

To all our customers

Regarding the change of names mentioned in the document, such as Mitsubishi Electric and Mitsubishi XX, to Renesas Technology Corp.

The semiconductor operations of Hitachi and Mitsubishi Electric were transferred to Renesas Technology Corporation on April 1st 2003. These operations include microcomputer, logic, analog and discrete devices, and memory chips other than DRAMs (flash memory, SRAMs etc.)

Accordingly, although Mitsubishi Electric, Mitsubishi Electric Corporation, Mitsubishi Semiconductors, and other Mitsubishi brand names are mentioned in the document, these names have in fact all been changed to Renesas Technology Corp. Thank you for your understanding. Except for our corporate trademark, logo and corporate statement, no changes whatsoever have been made to the contents of the document, and these changes do not constitute any alteration to the contents of the document itself.

Note : Mitsubishi Electric will continue the business operations of high frequency & optical devices and power devices.

Renesas Technology Corp.
Customer Support Dept.
April 1, 2003



MITSUBISHI Nch IGBT
CT60AM-18F

INSULATED GATE BIPOLAR TRANSISTOR

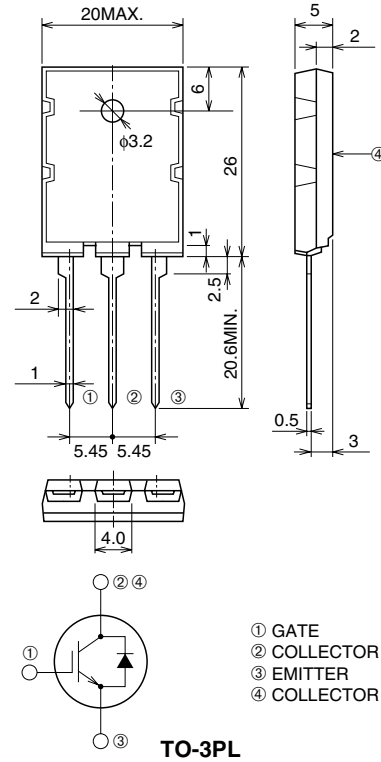
CT60AM-18F



- V_{CES} 900V
- I_C 60A
- Integrated Fast-recovery diode
- Small tail loss
- Low $V_{CE(sat)}$

OUTLINE DRAWING

Dimensions in mm



APPLICATION

Microwave oven, Electromagnetic cooking devices, Rice-cookers

MAXIMUM RATINGS ($T_c = 25^\circ\text{C}$)

| Symbol | Parameter | Conditions | Ratings | Unit |
|-----------|---------------------------|---------------|-----------------|------------------|
| V_{CES} | Collector-Emitter Voltage | $V_{GE} = 0V$ | 900 | V |
| V_{GES} | Gate-Emitter Voltage | | ± 25 | V |
| V_{GEM} | Peak Gate-Emitter Voltage | | ± 30 | V |
| I_C | Collector Current | | 60 | A |
| I_{CM} | Collector Current (Pulse) | | 120 | A |
| I_E | Emitter Current | | 40 | A |
| P_C | Maximum Power Dissipation | | 180 | W |
| T_j | Junction Temperature | | $-40 \sim +150$ | $^\circ\text{C}$ |
| T_{stg} | Storage Temperature | | $-40 \sim +150$ | $^\circ\text{C}$ |

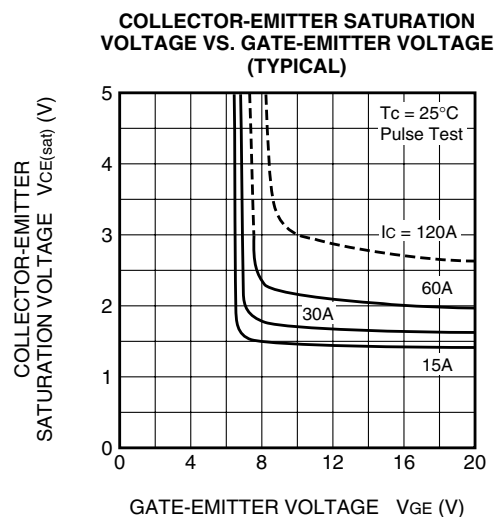
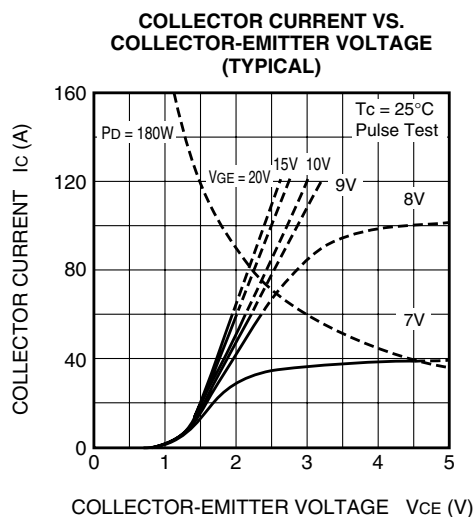


INSULATED GATE BIPOLAR TRANSISTOR

ELECTRICAL CHARACTERISTICS (Tch = 25°C)

| Symbol | Parameter | Test conditions | Limits | | | Unit |
|----------|--------------------------------------|-------------------------------------------|--------|------|------|--------|
| | | | Min. | Typ. | Max. | |
| ICES | Collector-emitter leakage current | VCE = 900V, VGE = 0V | — | — | 1.0 | mA |
| IGES | Gate-emitter leakage current | VGE = ±20V, VCE = 0V | — | — | 0.5 | μA |
| VGE(th) | Gate-emitter threshold voltage | VCE = 10V, IC = 6mA | 2.0 | 4.0 | 6.0 | V |
| VCE(sat) | Collector-emitter saturation voltage | IC = 60A, VGE = 15V | — | 2.1 | 2.7 | V |
| Cies | Input capacitance | VCE = 25V, VGE = 0V, f = 1MHz | — | 4400 | — | pF |
| Coēs | Output capacitance | | — | 115 | — | pF |
| Cres | Reverse transfer capacitance | | — | 75 | — | pF |
| td(on) | Turn-on delay time | VCC = 300V, IC = 60A, VGE = 15V, RG = 10Ω | — | 0.05 | — | μs |
| tr | Turn-on rise time | | — | 0.1 | — | μs |
| td(off) | Turn-off delay time | | — | 0.2 | — | μs |
| tf | Turn-off fall time | | — | 0.3 | — | μs |
| Etail | Tail loss | ICP = 60A, Tj = 125°C, dv/dt = 200V/μs | — | 0.6 | 1.0 | mJ/pls |
| Itail | Tail current | | — | 6.0 | 12 | A |
| VEC | Emitter-collector voltage | IE = 60A, VGE = 0V | — | 2.2 | 3.0 | V |
| trr | Diode reverse recovery time | IE = 60A, dis/dt = -20A/μs | — | 0.5 | 2.0 | μs |
| Rth(j-c) | Thermal resistance (IGBT) | Junction to case | — | — | 0.69 | °C/W |
| Rth(j-c) | Thermal resistance (Diode) | Junction to case | — | — | 4.0 | °C/W |

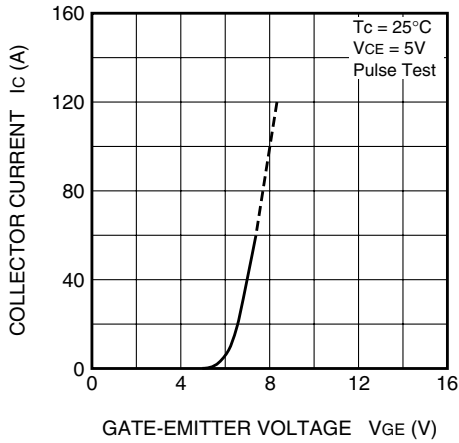
PERFORMANCE CURVES



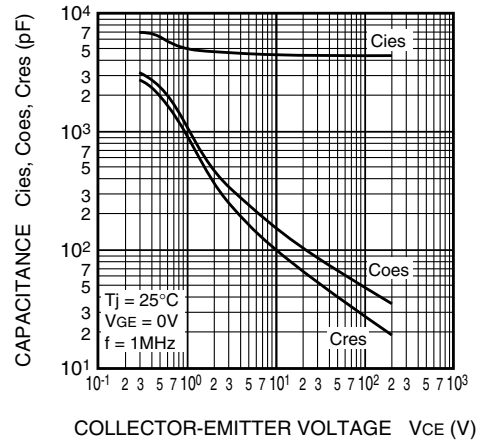
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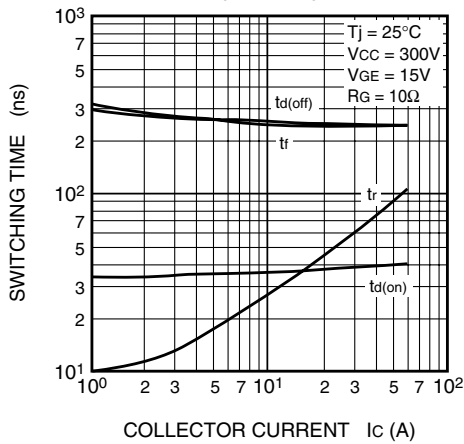
COLLECTOR CURRENT VS. GATE-EMITTER VOLTAGE (TYPICAL)



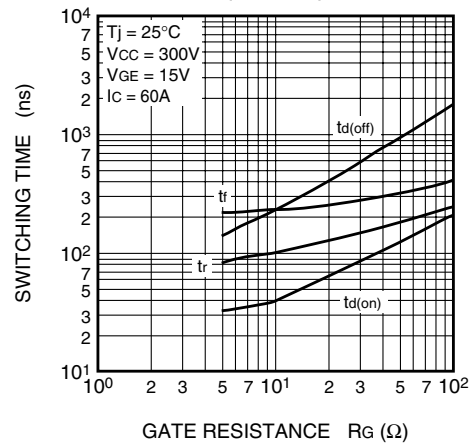
CAPACITANCE VS. COLLECTOR-EMITTER VOLTAGE (TYPICAL)



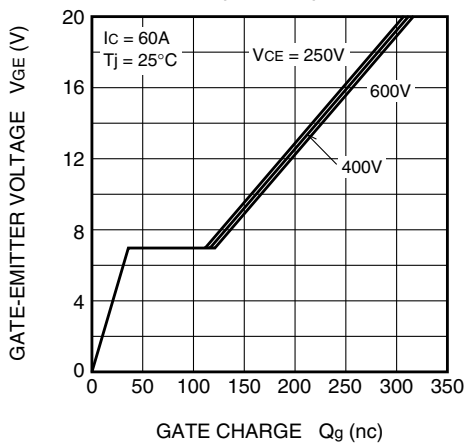
SWITCHING CHARACTERISTICS (TYPICAL)



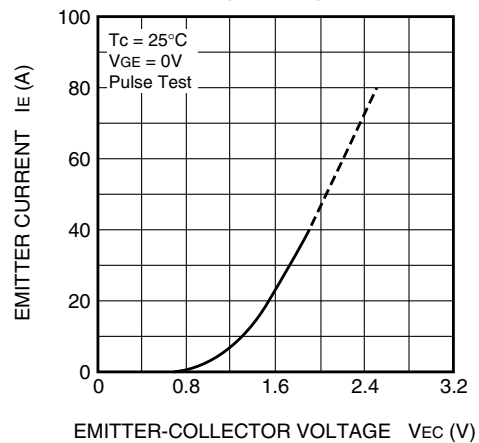
SWITCHING TIME VS. GATE RESISTANCE (TYPICAL)



GATE-EMITTER VOLTAGE VS. GATE CHARGE CHARACTERISTIC (TYPICAL)



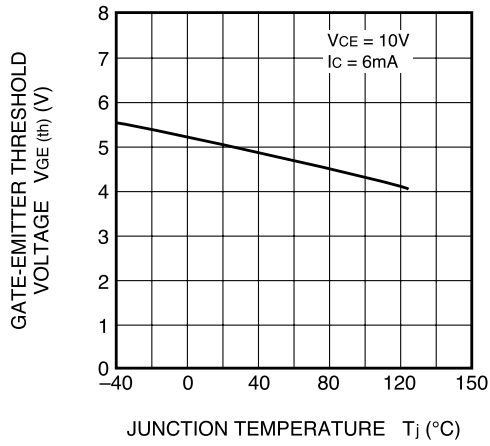
EMITTER CURRENT VS. EMITTER-COLLECTOR VOLTAGE (TYPICAL)



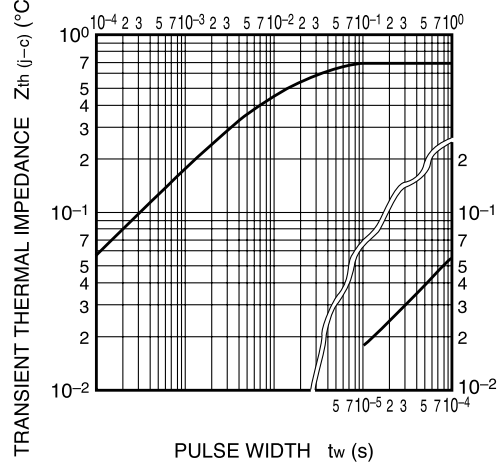
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INSULATED GATE BIPOLAR TRANSISTOR

THRESHOLD VOLTAGE VS. JUNCTION TEMPERATURE (TYPICAL)



IGBT TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS



DIODE TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS

