

MITSUBISHI IGBT MODULES
CM300DY-34A

HIGH POWER SWITCHING USE

CM300DY-34A



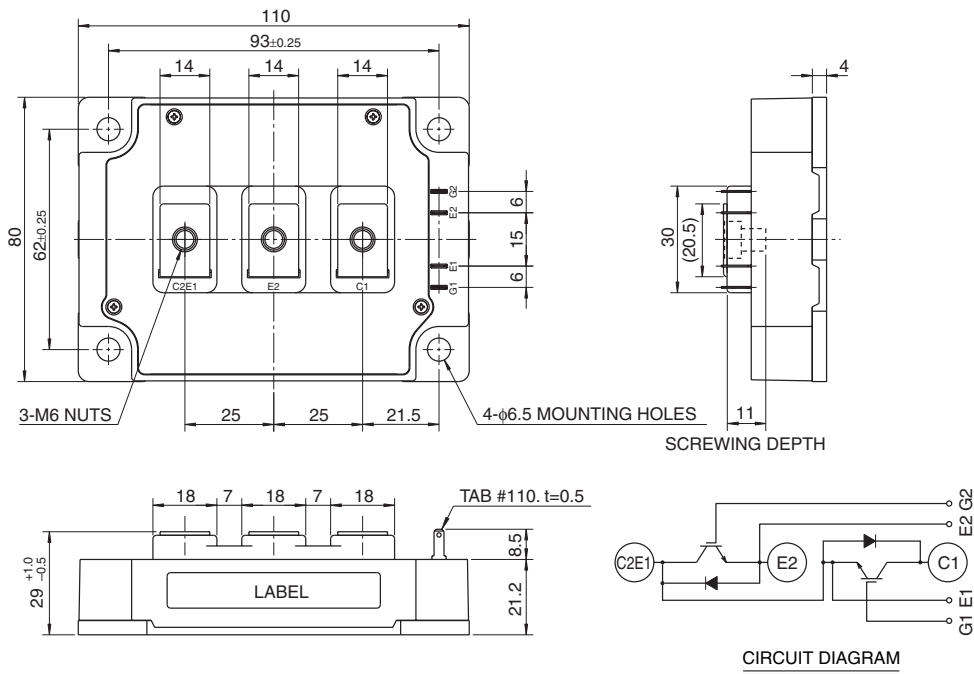
- IC300A
- VCES 1700V
- Insulated Type
- 2-elements in a pack

APPLICATION

General purpose inverters & Servo controls, etc

OUTLINE DRAWING & CIRCUIT DIAGRAM

Dimensions in mm



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ABSOLUTE MAXIMUM RATINGS (T_J = 25°C, unless otherwise specified)

| Symbol | Parameter | Conditions | Ratings | Unit |
|--------------------------|-------------------------------|--|------------|-------|
| V _{CE} S | Collector-emitter voltage | G-E Short | 1700 | V |
| V _{GE} S | Gate-emitter voltage | C-E Short | ±20 | V |
| I _C | Collector current | DC, T _C = 108°C ^{*1} | 300 | A |
| I _{CM} | | Pulse | 600 | |
| I _E (Note 1) | Emitter current | Operation | 300 | A |
| I _{EM} (Note 1) | | Pulse | 600 | |
| P _C (Note 3) | Maximum collector dissipation | T _C = 25°C ^{*1} | 2900 | W |
| T _J | Junction temperature | | -40 ~ +150 | °C |
| T _{stg} | Storage temperature | | -40 ~ +125 | °C |
| V _{iso} | Isolation voltage | Main terminal to base plate, AC 1 min. | 3500 | V |
| — | Torque strength | Main terminal M6 | 3.5 ~ 4.5 | N • m |
| — | | Mounting holes M6 | 3.5 ~ 4.5 | |
| — | Weight | Typical value | 580 | g |

ELECTRICAL CHARACTERISTICS (T_J = 25°C, unless otherwise specified)

| Symbol | Parameter | Test conditions | Limits | | | Unit |
|--------------------------|---|---|------------------------|------|-------|------|
| | | | Min. | Typ. | Max. | |
| I _{CES} | Collector cutoff current | V _{CE} = V _{CE} S, V _{GE} = 0V | — | — | 1 | mA |
| V _{GE(th)} | Gate-emitter threshold voltage | I _C = 30mA, V _{CE} = 10V | 5.5 | 7.0 | 8.5 | V |
| I _{GES} | Gate leakage current | ±V _{GE} = V _{GES} , V _{CE} = 0V | — | — | 2.0 | μA |
| V _{CE(sat)} | Collector to emitter saturation voltage | I _C = 300A, V _{GE} = 15V | T _J = 25°C | 2.2 | 2.8 | V |
| | | | T _J = 125°C | 2.45 | — | |
| C _{ies} | Input capacitance | V _{CE} = 10V V _{GE} = 0V | — | — | 74 | nF |
| C _{oes} | Output capacitance | | — | — | 8.4 | |
| C _{res} | Reverse transfer capacitance | | — | — | 1.6 | |
| Q _G | Total gate charge | V _{CC} = 1000V, I _C = 300A, V _{GE} = 15V | — | 2000 | — | nC |
| t _{d(on)} | Turn-on delay time | V _{CC} = 1000V, I _C = 300A V _{GE1} = V _{GE2} = 15V R _G = 1.6Ω, Inductive load switching operation I _E = 300A | — | — | 600 | ns |
| t _r | Turn-on rise time | | — | — | 200 | |
| t _{d(off)} | Turn-off delay time | | — | — | 850 | |
| t _f | Turn-off fall time | | — | — | 350 | |
| t _{rr} (Note 1) | Reverse recovery time | | — | — | 450 | |
| Q _{rr} (Note 1) | Reverse recovery charge | — | 30 | — | μC | |
| V _{EC} (Note 1) | Emitter-collector voltage | I _E = 300A, V _{GE} = 0V | — | — | 3.0 | V |
| R _{th(j-c)Q} | Thermal resistance | IGBT part (1/2 module) ^{*1} | — | — | 0.043 | °C/W |
| R _{th(j-c)R} | | FWDi part (1/2 module) ^{*1} | — | — | 0.072 | |
| R _{th(c-f)} | Contact thermal resistance | Case to fin, Thermal compound applied (1/2 module) ^{*1,*2} | — | 0.02 | — | |
| R _G | External gate resistance | | 1.6 | — | 16 | Ω |

*1 : T_C, T_f measured point is just under the chips.

*2 : Typical value is measured by using Shin-Etsu Chemical Co.,Ltd "G-746".

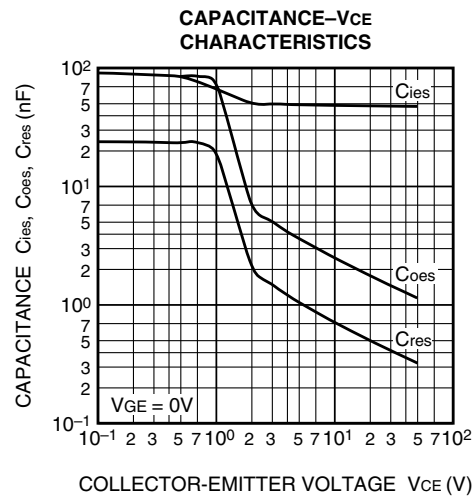
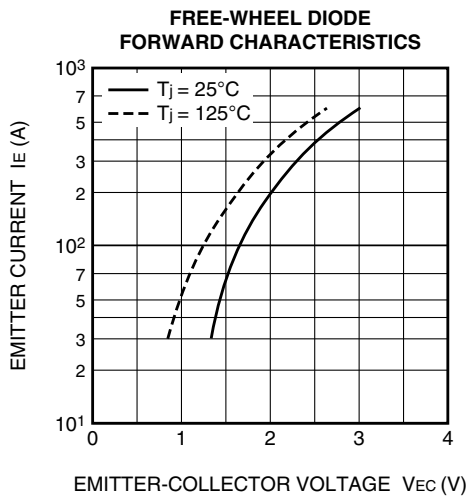
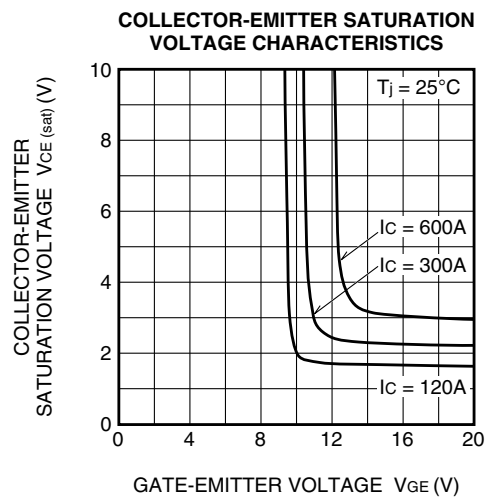
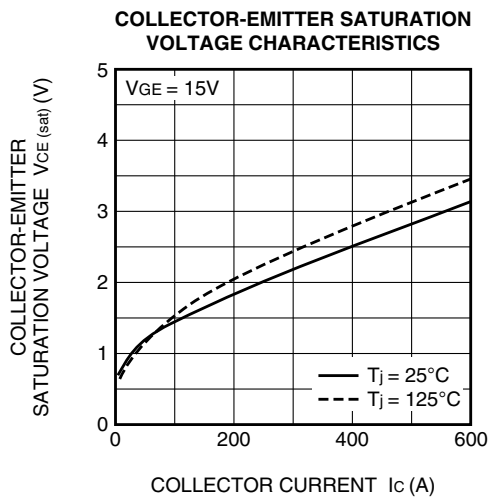
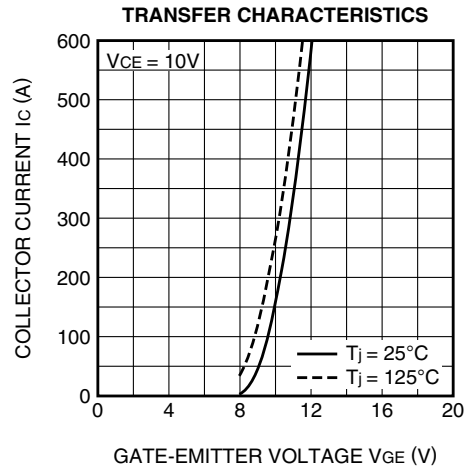
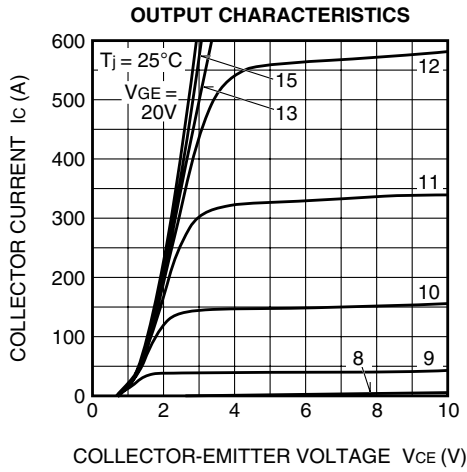
Note 1. I_E, I_{EM}, V_{EC}, t_{rr} & Q_{rr} represent characteristics of the anti-parallel, emitter to collector free-wheel diode (FWDi).

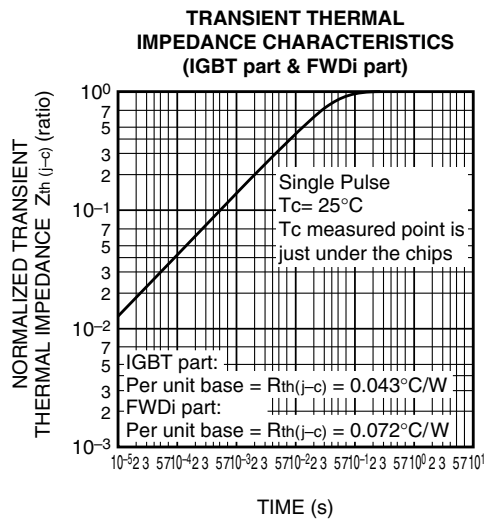
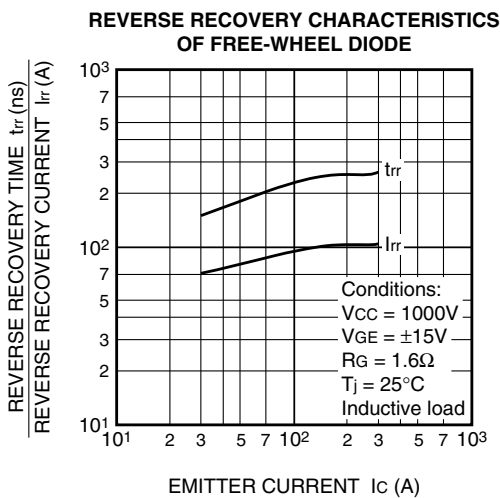
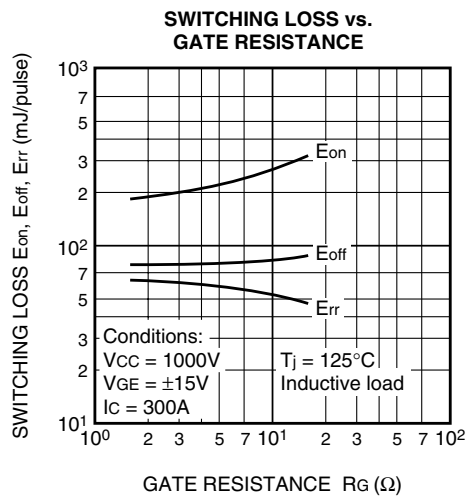
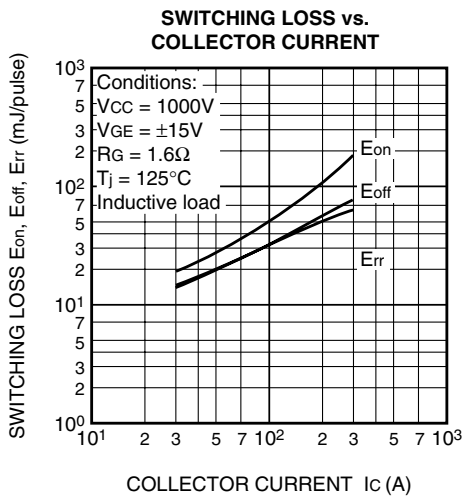
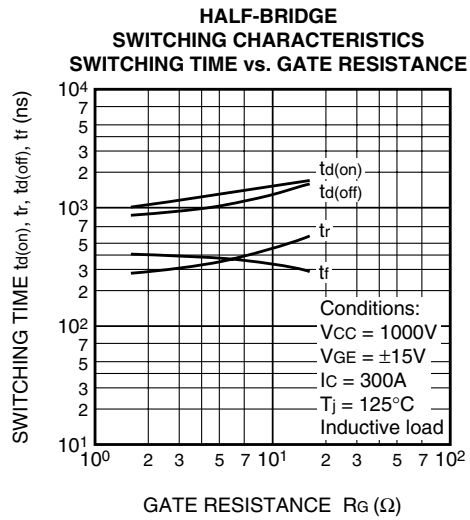
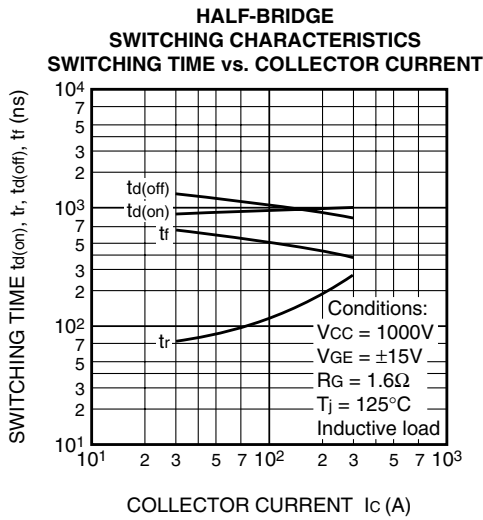
2. Pulse width and repetition rate should be such that the device junction temperature (T_J) does not exceed T_{Jmax} rating.

3. Junction temperature (T_J) should not increase beyond 150°C.

4. Pulse width and repetition rate should be such as to cause negligible temperature rise.

PERFORMANCE CURVES





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