

MITSUBISHI ELECTRIC CORPORATION

APPLICATION NOTE	Prepared by	<i>M. Takata</i>	Rev	
	Approved by	<i>M. Yamamoto Aug. 7. 2003</i>		

CMH5540.doc

SUBJECT Parallel connection of NF-series IGBT(CM* *-12NF/24NF)

This parallel specification is applied for more than or equal to 200A rating of NF series IGBT module.

1.Parallel specification

- 1) Shipping; When paralleled number of modules are required when getting order, we ship the modules which are in the same rank of $V_{CE(sat)}$ as following table 1.
- 2) Indication; $V_{CE(sat)}$ rank(for example;C,D,E etc.) is indicated on the label of module.

Table 1 $V_{CE(sat)}$ rank

Rank	600V series (V)
E	1.5 - 1.6
F	1.55-1.65
G	1.6-1.7
H	1.65-1.75
J	1.7-1.8
K	1.75-1.85
L	1.8-1.95
M	1.9-2.05
N	2.0-2.2

Rank	1200V series (V)
C	1.62-1.81
D	1.76-2.00
E	1.95-2.26

Conditions; I_c =rating current, V_{GE} =15V, T_j =25degree

2.Notes for parallelling

- 1) This rank for parallelling is decided to get within +/-10% collector current ambalnce for 600V series and +/-15% collector current ambalnce for 1200V series.
- 2) For each paralleled modules, same rank of $V_{CE(sat)}$ should be connected. Even if many paralleled modules are used in U/V/W phase or multi-axis servo etc. in the same equipment, same rank of modules are applied for each paralleled conection.
- 3) This rank is for getting static balance of collector curent,so there may be not effective for dynamic excessive balance by switching. Current balance of switching are dominated by not module,but wiring inductance in the equipment. Please take care to reduce the inductance and get symmetric balance of the inductance for paralleled connected modules.