

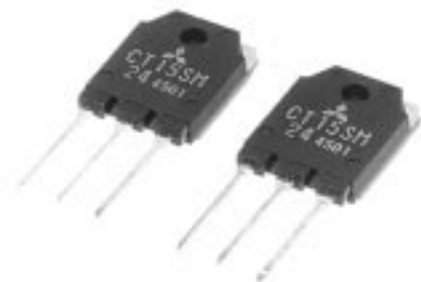
PRELIMINARY
 Notice: This is not a final specification.
 Some parametric limits are subject to change.

MITSUBISHI INSULATED GATE BIPOLAR TRANSISTOR

CT15SM-24

GENERAL INVERTER • UPS USE

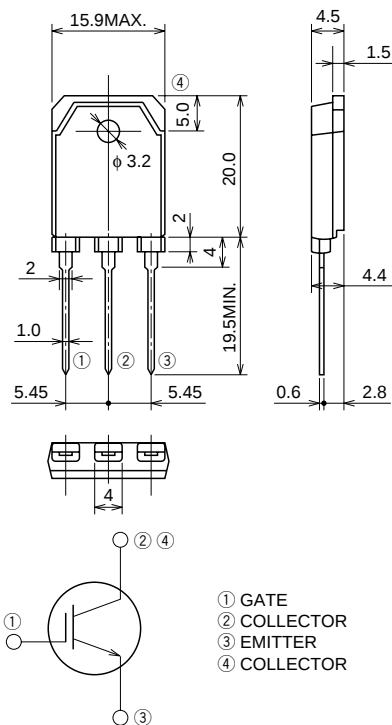
CT15SM-24



- 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)

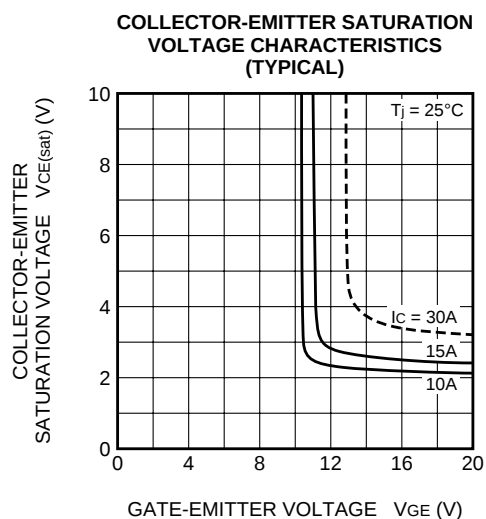
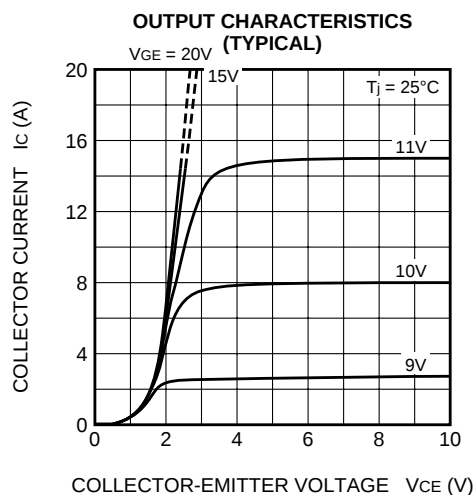
Symbol	Parameter	Conditions	Ratings	Unit
V_{CES}	Collector-emitter voltage	$V_{GE} = 0V$	1200	V
V_{GES}	Gate-emitter voltage	$V_{CE} = 0V$	± 20	V
V_{GEM}	Peak gate-emitter voltage	$V_{CE} = 0V$	± 30	V
I_C	Collector current		15	A
I_{CM}	Collector current (Pulsed)		30	A
P_C	Maximum power dissipation		250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

Feb.1999

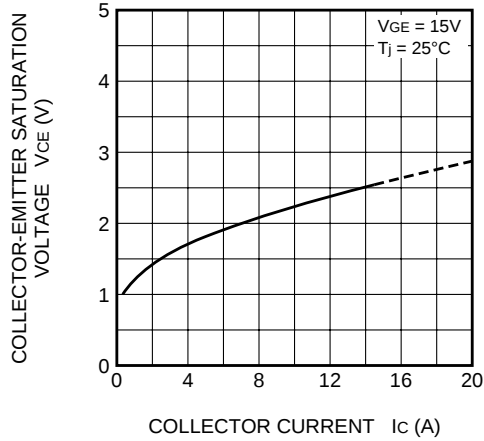
ELECTRICAL CHARACTERISTICS ($T_j = 25^\circ\text{C}$)

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
I_{GES}	Collector-emitter leakage current	$V_{GE} = \pm 30\text{V}$, $V_{CE} = 0\text{V}$	—	—	± 0.5	μA
I_{CES}	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		—	50	—	ns
t_r	Rise time	$V_{CC} = 600\text{V}$, Resistance load, $I_C = 15\text{A}$, $V_{GE} = 15\text{V}$, $R_{GE} = 20\Omega$	—	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	$^\circ\text{C/W}$

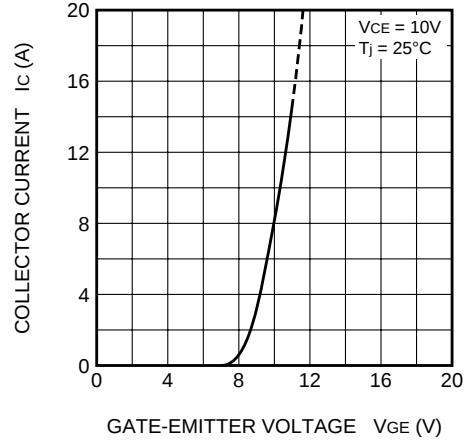
PERFORMANCE CURVES



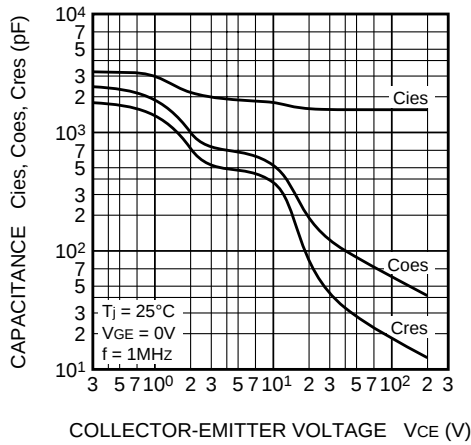
COLLECTOR-EMITTER SATURATION VOLTAGE CHARACTERISTICS (TYPICAL)



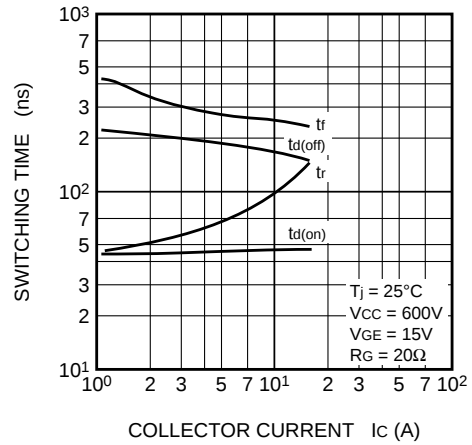
COLLECTOR CURRENT VS. GATE-EMITTER VOLTAGE CHARACTERISTIC (TYPICAL)



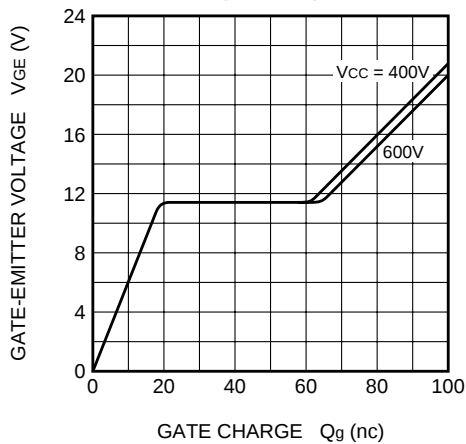
CAPACITANCE VS. COLLECTOR-EMITTER VOLTAGE CHARACTERISTIC (TYPICAL)



SWITCHING TIME-COLLECTOR CURRENT CHARACTERISTIC (TYPICAL)



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



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (TYPICAL)

