

Tentative

CM50TL-24NF

Pre.	M.Koura	Rev	B	H.Harada, M.Koura.
Apr.	T.Furuie 27-Nov-'03			T.Furuie 20-May-'04

HIGH POWER SWITCHING USE

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

CM50TL-24NF	
●I _c	50A
●V _{CES}	1200V
●Insulated Type	
●6-elements in a pack	

APPLICATION

AC drive inverters & Servo controls,etc

ABSOLUTE MAXIMUM RATINGS (T_j = 25 °C)

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, T _c =94°C *1	50	A	
I _{CM}		Pulse (2)	100		
I _E (1)		Emitter current			50
I _{EM} (1)			Pulse (2)		100
P _c (3)	Maximum collector dissipation	T _c = 25 °C	390	W	
T _j	Junction temperature		-40~+150	°C	
T _{stg}	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	350	g	

ELECTRICAL CHARACTERISTICS ($T_j = 25\text{ }^\circ\text{C}$)

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	$I_C=5.0mA, V_{CE}=10V$	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	$T_j = 25\text{ }^\circ\text{C}$ $I_C = 50A$	—	2.1	3.0	V
		$T_j = 125\text{ }^\circ\text{C}$ $V_{GE}=15V$	—	2.4	—	
C_{ies}	Input capacitance	$V_{CE}=10V$ $V_{GE}=0V$	—	—	8.5	nF
C_{oes}	Output capacitance		—	—	0.75	
C_{res}	Reverse transfer capacitance		—	—	0.17	
Q_G	Total gate charge	$V_{CC}=600V, I_C=50A, V_{GE}=15V$	—	250	—	nC
$t_{d(on)}$	Turn-on delay time	$V_{CC}=600V, I_C=50A$ $V_{GE1}=V_{GE2}=15V$ $R_G=6.3\Omega, \text{Inductive load}$ switching operation $I_E=50A$	—	—	100	ns
t_r	Turn-on rise time		—	—	50	
$t_{d(off)}$	Turn-off delay time		—	—	300	
t_f	Turn-off fall time		—	—	350	
t_{rr} ①	Reverse recovery time		—	—	100	
Q_{rr} ①	Reverse recovery charge	—	2	—	μC	
V_{EC} ①	Emitter-collector voltage	$I_E=50A, V_{GE}=0V$	—	—	3.8	V
$R_{th(j-c)Q}$	Thermal resistance	IGBT part (1/6 module) *1	—	—	0.32	$^\circ\text{C/W}$
$R_{th(j-c)R}$	Thermal resistance	FWDi part (1/6 module) *1	—	—	0.43	
$R_{th(c-f)}$	Contact thermal resistance	Case to fin, Thermal compound Applied (1/6 module) *2	—	0.085	—	
R_G	External gate resistance		6.3	—	96	Ω

*1: T_c measured point is just under the chips.

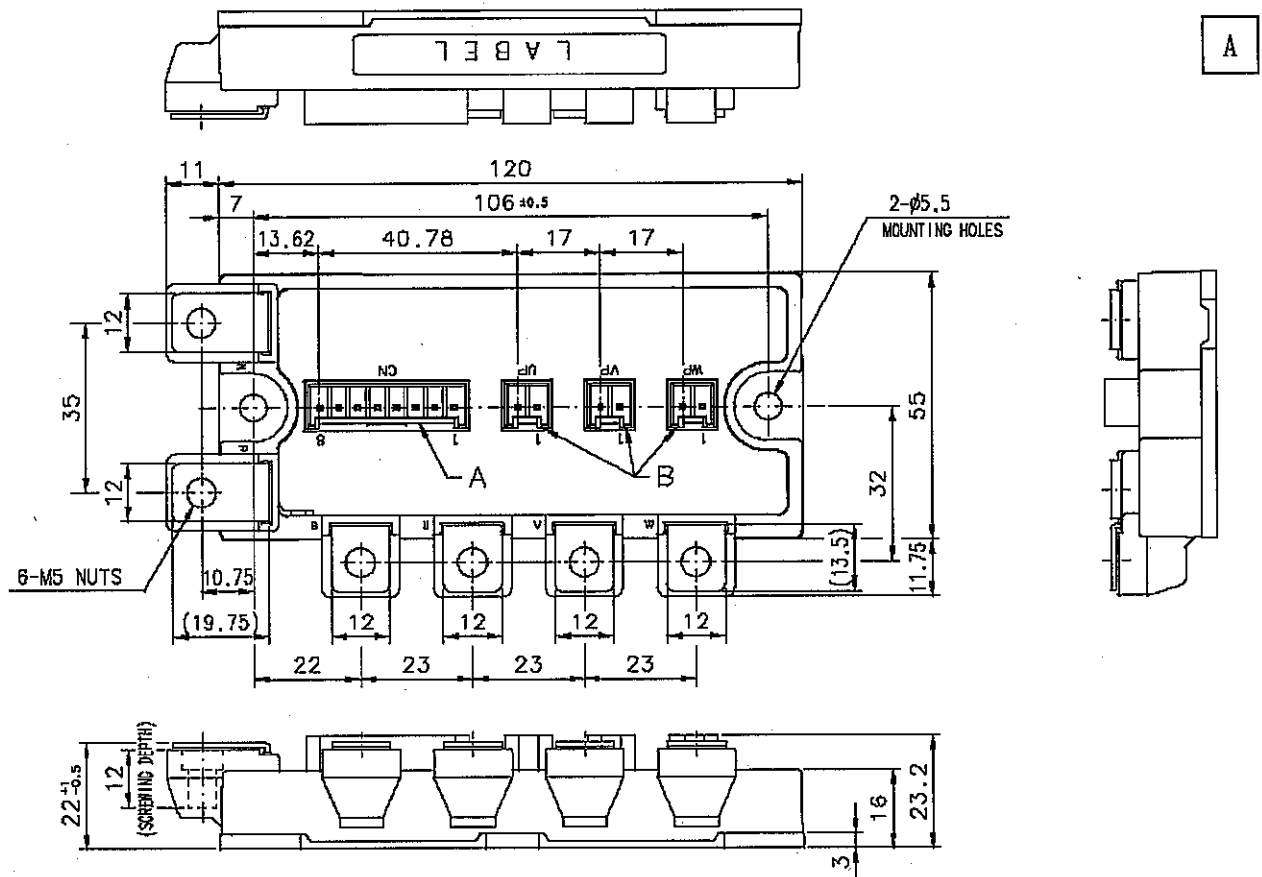
If you use this value, $R_{th(f-a)}$ should be measured just under the chips.

*2: Typical value is measured by using Shin-etsu Silicone "G-746".

- ① $I_E, V_{EC}, t_{rr}, Q_{rr}$ 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 temp. (T_j) does not exceed T_{jmax} rating.
- 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.

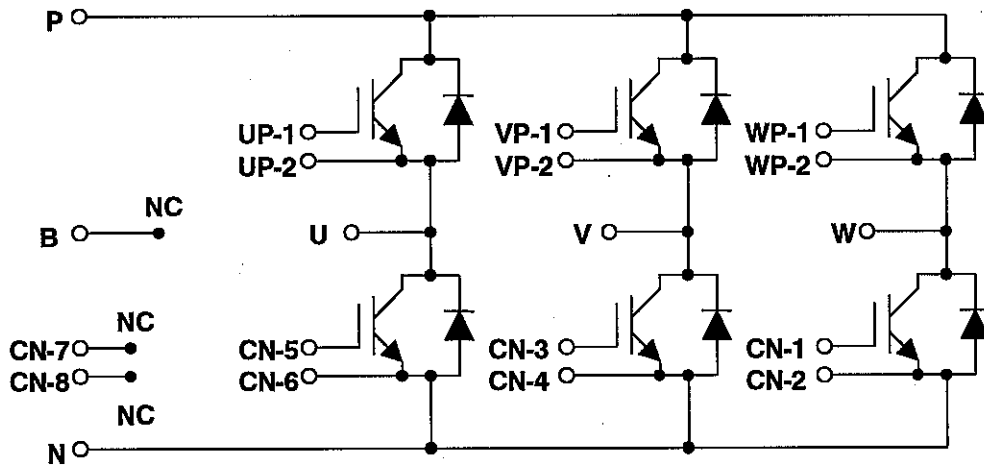
OUTLINE DRAWING

Dimensions in mm



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

CIRCUIT DIAGRAM



CHIP LAYOUT DRAWING

Dimensions in mm

