

CM110YE4-12F
HIGH POWER SWITCHING USE

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

B

Inverter part

Symbol	Item	Conditions	Min.	Typ.	Max.	Units	
I _{CES}	Collector cutoff current	V _{CE} =V _{CES} , V _{GE} =0V	-	-	1	mA	
V _{GE(th)}	Gate-emitter threshold voltage	I _C =11mA, V _{CE} =10V	5	6	7	V	
I _{GES}	Gate leakage current	±V _{GE} =V _{GES} , V _{CE} =0V	-	-	20	μA	
V _{CE(sat)}	Collector to emitter saturation voltage	I _C =110A V _{GE} =15V	T _j =25°C	-	1.6	2.2	V
			T _j =125°C	-	1.6	-	
C _{ies}	Input capacitance	V _{CE} =10V, V _{GE} =0V	-	-	30	nF	
C _{oes}	Output capacitance		-	-	2		
C _{res}	Reverse transfer capacitance		-	-	1.1		
Q _G	Total gate charge	V _{CC} =300V, I _C =110A, V _{GE} =15V	-	680	-	nC	
t _{d(on)}	Turn-on delay time	V _{CC} =300V, I _C =110A	-	-	450	ns	
t _r	Turn-on rise time	V _{GE1} =V _{GE2} =15V, R _G =17Ω	-	-	200		
t _{d(off)}	Turn-off delay time	Inductive load switching operation I _E =110A	-	-	800		
t _f	Turn-off fall time		-	-	300		
t _{rr} *1	Reverse recovery time		-	-	200		
Q _{rr} *1	Reverse recovery charge		-	0.55	-		μC
V _{EC} *1	Emitter-collector voltage	I _E =110A, V _{GE} =0V	-	-	3.1	V	
R _G	External gate resistance		17	-	57	Ω	

Clamp diode part

Symbol	Item	Conditions	Min.	Typ.	Max.	Units
I _{RRM}	Repetitive reverse current	V _R =V _{RRM}	-	-	1	mA
V _{FM}	Forward voltage drop	I _F =110A	-	-	2.6	V
t _{rr}	Reverse recovery time	I _F =110A, V _{CC} =300V V _{GE1} =V _{GE2} =15V, R _G =17Ω Inductive load switching operation	-	-	200	ns
Q _{rr}	Reverse recovery charge		-	0.7	-	μC

*1: I_E, I_{EM}, V_{EC}, t_{rr} and Q_{rr} represent characteristics of the anti-parallel, emitter to collector free-wheel diode (FWDi).

*2: Pulse width and repetition rate should be such that the device junction temperature (T_j) dose not exceed T_{jmax} rating.

*3: Junction temperature (T_j) should not increase beyond 150°C.

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Thermal resistance

Symbol	Item	Conditions	Min.	Typ.	Max.	Units
$R_{th(j-c)Q}$	Thermal resistance ^{*4}	Inverter part, IGBT	-	-	0.33	°C/W
$R_{th(j-c)R}$	Thermal resistance ^{*4}	Inverter part, Free-wheel diode	-	-	0.71	°C/W
$R_{th(j-c)R}$	Thermal resistance ^{*4}	Clamp diode part	-	-	0.38	°C/W
$R_{th(c-f)}$	Contact thermal resistance ^{*4*5}	Case to fin, Thermal grease Applied (per 1 module)	-	0.096	-	°C/W

*4: T_C measured point is just under the chips.

If use this value, $R_{th(f-a)}$ should be measured just under the chips.

*5: Typical value is measured by using Shin-Etsu Chemical Co.,Ltd "G-746".

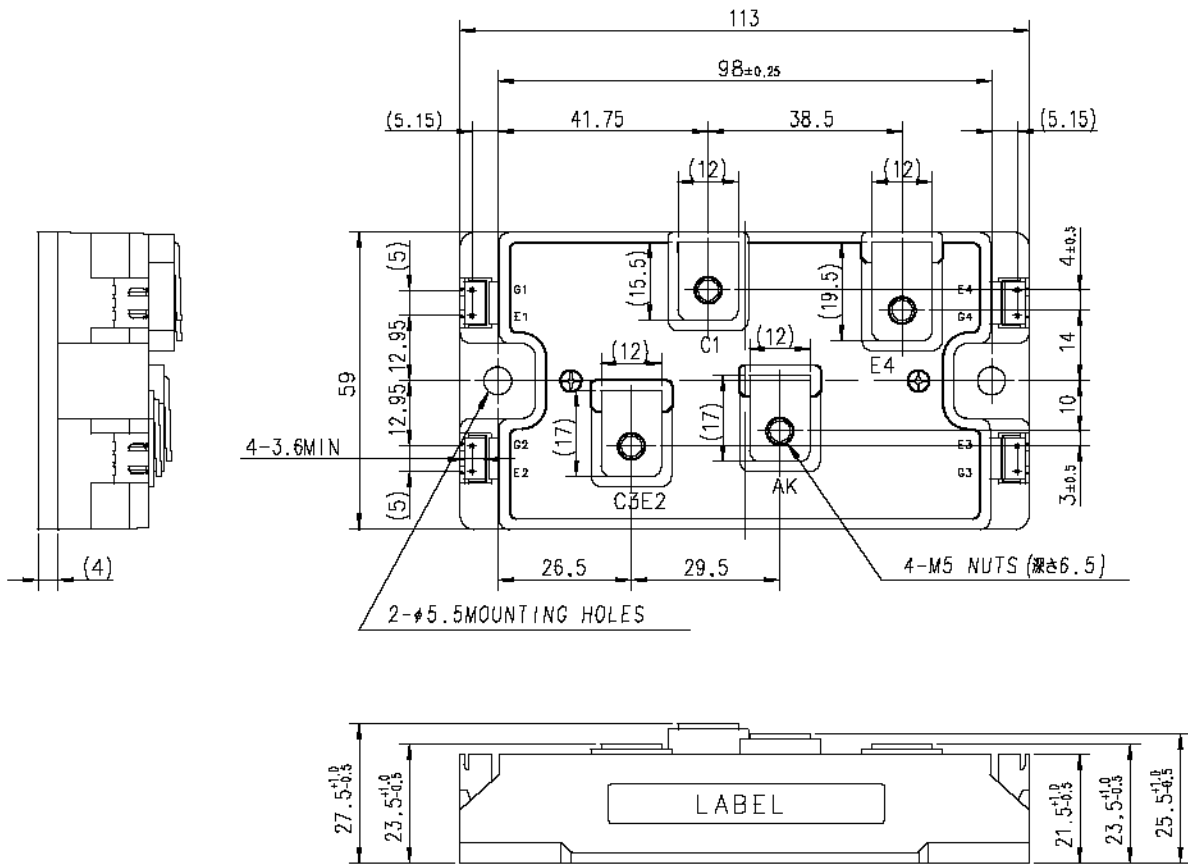
Mechanical characteristics

Symbol	Item	Conditions	Ratings	Units
-	Torque strength	Main Terminals M5 screw	2.5 ~ 3.5	
		Mounting holes M5 screw	2.5 ~ 3.5	N·m
-	Weight	Typical value	390	g

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OUTLINE DRAWING

Dimensions in mm



CIRCUIT DIAGRAM

