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

PRELIMINARY
Notice: This is not a final specification.
Some parametric limits are subject to change.

MITSUBISHI INSULATED GATE BIPOLAR TRANSISTOR

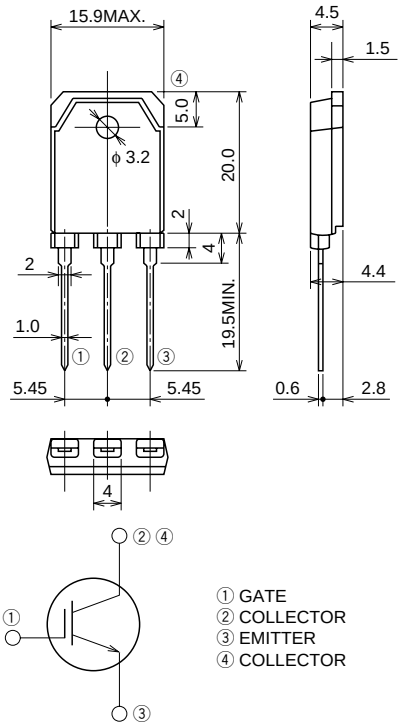
CT15SM-24

GENERAL INVERTER • UPS USE

CT15SM-24

- V_{CES} 1200V
- I_C 15A
- High Speed Switching
- Low V_{CE} Saturation Voltage

OUTLINE DRAWING Dimensions in mm



TO-3P

APPLICATION

AC & DC motor controls, General purpose inverters, UPS, Power supply switching, Servo controls, etc.

MAXIMUM RATINGS (T_C = 25°C)

Symbol	Parameter	Conditions	Ratings	Unit
V_{CES}	Collector-emitter voltage	V_{GE} = 0V	1200	V
V_{GES}	Gate-emitter voltage	V_{CE} = 0V	±20	V
V_{GEM}	Peak gate-emitter voltage	V_{CE} = 0V	±30	V
I_C	Collector current		15	A
I_{CM}	Collector current (Pulsed)		30	A
P_C	Maximum power dissipation		250	W
T_j	Junction temperature		–40 ~ +150	°C
T_{stg}	Storage temperature		–40 ~ +150	°C
—	Weight	Typical value	4.8	g

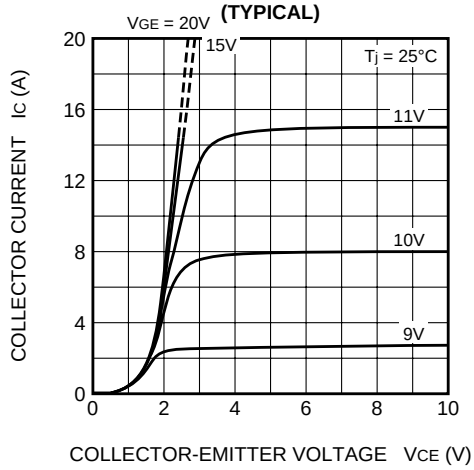
RENESAS
Renesas Technology Corp.

ELECTRICAL CHARACTERISTICS (T_j = 25°C)

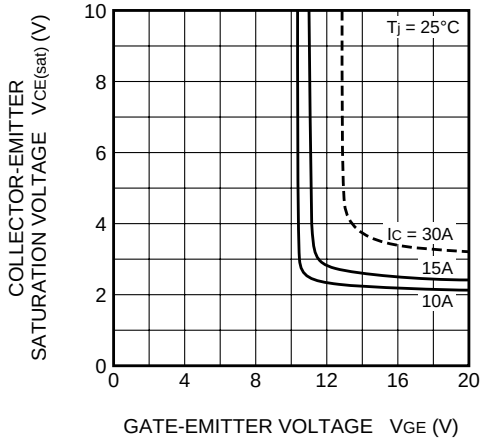
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
$V_{(BR)CES}$	Collector-emitter breakdown voltage	I_C = 1mA, V_{GE} = 0V	1200	—	—	V
I_{GES}	Collector-emitter leakage current	V_{GE} = ±30V, V_{CE} = 0V	—	—	±0.5	μA
I_{CES}	Gate-emitter leakage current	V_{CE} = 1200V, V_{GE} = 0V	—	—	1	mA
$V_{GE(th)}$	Gate-emitter threshold voltage	I_C = 1.5mA, V_{CE} = 10V	4.5	6.0	7.5	V
$V_{CE(sat)}$	Collector-emitter saturation voltage	I_C = 15A, V_{GE} = 15V	—	2.7	3.6	V
C_{ies}	Input capacitance	V_{CE} = 25V, V_{GE} = 0V, f = 1MHz	—	1600	—	pF
C_{oes}	Output capacitance		—	150	—	pF
C_{res}	Reverse transfer capacitance		—	45	—	pF
$t_{d(on)}$	Turn-on delay time	V_{CC} = 600V, Resistance load, I_C = 15A, V_{GE} = 15V, R_{GE} = 20Ω	—	50	—	ns
t_r	Rise time		—	150	—	ns
$t_{d(off)}$	Turn-off delay time		—	150	—	ns
t_f	Fall time		—	250	—	ns
$R_{th(j-c)}$	Thermal resistance	Junction to case	—	—	0.50	°C/W

PERFORMANCE CURVES

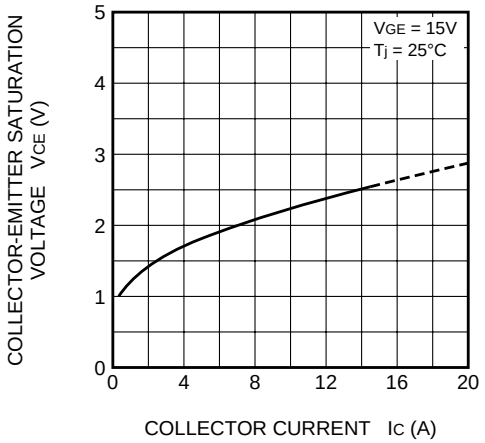
OUTPUT CHARACTERISTICS (TYPICAL)



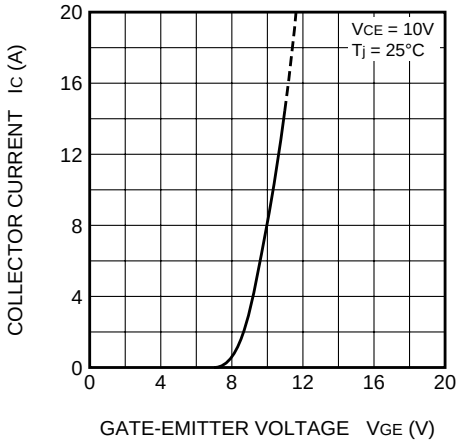
COLLECTOR-EMITTER SATURATION VOLTAGE CHARACTERISTICS (TYPICAL)



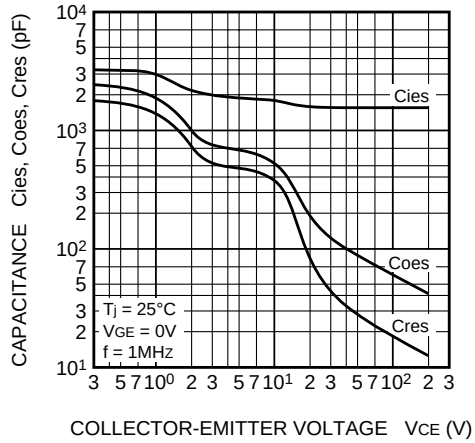
COLLECTOR-EMITTER SATURATION VOLTAGE CHARACTERISTICS (TYPICAL)



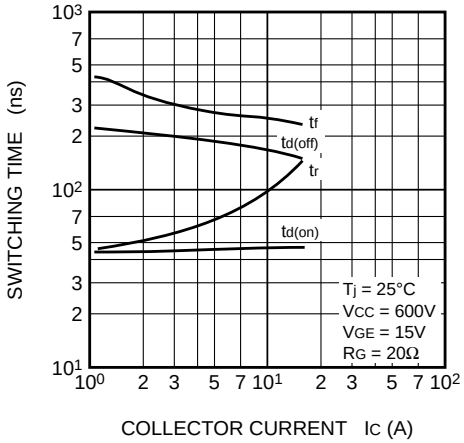
COLLECTOR CURRENT VS. GATE EMITTER VOLTAGE CHARACTERISTIC (TYPICAL)



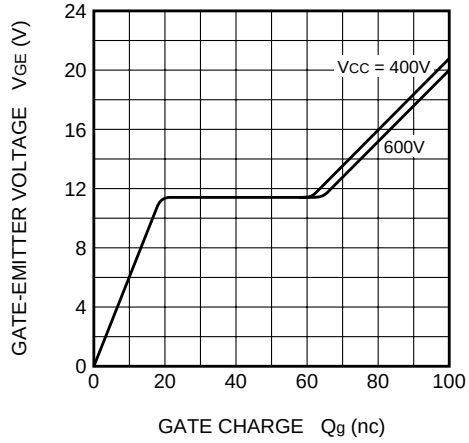
CAPACITANCE VS. COLLECTOR-EMITTER VOLTAGE CHARACTERISTIC (TYPICAL)



SWITCHING TIME-COLLECTOR CURRENT CHARACTERISTIC (TYPICAL)



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



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (TYPICAL)