FUJI ELECTRIC

6MBI 50F-120

6-Pack IGBT
1200 V
50 A

IGBT MODULE (F series)

■ Features

- ● Low Saturation Voltage
- ● Voltage Drive
- ● Variety of Power Capacity Series

■ Applications

- ● Inverter for Motor Drive
- ● AC and DC Servo Drive Amplifier
- ● Uninterruptible Power Supply
- ● Industrial Machines, such as Welding Machines

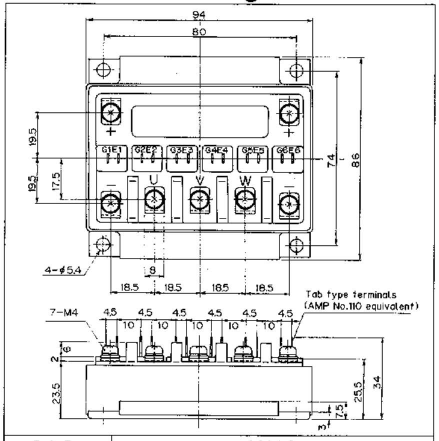
■ Maximum Ratings and Characteristics

● Absolute Maximum Ratings

Items		Symbols	Ratings	Units
Collecter-Emitter Voltage		V_{CES}	1200	V
Gate-Emitter Voltage		V_{GES}	±20	V
Collecter Current	Continuous	I_C	50	A
	1ms	$I_{C\,pulse}$	100	
	Continuous	$-I_C$	50	
	1ms	$-I_{C\,pulse}$	100	
Max. Power Dissipation		P_C	360	W
Operating Temperature		T_j	+150	°C
Storage Temperature		T_{stg}	-40 to +125	°C
Net. Weight			510	g
Isolation Voltage	AC. 1min.	V_{isol}	2500	V
Screw Torque		Mounting *1	3.5 {35}	N・m {kg・cm}
		Terminals *2	1.7 {17}	

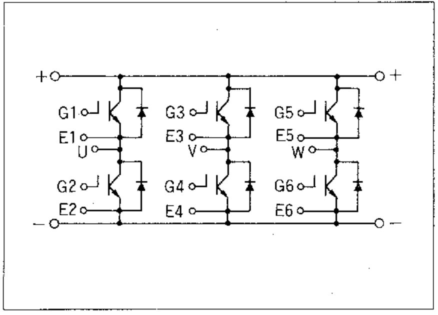
*1 Recommendable Value 2.5 to 3.5 N•m {25 to 35 kg•cm} (M5)
*2 Recommendable Value 1.3 to 1.7 N•m {13 to 17 kg•cm} (M4)

■ Outline Drawings



CASE	M616
UL	E82988(M)

■ Equivalent Circuit Schematic

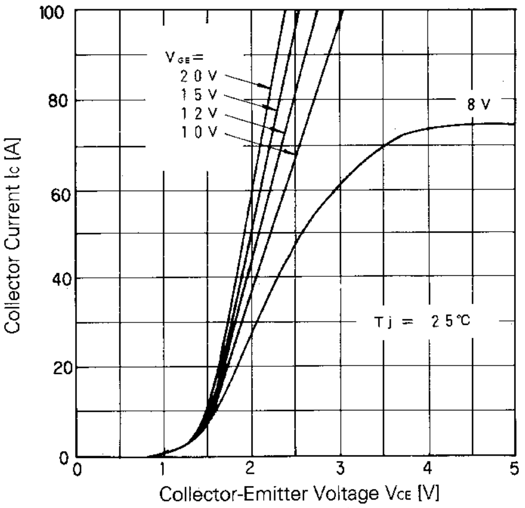


● Electrical Characteristics (Tc=25°C)

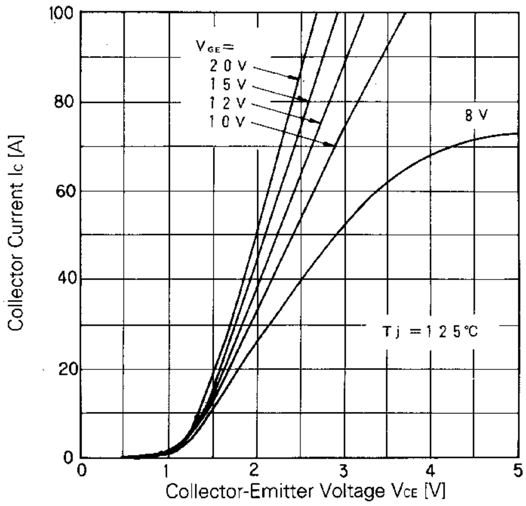
Items	Symbols	Test Conditions		Min.	Typ.	Max.	Units
Zero Gate Voltage Collecter Current	I_{CES}	V_{GE}=0V V_{CE}=1200V T_j=25°C				1.0	mA
		V_{GE}=0V V_{CE}=1200V T_j=125°C				—	mA
Gate-Emitter Leackage Current	I_{GES}	V_{CE}=0V V_{GE}=±20V				100	nA
Gate-Emitter Threshold Voltage	$V_{GE\,(th)}$	V_{CE}=20V I_C=50mA		3.0		6.0	V
Collecter-Emitter Saturation Voltage	$V_{CE\,(sat)}$	V_{GE}=15V I_C=50A				2.5	V
Input Capacitance	C_{ies}	V_{GE}=0V			9000		pF
Output Capacitance	C_{oes}	V_{CE}=10V			—		
Reverse Transfer Capacitance	C_{res}	f=1MHz			—		
Turn-on Time	t_{on}	V_{CC}=600V	Resitive load			0.8	µs
	t_r	I_C=50A				0.6	
Turn-off Time	t_{off}	V_{GE}=±15V	Inductive load			1.5	
	t_f	R_G=25Ω				1.0	
Diode Forward On-Voltage	V_F	I_F=50A, V_{GE}=0V				2.5	V
Reverse Recovery Time	t_{rr}	I_F=50A, –di/dt=150A/µs V_{GE}=–10V				350	ns

● Thermal Characteristics

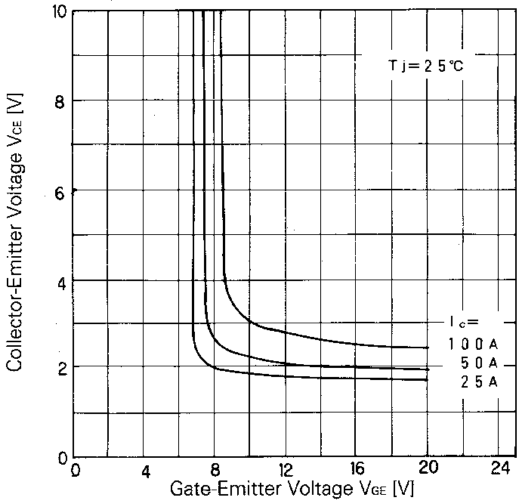
Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance	$R_{th\,(j-c)}$	IGBT			0.347	°C/W
	$R_{th\,(j-c)}$	Diode			0.666	
	$R_{th\,(c-f)}$	With Thermal compound		0.05		



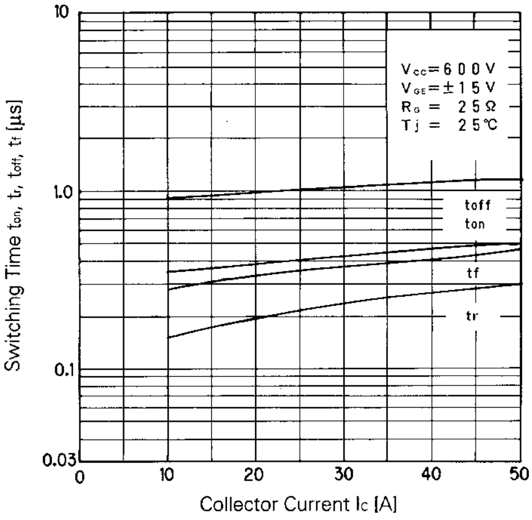
Collector Current vs. Collector-Emitter Voltage



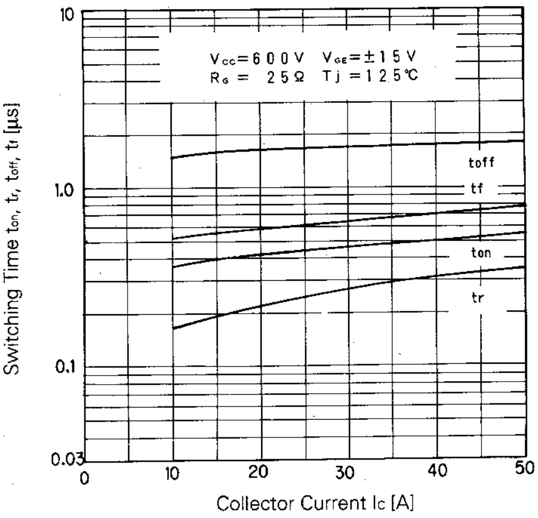
Collector Current vs. Collector-Emitter Voltage



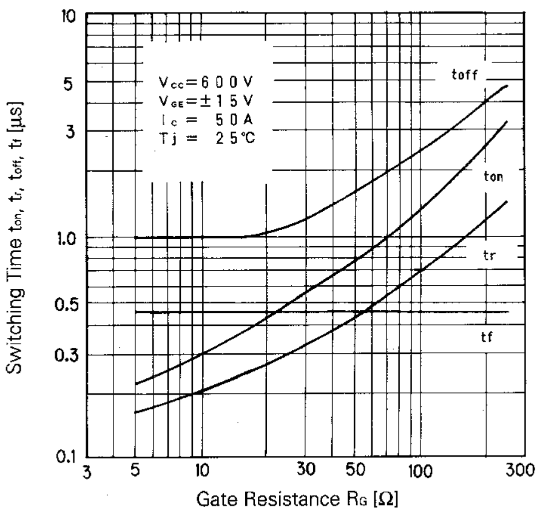
Collector-Emitter Voltage vs. Gate-Emitter Voltage



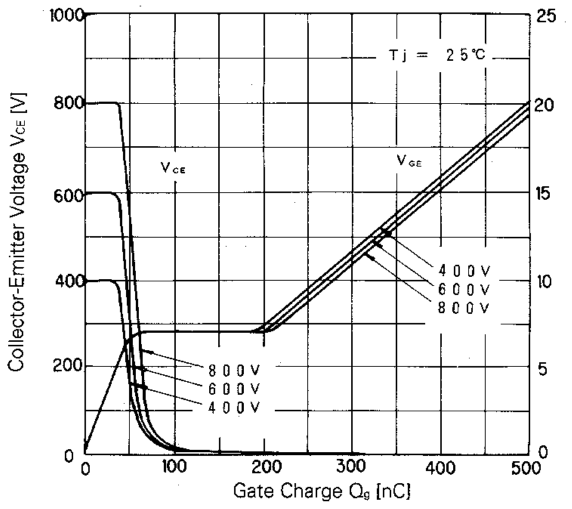
Switching Time



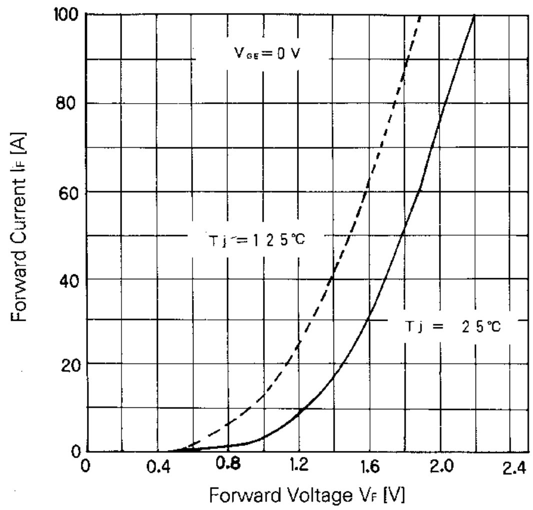
Switching Time



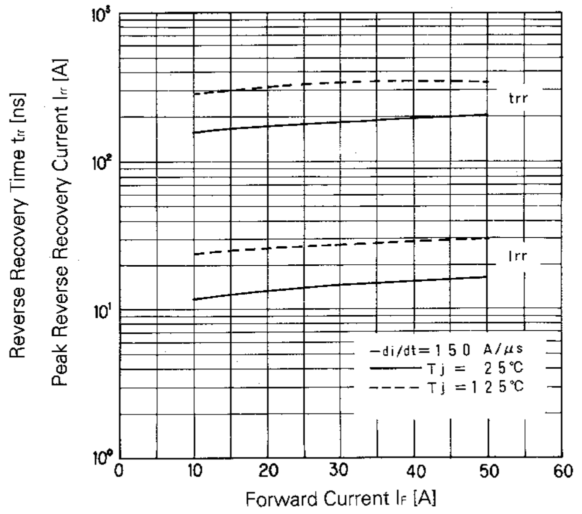
Switching Time-Gate Resistance



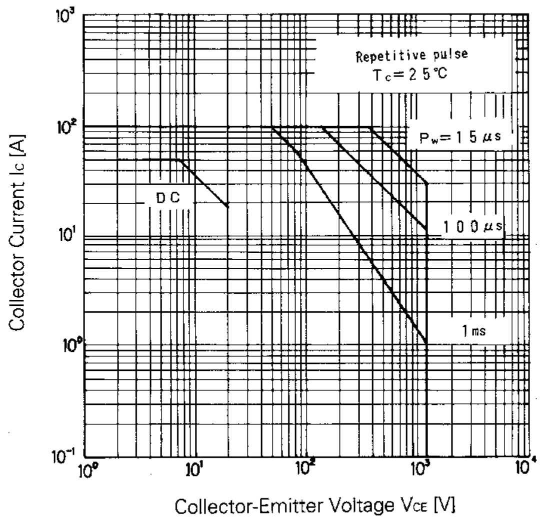
Dynamic Input Characteristic



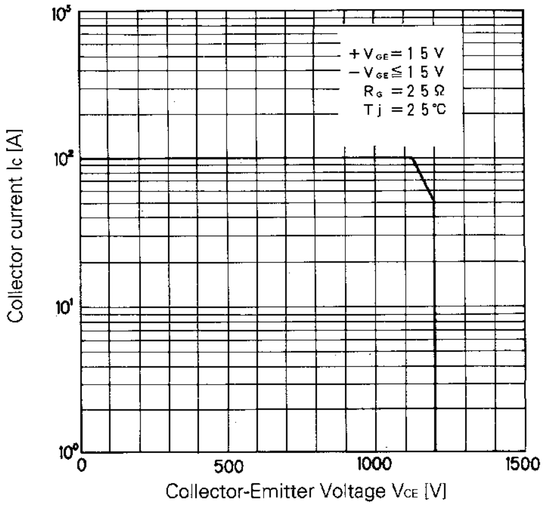
Forward Voltage of Free Wheel Diode



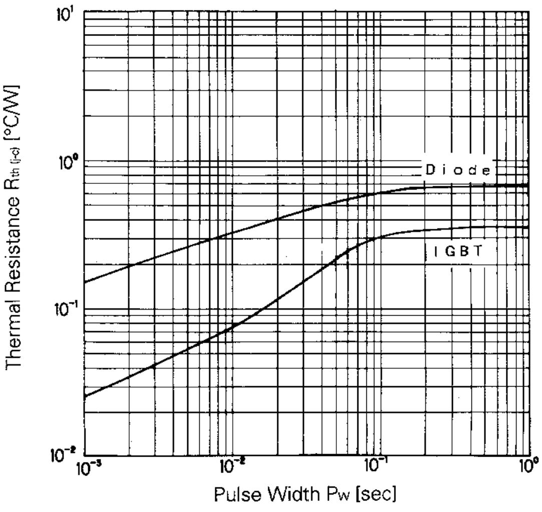
Trr, Irr-IF



Safe Operating Area



Reverse Biased Safe Operating Area



Transient Thermal Resistance

For more information, contact:

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