

1MBH75D-060S

Molded IGBT

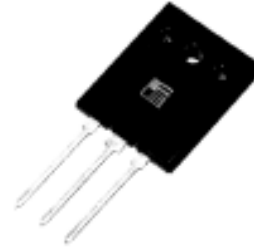
600V / 75A Molded Package

■ Features

- Small molded package
- Low power loss
- Soft switching with low switching surge and noise
- High reliability, high ruggedness (RBSOA, SCSOA etc.)
- Comprehensive line-up

■ Applications

- Inverter for Motor drive
- AC and DC Servo drive amplifier
- Uninterruptible power supply

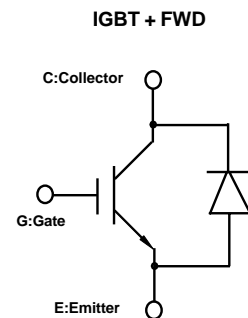


■ Maximum ratings and characteristics

● Absolute maximum ratings (Tc=25°C)

| Item | Symbol | Rating | Unit | | |
|-------------------------------|------------------|-----------------------|-------------------|-----|---|
| Collector-Emitter voltage | V _{CES} | 600 | V | | |
| Gate-Emitter voltage | V _{GES} | ±20 | V | | |
| Collector current | DC | T _c =25°C | I _{C25} | 83 | A |
| | | T _c =100°C | I _{C100} | 75 | A |
| | 1ms | T _c =25°C | I _{CP} | 225 | A |
| Max. power dissipation (IGBT) | P _C | 310 | W | | |
| Max. power dissipation (FWD) | P _C | 180 | W | | |
| Operating temperature | T _J | +150 | °C | | |
| Storage temperature | T _{stg} | -40 to +150 | °C | | |
| Screw torque | - | 58.8 to 78.4 | N·cm | | |

■ Equivalent Circuit Schematic



● Electrical characteristics (at Tc=25°C unless otherwise specified)

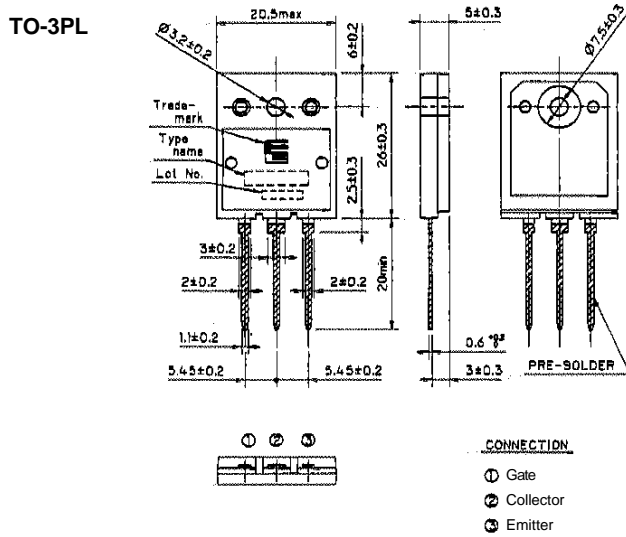
| Item | Symbol | Characteristics | | | Conditions | Unit | |
|--------------------------------------|----------------------|-------------------|------|------|---------------------------------------------------------------------------------|--------------------------------------------|----|
| | | Min. | Typ. | Max. | | | |
| Zero gate voltage collector current | I _{CES} | - | - | 1.0 | V _{GE} =0V, V _{CES} =600V | mA | |
| Gate-Emitter leakage current | I _{GES} | - | - | 10 | V _{CE} =0V, V _{GE} =±20V | μA | |
| Gate-Emitter threshold voltage | V _{GE(th)} | 4.0 | 5.0 | 6.0 | V _{CE} =20V, I _C =75mA | V | |
| Collector-Emitter saturation voltage | V _{CE(sat)} | - | 2.4 | 2.9 | V _{GE} =15V, I _C =75A | V | |
| Input capacitance | C _{ies} | - | 3700 | - | V _{GE} =0V | pF | |
| Output capacitance | C _{oes} | - | 350 | - | V _{CE} =25V | | |
| Reverse transfer capacitance | C _{res} | - | 190 | - | f=1MHz | | |
| Switching Time | Turn-on time | t _{on} * | - | 0.15 | - | V _{CC} =300V, I _C =75A | μs |
| | | t _r * | - | 0.09 | - | V _{GE} =±15V | |
| | | t _{rr2} | - | 0.03 | - | R _G =24 ohm | |
| | Turn-off time | t _{off} | - | 0.50 | 0.62 | (Half Bridge) | |
| | | t _f | - | 0.10 | 0.17 | Inductance Load | |
| | | t _{off} | - | 0.50 | 0.62 | (Half Bridge) | |
| Turn-on time | t _{on} * | - | 0.15 | - | V _{CC} =300V, I _C =75A | μs | |
| | t _r * | - | 0.09 | - | V _{GE} =+15V | | |
| | t _{rr2} | - | 0.03 | - | R _G =6 ohm | | |
| Turn-off time | t _{off} | - | 0.50 | 0.62 | (Half Bridge) | | |
| | t _f | - | 0.10 | 0.17 | Inductance Load | | |
| | t _{off} | - | 0.50 | 0.62 | (Half Bridge) | | |
| FWD forward on voltage | V _F | - | 2.0 | 2.5 | I _F =75A, V _{GE} =0V | V | |
| Reverse recovery time | t _{rr} | - | 0.06 | 0.10 | I _F =75A, V _{GE} =-10V, V _R =300V, di/dt=100A/μs | μs | |

*Turn-on characteristics include t_{rr2}. See a figure in next page.

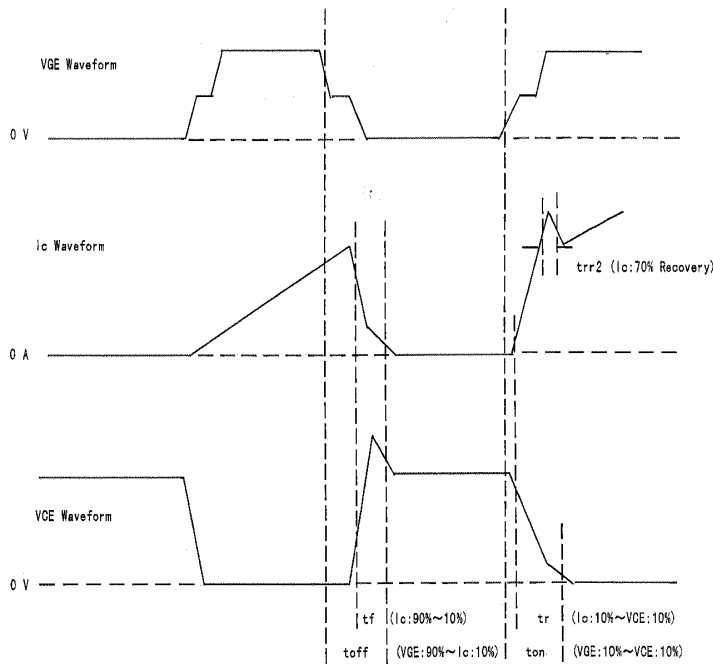
● Thermal resistance characteristics

| Item | Symbol | Characteristics | | | Conditions | Unit |
|--------------------|----------------------|-----------------|------|------|------------|------|
| | | Min. | Typ. | Max. | | |
| Thermal resistance | R _{th(j-c)} | - | - | 0.40 | IGBT | °C/W |
| | R _{th(j-c)} | - | - | 0.69 | FWD | °C/W |

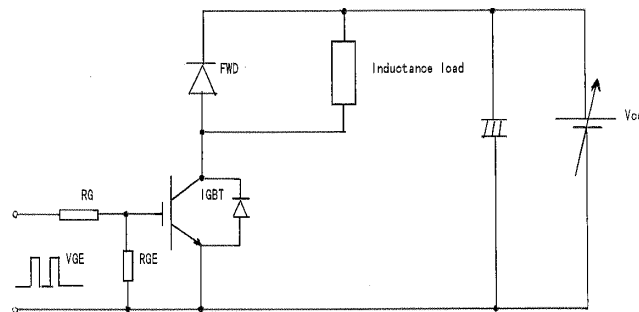
■ Outline drawings, mm



■ Switching waveform (Inductance load)

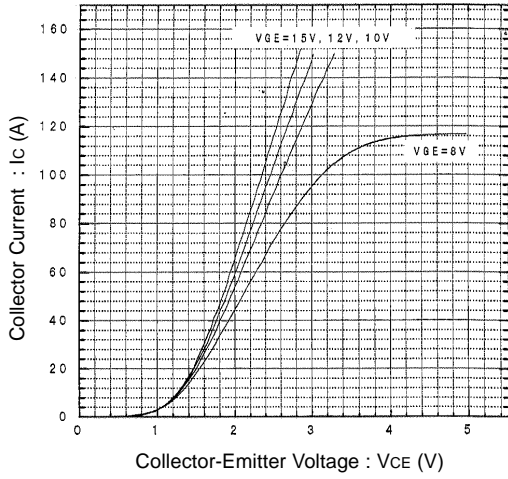


■ Measurement circuit

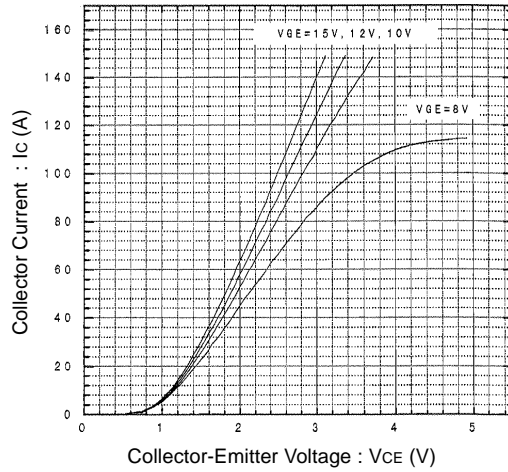


Characteristics

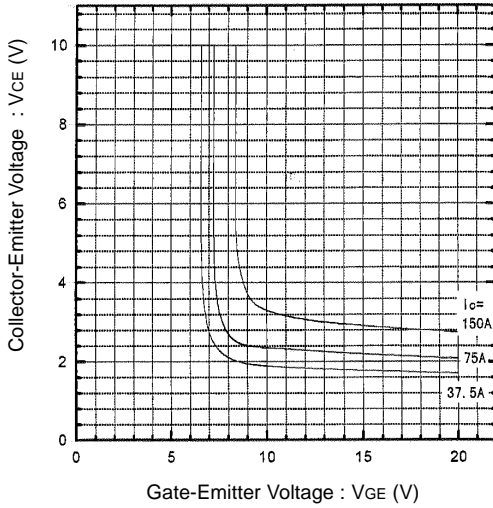
Collector current vs. Collector-Emitter voltage
Tj=25°C



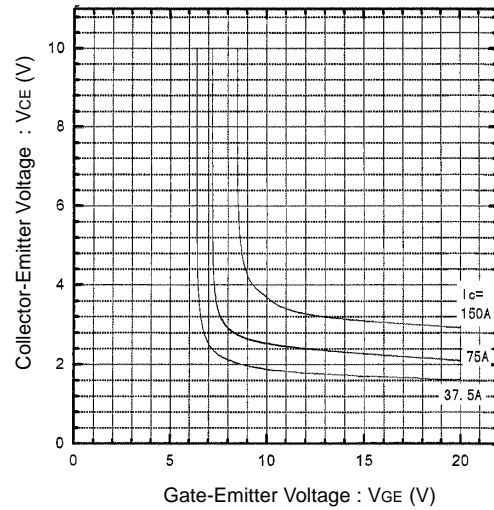
Collector current vs. Collector-Emitter voltage
Tj=125°C



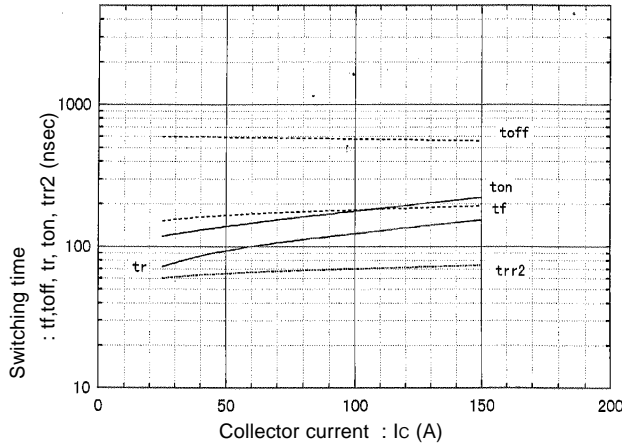
Collector-Emitter voltage vs. Gate-Emitter voltage
Tj=25°C



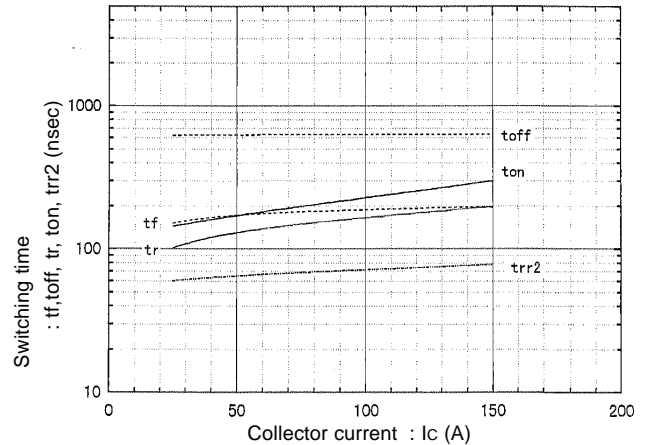
Collector-Emitter voltage vs. Gate-Emitter voltage
Tj=125°C



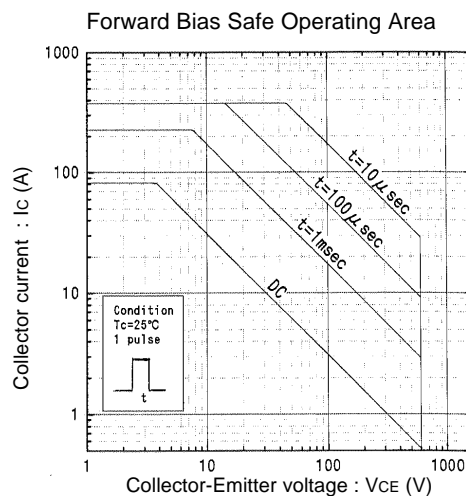
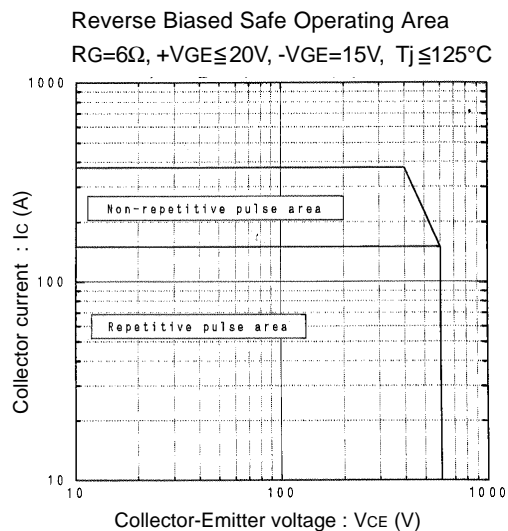
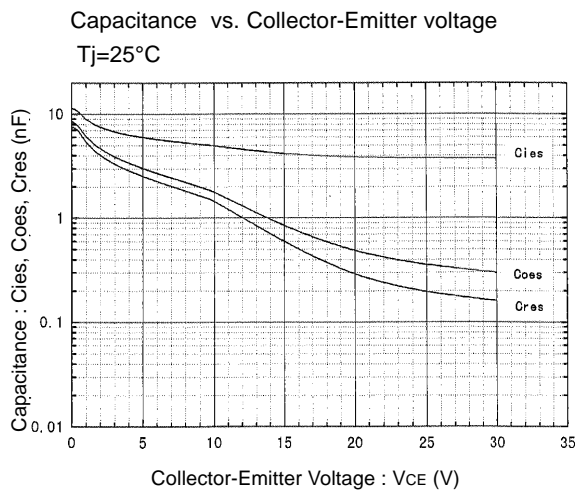
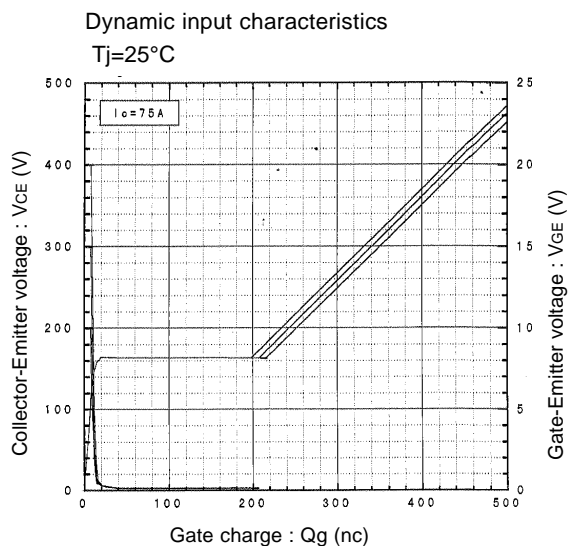
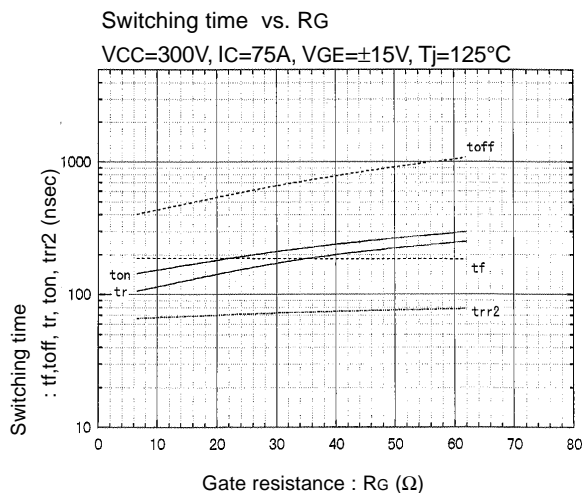
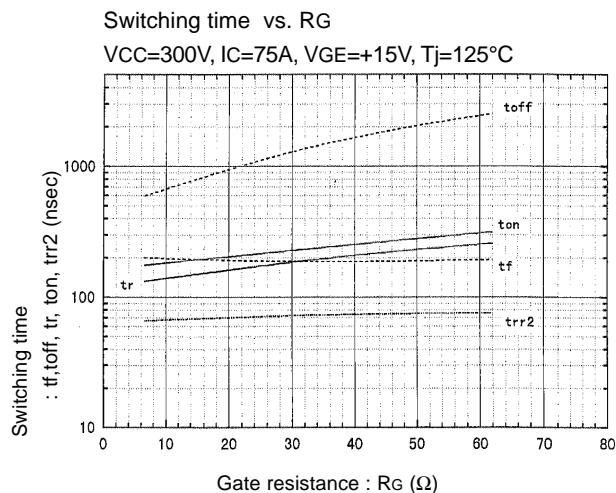
Switching time vs. Collector current
VCC=300V, RG=6Ω, VGE=+15V, Tj=125°C



Switching time vs. Collector current
VCC=300V, RG=24Ω, VGE=±15V, Tj=125°C



■ Characteristics



■ Characteristics

