

IGBT MODULE (L series)

■ Features

- High Speed Switching
- Low Saturation Voltage
- Compact Package
- PCB Mounting Flexibility

■ 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	
	Duty = 77%	$-I_C$	10	
	1ms	$-I_C$ pulse	20	
Max. Power Dissipation		P_C	35	W
Operating Temperature		T_j	+150	$^{\circ}\text{C}$
Storage Temperature		T_{stg}	-40 to +125	$^{\circ}\text{C}$
Isolation Voltage	AC. 1min.	V_{is}	2000	V
Screw Torque		Mounting *1	17	kg-cm

*1 Recommendable Value 13 to 17kg•cm (M4)

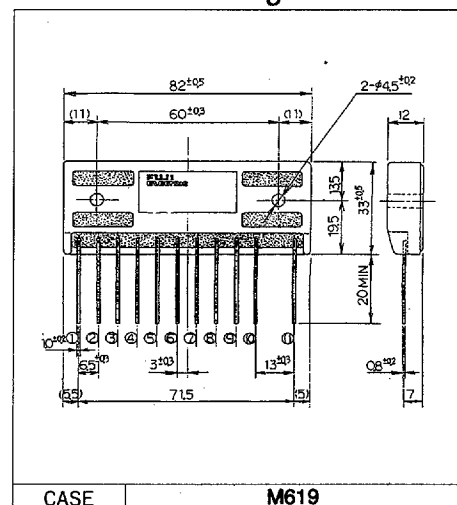
● Electrical Characteristics (Tj=25°C)

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Zero Gate Voltage Collector Current	ICES	VGE=0V VCE=600V TJ=25°C			1.0	mA
Gate-Emitter Leakage Current	IGES	VCE=0V VGE=±20V			100	nA
Gate-Emitter Threshold Voltage	VGE(th)	VCE=20V IC=10mA	3.0	4.5	6.0	V
Collector-Emitter Saturation Voltage	VCE(sat)	VGE=15V IC=10A		2.7	3.5	V
Input Capacitance	Cies	VGE=0V		950		pF
Output Capacitance	Coes	VCE=10V		—		
Reverse Transfer Capacitance	Cres	f=1MHz		—		
Turn-on Time	ton	VCC=300V		0.4	0.8	μs
	tr	IC=10A		0.3	0.6	
Turn-off Time	toff	VGE=±15V		0.6	1.0	
	tf	RG=220Ω		0.2	0.35	
Diode Forward On-Voltage	VF	IF=10A VGE=0V			2.5	V
Reverse Recovery Time	trr	IF=10A -di/dt=50A/μs VGE=-10V			300	ns

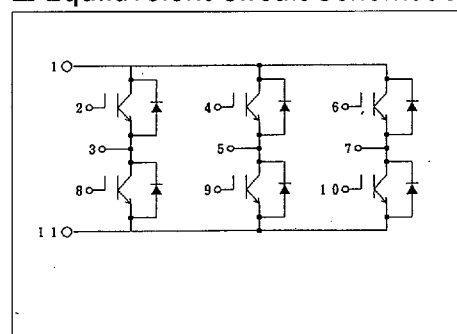
● Thermal Characteristics

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance	R _{th(j-c)}	IGBT			3.57	°C/W
	R _{th(j-c)}	Diode			6.49	
	R _{th(c-f)}	With Thermal compound		0.06		

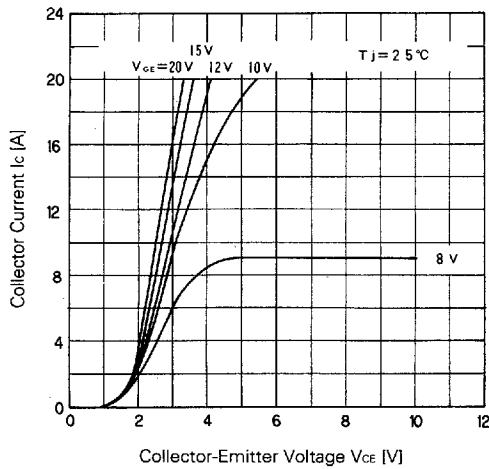
■ Outline Drawings



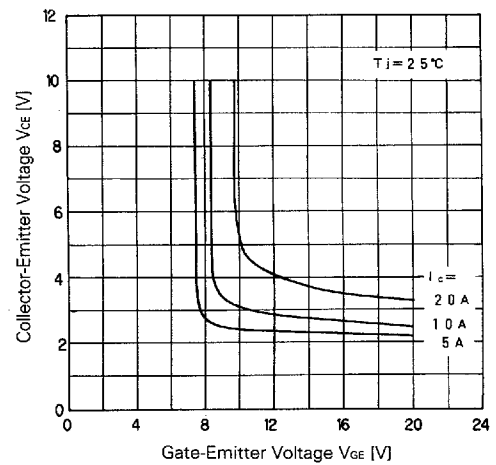
■ Equilavelent Circuit Schematic



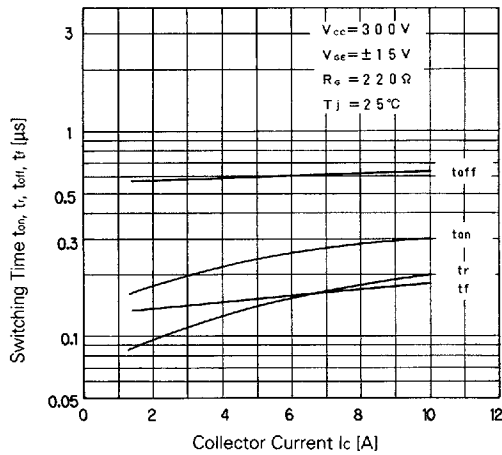
■ Characteristics



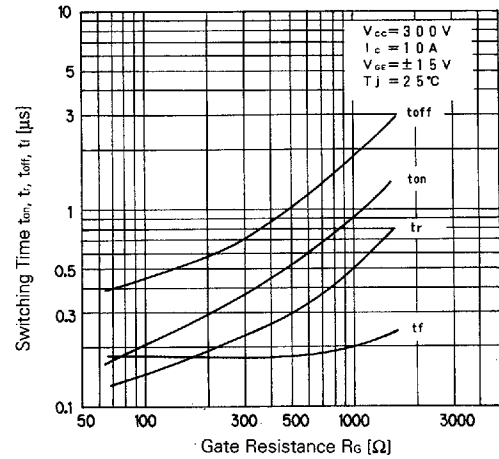
Collector Current vs. Collector-Emitter Voltage



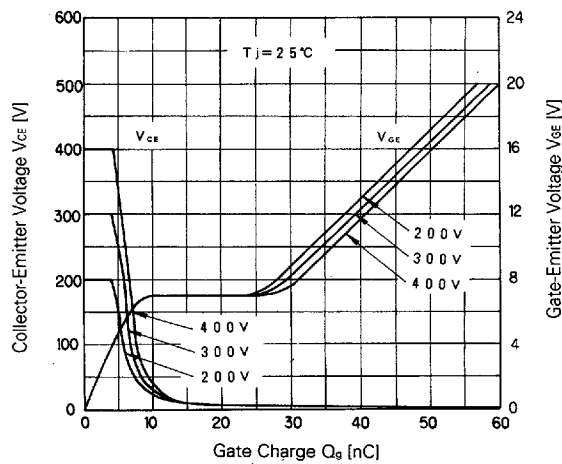
Collector-Emitter Voltage vs. Gate-Emitter Voltage



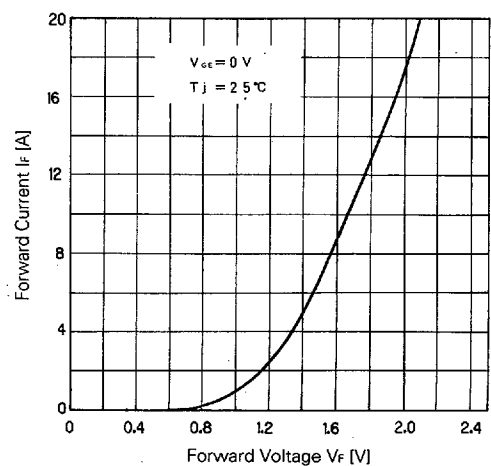
Switching Time



Switching Time-Gate Resistance



Dynamic Input Characteristic



Forward Voltage of Free Wheel Diode

