

Tentative

CM900DU-24NF

Pre.	S. Uchida	Rev	M	K. Kurachi
Apr.	M. Tabata 26-Oct.-'01			M. Tabata 24-Jul.-03

HIGH POWER SWITCHING USE

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

<p>CM900DU-24NF</p> <p>●I<sub>C</sub>.....900A ●V<sub>CES</sub>.....1200V ●Insulated Type ●2-elements in a pack</p>	
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APPLICATION

UPS & General purpose inverters

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ABSOLUTE MAXIMUM RATINGS (T<sub>j</sub> = 25 °C)

Symbol	Item	Conditions	Ratings	Units
V <sub>CES</sub>	Collector-emitter voltage	G-E Short	1200	V
V <sub>GES</sub>	Gate-emitter voltage	C-E Short	±20	V
I <sub>C</sub>	Collector current	DC, T <sub>c</sub> ' = 96 °C *1	900	A
I <sub>CM</sub>		Pulse ②	1800	
I <sub>E</sub> ①	Emitter current		900	A
I <sub>EM</sub> ①		Pulse ②	1800	
P <sub>C</sub> ③	Maximum collector dissipation	T <sub>c</sub> = 25 °C	2550	W
T <sub>j</sub>	Junction temperature		-40~+150	°C
T <sub>stg</sub>	Storage temperature*4		-40~+125	°C
Viso	Isolation voltage	Main terminal to base plate, AC 1 min.	2500	V
—	Torque strength	Main terminal M6	3.5 ~ 4.5	N·m
—	Torque strength	Mounting holes M6	3.5 ~ 4.5	N·m
—	Weight	Typical value	1400	g

K

K

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H

L

## CM900DU-24NF

HIGH POWER SWITCHING USE

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	F
$V_{GE(th)}$	Gate-emitter threshold voltage	$I_C=90mA, V_{CE}=10V$	6	7	8	V	F
$I_{GES}$	Gate leakage current	$V_{GE}=V_{GES}, V_{CE}=0V$	—	—	1.0	$\mu A$	L
$V_{CE(sat)}$ (chip)	Collector to emitter saturation voltage (without lead resistance)	$T_j=25\text{ }^\circ\text{C}$ $I_C=900A$	—	1.8	2.5	V	H
		$T_j=125\text{ }^\circ\text{C}$ $V_{GE}=15V$ ④	—	2.0	—		
R(lead)	Module lead resistance	$I_C=900A$ , terminal-chip	—	0.286	—	m $\Omega$	C M
$C_{ies}$	Input capacitance	$V_{CE}=10V$	—	—	140	nF	F
$C_{oes}$	Output capacitance	$V_{GE}=0V$	—	—	16		F
$C_{res}$	Reverse transfer capacitance		—	—	3		F
$Q_G$	Total gate charge	$V_{CC}=600V, I_C=900A, V_{GE}=15V$	—	4800	—	nC	
td(on)	Turn-on delay time	$V_{CC}=600V, I_C=900A$	—	—	600	ns	F J
tr	Turn-on rise time	$V_{GE1}=V_{GE2}=15V$	—	—	200		F
td(off)	Turn-off delay time	$R_G=0.35\Omega$ , inductive load	—	—	800		F
tf	Turn-off fall time	switching operation	—	—	300		F
trr ①	Reverse recovery time	$I_E=900A$	—	—	500		ns
Qrr ①	Reverse recovery charge		—	50	—	$\mu C$	F
$V_{EC}$ ① (chip)	Emitter-collector voltage (without lead resistance)	$I_E=900A, V_{GE}=0V$	—	—	3.2	V	F L
Rth(j-c)Q	Thermal resistance <sup>3</sup>	IGBT part (1/2module)	—	—	0.049	$^\circ\text{C/W}$	H
Rth(j-c)R		FWDi part (1/2module)	—	—	0.078		
Rth(j-c)Q	Thermal resistance <sup>1</sup>	Tc measured point is just under the chips(IGBT part)	—	—	0.021	$^\circ\text{C/W}$	
Rth(j-c)R		Tc measured point is just under the chips(FWDi part)	—	—	0.034		
Rth(c-f)	Contact thermal resistance <sup>2</sup>	Case to fin, Thermal compound Applied (1/2module)	—	0.016	—		
$R_G$	External gate resistance		0.35	—	2.2	$\Omega$	G J

\*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".

\*3: Tc measured point is shown in page "3-3".

\*4: The operation temperature is restrained by the permission temperature of female connector.

- ①  $I_E, V_{EC}, trr$  &  $Q_{rr}$  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. ( $T_j$ ) dose not exceed  $T_{jmax}$  rating.  
 ③ Junction temperature ( $T_j$ ) should not increase beyond  $150^\circ\text{C}$ .  
 ④ Pulse width and repetition rate should be such as to cause neglible temperature rise.

# APPLICATION NOTE

# MITSUBISHI IGBT MODULE CM900DU-24NF HIGH POWER SWITCHING USE

## OUTLINE DRAWING

Dimensions in mm

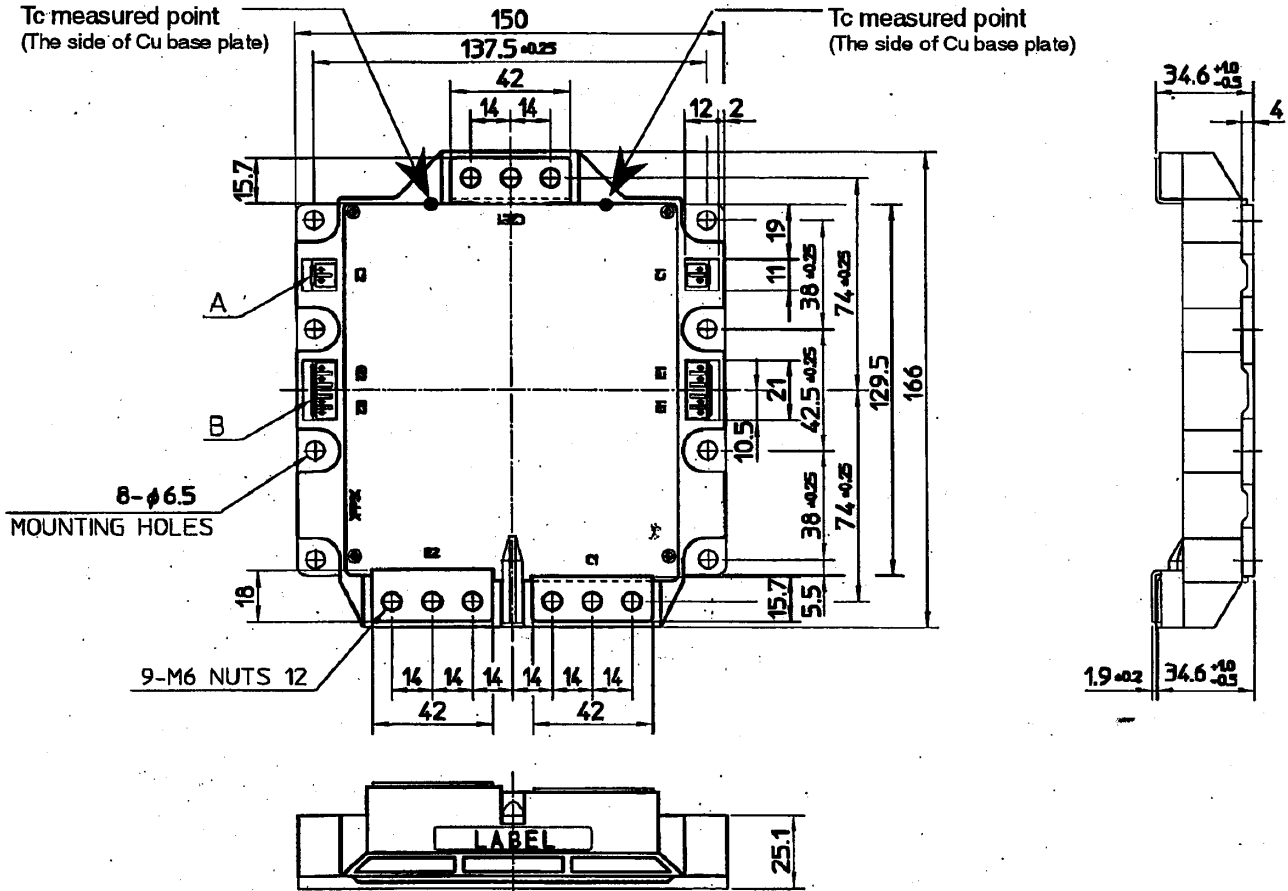
### A,B HOUSING Type

(J.S.T.Mfg.Co.,Ltd)

A : VHR-2N

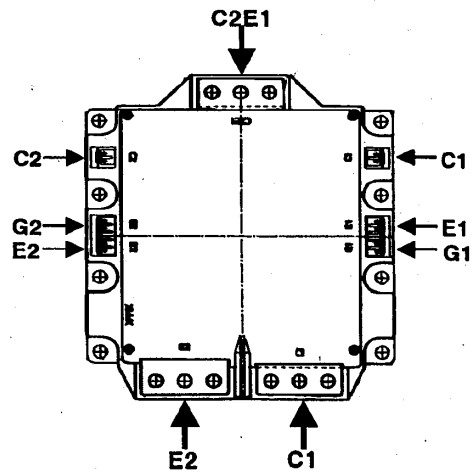
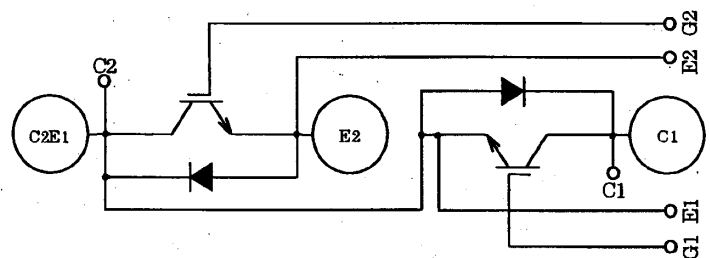
B : VHR-5N

	B
G	D
H	E



## CIRCUIT DIAGRAM

Terminal name



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