	Condition		Rating	Unit	
Converter	Repetitive peak reverse voltage	V <sub>RRM</sub>		1600	V	
	Non-repetitive peak reverse voltage	V <sub>RSM</sub>		1760	V	
	Average output current	I <sub>o</sub>	50Hz/60Hz sine wave Tc=110°C	100	A	
	One cycle surge current	I <sub>FSM</sub>	From rated load	1000	A	
	Peak power	P <sub>t</sub>	From rated load	4000	A <sup>2</sup> s	
	Operation junction temperature	T <sub>j</sub>		-40 to +125	°C	
Brake	Collector-Emitter voltage	V <sub>GES</sub>		1400	V	
	Gate-Emitter voltage	V <sub>GES</sub>		±20	V	
	Collector current	I <sub>c</sub>	DC	Tc=25°C	75	A
				Tc=75°C	50	
		I <sub>cP</sub>	1ms	Tc=25°C	150	A
				Tc=75°C	100	
	Collector power dissipation	P <sub>c</sub>	1 device	360	W	
	Repetitive peak reverse voltage	V <sub>RRM</sub>		1400	V	
	Operation junction temperature	T <sub>j</sub>		+150	°C	
	Storage junction temperature	T <sub>stg</sub>	AC : 1 minute	-40 to +125	°C	
Isolation voltage	V <sub>iso</sub>	M5 screw	2500	V		
Mounting screw torque			2.0 to 2.5	N·m		

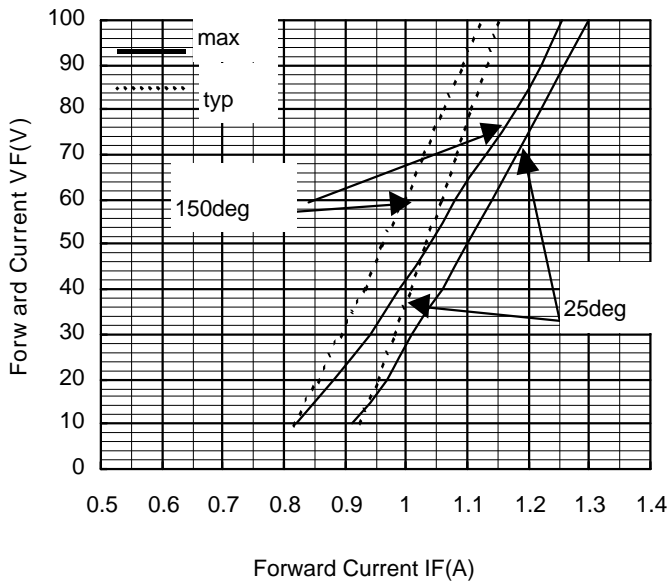
##### ● Electrical characteristics (Tj=25°C unless otherwise specified)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	
Co.	Forward voltage	V <sub>FM</sub>			1.30	V	
	Reverse current	I <sub>RRM</sub>			20	mA	
	Zero gate voltage Collector current	I <sub>CES</sub>	V <sub>GE</sub> =0V. V <sub>CE</sub> =1400V			1.0	mA
	Gate-Emitter leakage current	I <sub>GES</sub>	V <sub>CE</sub> =0V. V <sub>GE</sub> =±20V			200	nA
Brake	Collector-Emitter saturation voltage	V <sub>CE(sat)</sub>	V <sub>GE</sub> =15V. I <sub>c</sub> =50A		2.4	2.8	V
	Turn-on time	ton	V <sub>CC</sub> =800V		0.35	1.2	μs
		tr	I <sub>c</sub> =50A		0.25	0.6	
	Turn-off time	toff	V <sub>GE</sub> =±15V		0.45	1.0	
		tf	R <sub>G</sub> =25ohm		0.08	0.3	
	Reverse current	I <sub>RRM</sub>				1.0	mA

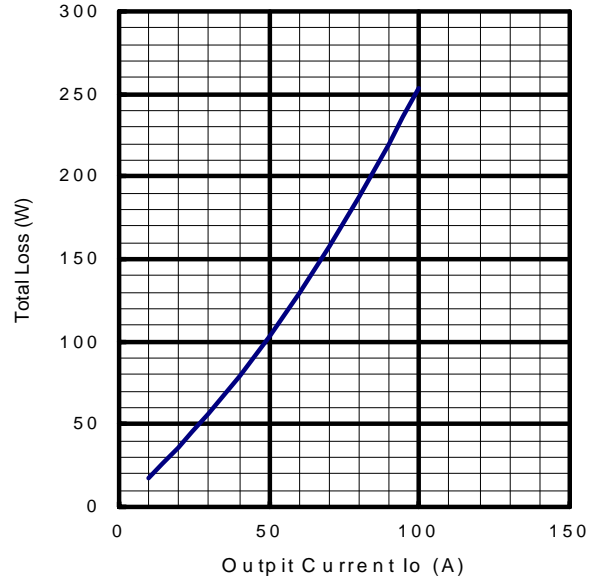
##### ● Thermal characteristics

Item	Symbol	Condition		Min.	Typ.	Max.	Unit
Thermal resistance	R <sub>th(j-c)</sub>	Converter	Per total loss			0.14	°C/W
			Per each device			0.84	
		Brake IGBT (1 device)			0.55		
Thermal Resistance(Case to fine)	R <sub>th(c-f)</sub>	with thermal compound				0.08	°C/W

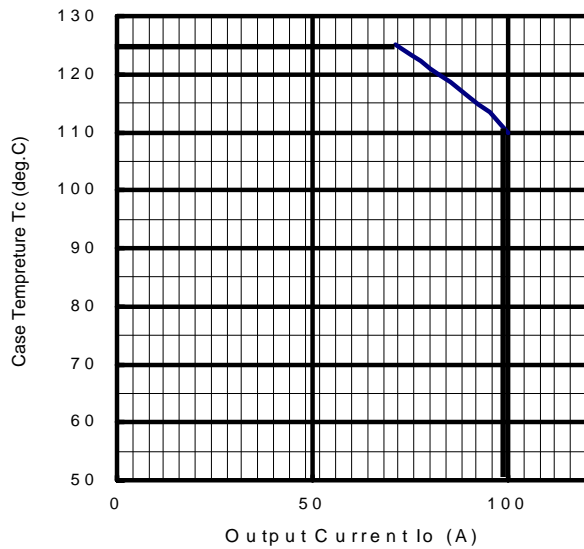
Forward Characteristics



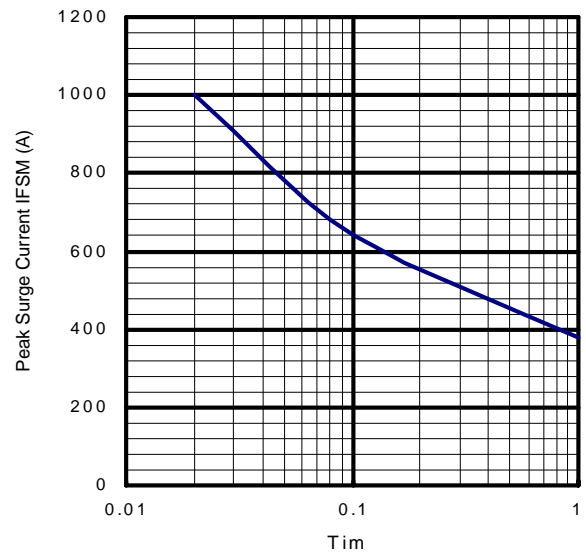
Output Current - Total Loss



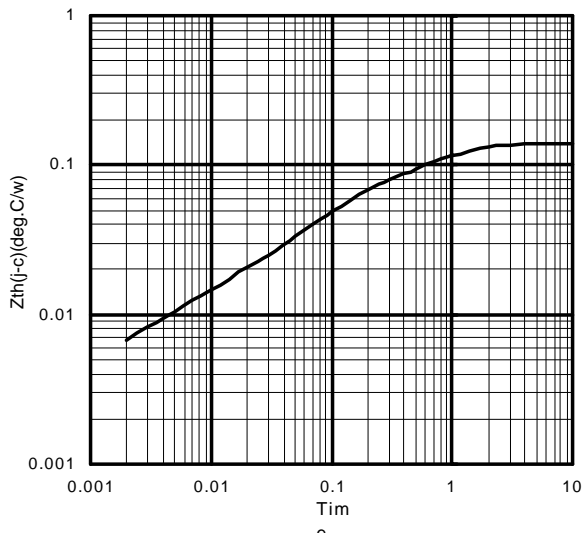
Output Current - Case Temperature



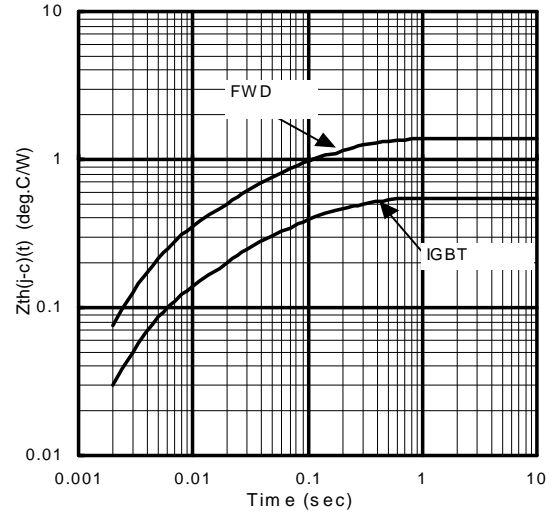
Surge Current

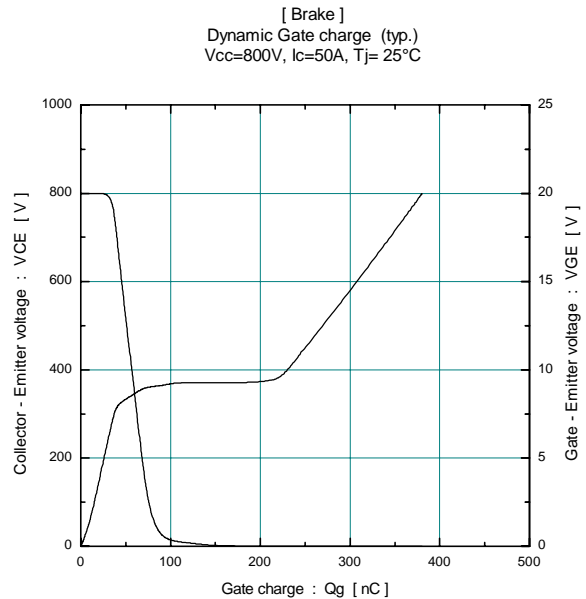
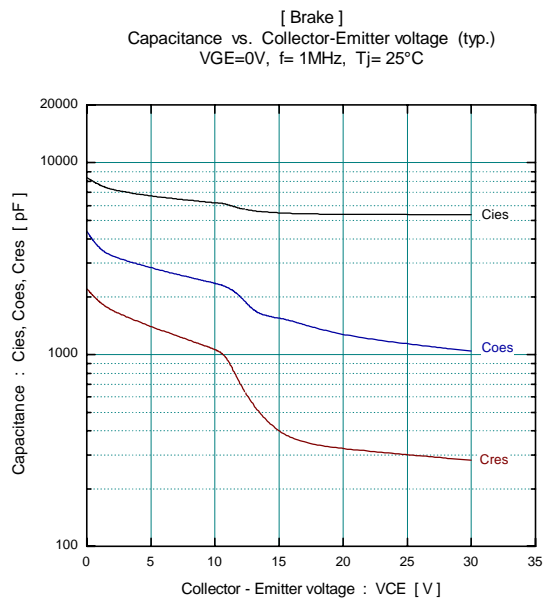
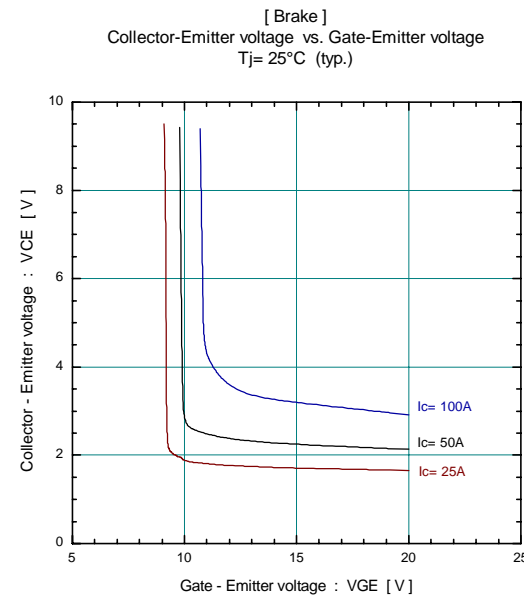
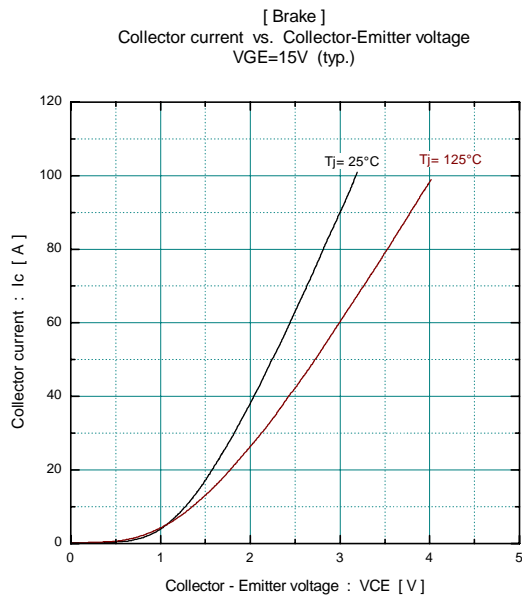
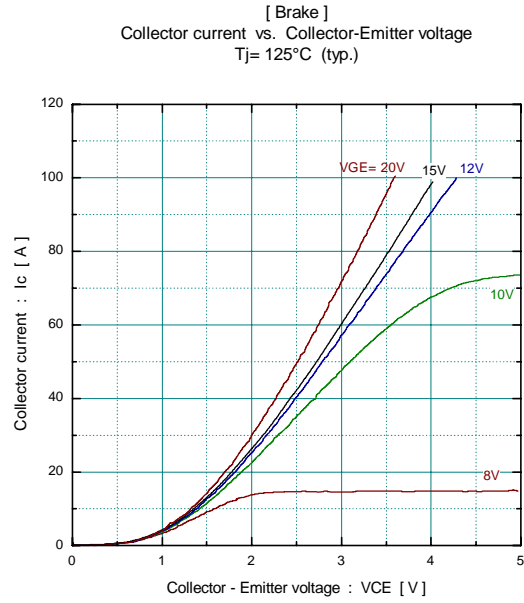
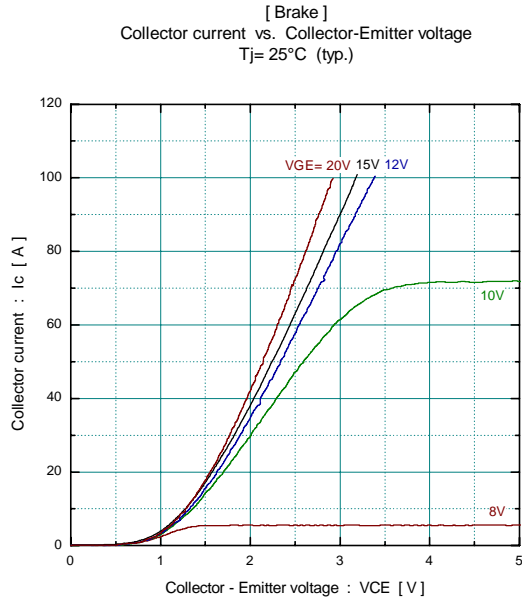


Transient Thermal Impedance

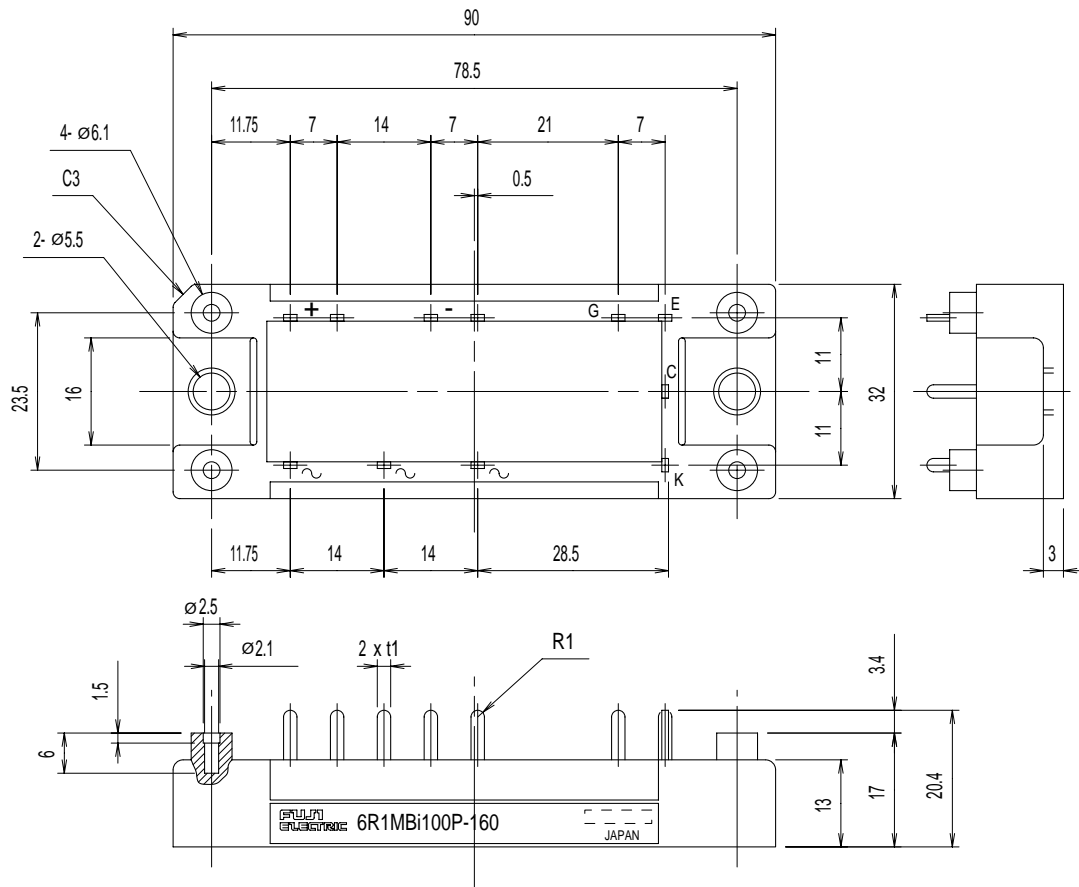


[ Brake ] Transient Thermal Impedance





■ Outline Drawings, mm



■ Equivalent Circuit Schematic

