


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

MITSUBISHI INSULATED GATE BIPOLAR TRANSISTOR

**CT15SM-24**

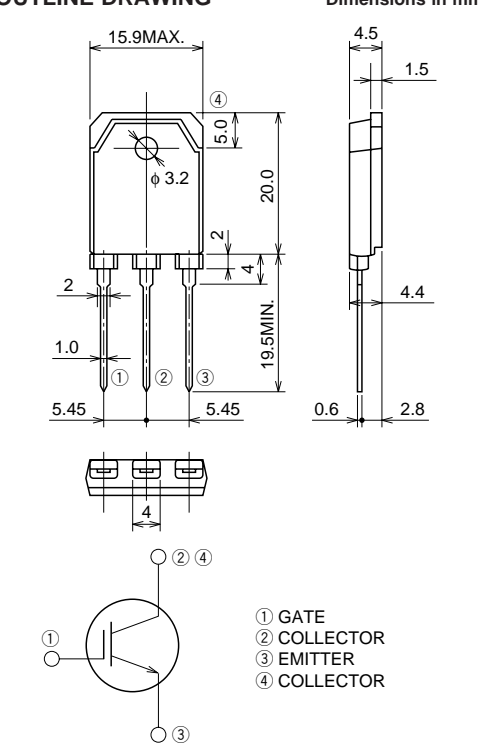
GENERAL INVERTER • UPS USE

**CT15SM-24**



- VCES ..... 1200V
- IC ..... 15A
- High Speed Switching
- Low VCE Saturation Voltage

**OUTLINE DRAWING** Dimensions in mm



① GATE  
 ② COLLECTOR  
 ③ EMITTER  
 ④ COLLECTOR

**TO-3P**

**APPLICATION**

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

**MAXIMUM RATINGS** (Tc = 25°C)

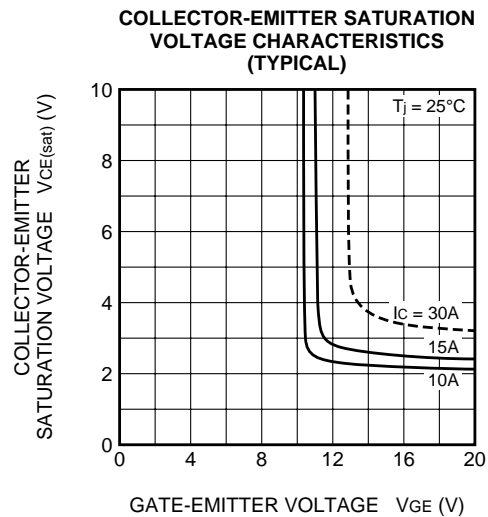
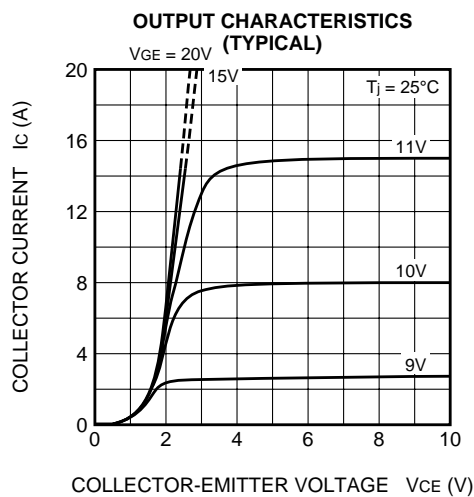
Symbol	Parameter	Conditions	Ratings	Unit
V <sub>CE</sub> S	Collector-emitter voltage	V <sub>GE</sub> = 0V	1200	V
V <sub>GES</sub>	Gate-emitter voltage	V <sub>CE</sub> = 0V	±20	V
V <sub>GEM</sub>	Peak gate-emitter voltage	V <sub>CE</sub> = 0V	±30	V
I <sub>C</sub>	Collector current		15	A
I <sub>CM</sub>	Collector current (Pulsed)		30	A
P <sub>C</sub>	Maximum power dissipation		250	W
T <sub>j</sub>	Junction temperature		-40 ~ +150	°C
T <sub>stg</sub>	Storage temperature		-40 ~ +150	°C
—	Weight	Typical value	4.8	g

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

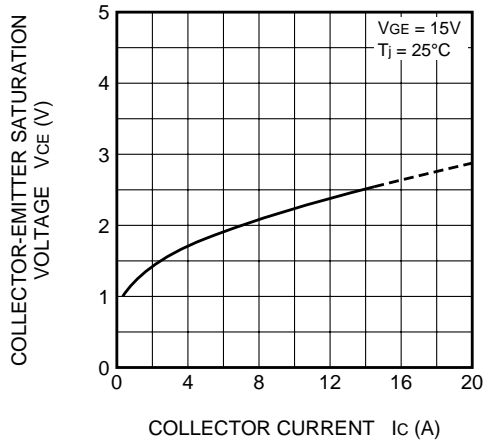
**ELECTRICAL CHARACTERISTICS** ( $T_j = 25^\circ\text{C}$ )

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V(BR)CES	Collector-emitter breakdown voltage	$I_C = 1\text{mA}, V_{GE} = 0\text{V}$	1200	—	—	V
IGES	Collector-emitter leakage current	$V_{GE} = \pm 30\text{V}, V_{CE} = 0\text{V}$	—	—	$\pm 0.5$	$\mu\text{A}$
ICES	Gate-emitter leakage current	$V_{CE} = 1200\text{V}, V_{GE} = 0\text{V}$	—	—	1	mA
$V_{GE(th)}$	Gate-emitter threshold voltage	$I_C = 1.5\text{mA}, V_{CE} = 10\text{V}$	4.5	6.0	7.5	V
$V_{CE(sat)}$	Collector-emitter saturation voltage	$I_C = 15\text{A}, V_{GE} = 15\text{V}$	—	2.7	3.6	V
$C_{ies}$	Input capacitance	$V_{CE} = 25\text{V}, V_{GE} = 0\text{V}, f = 1\text{MHz}$	—	1600	—	pF
$C_{oes}$	Output capacitance		—	150	—	pF
$C_{res}$	Reverse transfer capacitance		—	45	—	pF
$t_d(on)$	Turn-on delay time	$V_{CC} = 600\text{V}, \text{Resistance load}, I_C = 15\text{A}, V_{GE} = 15\text{V}, R_{GE} = 20\Omega$	—	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	$^\circ\text{C/W}$

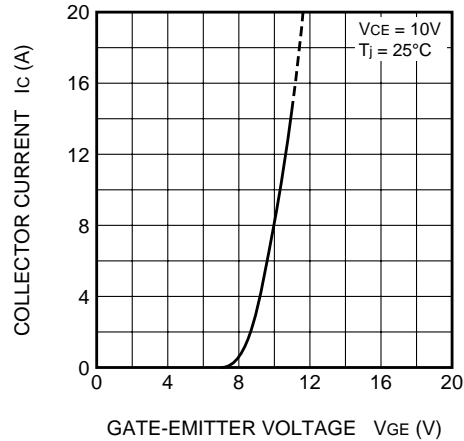
**PERFORMANCE CURVES**



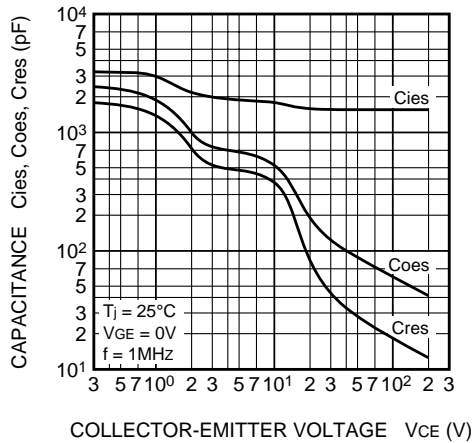
**COLLECTOR-EMITTER SATURATION VOLTAGE CHARACTERISTICS (TYPICAL)**



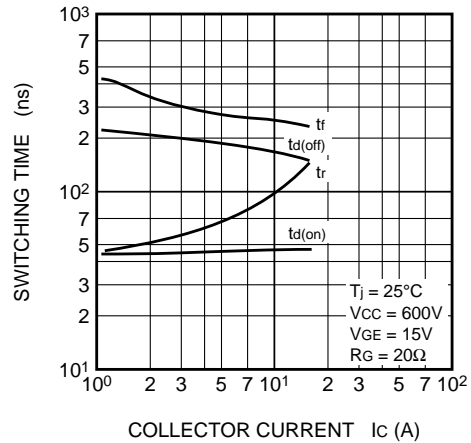
**COLLECTOR CURRENT VS. GATE EMITTER VOLTAGE CHARACTERISTIC (TYPICAL)**



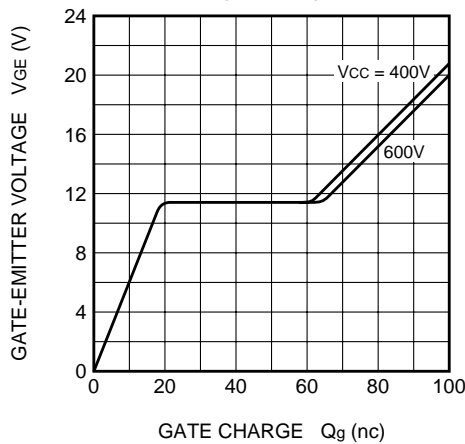
**CAPACITANCE VS. COLLECTOR-EMITTER VOLTAGE CHARACTERISTIC (TYPICAL)**



**SWITCHING TIME-COLLECTOR CURRENT CHARACTERISTIC (TYPICAL)**



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



**TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (TYPICAL)**

