IGBT MODULE (F series)

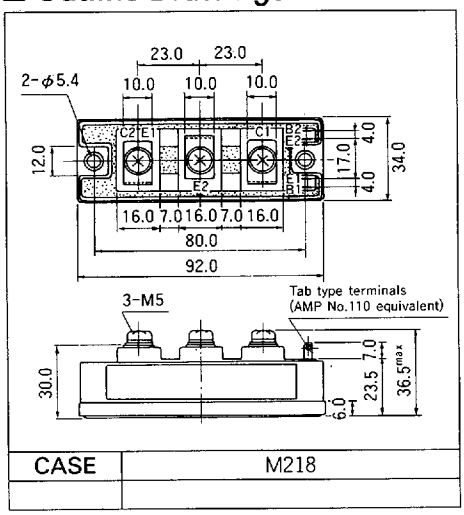
■ Features

- Low Saturation Voltage
- Voltage Drive
- Isolated Package

■ Applications

- Ideal for Shunt Regulator Application
- Inverter for Motor Drive
- AC and DC Servo Drive Amplifier
- Uninterruptible Power Supply
- Industrial Machines, such as Welding Machines

■ Outline Drawings



CASE	M218

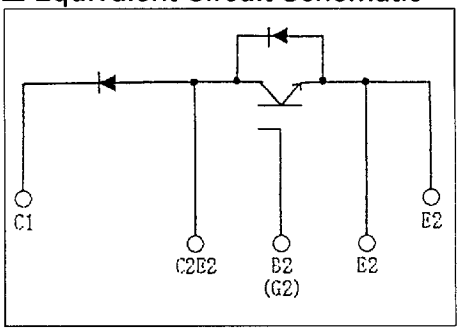
■ Maximum Ratings and Characteristics

● Absolute Maximum Ratings

Items		Symbols	Ratings	Units
Collecter-Emitter Voltage		VCES	600	V
Gate-Emitter Voltage		VGES	±20	V
Collecter Current	Continuous	IC	75	A
	1ms	IC pulse	150	
	Duty = 75%	−IC	75	
	1ms	−IC pulse	150	
Max. Power Dissipation		PC	290	W
Operating Temperature		Tj	+150	°C
Storage Temperature		Tstg	−40 to +125	°C
Isolation Voltage	AC. 1min.	Vis	2500	V
Screw Torque		Mounting *1	3.5 [35]	N・m
		Terminals *1	3.5 [17]	[kg・cm]

*1 Recommendable Value 2.5 to 3.5 N•m (M5)

■ Equivalent Circuit Schematic



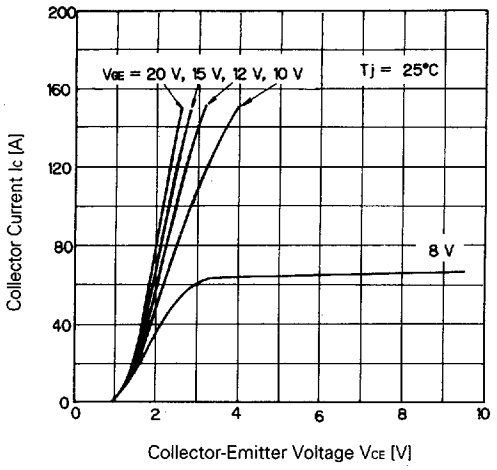
● Electrical Characteristics (Tj=25°C)

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Zero Gate Voltage Collecter Current	ICES	VGE=0V VCE=600V Tj=25°C			1.0	mA
		VGE=0V VCE=600V Tj=125°C			——	mA
Gate-Emitter Leackage Current	IGES	VCE=0V VGE=±20V			100	nA
Gate-Emitter Threshold Voltage	VGE (th)	VCE=20V IC=75mA	3.0		6.0	V
Collecter-Emitter Saturation Voltage	VCE (sat)	VGE=15V IC=75A			2.5	V
Input Capacitance	Cies	VGE=0V		7100		pF
Output Capacitance	Coes	VCE=10V		——		
Reverse Transfer Capacitance	Cres	f=1MHz		——		
Turn-on Time	ton	VCC=300V			0.8	µs
	tr	IC=75A			0.6	
Turn-off Time	toff	VGE=±15V			1.5	
	tf	RG=33Ω			1.0	
Diode Forward On-Voltage	VF	IF=75A, VGE=0V			2.5	V
Reverse Recovery Time	trr	IF=75A, −di/dt=225A/µs VGE=−10V			300	ns

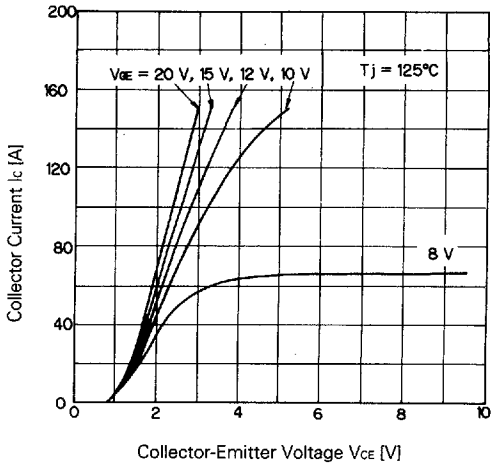
● Thermal Characteristics

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance	Rth (j-c)	IGBT			0.431	°C/W
	Rth (j-c)	Diode			0.888	
	Rth (c-f)	With Thermal compound		0.06		

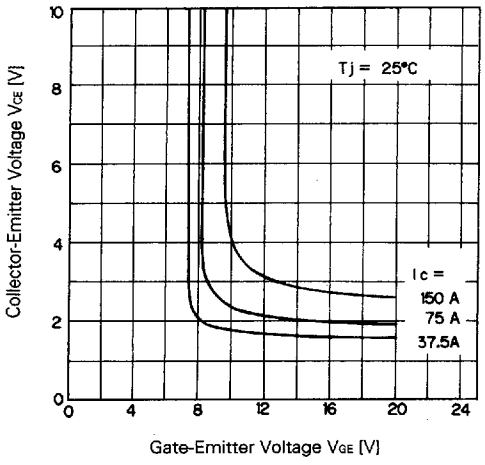
■ Characteristics



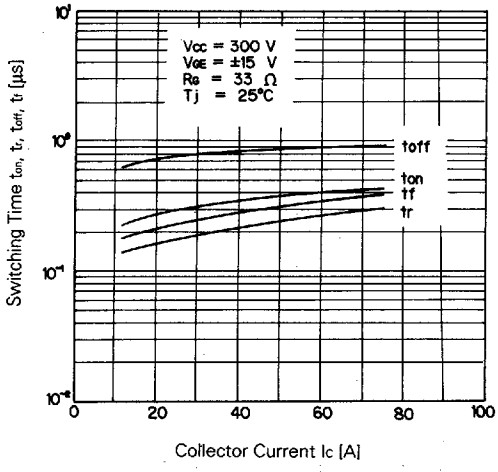
Collector Current vs. Collector-Emitter Voltage



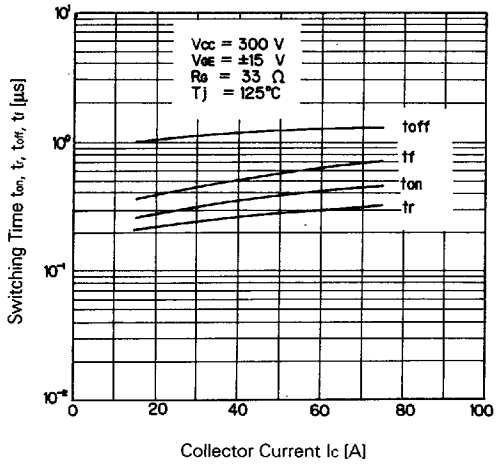
Collector Current vs. Collector-Emitter Voltage



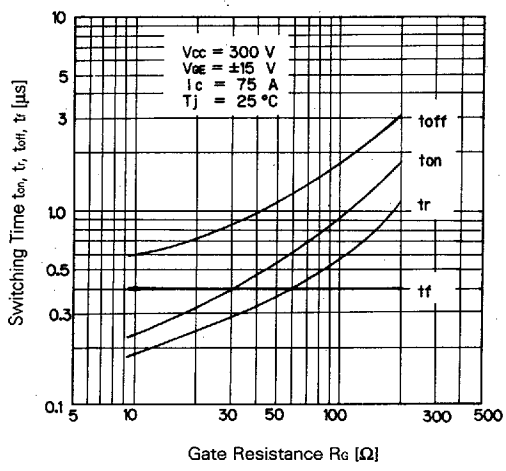
Collector-Emitter Voltage vs. Gate-Emitter Voltage



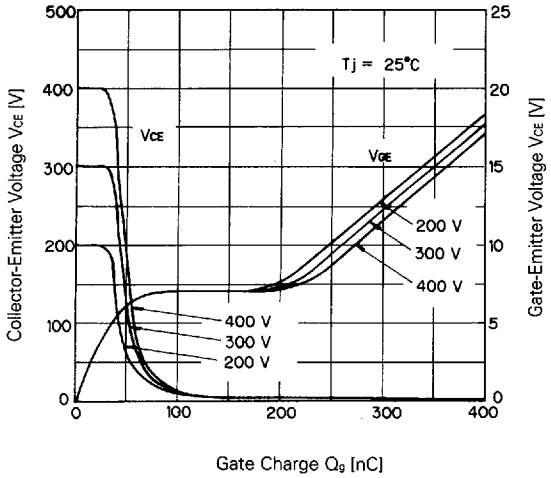
Switching Time



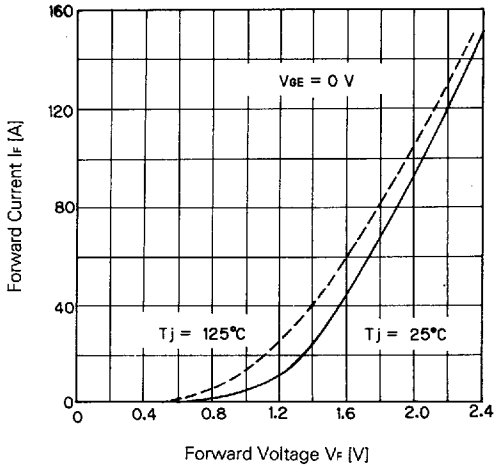
Switching Time



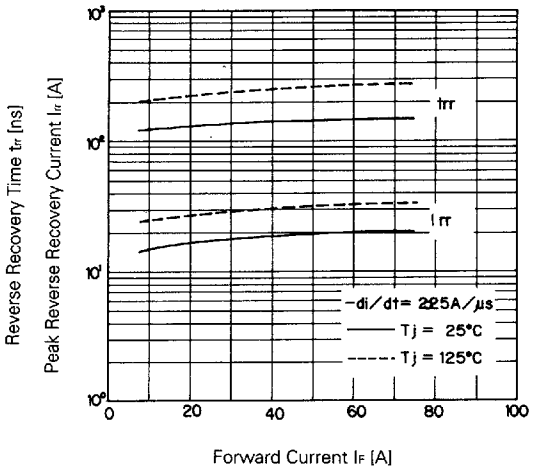
Switching Time-Gate Resistance



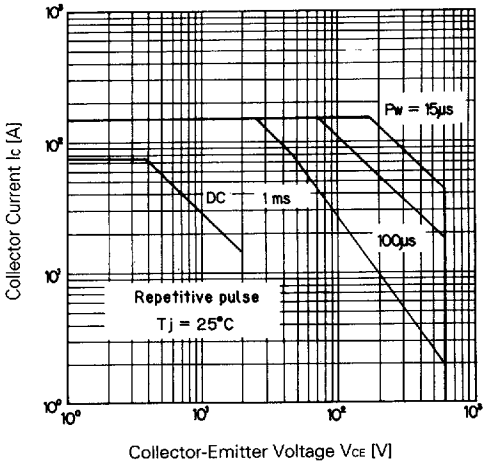
Dynamic Input Characteristic



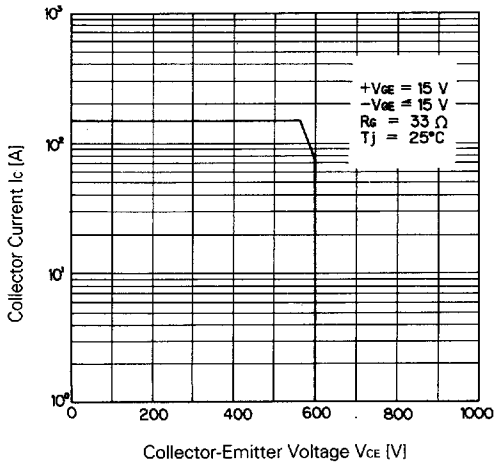
Forward Voltage of Free Wheel Diode



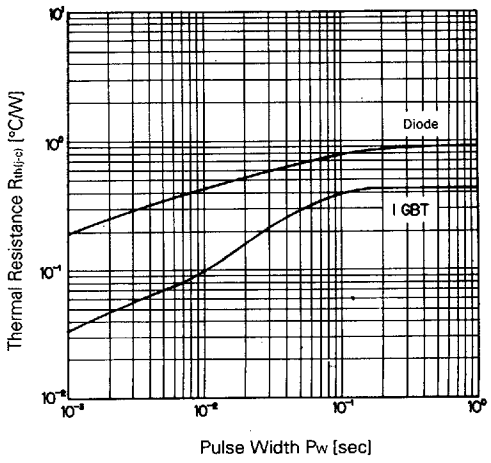
T_{rr}, I_{rr}-I_F



Safe Operating Area



Reverse Biased Safe Operating Area



Transient Thermal Resistance