

IGBT MODULE

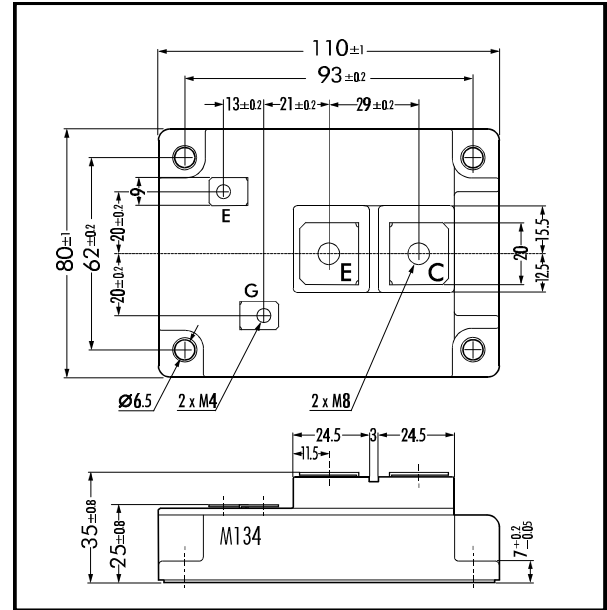
■ Features

- Square RBSOA
- Low Saturation Voltage
- Less Total Power Dissipation
- Improved FWD Characteristic
- Minimized Internal Stray Inductance

■ Applications

- High Power Switching
- A.C. Motor Controls
- D.C. Motor Controls
- Uninterruptible Power Supply

■ Outline Drawing



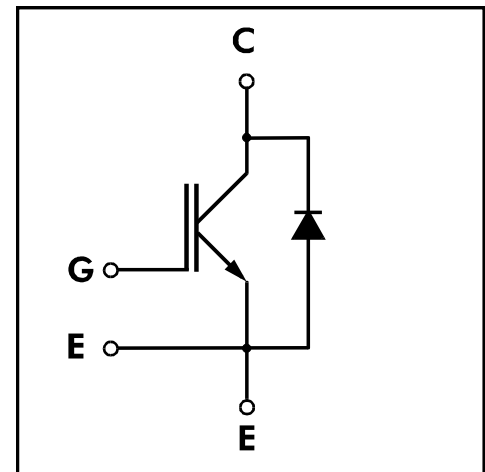
■ Maximum Ratings and Characteristics

• Absolute Maximum Ratings (T_c=25°C)

| Items | Symbols | Ratings | Units |
|---------------------------|-------------------------------|-----------------------|-------------|
| Collector-Emitter Voltage | V _{CEs} | 1200 | V |
| Gate -Emitter Voltage | V _{GEs} | ± 20 | V |
| Collector Current | Continuous (25°C / 80°C) | I _C | 800 / 600 |
| | 1ms (25°C / 80°C) | I _{C PULSE} | 1600 / 1200 |
| | Continuous | -I _C | 600 |
| | 1ms | -I _{C PULSE} | 1200 |
| Max. Power Dissipation | P _C | 4100 | W |
| Operating Temperature | T _j | +150 | °C |
| Storage Temperature | T _{stg} | -40 ~ +125 | °C |
| Isolation Voltage | A.C. 1min. V _{is} | 2500 | V |
| Screw Torque | Mounting *1 | 4.5 | Nm |
| | Terminals *2 | 11.0 | |
| | Terminals *3 | 1.7 | |

Note: *1:Recommendable Value; 4.0 ± 0.5 Nm (M6)
*2:Recommendable Value; 10.0 ± 1.0 Nm (M8)
*3:Recommendable Value; 1.5 ± 0.2 Nm (M4)

■ Equivalent Circuit



• Electrical Characteristics (at T_j=25°C)

| Items | Symbols | Test Conditions | Min. | Typ. | Max. | Units |
|--------------------------------------|----------------------|---|------|------|-------|-------|
| Zero Gate Voltage Collector Current | I _{CEs} | V _{GE} =0V V _{CE} =1200V | | | 2.0 | mA |
| Gate-Emitter Leakage Current | I _{GES} | V _{CE} =0V V _{GE} =± 20V | | | ± 0.5 | μA |
| Gate-Emitter Threshold Voltage | V _{GE(th)} | V _{GE} =20V I _C =600mA | 7.0 | 8.0 | 9.0 | V |
| Collector-Emitter Saturation Voltage | V _{CE(sat)} | V _{GE} =15V I _C =600A | | 2.85 | 3.2 | V |
| Input capacitance | C _{ies} | V _{GE} =0V | | 60 | | nF |
| Output capacitance | C _{oes} | V _{CE} =10V | | 9 | | |
| Reverse Transfer capacitance | C _{res} | f=1MHz | | 4 | | |
| Turn-on Time | t _{ON} | V _{CC} =600V | | 0.75 | 1.20 | μs |
| | t _r | I _C =600A | | 0.02 | 0.60 | |
| Turn-off Time | t _{OFF} | V _{GE} =± 15V | | 0.65 | 1.00 | |
| | t _f | R _G =2.0Ω | | 0.01 | 0.30 | |
| Diode Forward On-Voltage | V _F | I _F =600A V _{GE} =0V | | | 3.4 | V |
| Reverse Recovery Time | t _{rr} | I _F =600A, V _{GE} =-15V | | | 350 | ns |

• Thermal Characteristics

| Items | Symbols | Test Conditions | Min. | Typ. | Max. | Units |
|--------------------|----------------------|-----------------------|------|--------|------|-------|
| Thermal Resistance | R _{th(j-c)} | IGBT | | | 0.03 | °C/W |
| | R _{th(j-e)} | Diode | | | 0.06 | |
| | R _{th(c-f)} | With Thermal Compound | | 0.0063 | | |