

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 | Ratings | Units |
|---------------------------|--------------|-----------------|---------------|
| Collector-Emitter Voltage | V_{CES} | 1200 | V |
| Gate-Emitter Voltage | V_{GES} | ± 20 | V |
| Collector Current | Continuous | I_C | 50 |
| | 1ms | $I_{C\ pulse}$ | 100 |
| | Continuous | $-I_C$ | 50 |
| | 1ms | $-I_{C\ pulse}$ | 100 |
| Max. Power Dissipation | P_C | 400 | W |
| Operating Temperature | T_j | +150 | $^{\circ}C$ |
| Storage Temperature | T_{stg} | -40 to +125 | $^{\circ}C$ |
| Net. Weight | | 510 | g |
| Isolation Voltage | AC. 1min. | V_{isol} | 2500 |
| Screw Torque | Mounting *1 | 35 | kg \cdot cm |
| | Terminals *2 | 17 | |

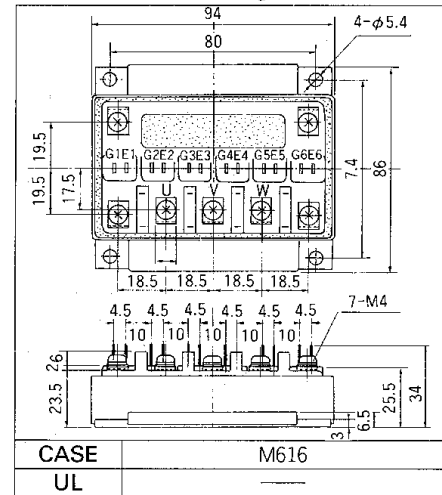
● Electrical Characteristics ($T_c=25^{\circ}C$)

| Items | Symbols | Test Conditions | Min. | Typ. | Max. | Units |
|--------------------------------------|---------------|---|------|------|------|---------|
| Zero Gate Voltage Collector Current | I_{CES} | $V_{GE}=0V$ $V_{CE}=1200V$ $T_c=25^{\circ}C$ | | | 1.0 | mA |
| | | $V_{GE}=0V$ $V_{CE}=1200V$ $T_c=125^{\circ}C$ | | | - | |
| Gate-Emitter Leakage Current | I_{GES} | $V_{CE}=0V$ $V_{GE}=\pm 20V$ | | | 100 | nA |
| Gate-Emitter Threshold Voltage | $V_{GE(th)}$ | $V_{CE}=20V$ $I_C=50mA$ | 3.0 | | 6.0 | V |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $V_{GE}=15V$ $I_C=50A$ | | 2.7 | 3.5 | V |
| Input Capacitance | C_{ies} | $V_{GE}=0V$ | | 9000 | | pF |
| Output Capacitance | C_{oes} | $V_{CE}=10V$ | | - | | |
| Reverse Transfer Capacitance | C_{res} | $f=1MHz$ | | - | | |
| Turn-on Time | t_{on} | $V_{CC}=600V$ | | 0.5 | 0.8 | μs |
| | t_r | $I_C=50A$ | | 0.3 | 0.6 | |
| Turn-off Time | t_{off} | $V_{GE}=\pm 15V$ | | 0.8 | 1.5 | |
| | t_f | $R_G=25\Omega$ | | 0.3 | 0.5 | |
| Diode Forward On-Voltage | V_F | $I_F=50A$ $V_{GE}=0V$ | | | 2.5 | V |
| Reverse Recovery Time | t_{rr} | $I_F=50A$ $-di/dt=150A/\mu s$ $V_{GE}=-10V$ | | 200 | 350 | ns |

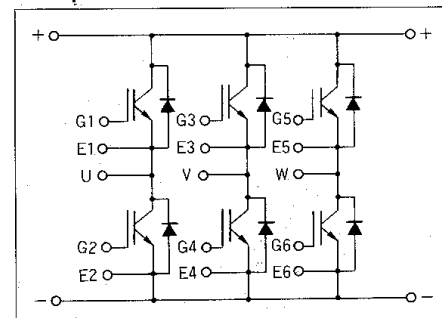
● Thermal Characteristics

| Items | Symbols | Test Conditions | Min. | Typ. | Max. | Units |
|--------------------|---------------|-----------------------|------|------|-------|---------------|
| Thermal Resistance | $R_{th(j-c)}$ | IGBT | | | 0.312 | $^{\circ}C/W$ |
| | $R_{th(j-e)}$ | Diode | | | 0.60 | |
| | $R_{th(c-f)}$ | With Thermal compound | | 0.05 | | |

■ Outline Drawings



■ Equilavelent Circuit Schematic



*1 Recommendable Value 25 to 35kg \cdot cm (M5)
*2 Recommendable Value 13 to 17kg \cdot cm (M4)