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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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MITSUBISHI IGBT MODULES  
**CM150DY-12NF**

HIGH POWER SWITCHING USE

**CM150DY-12NF**



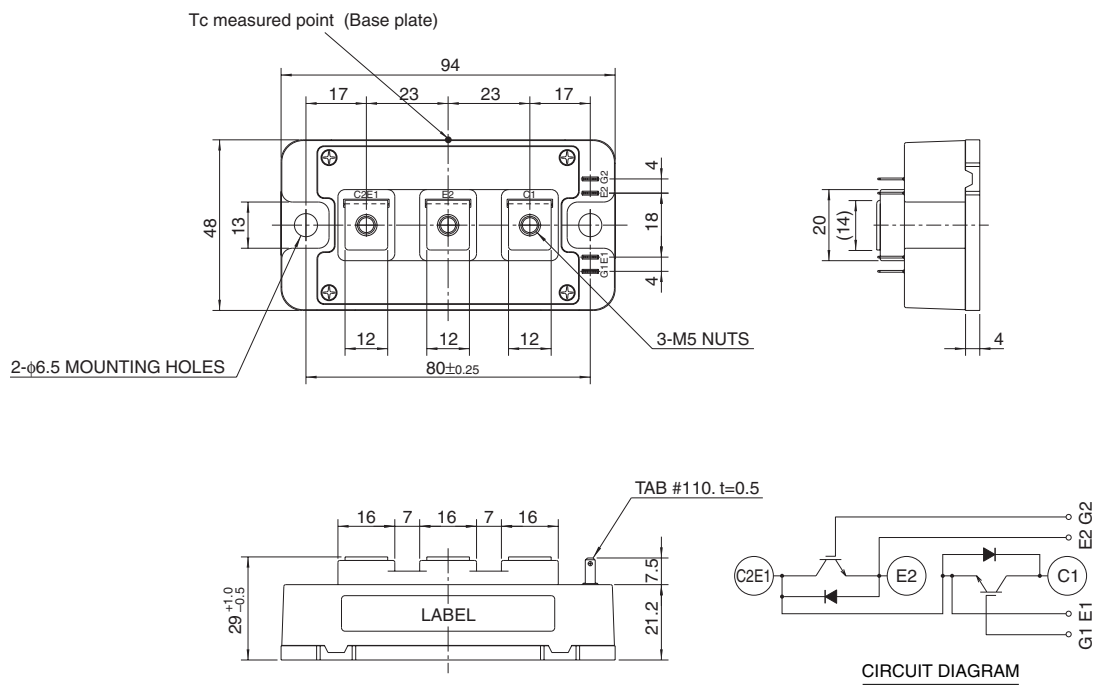
- IC ..... 150A
- VCES ..... 600V
- Insulated Type
- 2-elements in a pack

**APPLICATION**

General purpose inverters & Servo controls, etc

**OUTLINE DRAWING & CIRCUIT DIAGRAM**

Dimensions in mm



CM150DY-12NF

HIGH POWER SWITCHING USE

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

Symbol	Parameter	Conditions	Ratings	Unit
VCES	Collector-emitter voltage	G-E Short	600	V
VGES	Gate-emitter voltage	C-E Short	±20	V
IC	Collector current	DC, Tc' = 97°C <sup>3</sup>	150	A
ICM		Pulse (Note 2)	300	A
IE (Note 1)	Emitter current		150	A
IEM (Note 1)		Pulse (Note 2)	300	A
PC (Note 3)	Maximum collector dissipation	Tc = 25°C	590	W
Tj	Junction temperature		-40 ~ +150	°C
Tstg	Storage temperature		-40 ~ +125	°C
Viso	Isolation voltage	Terminals to base plate, f = 60Hz, AC 1 minute	2500	Vrms
—	Torque strength	Main terminals M5 screw	2.5 ~ 3.5	N • m
—		Mounting M6 screw	3.5 ~ 4.5	N • m
—	Weight	Typical value	310	g

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

Symbol	Parameter	Test conditions	Limits			Unit	
			Min.	Typ.	Max.		
ICES	Collector cutoff current	VCE = VCES, VGE = 0V	—	—	1	mA	
VGE(th)	Gate-emitter threshold voltage	IC = 15mA, VCE = 10V	5	6	7.5	V	
IGES	Gate leakage current	±VGE = VGES, VCE = 0V	—	—	0.5	µA	
VCE(sat)	Collector-emitter saturation voltage	IC = 150A, VGE = 15V	Tj = 25°C	—	1.7	2.2	V
			Tj = 125°C	—	1.7	—	
Cies	Input capacitance	VCE = 10V VGE = 0V	—	—	23	nF	
Coes	Output capacitance		—	—	2.8	nF	
Cres	Reverse transfer capacitance		—	—	0.9	nF	
QG	Total gate charge	VCC = 300V, IC = 150A, VGE = 15V	—	600	—	nC	
td(on)	Turn-on delay time	VCC = 300V, IC = 150A VGE = ±15V RG = 4.2Ω, Inductive load IE = 150A	—	—	120	ns	
tr	Turn-on rise time		—	—	100	ns	
td(off)	Turn-off delay time		—	—	300	ns	
tf	Turn-off fall time		—	—	300	ns	
trr (Note 1)	Reverse recovery time		—	—	150	ns	
Qrr (Note 1)	Reverse recovery charge		—	2.5	—	µC	
VEC(Note 1)	Emitter-collector voltage	IE = 150A, VGE = 0V	—	—	2.6	V	
Rth(j-c)Q	Thermal resistance*1	IGBT part (1/2 module)	—	—	0.21	K/W	
Rth(j-c)R		FWDi part (1/2 module)	—	—	0.47	K/W	
Rth(c-f)	Contact thermal resistance	Case to heat sink, Thermal compound Applied <sup>2</sup> (1/2 module)	—	0.07	—	K/W	
Rth(j-c')Q	Thermal resistance	Case temperature measured point is just under the chips	—	—	0.16 <sup>3</sup>	K/W	
RG	External gate resistance		4.2	—	42	Ω	

\*1 : Case temperature (Tc) measured point is shown in page OUTLINE DRAWING.

\*2 : Typical value is measured by using thermally conductive grease of λ = 0.9[W/(m • K)].

\*3 : Case temperature (Tc) measured point is just under the chips.

If you use this value, Rth(f-a) should be measured just under the chips.

Note 1. IE, VEC, trr & Qrr represent characteristics of the anti-parallel, emitter-collector free-wheel diode (FWDi).

2. Pulse width and repetition rate should be such that the device junction temperature (Tj) does not exceed Tjmax rating.

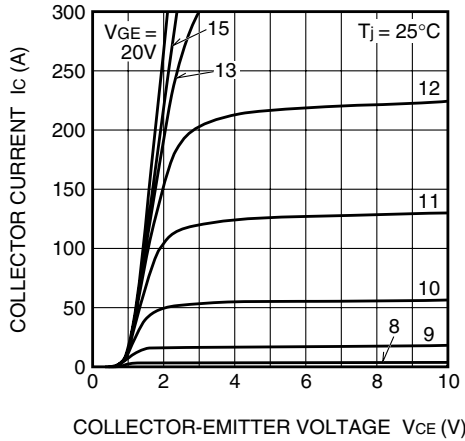
3. Junction temperature (Tj) should not increase beyond 150°C.

# CM150DY-12NF

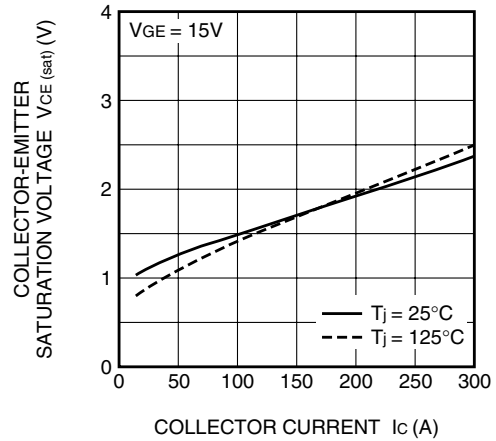
HIGH POWER SWITCHING USE

PERFORMANCE CURVES

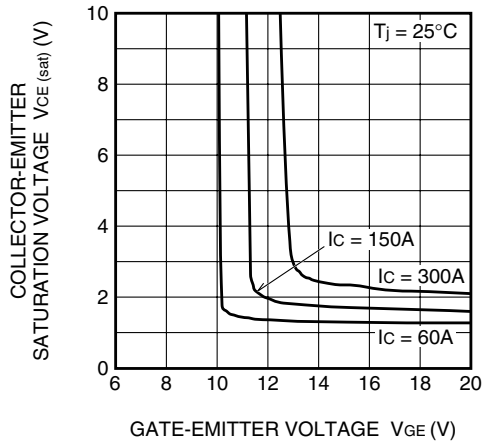
OUTPUT CHARACTERISTICS (TYPICAL)



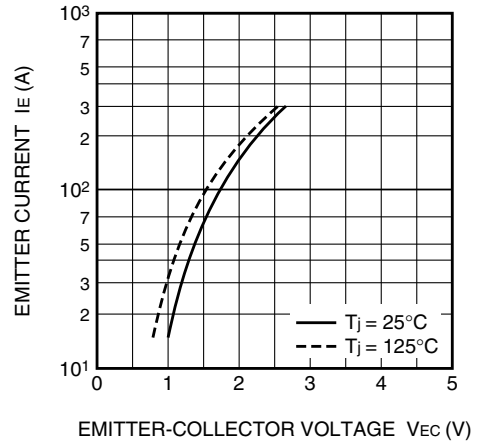
COLLECTOR-EMITTER SATURATION VOLTAGE CHARACTERISTICS (TYPICAL)



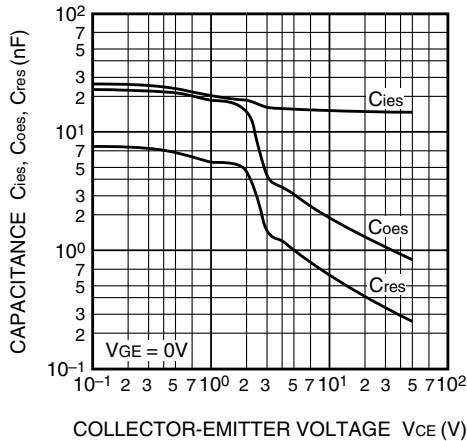
COLLECTOR-EMITTER SATURATION VOLTAGE CHARACTERISTICS (TYPICAL)



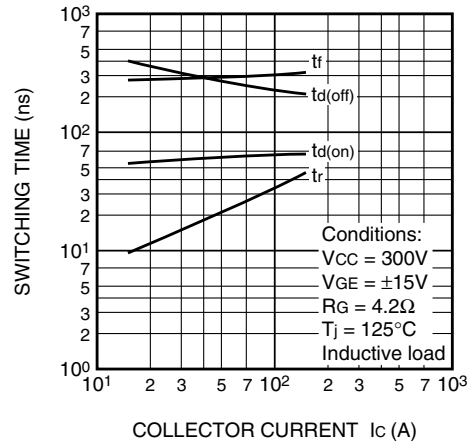
FREE-WHEEL DIODE FORWARD CHARACTERISTICS (TYPICAL)



CAPACITANCE-VCE CHARACTERISTICS (TYPICAL)



HALF-BRIDGE SWITCHING CHARACTERISTICS (TYPICAL)

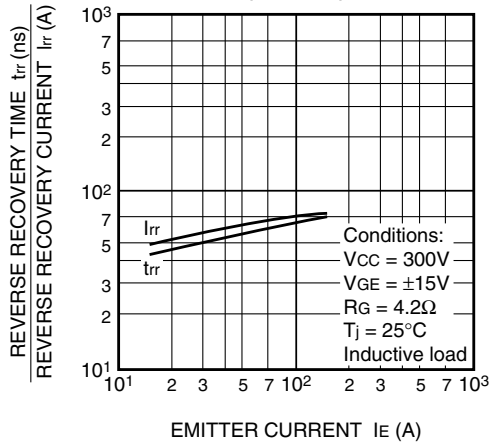




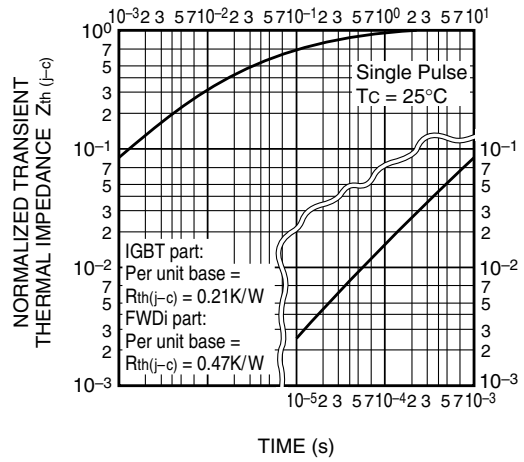
CM150DY-12NF

HIGH POWER SWITCHING USE

REVERSE RECOVERY CHARACTERISTICS OF FREE-WHEEL DIODE (TYPICAL)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (IGBT part & FWDi part)



GATE CHARGE CHARACTERISTICS (TYPICAL)

