

MITSUBISHI HVIGBT MODULES  
**CM600DY-34H**

HVIGBT (High Voltage Insulated Gate Bipolar Transistor) Modules

HIGH POWER SWITCHING USE  
 INSULATED TYPE

**CM600DY-34H**



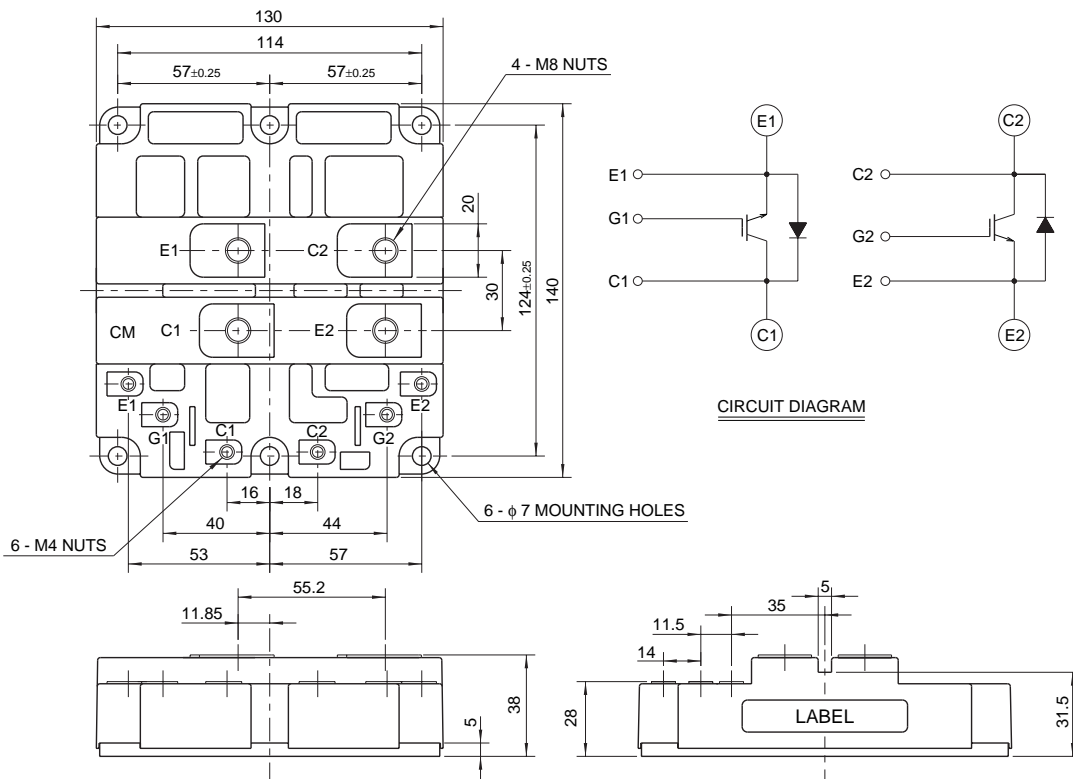
- IC.....600A
- VCES ..... 1700V
- Insulated Type
- 2-elements in a pack

**APPLICATION**

Inverters, Converters, DC choppers, Induction heating, DC to DC converters.

**OUTLINE DRAWING & CIRCUIT DIAGRAM**

Dimensions in mm



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Feb. 2000



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**MAXIMUM RATINGS (Tj = 25°C)**

Symbol	Item	Conditions	Ratings	Unit
VCES	Collector-emitter voltage	VGE = 0V	1700	V
VGES	Gate-emitter voltage	VCE = 0V	±20	V
IC	Collector current	TC = 25°C	600	A
ICM		Pulse (Note 1)	1200	A
IE (Note 2)	Emitter current	TC = 25°C	600	A
IEM (Note 2)		Pulse (Note 1)	1200	A
PC (Note 3)	Maximum collector dissipation	TC = 25°C, IGBT part	6200	W
Tj	Junction temperature	—	-40 ~ +150	°C
Tstg	Storage temperature	—	-40 ~ +125	°C
Viso	Isolation voltage	Charged part to base plate, rms, sinusoidal, AC 60Hz 1min.	4000	V
—	Mounting torque	Main terminals screw M8	6.67 ~ 13.00	N·m
		Mounting screw M6	2.84 ~ 6.00	N·m
		Auxiliary terminals screw M4	0.88 ~ 2.00	N·m
—	Mass	Typical value	1.5	kg

**ELECTRICAL CHARACTERISTICS (Tj = 25°C)**

Symbol	Item	Conditions	Limits			Unit
			Min	Typ	Max	
ICES	Collector cutoff current	VCE = VCES, VGE = 0V	—	—	12	mA
VGE(th)	Gate-emitter threshold voltage	IC = 60mA, VCE = 10V	4.5	5.5	6.5	V
IGES	Gate-leakage current	VGE = VGES, VCE = 0V	—	—	0.5	µA
VCE(sat)	Collector-emitter saturation voltage	Tj = 25°C	—	2.75	3.58	V
		Tj = 125°C	—	3.30	—	
Cies	Input capacitance	VCE = 10V VGE = 0V	—	70	—	nF
Coes	Output capacitance		—	10.0	—	nF
Cres	Reverse transfer capacitance		—	3.8	—	nF
QG	Total gate charge	VCC = 850V, IC = 600A, VGE = 15V	—	3.3	—	µC
td(on)	Turn-on delay time	VCC = 850V, IC = 600A	—	—	1.20	µs
tr	Turn-on rise time	VGE1 = VGE2 = 15V	—	—	1.50	µs
td(off)	Turn-off delay time	RG = 3.3Ω	—	—	2.00	µs
tf	Turn-off fall time	Resistive load switching operation	—	—	0.60	µs
VEC (Note 2)	Emitter-collector voltage	IE = 600A, VGE = 0V	—	2.40	3.12	V
ttr (Note 2)	Reverse recovery time	IE = 600A	—	—	2.00	µs
Qrr (Note 2)	Reverse recovery charge	die / dt = -1200A / µs	—	100	—	µC
Rth(j-c)Q	Thermal resistance	Junction to case, IGBT part (Per 1/2 module)	—	—	0.020	K/W
Rth(j-c)R		Junction to case, FWDi part (Per 1/2 module)	—	—	0.064	K/W
Rth(c-f)	Contact thermal resistance	Case to fin, conductive grease applied (Per 1/2 module)	—	0.016	—	K/W

- Note 1. Pulse width and repetition rate should be such that the device junction temp. (Tj) does not exceed Tjmax rating.  
 2. IE, VEC, ttr, Qrr & die/dt represent characteristics of the anti-parallel, emitter to collector free-wheel diode.  
 3. Junction temperature (Tj) should not increase beyond 150°C.  
 4. Pulse width and repetition rate should be such as to cause negligible temperature rise.



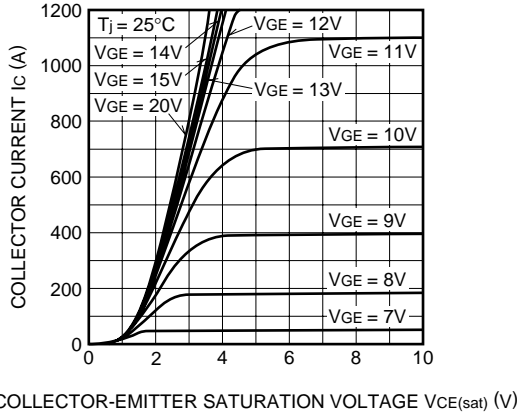
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HIGH POWER SWITCHING USE  
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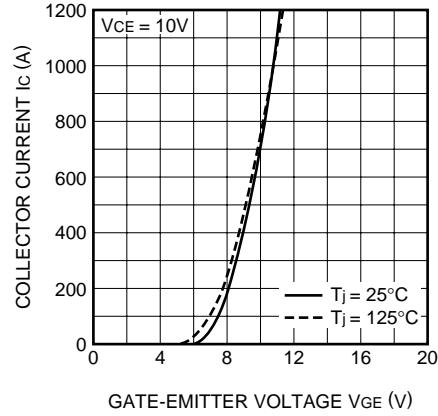
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## PERFORMANCE CURVES

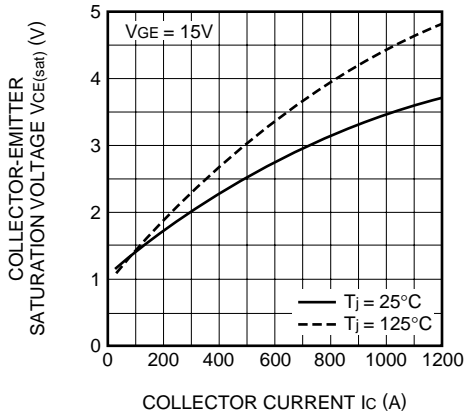
OUTPUT CHARACTERISTICS (TYPICAL)



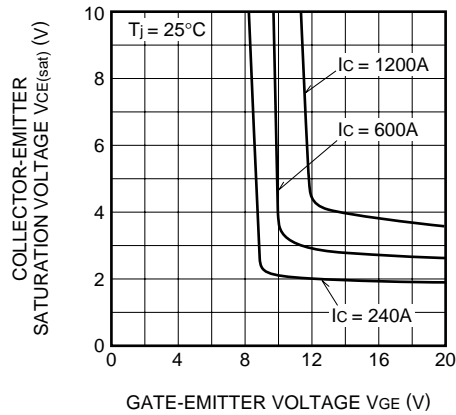
TRANSFER CHARACTERISTICS (TYPICAL)



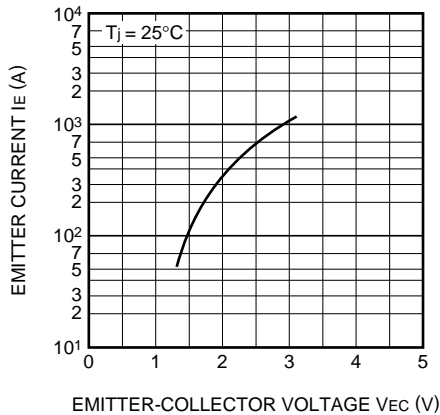
COLLECTOR-EMITTER SATURATION VOLTAGE CHARACTERISTICS (TYPICAL)



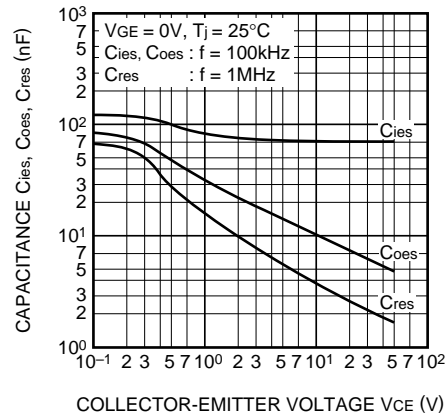
COLLECTOR-EMITTER SATURATION VOLTAGE CHARACTERISTICS (TYPICAL)



FREE-WHEEL DIODE FORWARD CHARACTERISTICS (TYPICAL)



CAPACITANCE VS. VCE (TYPICAL)

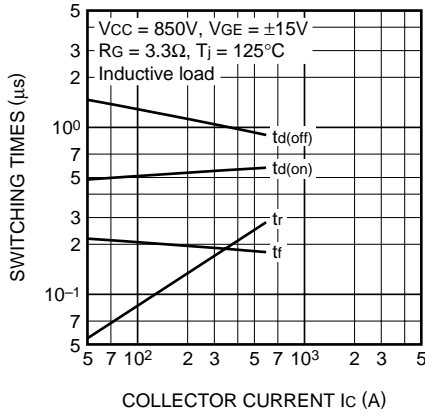


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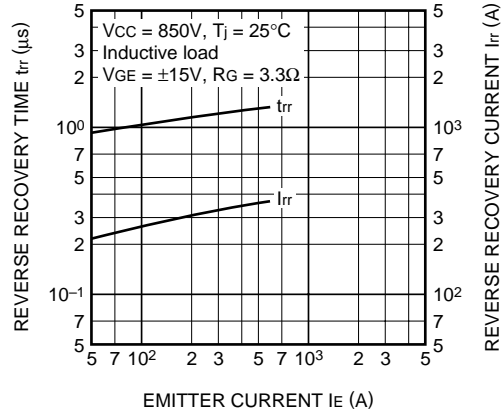
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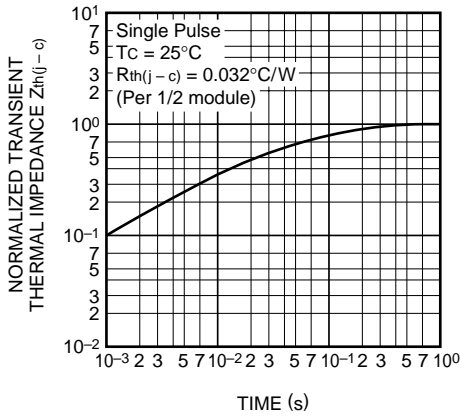
**HALF-BRIDGE SWITCHING CHARACTERISTICS (TYPICAL)**



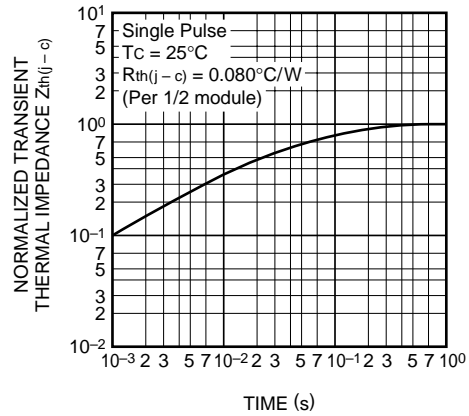
**REVERSE RECOVERY CHARACTERISTICS OF FREE-WHEEL DIODE (TYPICAL)**



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



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



**V<sub>GE</sub> - GATE CHARGE (TYPICAL)**

