Tentative

CM200RL-24NF

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Apr.	T.Furuie 16-Jan-'04			M.Takata 17-Jun.-'04

HIGH POWER SWITCHING USE

Notice : This is not a final specification. Some parametric limi ts are subject to change.

CM200RL-24NF
- Ic ····· 200A
- V_{CES} ····· 1200V
- Insulated Type
- 7-elements in a pack

APPLICATION

AC drive inverters & Servo controls,etc

ABSOLUTE MAXIMUM RATINGS (T_j = 25 °C)

Inverter part

Symbol	Item	Conditions	Ratings	Units
V_{CES}	Collector-emitter voltage	G-E Short	1200	V
V_{GES}	Gate-emitter voltage	C-E Short	±20	
I_C	Collector current	DC, Tc= 72°C *1	200	A
I_{CM}		Pulse ②	400	
I_E ①	Emitter current		200	
I_{EM} ①		Pulse ②	400	
Pc ③	Maximum collector dissipation	Tc= 25°C	1160	W

Brake part

Symbol	Item	Conditions	Ratings	Units
V_{CES}	Collector-emitter voltage	G-E Short	1200	V
V_{GES}	Gate-emitter voltage	C-E Short	±20	
I_C	Collector current	DC, Tc= 80°C *1	100	A
I_{CM}		Pulse ②	200	
Pc ③	Maximum collector dissipation	Tc= 25°C	620	W
V_{RRM}	Repetitive peak reverse voltage	Clamp diode part	1200	V
I_{FM}	Forward current	Clamp diode part	100	A

(Common rating)

Symbol	Item	Conditions	Ratings	Units
Tj	Junction temperature		−40~+150	°C
Tstg	Storage temperature		−40~+125	
Viso	Isolation voltage	Main terminal to base plate,AC 1 min.	2500	V
—	Torque strength	Main terminal M5	2.5~3.5	N·m
—	Torque strength	Mounting holes M5	2.5~3.5	
—	Weight	Typical value	750	g

C

ELECTRICAL CHARACTERISTICS (T_j = 25 °C)

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=20mA, V_{CE}= 10V		6	7	8	V	
I_{GES}	Gate leakage current	$V_{GE}=V_{GES}$, V_{CE}= 0V		—	—	0.5	μA	
$V_{CE(sat)}$	Collector to emitter saturation voltage	I_C = 200A, V_{GE}= 15V	T_j= 25°C	—	2.1	3.0	V	C
			T_j= 125°C	—	2.4	—		
Cies	Input capacitance	V_{CE}= 10V, V_{GE}= 0V		—	—	35	nF	
Coes	Output capacitance			—	—	3		
Cres	Reverse transfer capacitance			—	—	0.68		
Q_G	Total gate charge	V_{CC}=600V, Ic=200A, V_{GE}=15V		—	1000	—	nC	A
td(on)	Turn-on delay time	V_{CC}=600V, Ic=200A, $V_{GE1}=V_{GE2}$=15V, R_G=1.6Ω, Inductive load switching operation		—	—	130	ns	
tr	Turn-on rise time			—	—	70		A
td(off)	Turn-off delay time			—	—	400		
tf	Turn-off fall time			—	—	350		
trr ①	Reverse recovery time	I_E=200A		—	—	150		A
Qrr ①	Reverse recovery charge			—	9	—	μC	
V_{EC} ①	Emitter-collector voltage	I_E=200A, V_{GE}= 0V		—	—	3.8	V	
Rth(j-c)Q	Thermal resistance	IGBT part (1/6 module) *1		—	—	0.11	°C/W	
Rth(j-c)R	Thermal resistance	FWDi part (1/6 module) *1		—	—	0.17		
Rth(c-f)	Contact thermal resistance	Case to fin, Thermal compound Applied (1/6module) *2		—	0.051	—		B
R_G	External gate resistance			1.6	—	21	Ω	

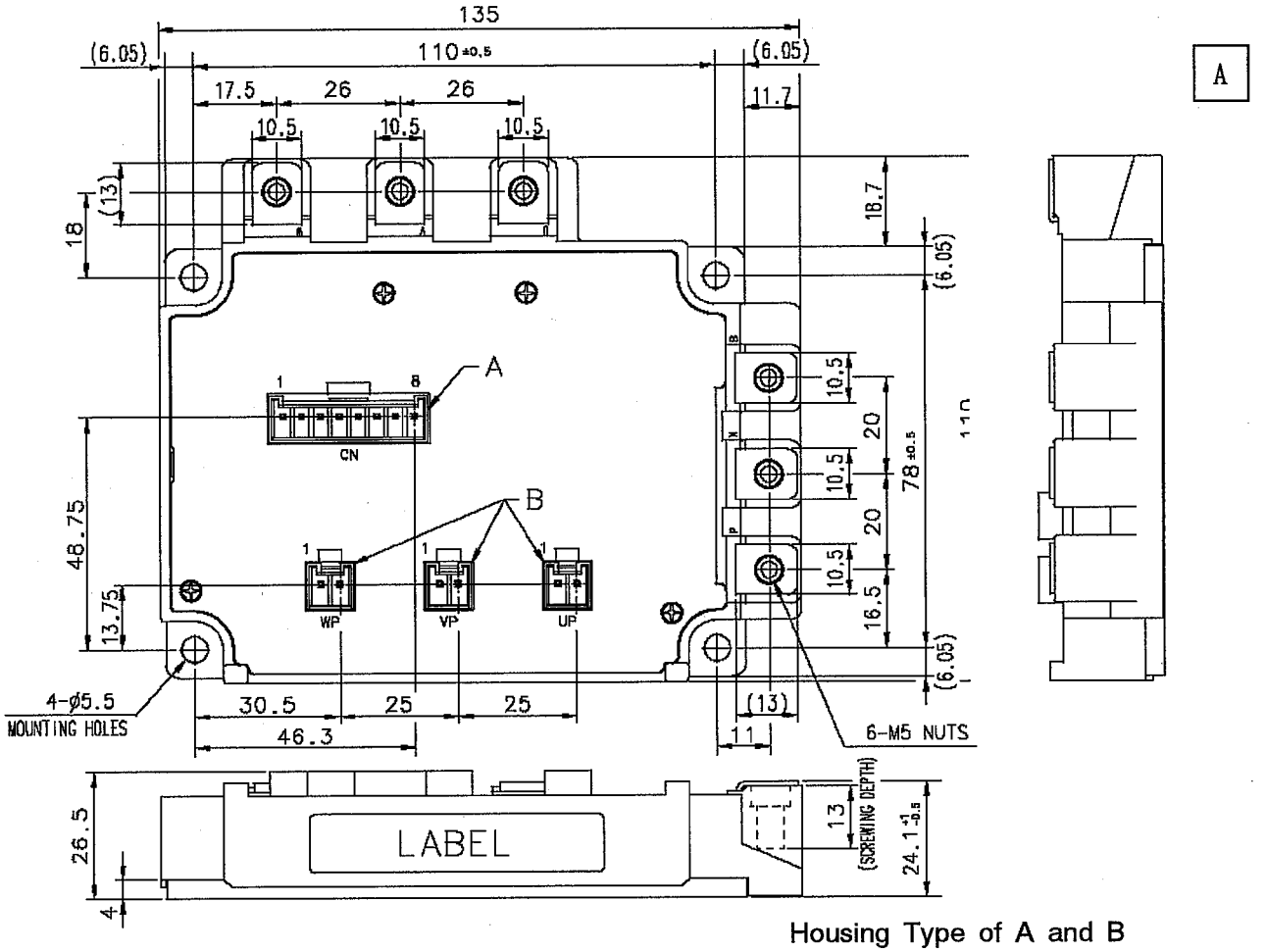
Brake Part

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	$I_C=$ 10mA, $V_{CE}=$ 10V		6	7	8	V
I_{GES}	Gate leakage current	$V_{GE}=V_{GES}$, $V_{CE}=$ 0V		—	—	0.5	μA
$V_{CE(sat)}$	Collector to emitter saturation voltage	$I_C=$ 100A, $V_{GE}=$ 15V	$T_j=$ 25°C	—	2.1	3.0	V
			$T_j=$ 125°C	—	2.4	—	
Cies	Input capacitance	$V_{CE}=$ 10V, $V_{GE}=$ 0V		—	—	17.5	nF
Coes	Output capacitance			—	—	1.5	
Cres	Reverse transfer capacitance			—	—	0.34	
Q_G	Total gate charge	$V_{CC}=$ 600V, Ic= 100A, $V_{GE}=$15V		—	500	—	nC
V_{FM}	Forward voltage drop	$I_F=$ 100A		—	—	3.8	V
Rth(j-c)Q	Thermal resistance	IGBT part *1		—	—	0.20	°C/W
Rth(j-c)R		Clamp diode part *1		—	—	0.28	

*1: Tc measured point is just under the chips.
If you use this value , Rth(f-a) should be measured just under the chips.
*2: Typical value is measured by using Shin-etsu Silicone "G-746".
① I_E,V_{EC},trr,Qrr 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 temp.(T_j) dose not exceed Tjmax rating.
③ Junction temperature (T_j) should not increase beyond 150°C.
④ Pulse width and repetition rate should be such as to cause neglible temperature rise.

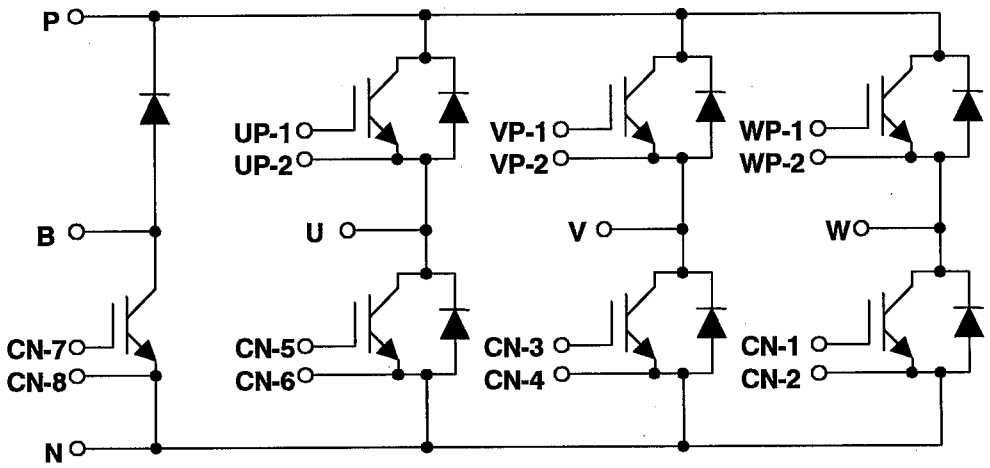
OUTLINE DRAWING

Dimensions in mm



Housing Type of A and B
(J.S.T.Mfq.Co.Ltd)
A= B8P-VH-FB-B, B= B2P-VH-FB-B

CIRCUIT DIAGRAM



CHIP LAYOUT DRAWING

Dimensions in mm