

IGBT MODULE (L series)

■ Features

- High Speed Switching
- Low Saturation Voltage
- Voltage Drive

■ 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	Rated Values	Units
Collector-Emitter Voltage		V_{CES}	600	V
Gate-Emitter Voltage		V_{GES}	± 20	V
Collector Current	Continuous	I_C	10	A
	1ms	$I_{C\ pulse}$	20	
	Continuous	$-I_C$	10	
	1ms	$-I_{C\ pulse}$	20	
Max. Power Dissipation		P_C	40	W
Operating Temperature		T_j	+150	°C
Storage Temperature		T_{stg}	-40 to +125	°C
Net. Weight			150	g
Isolation Voltage	AC. 1min.	V_{isol}	2500	V
Screw Torque		Mounting *1	35	kg-cm

*1 Recommendable Value 25 to 35kg•cm (M5)

● Electrical Characteristics (Tj=25°C)

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Zero Gate Voltage Collector Current	I_{CES}	$V_{GE}=0V$ $V_{CE}=600V$ $T_j=25^{\circ}C$			1.0	mA
Gate-Emitter Leakage Current	I_{GES}	$V_{CE}=0V$ $V_{GE}=\pm 20V$			100	nA
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	$V_{CE}=20V$ $I_C=10mA$	3.0	4.5	6.0	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$V_{GE}=15V$ $I_C=10A$		2.7	3.5	V
Input Capacitance	C_{ies}	$V_{GE}=0V$		950		pF
Output Capacitance	C_{oes}	$V_{CE}=10V$		—		
Reverse Transfer Capacitance	C_{res}	$f=1MHz$		—		
Turn-on Time *2	t_{on}	$V_{CC}=300V$		0.4	0.8	μs
	t_r	$I_C=10A$		0.3	0.6	
Turn-off Time *3	t_{off}	$V_{GE}=\pm 15V$		0.6	1.0	
	t_r	$R_G=220\Omega$		0.2	0.35	
Diode Forward On-Voltage	V_F	$I_F=10A$ $V_{GE}=0V$			2.5	V
Reverse Recovery Time	t_{rr}	$I_F=10A$ $-di/dt=50A/\mu s$ $V_{GE}=-10V$			300	ns

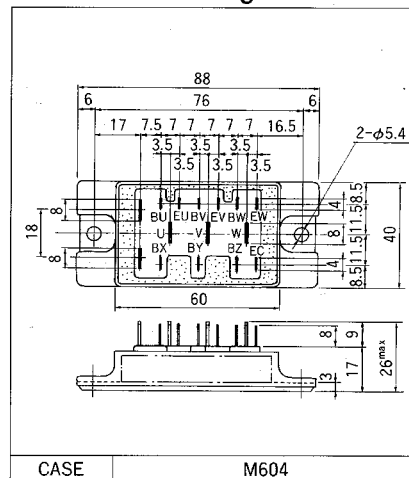
*2 Resistive load

*3 Inductive load

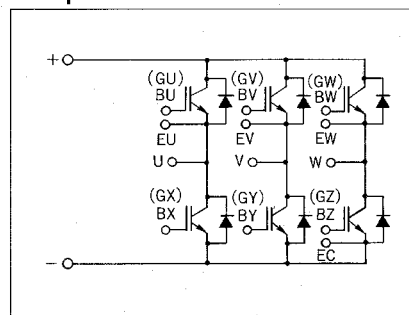
● Thermal Characteristics

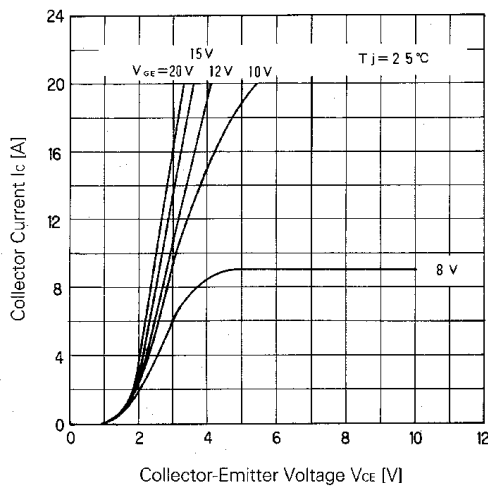
Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance	R _{th(j-c)}	IGBT			3.13	°C/W
	R _{th(j-c)}	Diode			4.15	
	R _{th(c-f)}	With Thermal compound		0.06		

■ Outline Drawings

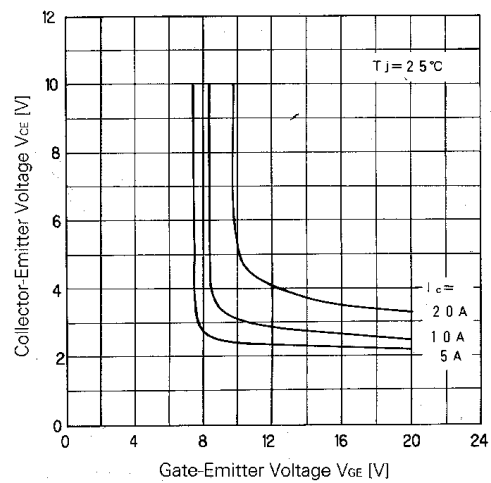


■ Equilavelent Circuit Schematic

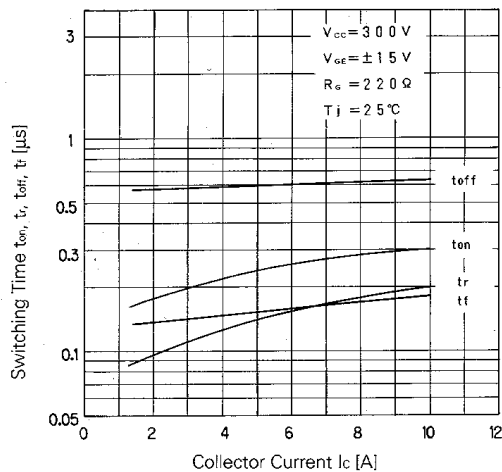




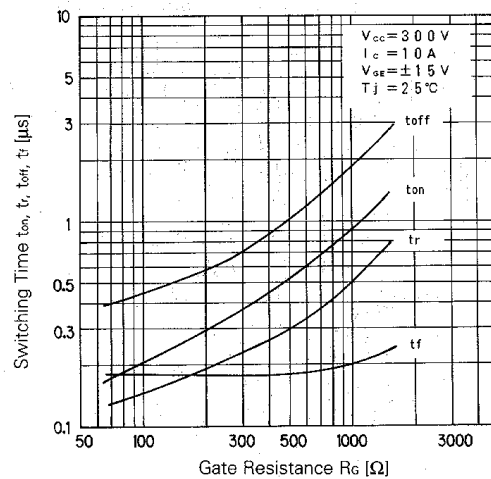
Collector Current vs. Collector-Emitter Voltage



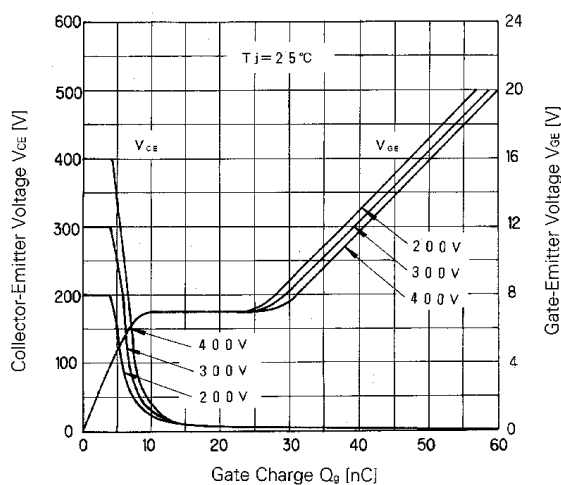
Collector-Emitter Voltage vs. Gate-Emitter Voltage



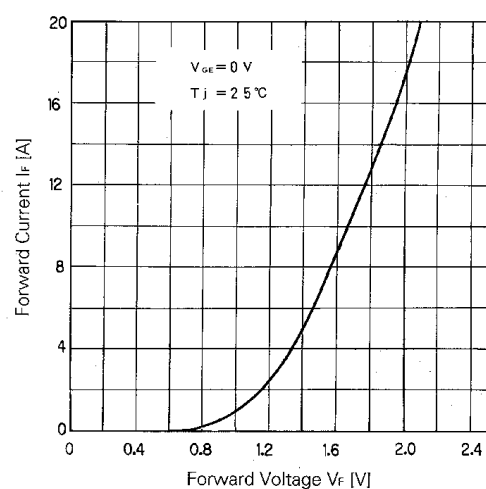
Switching Time



Switching Time-Gate Resistance



Dynamic Input Characteristic



Forward Voltage of Free Wheel Diode

