

MITSUBISHI IGBT MODULES

CM200DY-12NF

HIGH POWER SWITCHING USE

CM200DY-12NF



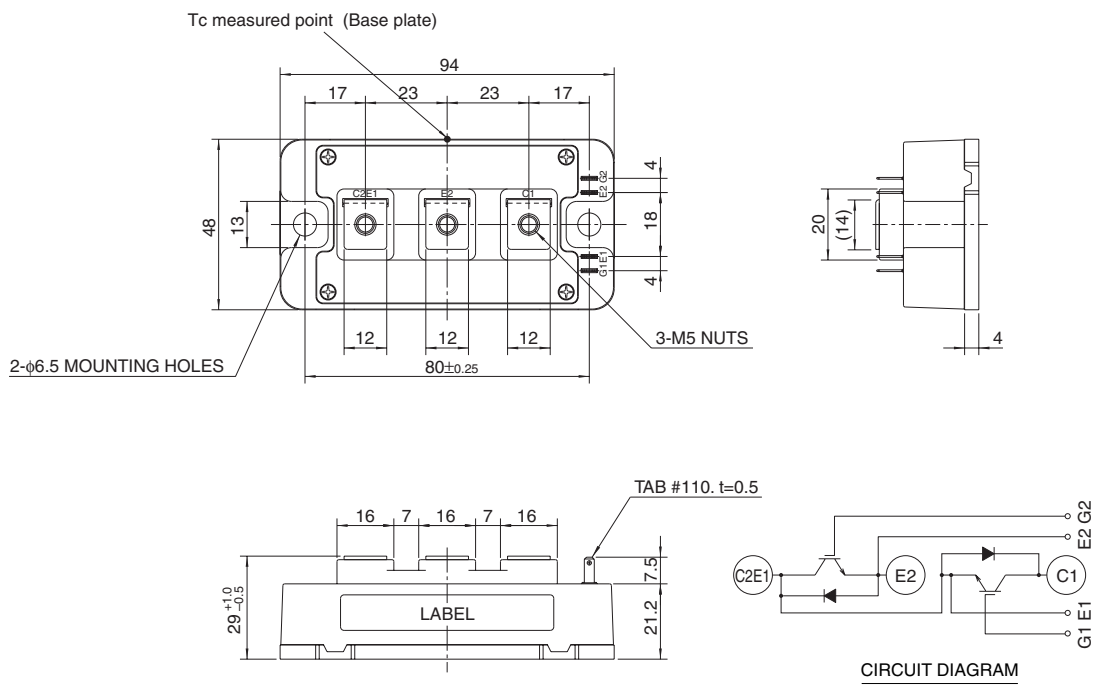
- Ic200A
- VCES600V
- Insulated Type
- 2-elements in a pack

APPLICATION

General purpose inverters & Servo controls, etc

OUTLINE DRAWING & CIRCUIT DIAGRAM

Dimensions in mm



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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' = 93°C ^{*3}	200	A
ICM		Pulse (Note 2)	400	A
IE (Note 1)	Emitter current		200	A
IEM (Note 1)		Pulse (Note 2)	400	A
PC (Note 3)	Maximum collector dissipation	Tc = 25°C	650	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 = 20mA, 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 = 200A, VGE = 15V	—	Tj = 25°C 1.7	2.2	V
Cies	Input capacitance			Tj = 125°C 1.7	—	
Coes	Output capacitance	VCE = 10V	—	—	30	nF
Cres	Reverse transfer capacitance	VGE = 0V	—	—	3.7	nF
QG	Total gate charge	VCC = 300V, IC = 200A, VGE = 15V	—	800	—	nC
td(on)	Turn-on delay time	VCC = 300V, IC = 200A VGE = ±15V RG = 3.1Ω, Inductive load IE = 200A	—	—	120	ns
tr	Turn-on rise time		—	—	120	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		—	3.5	—	μC
VEC(Note 1)	Emitter-collector voltage	IE = 200A, VGE = 0V	—	—	2.6	V
Rth(j-c)Q	Thermal resistance ^{*1}	IGBT part (1/2 module)	—	—	0.19	K/W
Rth(j-c)R		FWDi part (1/2 module)	—	—	0.35	K/W
Rth(c-f)	Contact thermal resistance	Case to heat sink, Thermal compound Applied ^{*2} (1/2 module)	—	0.07	—	K/W
Rth(j-c')Q	Thermal resistance	Case temperature measured point is just under the chips	—	—	0.13 ^{*3}	K/W
RG	External gate resistance		3.1	—	31	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.

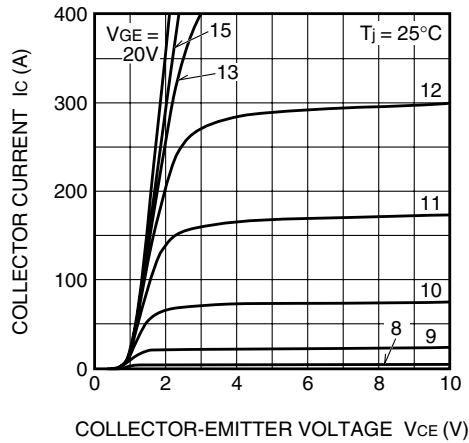
3. Junction temperature (Tj) should not increase beyond 150°C.

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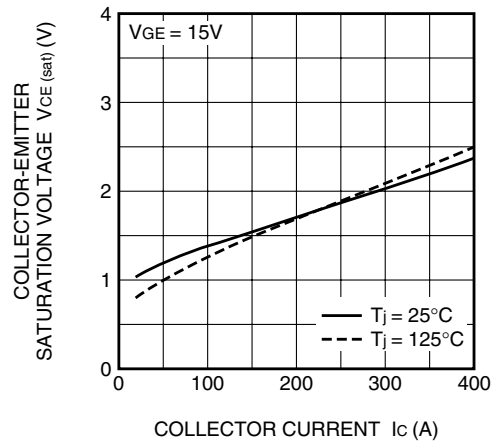
HIGH POWER SWITCHING USE

PERFORMANCE CURVES

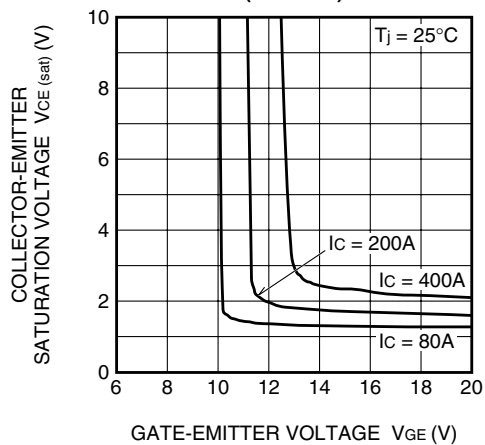
**OUTPUT CHARACTERISTICS
(TYPICAL)**



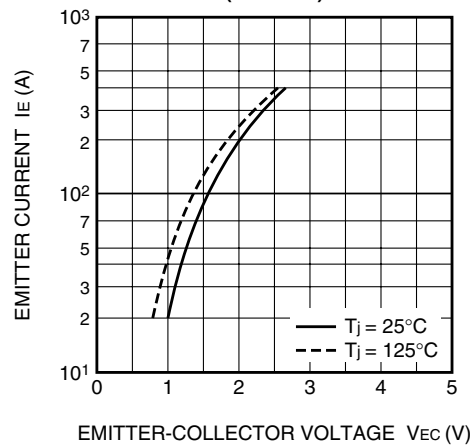
**COLLECTOR-EMITTER SATURATION
VOLTAGE CHARACTERISTICS
(TYPICAL)**



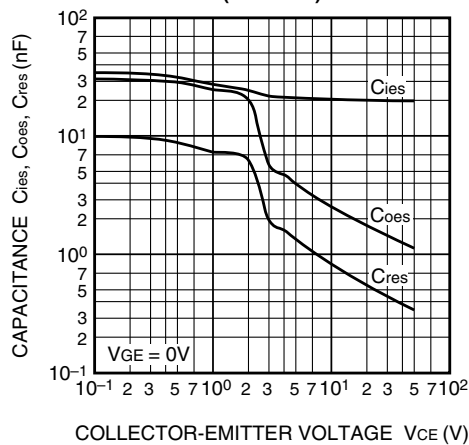
**COLLECTOR-EMITTER SATURATION
VOLTAGE CHARACTERISTICS
(TYPICAL)**



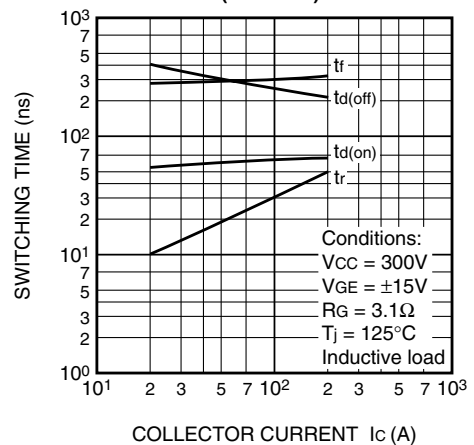
**FREE-WHEEL DIODE
FORWARD CHARACTERISTICS
(TYPICAL)**



**CAPACITANCE- V_{CE}
CHARACTERISTICS
(TYPICAL)**



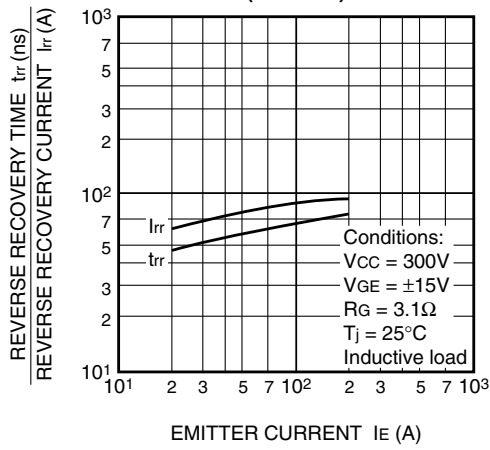
**HALF-BRIDGE
SWITCHING CHARACTERISTICS
(TYPICAL)**



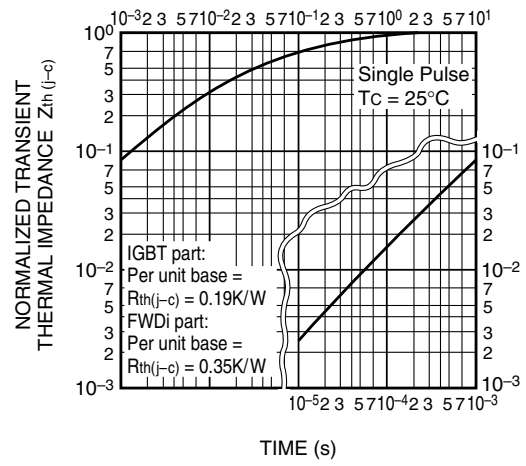
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HIGH POWER SWITCHING USE

**REVERSE RECOVERY CHARACTERISTICS
OF FREE-WHEEL DIODE
(TYPICAL)**



**TRANSIENT THERMAL
IMPEDANCE CHARACTERISTICS
(IGBT part & FWDi part)**



**GATE CHARGE
CHARACTERISTICS
(TYPICAL)**

