

MITSUBISHI IGBT MODULES
CM100DU-24H
 HIGH POWER SWITCHING USE
 INSULATED TYPE

CM100DU-24H



- IC 100A
- VCES 1200V
- Insulated Type
- 2-elements in a pack

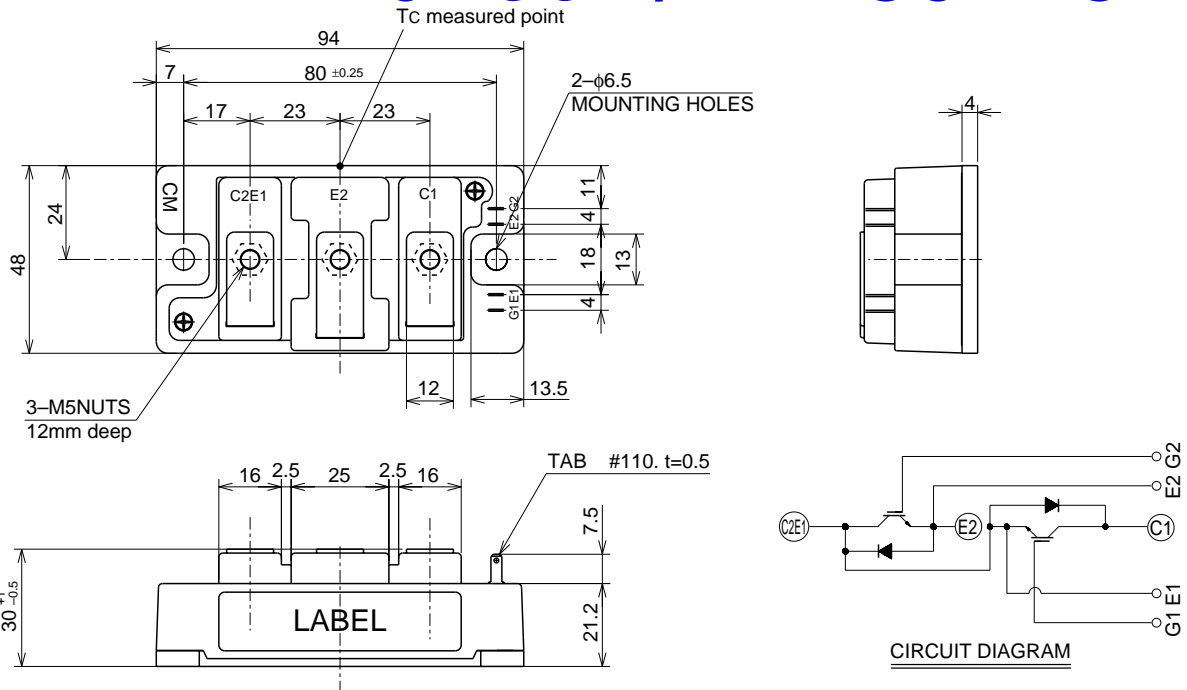
APPLICATION

UPS, NC machine, AC-Drive control, Servo, Welders

OUTLINE DRAWING & CIRCUIT DIAGRAM

Dimensions in mm

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MAXIMUM RATINGS (T_j = 25°C)

Symbol	Item	Conditions	Ratings	Unit
V _{CEs}	Collector-emitter voltage	V _{GE} = 0V	1200	V
V _{GES}	Gate-emitter voltage	V _{CE} = 0V	±20	V
I _C	Collector current	T _c = 25°C	100	A
I _{CM}		Pulse (Note 1)	200	A
I _E (Note 2)	Emitter current	T _c = 25°C	100	A
I _{EM} (Note 2)		Pulse (Note 1)	200	A
P _C (Note 3)	Maximum collector dissipation	T _c = 25°C	650	W
T _j	Junction temperature	—	-40 ~ +150	°C
T _{stg}	Storage temperature	—	-40 ~ +125	°C
V _{iso}	Isolation voltage	Charged part to base plate, rms, sinusoidal, AC 60Hz 1min.	2500	V
—	Mounting torque	Main terminals screw M5	2.5 ~ 3.5	N·m
		Mounting screw M6	3.5 ~ 4.5	N·m
—	Weight	Typical value	310	g

ELECTRICAL CHARACTERISTICS (T_j = 25°C)

Symbol	Item	Test Conditions		Limits			Unit
				Min	Typ	Max	
I _{CEs}	Collector cutoff current	V _{CE} = V _{CEs} , V _{GE} = 0V		—	—	1	mA
V _{GE(th)}	Gate-emitter threshold voltage	I _C = 10mA, V _{CE} = 10V		4.5	6	7.5	V
I _{GES}	Gate-leakage current	V _{GE} = V _{CEs} , V _{CE} = 0V		—	—	0.5	μA
V _{CE(sat)}	Collector-emitter saturation voltage	T _j = 25°C	I _C = 100A, V _{GE} = 15V (Note 4)	—	2.9	3.7	V
		T _j = 150°C		—	2.85	3.5	
C _{ies}	Input capacitance	V _{CE} = 10V		—	—	15	nF
C _{oes}	Output capacitance	V _{CE} = 0V		—	—	5	nF
C _{res}	Reverse transfer capacitance			—	—	3	nF
Q _G	Total gate charge	V _{CC} = 600V, I _C = 100A, V _{GE} = 15V		—	375	—	nC
t _{d(on)}	Turn-on delay time	V _{CC} = 600V, I _C = 100A		—	—	100	ns
t _r	Turn-on rise time	V _{GE1} = V _{GE2} = 15V		—	—	200	ns
t _{d(off)}	Turn-off delay time	R _G = 3.1Ω		—	—	300	ns
t _f	Turn-off fall time	Resistive load switching operation		—	—	350	ns
V _{EC} (Note 2)	Emitter-collector voltage	I _E = 100A, V _{GE} = 0V		—	—	3.2	V
t _{rr} (Note 2)	Reverse recovery time	I _E = 100A,		—	—	300	ns
Q _{rr} (Note 2)	Reverse recovery charge	die / dt = -200A / μs		—	0.55	—	μC
R _{th(j-c)Q}	Thermal resistance (Note 5)	Junction to case, IGBT part (Per 1/2 module)		—	—	0.19	°C/W
R _{th(j-c)R}		Junction to case, FWDi part (Per 1/2 module)		—	—	0.35	°C/W
R _{th(c-f)}	Contact thermal resistance	Case to fin, conductive grease applied (Per 1/2 module) (Note 6)		—	0.07	—	°C/W

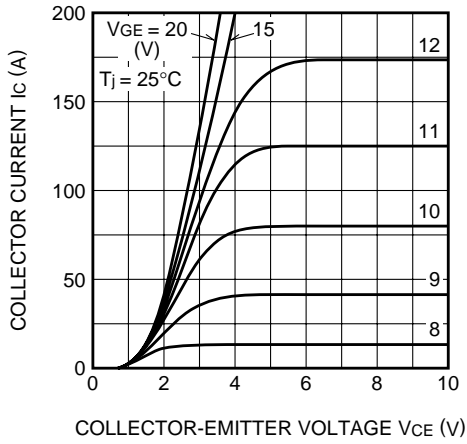
- Note 1. Pulse width and repetition rate should be such that the device junction temp. (T_j) does not exceed T_{jmax} rating.
 2. I_E, V_{EC}, t_{rr}, Q_{rr} & die/dt represent characteristics of the anti-parallel, emitter to collector free-wheel diode.
 3. Junction temperature (T_j) should not increase beyond 150°C.
 4. Pulse width and repetition rate should be such as to cause negligible temperature rise.
 5. T_c measured point is shown in page OUTLINE DRAWING.
 6. Typical value is measured by using Shin-etsu Silicone "G-746".

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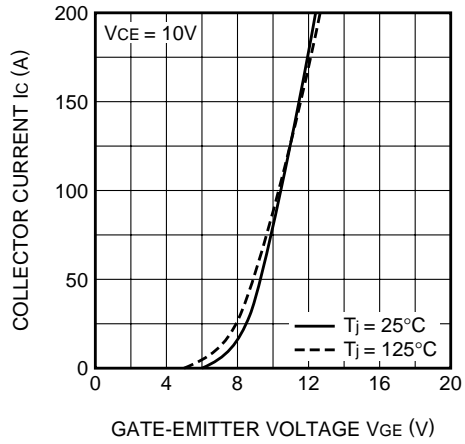
HIGH POWER SWITCHING USE
INSULATED TYPE

PERFORMANCE CURVES

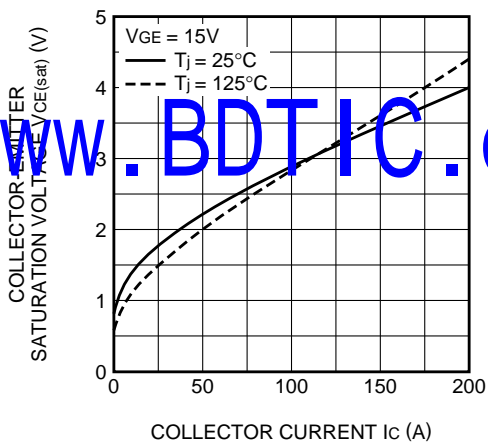
OUTPUT CHARACTERISTICS
(TYPICAL)



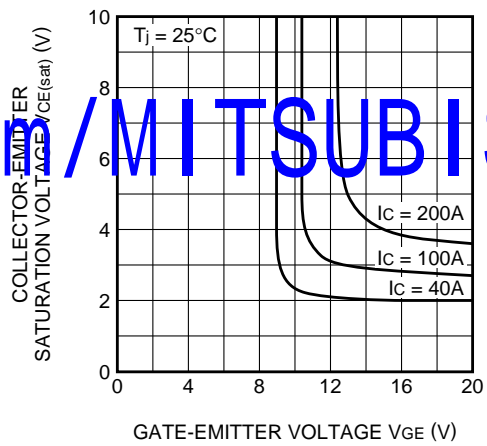
TRANSFER CHARACTERISTICS
(TYPICAL)



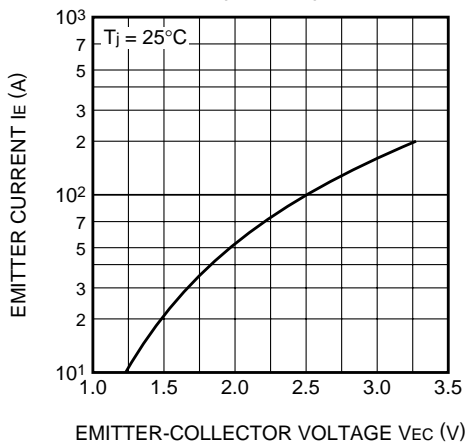
COLLECTOR-EMITTER SATURATION
VOLTAGE CHARACTERISTICS
(TYPICAL)



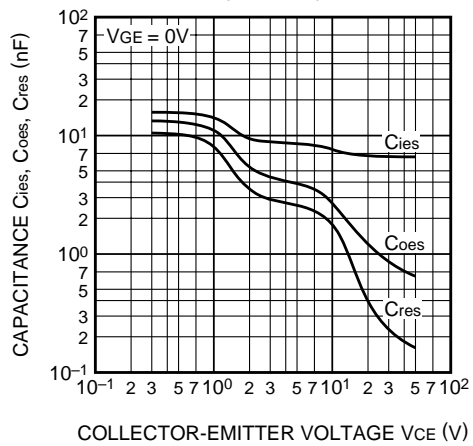
COLLECTOR-EMITTER SATURATION
VOLTAGE CHARACTERISTICS
(TYPICAL)



FREE-WHEEL DIODE
FORWARD CHARACTERISTICS
(TYPICAL)



CAPACITANCE CHARACTERISTICS
(TYPICAL)

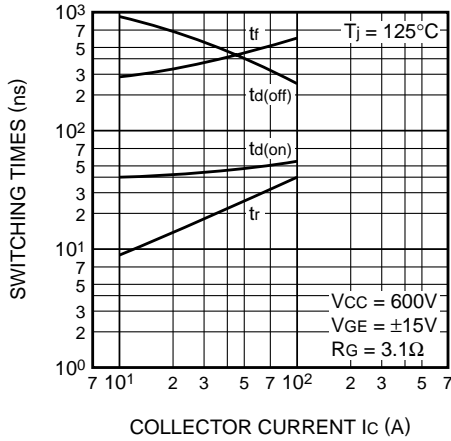


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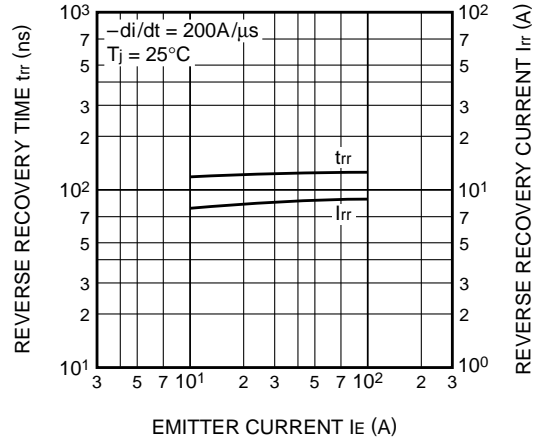
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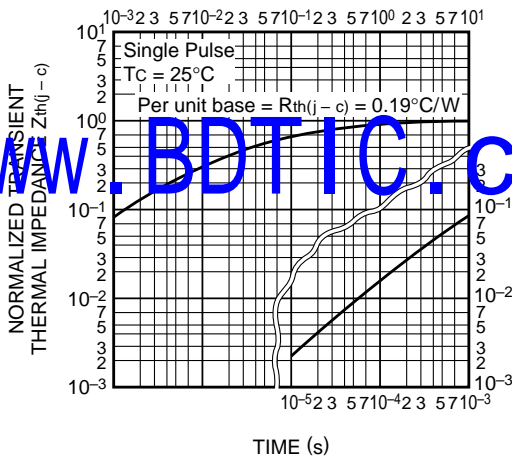
HALF-BRIDGE
SWITCHING TIME CHARACTERISTICS
(TYPICAL)



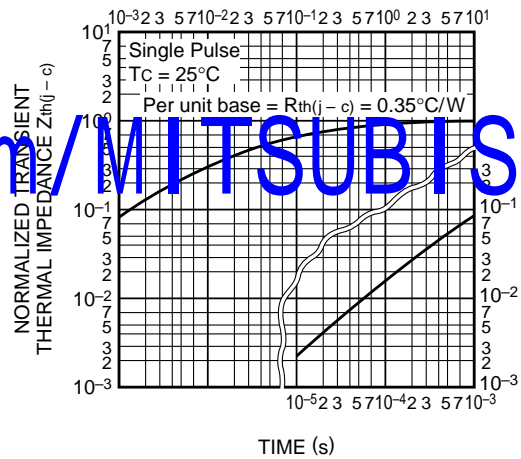
REVERSE RECOVERY CHARACTERISTICS
OF FREE-WHEEL DIODE
(TYPICAL)



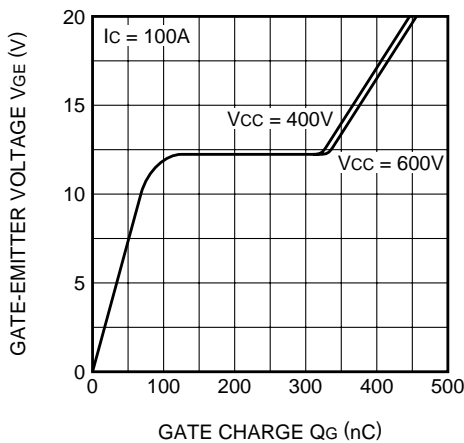
TRANSIENT THERMAL
IMPEDANCE CHARACTERISTICS
(IGBT part)



TRANSIENT THERMAL
IMPEDANCE CHARACTERISTICS
(FWDi part)



GATE CHARGE CHARACTERISTICS
(TYPICAL)



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