

CM600HN-5F

HIGH POWER SWITCHING USE
INSULATED TYPE

CM600HN-5F



- Ic 600A
- VCES 250V
- Insulated Type
- 1-element in a pack
- UL Recognized

Yellow Card No. E80276

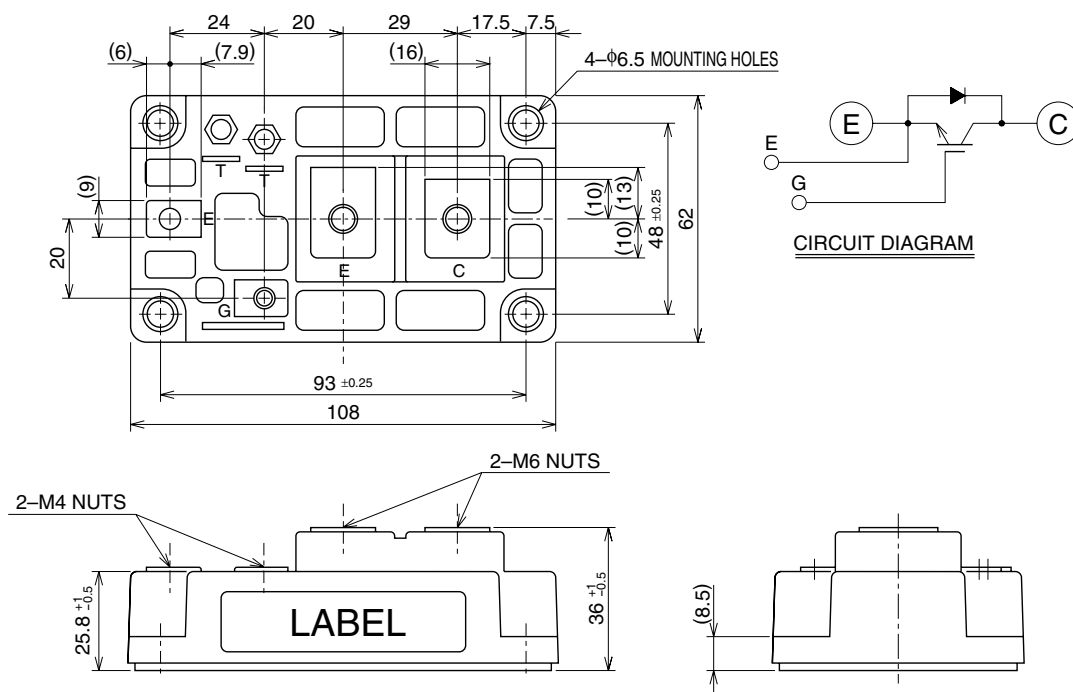
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APPLICATION

UPS, Forklift

OUTLINE DRAWING & CIRCUIT DIAGRAM

Dimensions in mm



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

Symbol	Item	Conditions	Ratings	Unit
VCES	Collector-emitter voltage	G-E Short	250	V
VGES	Gate-emitter voltage	C-E Short	±20	V
IC	Collector current	Tc = 25°C	600	A
ICM		Pulse (Note 2)	1200	A
IE (Note 1)	Emitter current	Tc = 25°C	600	A
IEM (Note 1)		Pulse (Note 2)	1200	A
PC (Note 3)	Maximum collector dissipation	Tc = 25°C	1780	W
Tj	Junction temperature	—	−40 ~ +150	°C
Tstg	Storage temperature	—	−40 ~ +125	°C
Viso	Isolation voltage	Charged part to base plate, sinusoidal, AC 60Hz 1min.	2500	Vrms
—	Mounting torque	Main terminals M6 screw	1.96 ~ 2.94	N·m
		Mounting M6 screw	1.96 ~ 2.94	N·m
		G(E) auxiliary terminal M4 screw	0.98 ~ 1.47	N·m
—	Weight	Typical value	400	g

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

Symbol	Item	Test Conditions	Limits			Unit
			Min	Typ	Max	
ICES	Collector cutoff current	VCE = VCES, VGE = 0V	—	—	1	mA
VGE(th)	Gate-emitter threshold voltage	IC = 60mA, VCE = 10V	3	4	5	V
IGES	Gate-leakage current	VGE = VGES, VCE = 0V	—	—	0.5	μA
VCE(sat)	Collector-emitter saturation voltage	Tj = 25°C	—	1.2	1.7	V
		Tj = 150°C	—	1.1	—	
Cies	Input capacitance	VCE = 10V VGE = 0V	—	—	165	nF
Coes	Output capacitance		—	—	7.5	nF
Cres	Reverse transfer capacitance		—	—	5.6	nF
QG	Total gate charge	VCC = 100V, IC = 600A, VGE = 10V	—	2200	—	nC
td (on)	Turn-on delay time	VCC = 100V, IC = 600A	—	—	1000	ns
tr	Turn-on rise time	VGE1 = VGE2 = 10V	—	—	4000	ns
td (off)	Turn-off delay time	RG = 4.2Ω	—	—	1000	ns
tf	Turn-off fall time	Resistive load	—	—	500	ns
VEC(Note 1)	Emitter-collector voltage	IE = 600A, VGE = 0V	—	—	2.0	V
trr (Note 1)	Reverse recovery time	IE = 600A,	—	—	300	ns
Qrr (Note 1)	Reverse recovery charge	die / dt = −1200A / μs	—	9.5	—	μC
Rth(j-c)Q	Thermal resistance	Junction to case, IGBT part	—	—	0.07	K/W
Rth(j-c)R		Junction to case, FWDi part	—	—	0.11	K/W
Rth(c-f)	Contact thermal resistance	Case to fin, conductive grease applied	—	—	0.04	K/W

Note 1. IE, VEC, trr, Qrr & die/dt represent characteristics of the anti-parallel, emitter-collector free-wheel diode.

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.

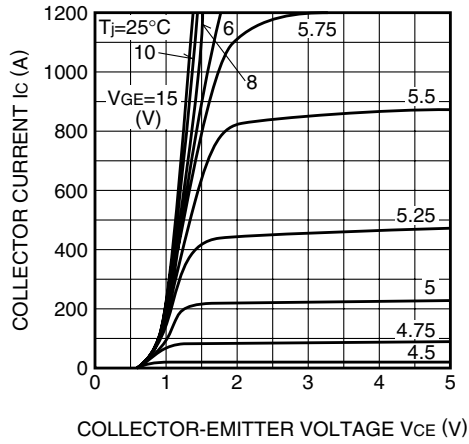
4. Pulse width and repetition rate should be such as to cause negligible temperature rise.

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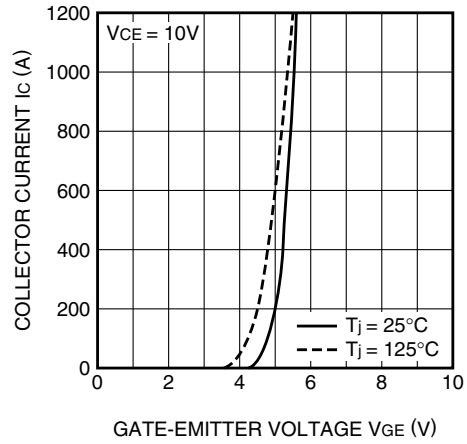
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PERFORMANCE CURVES

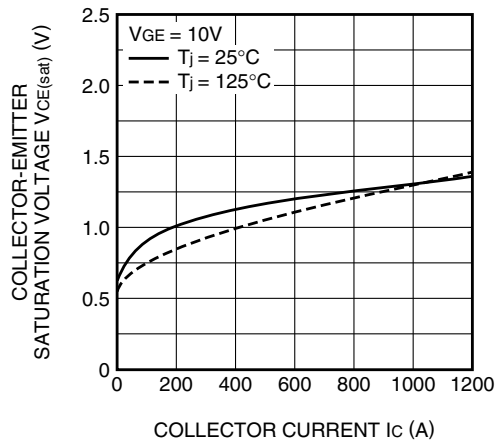
OUTPUT CHARACTERISTICS
(TYPICAL)



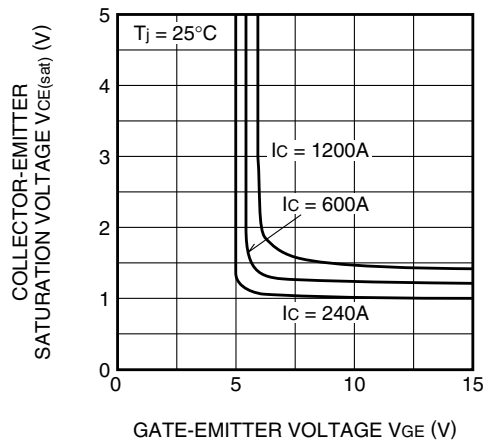
TRANSFER CHARACTERISTICS
(TYPICAL)



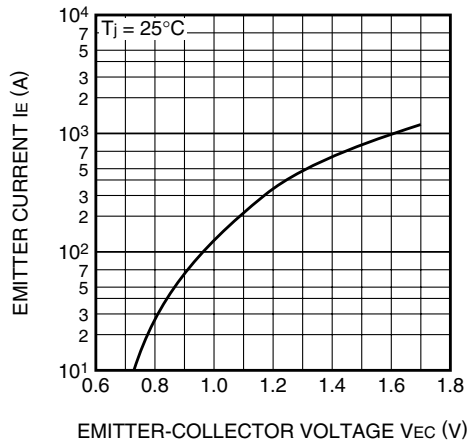
COLLECTOR-EMITTER SATURATION
VOLTAGE CHARACTERISTICS
(TYPICAL)



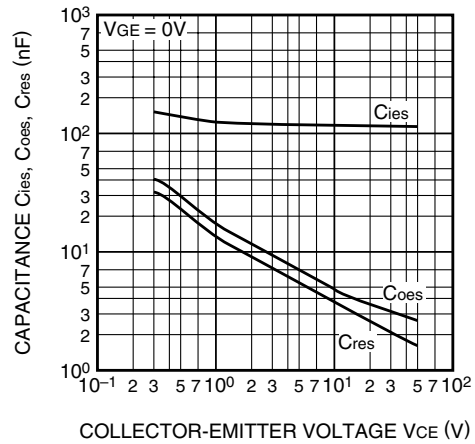
COLLECTOR-EMITTER SATURATION
VOLTAGE CHARACTERISTICS
(TYPICAL)



FREE-WHEEL DIODE
FORWARD CHARACTERISTICS
(TYPICAL)



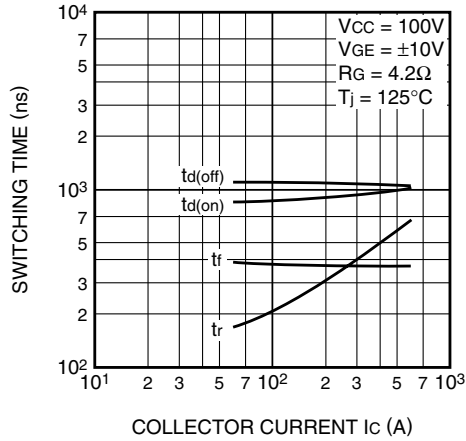
CAPACITANCE CHARACTERISTICS
(TYPICAL)



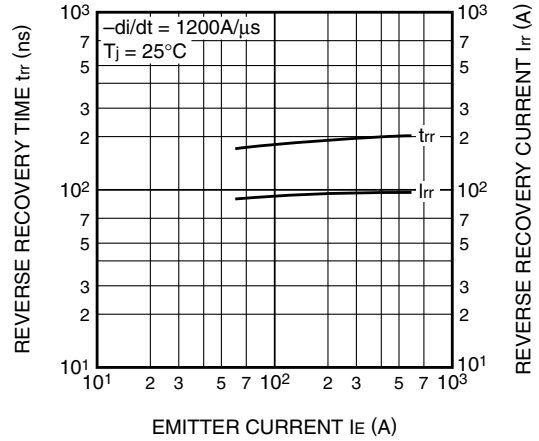
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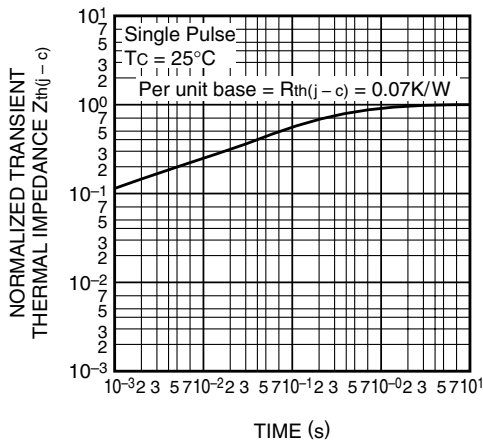
HALF-BRIDGE
SWITCHING TIME CHARACTERISTICS
(TYPICAL)



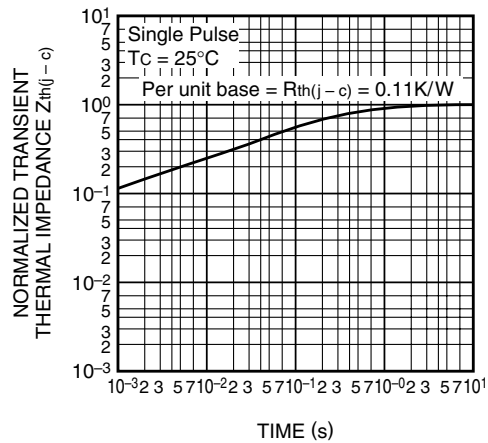
REVERSE RECOVERY CHARACTERISTICS
OF FREE-WHEEL DIODE
(TYPICAL)



TRANSIENT THERMAL
IMPEDANCE CHARACTERISTICS
(IGBT part)



TRANSIENT THERMAL
IMPEDANCE CHARACTERISTICS
(FWDi part)



GATE CHARGE CHARACTERISTICS
(TYPICAL)

