

IGBT MODULE (L series)

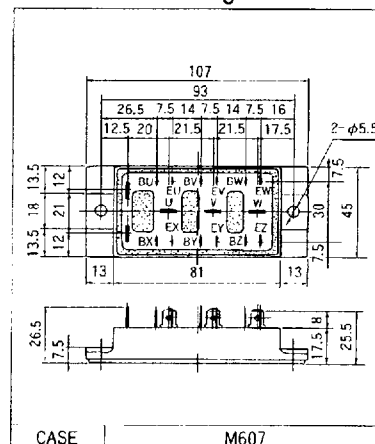
■ Features

- 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

■ Outline Drawings



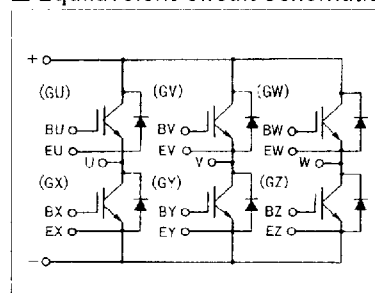
■ Maximum Ratings and Characteristics

● Absolute Maximum Ratings

Items	Symbols	Ratings	Units
Collector-Emitter Voltage	V_{CES}	800	V
Gate-Emitter Voltage	V_{GES}	± 20	V
Collector Current	Continuous	I_C	30
	1ms	$I_{C\ pulse}$	60
	Continuous	$-I_C$	30
	1ms	$-I_{C\ pulse}$	60
Max. Power Dissipation	P_C	120	W
Operating Temperature	T_J	150	$^{\circ}C$
Storage Temperature	T_{stg}	-40 to $+25$	$^{\circ}C$
Net. Weight		235	g
Isolation Voltage	AC, 1min.	V_{isol}	2500 V
Screw Torque	Mounting *1	35	kg-cm

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

■ Equivalalent Circuit Schematic



● Electrical Characteristics ($T_J=25^{\circ}C$)

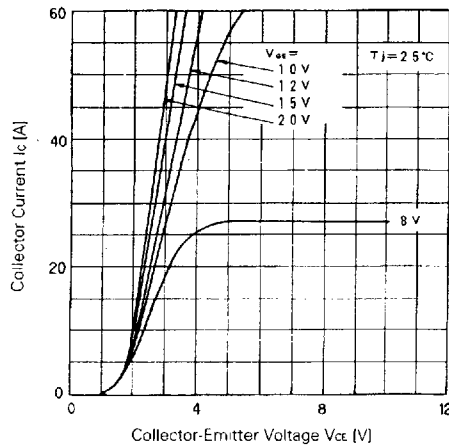
Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Zero Gate Voltage Collector Current	I_{CES}	$V_{CE}=0V$ $V_{GE}=600V$ $T_J=25^{\circ}C$			1.0	mA
Gate-Emitter Leakage Current	I_{GES}	$V_{CE}=0V$ $V_{GE}=\pm 20V$			100	nA
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	$V_{CE}=20V$ $I_C=30mA$	3.0	4.5	6.0	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$V_{GE}=15V$ $I_C=30A$		2.7	3.5	V
Input Capacitance	C_{ies}	$V_{CE}=0V$		2850		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	$I_C=30A$		0.3	0.6	
	t_{off}	$V_{CE}=\pm 15V$		0.6	1.0	
Turn-off Time *3	t_{off}	$R_G=82\Omega$		0.2	0.35	μs
	t_f					
Diode Forward On-Voltage	V_F	$I_F=30A$ $V_{GE}=0V$			2.5	V
Reverse Recovery Time	t_{rr}	$I_F=30A$ $-di/dt=100A/\mu s$ $V_{GE}=-10V$			300	ns

*2 Resistive load

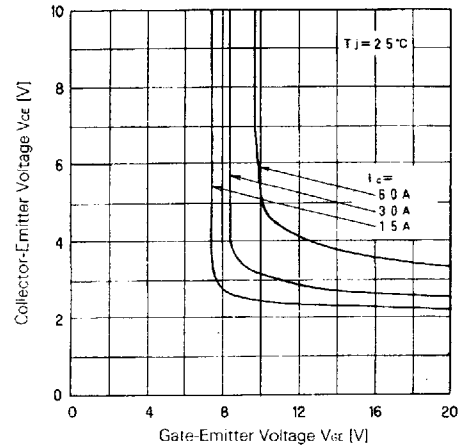
*3 Inductive load

● Thermal Characteristics

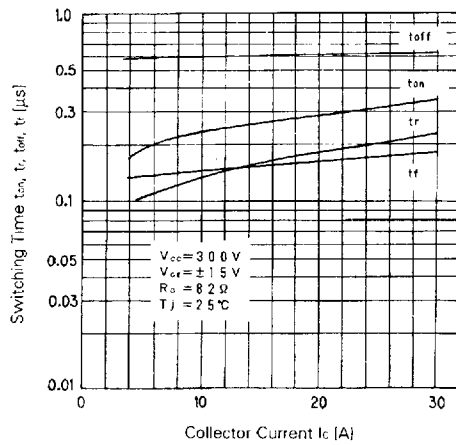
Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance	$R_{th(j-c)}$	IGBT			1.04	$^{\circ}C/W$
	$R_{th(j-e)}$	Diode			2.01	
	$R_{th(c-l)}$	With Thermal compound		0.08		



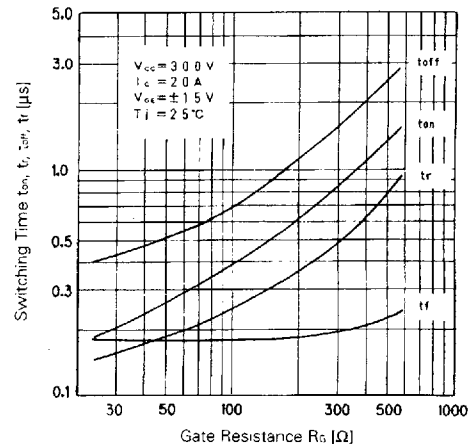
Collector Current vs. Collector-Emitter Voltage



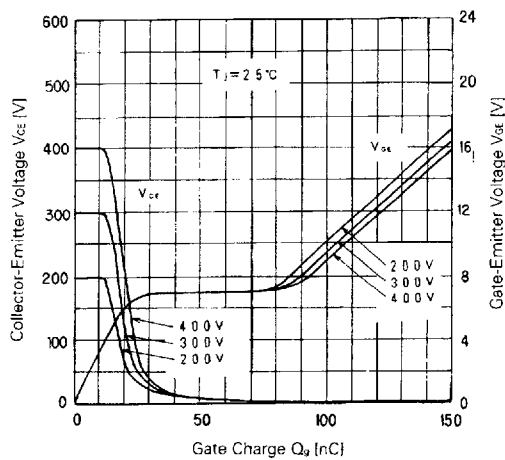
Collector-Emitter Voltage vs. Gate-Emitter Voltage



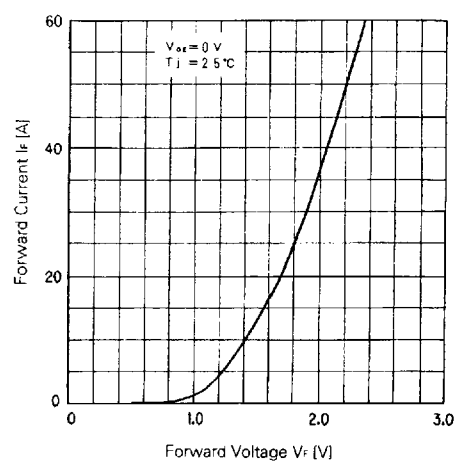
Switching Time



Switching Time-Gate Resistance



Dynamic Input Characteristic



Forward Voltage of Free Wheel Diode

