

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	Ratings	Units
Collector-Emitter Voltage		V_{CES}	600	V
Gate-Emitter Voltage		V_{GES}	± 20	V
Collector Current	Continuous	I_C	15	A
	1ms	$I_{C\ pulse}$	30	
	Duty = 77%	$-I_C$	15	
	1ms	$-I_{C\ pulse}$	30	
Max. Power Dissipation		P_C	50	W
Operating Temperature		T_j	+150	°C
Storage Temperature		T_{stg}	-40 to +125	°C
Isolation Voltage	AC. 1min.	V_{is}	2000	V
Screw Torque		Mounting *1	17	kg·cm

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

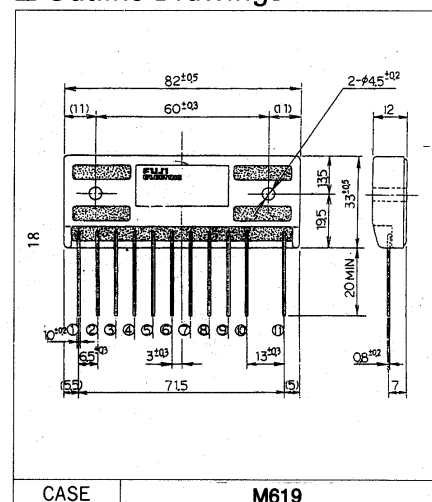
● Electrical Characteristics ($T_j=25^\circ\text{C}$)

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Zero Gate Voltage Collector Current	I_{CES}	$V_{GE}=0V$ $V_{CE}=600V$ $T_j=25^\circ\text{C}$			1.0	mA
Gate-Emitter Leakage Current	I_{GES}	$V_{CE}=0V$ $V_{GE}=\pm 20V$			100	nA
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	$V_{CE}=20V$ $I_C=15mA$	3.0	4.5	6.0	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$V_{GE}=15V$ $I_C=15A$		2.7	3.5	V
Input Capacitance	C_{ies}	$V_{GE}=0V$		1400		pF
Output Capacitance	C_{oes}	$V_{CE}=10V$		—		
Reverse Transfer Capacitance	C_{res}	$f=1MHz$		—		
Turn-on Time	t_{on}	$V_{CC}=300V$		0.4	0.8	μs
	t_r	$I_C=15A$		0.3	0.6	
Turn-off Time	t_{off}	$V_{GE}=\pm 15V$		0.6	1.0	
	t_r	$R_G=150\Omega$		0.2	0.35	
Diode Forward On-Voltage	V_F	$I_F=15A$ $V_{GE}=0V$			2.5	V
Reverse Recovery Time	t_{rr}	$I_F=15A$ $-di/dt=50A/\mu s$ $V_{GE}=-10V$			300	ns

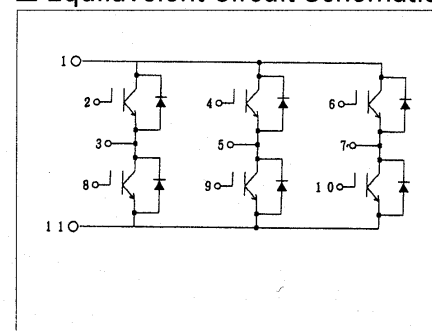
● Thermal Characteristics

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance	$R_{th(j-c)}$	IGBT			2.5	°C/W
	$R_{th(j-d)}$	Diode			4.30	
	$R_{th(c-f)}$	With Thermal compound		0.06		

■ Outline Drawings

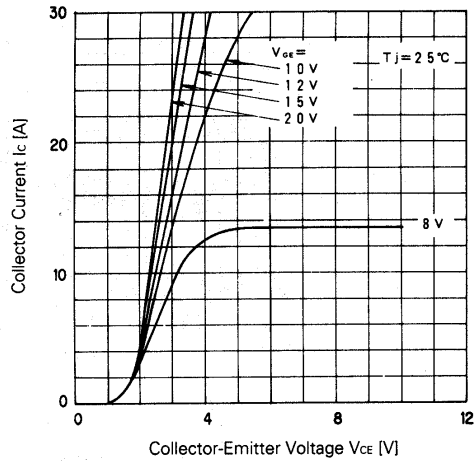
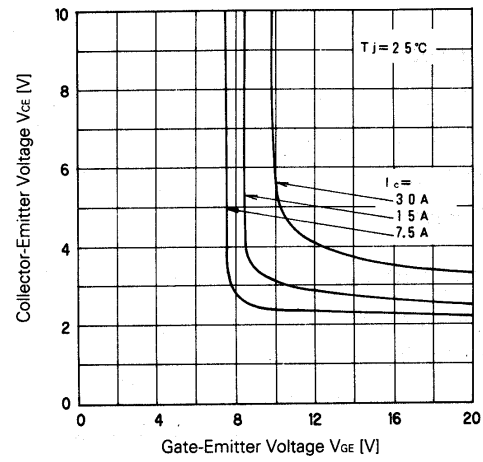
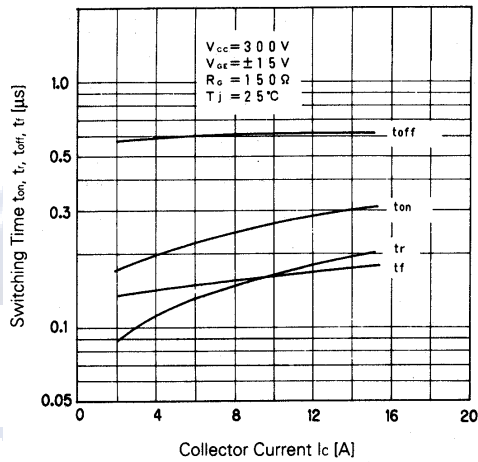
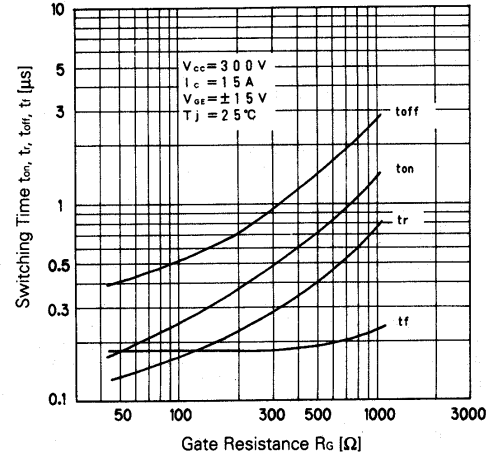
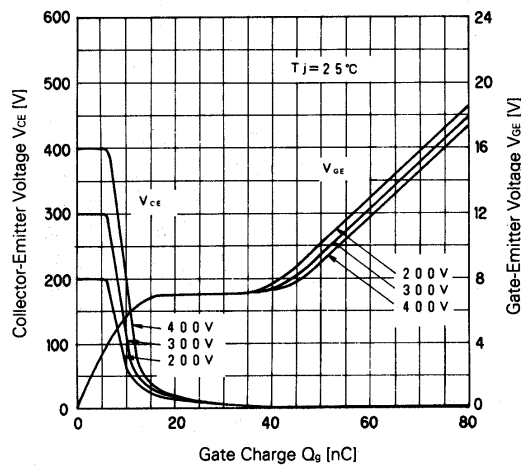
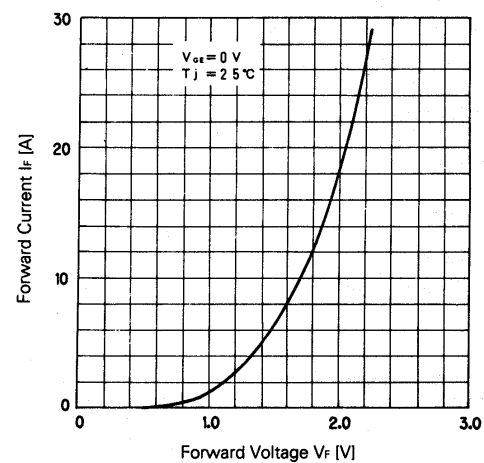


■ Equilavelent Circuit Schematic



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6MBI 15LS-060

6 Pack IGBT
600V
15A

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

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