

IGBT MODULE (L series)

■ Features

- High Speed Switching
- Low Saturation Voltage
- Voltage Drive

■ Applications

- High Current for Motor Drive, such as Electric Vehicle
- High Current Inverter
- Uninterruptible Power Supply

■ 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	750	A
	1ms	$I_{C \text{ pulse}}$	1500	
	Duty = 83%	$-I_C$	750	
	1ms	$-I_{C \text{ pulse}}$	1500	
Max. Power Dissipation		P_C	3125	W
Operating Temperature		T_j	+150	°C
Storage Temperature		T_{stg}	-40 to +125	°C
Isolation Voltage	AC, 1min.	V_{is}	2500	V
Screw Torque		Mounting *1	3.5	N·m
		Terminals *2	4.5	
		Terminals *3	1.7	

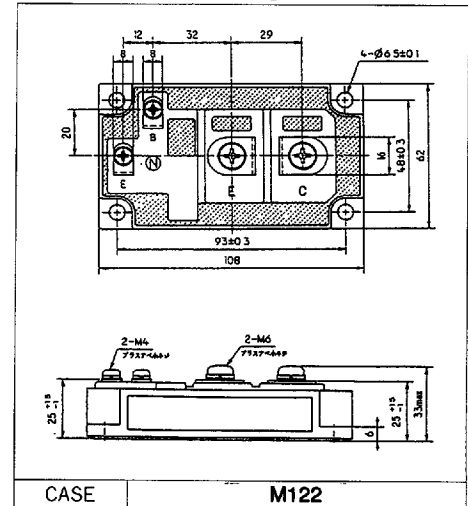
● Electrical Characteristics ($T_j=25^\circ\text{C}$)

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Zero Gate Voltage Collector Current	I_{CES}	$V_{GE}=0V$ $V_{CE}=600V$ $T_j=25^\circ\text{C}$			4.0	mA
Gate-Emitter Leakage Current	I_{GES}	$V_{CE}=0V$ $V_{GE}=\pm 20V$			400	nA
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	$V_{CE}=20V$ $I_C=750mA$	3.0		6.0	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$V_{GE}=15V$ $I_C=750A$		2.7	3.5	V
Input Capacitance	C_{ies}	$V_{GE}=0V$		76		nF
Output Capacitance	C_{oes}	$V_{CE}=10V$		—		
Reverse Transfer Capacitance	C_{res}	$f=1MHz$		—		
Turn-on Time	t_{on}	$V_{CC}=300V$		0.6	0.8	μs
	t_r	$I_C=750A$		0.4	0.6	
Turn-off Time	t_{off}	$V_{GE}=\pm 15V$		0.7	1.0	
	t_f	$R_G=2.4\Omega$		0.2	0.35	
Diode Forward On-Voltage	V_F	$I_F=750A$ $V_{GE}=0V$			2.5	V
Reverse Recovery Time	t_{rr}	$I_F=750A$ $-di/dt=2.25A/ns$ $V_{GE}=-10V$			300	ns

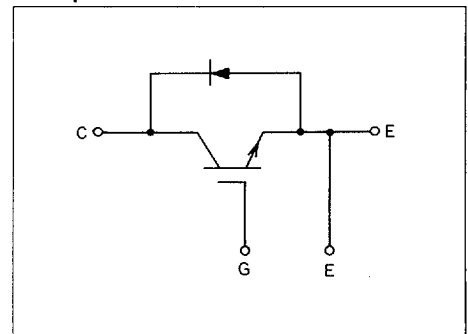
● Thermal Characteristics

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance	$R_{th(j-c)}$	IGBT			0.04	°C/W
	$R_{th(j-d)}$	Diode			0.08	
	$R_{th(c-f)}$	With Thermal compound		0.0125		

■ Outline Drawings



■ Equilavelent Circuit Schematic

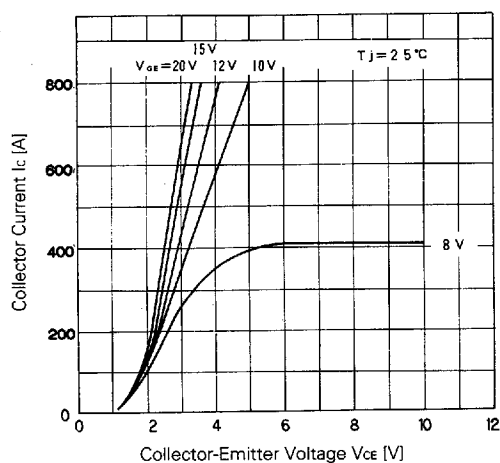


*1 Recommendable Value 2.5 ~ 3.5 N·m (M5) or (M6)

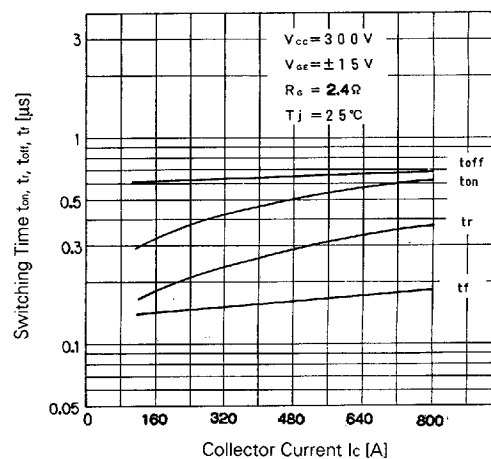
*2 Recommendable Value 3.5 ~ 4.5 N·m (M6)

*3 Recommendable Value 1.3 ~ 1.6 N·m (M4)

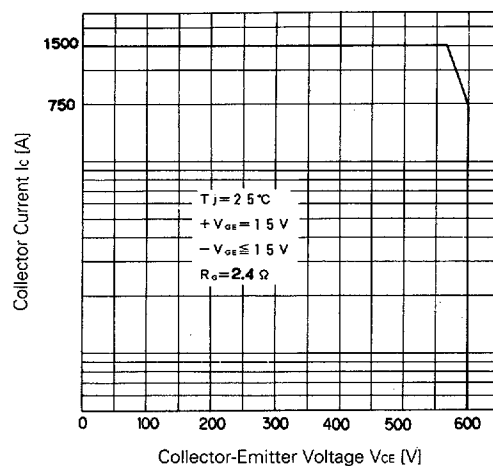
■ Characteristics



Collector Current vs. Collector-Emitter Voltage



Switching Time



Reverse Biased Safe Operating Area