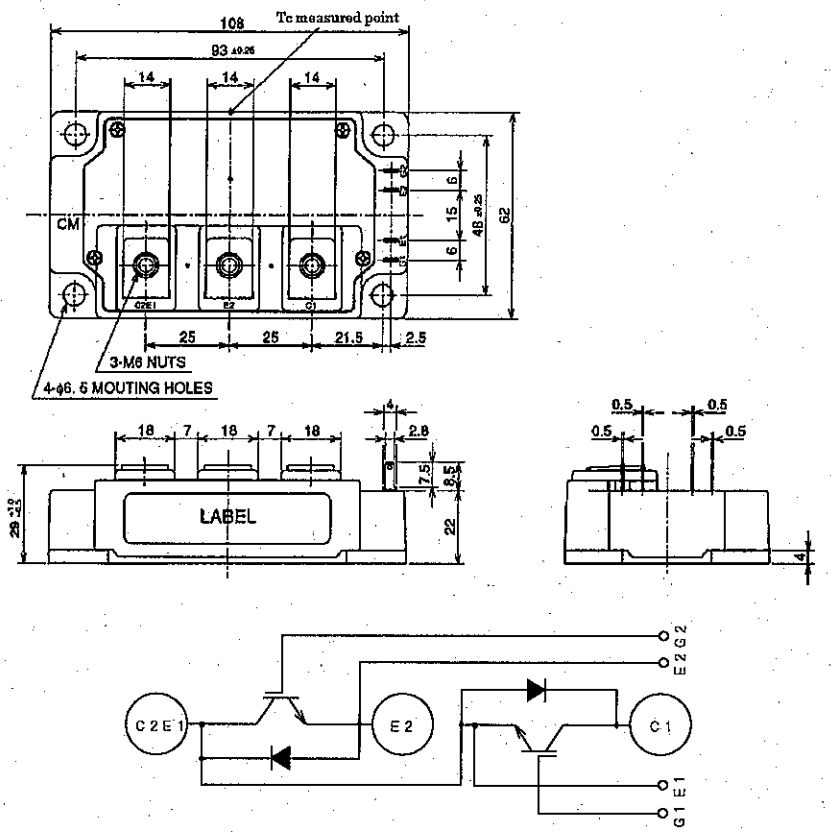
Pre.	M.Koura	Rev	B	M. Koura
Apr.	M.Tabata 31-Mar.'03			M. Tabata 11-Jun.-03

HIGH POWER SWITCHING USE

CM300DU-12NFH

- Ic ····· 300A
- VCES ····· 600V
- Insulated Type
- 2-elements in a pack

OUTLINE DRAWING Dimensions in mm



CIRCUIT DIAGRAM

APPLICATION

High frequency switching use (30kHz to 60kHz).
Gradient amplifier,Induction heating,power supply,etc.

ABSOLUTE MAXIMUM RATINGS (T_j = 25 °C)

Symbol	Item	Conditions	Ratings	Unit
V_{CES}	Collector-emitter voltage	G-E Short	600	V
V_{GES}	Gate-emitter voltage	C-E Short	±20	V
I_C	Collector current	Tc= 25 °C	300	A
I_{CM}		Pulse ②	600	
I_E ①	Emitter current	Tc= 25 °C	300	A
I_{EM} ①		Pulse ②	600	
Pc ③	Maximum collector dissipation	Tc= 25 °C	780	W
Pc' ③	Maximum collector dissipation	Tc= 25 °C	1250	
Tj	Junction temperature		−40～+150	°C
Tstg	Storage temperature		−40～+125	°C
Viso	Isolation voltage	Main terminal to base plate,AC 1 min.	2500	V
—	Mounting torque	Main Terminal M 6	3.5～4.5	N·m
		Mounting M 6	3.5～4.5	N·m
—	Weight	Typical value	400	g

ELECTRICAL CHARACTERISTICS (T_j = 25 °C)

Symbol	Item	Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector cutoff current	V_{CE}=V_{CES}, V_{GE}= 0V	—	—	1	mA
$V_{GE(th)}$	Gate-emitter threshold voltage	I_C=30mA, V_{CE}= 10V	5	6	7	V
I_{GES}	Gate leakage current	V_{GE}=V_{CES}, V_{CE}= 0V	—	—	0.5	μA
$V_{CE(sat)}$	Collector to emitter saturation voltage ④	T_j= 25 °C, I_C = 300A	—	2.0	2.7	V
		T_j= 125 °C, V_{GE}= 15V	—	1.95	—	
Cies	Input capacitance	V_{CE}= 10V, V_{GE}= 0V	—	—	83	nF
Coes	Output capacitance		—	—	5.4	
Cres	Reverse transfer capacitance		—	—	3.0	
Q_G	Total gate charge	V_{CC}= 300V, I_C= 300A, V_{GE}= 15V	—	1860	—	nC
td(on)	Turn-on delay time	V_{CC}=300V, I_C=300A, V_{GE1}=V_{GE2}=15V, R_G=4.2Ω, Inductive load switching operation, I_E= 300 A	—	—	350	ns
tr	Turn-on rise time		—	—	150	
td(off)	Turn-off delay time		—	—	700	
tf	Turn-off fall time		—	—	150	
trr ①	Reverse recovery time		—	—	200	
Qrr ①	Reverse recovery charge		—	5.5	—	μC
V_{EC} ①	Emitter-collector voltage	I_E= 300A, V_{GE}= 0V	—	—	2.6	V
Rth(j-c)Q	Thermal resistance*1	IGBT part(1/2 module)	—	—	0.16	°C/W
Rth(j-c)R		FWDi part(1/2 module)	—	—	0.24	
Rth(c-f)	Contact thermal resistance	Case to fin, Thermal compound applied*2 (1/2 module)	—	0.04	—	
Rth(j-c')Q	Thermal resistance	Tc measured point is just under the chips (1/2module)	—	—	0.10*3	
R_G	External gate resistance		2.1	—	21	Ω

*1:Tc measured point is shown in page "1-2".
*2:Typical value is measured by using Shin-etsu Silicone "G-746".
*3 :If you use this value , Rth(f-a) should be measured just under the chips.

① I_E, V_{EC}, trr, Qrr & die/dt 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.
⑤ No short circuit capability is designed.

B
A