FUJI ELECTRIC

1MBI 300F-060

1-Pack IGBT
600 V
300 A

IGBT MODULE (F series)

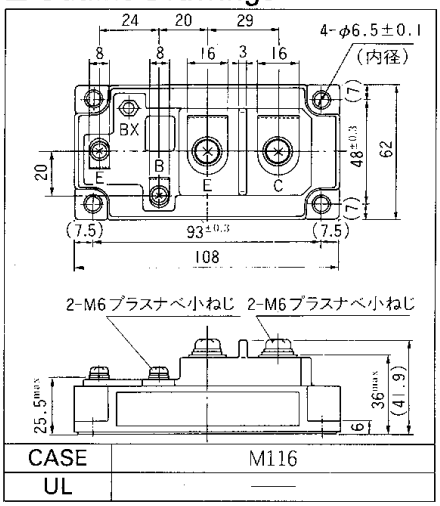
■ Features

- 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

■ Outline Drawings



CASE	M116
UL	——

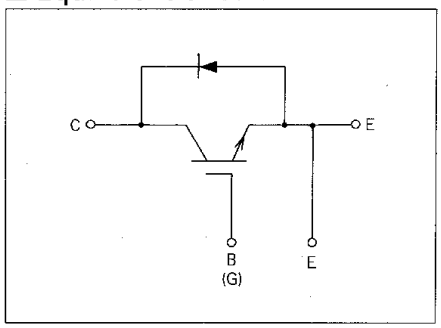
■ Maximum Ratings and Characteristics

● Absolute Maximum Ratings

Items		Symbols	Ratings	Units
Collecter-Emitter Voltage		V_{CES}	600	V
Gate-Emitter Voltage		V_{GES}	±20	V
Collecter Current	Continuous	I_C	300	A
	1ms	$I_{C\ pulse}$	600	
	Continuous	$-I_C$	300	
	1ms	$-I_{C\ pulse}$	600	
Max. Power Dissipation		P_C	1080	W
Operating Temperature		T_j	+150	°C
Storage Temperature		T_{stg}	−40 to +125	°C
Net. Weight			415	g
Isolation Voltage	AC. 1min.	V_{isol}	2500	V
Screw Torque		Mounting *1	3.5 {35}	N・m {kg・cm}
		Terminals *2	4.5 {45}	
		Terminals *3	1.7 {17}	

*1 Recommendable Value 2.5 to 3.5N•m {25 to 35 kg•cm} (M5)
*2 Recommendable Value 3.5 to 4.0N•m {35 to 40 kg•cm} (M6)
*3 Recommendable Value 1.3 to 1.6N•m {13 to 16 kg•cm} (M4)

■ Equivalent Circuit Schematic

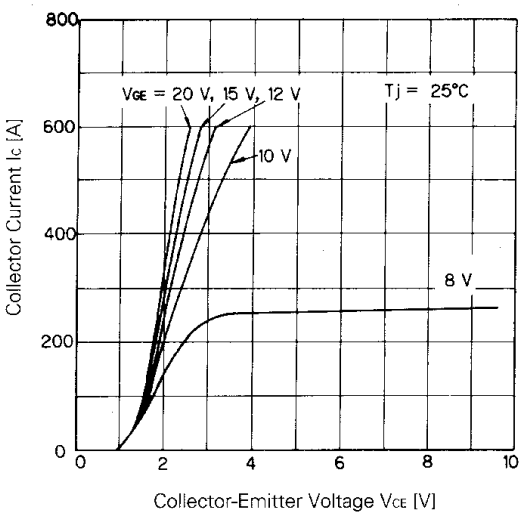


● Electrical Characteristics (Tc=25°C)

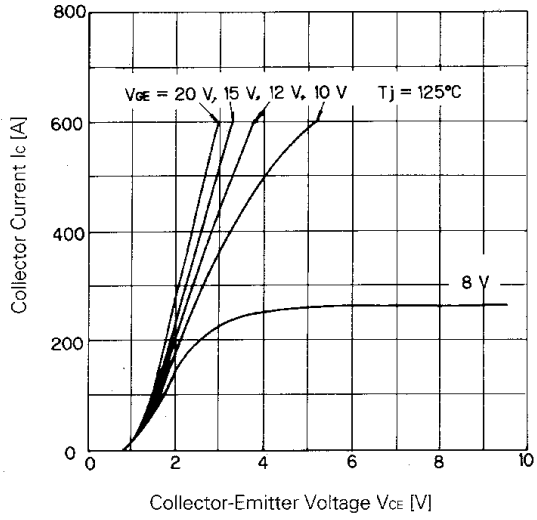
Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Zero Gate Voltage Collecter Current	I_{CES}	V_{GE}=0V V_{CE}=600V T_j=25°C			4.0	mA
		V_{GE}=0V V_{CE}=600V T_j=125°C			——	mA
Gate-Emitter Leackage Current	I_{GES}	V_{CE}=0V V_{GE}=±20V			200	nA
Gate-Emitter Threshold Voltage	$V_{GE\ (th)}$	V_{CE}=20V I_C=300mA	3.0		6.0	V
Collecter-Emitter Saturation Voltage	$V_{CE\ (sat)}$	V_{GE}=15V I_C=300A			2.5	V
Input Capacitance	C_{ies}	V_{GE}=0V		28500		pF
Output Capacitance	C_{oes}	V_{CE}=10V		——		
Reverse Transfer Capacitance	C_{res}	f=1MHz		——		
Turn-on Time	t_{on}	V_{CC}=300V			0.8	μs
	t_r	I_C=300A			0.6	
Turn-off Time	t_{off}	V_{GE}=±15V			1.5	
	t_f	R_G=6.8Ω			1.0	
Diode Forward On-Voltage	V_F	I_F=300A, V_{GE}=0V			2.5	V
Reverse Recovery Time	t_{rr}	I_F=300A, −di/dt=900A/μs V_{GE}=−10V			300	ns

● Thermal Characteristics

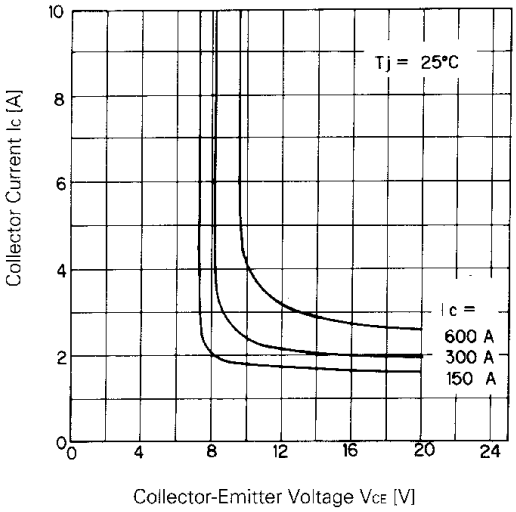
Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance	$R_{th\ (j-c)}$	IGBT			0.116	°C/W
	$R_{th\ (j-c)}$	Diode			0.222	
	$R_{th\ (c-f)}$	With Thermal compound		0.015		



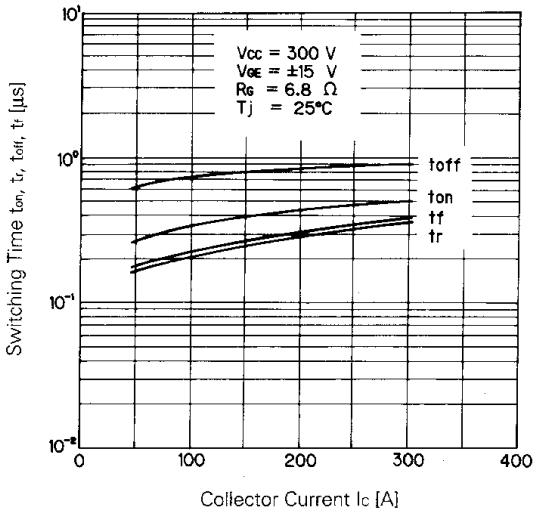
Collector Current vs. Collector-Emitter Voltage



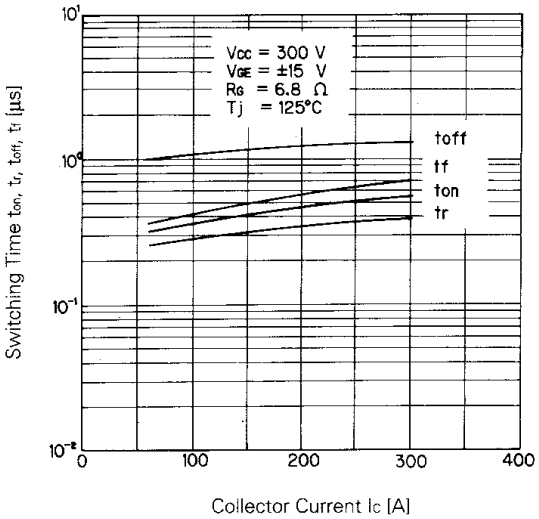
Collector Current vs. Collector-Emitter Voltage



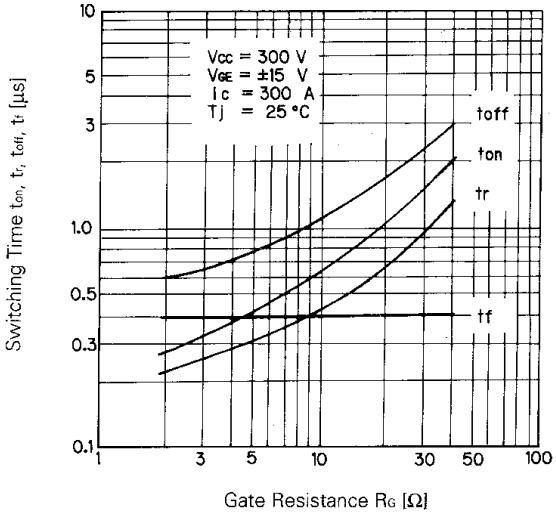
Collector Current vs. Collector-Emitter Voltage



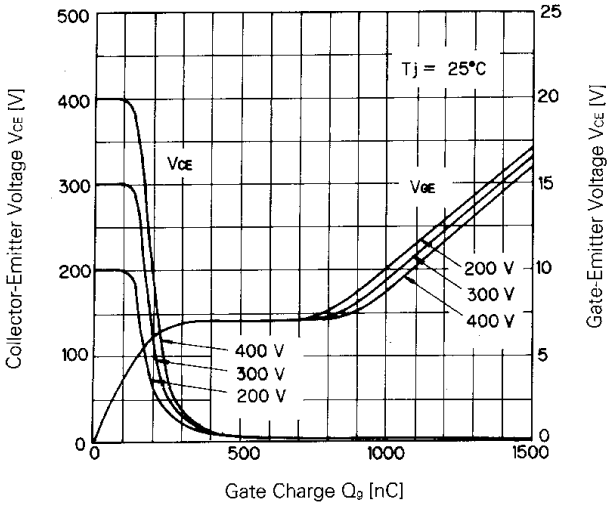
Switching Time



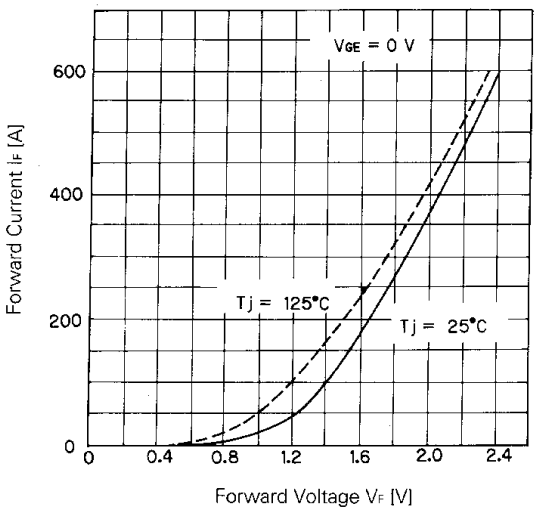
Switching Time



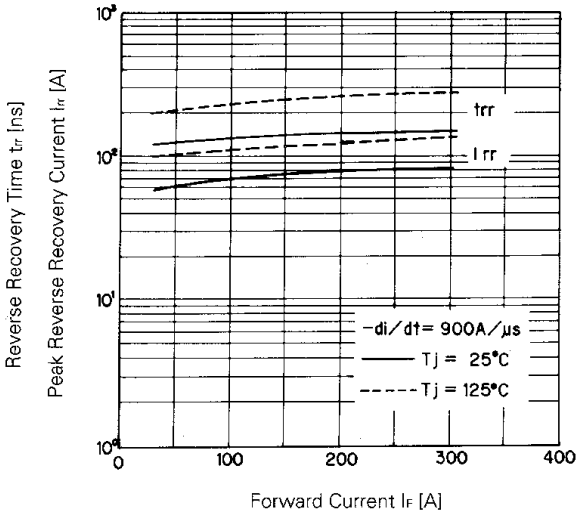
Switching Time-Gate Resistance



Dynamic Input Characteristic



Forward Voltage of Free Wheel Diode



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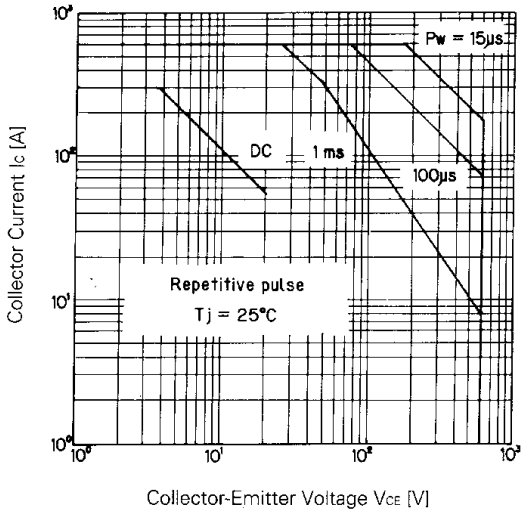
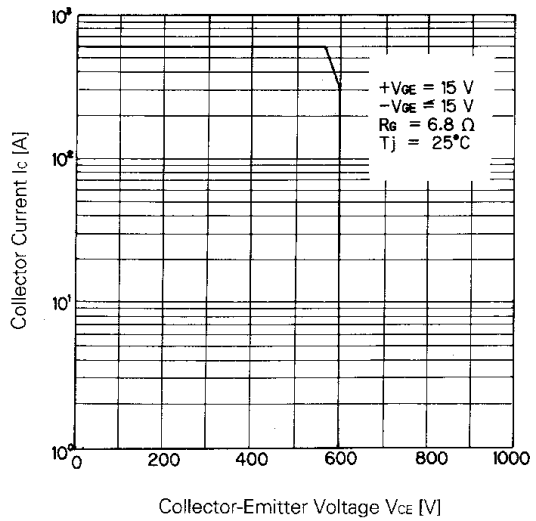
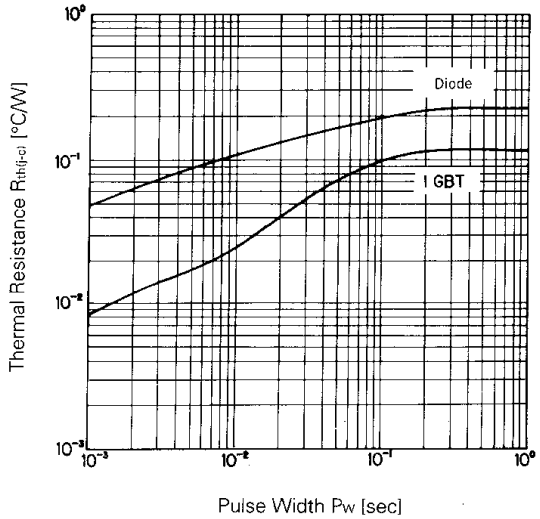


Safe Operating Area



Reverse Biased Safe Operating Area



Transient Thermal Resistance

For more information, contact:

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