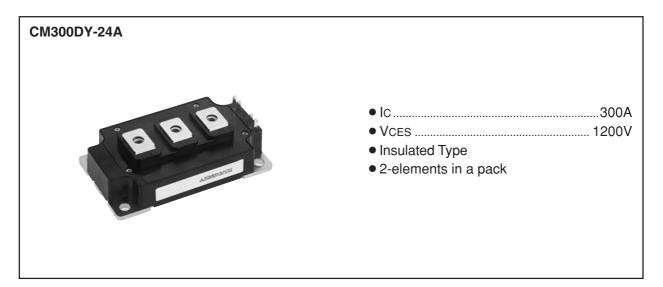
MITSUBISHI IGBT MODULES

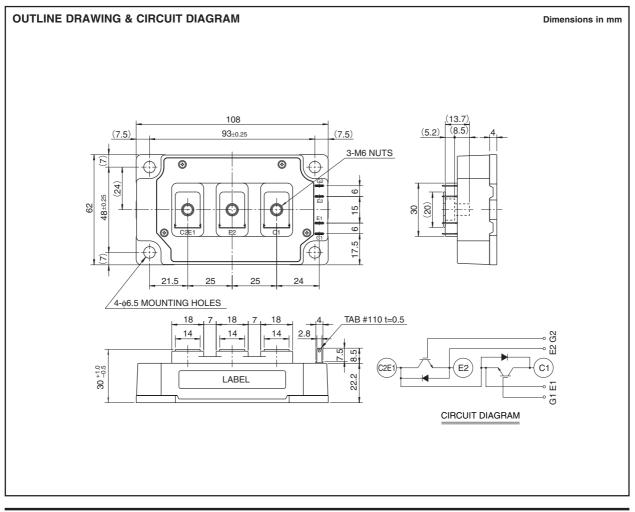
CM300DY-24A

HIGH POWER SWITCHING USE



APPLICATION

AC drive inverters & Servo controls, etc





HIGH POWER SWITCHING USE

ABSOLUTE MAXIMUM RATINGS (Tj = 25°C, unless otherwise specified)

Symbol	Parameter	Conditions		Ratings	Unit	
VCES	Collector-emitter voltage	G-E Short		1200	V	
VGES	Gate-emitter voltage	C-E Short		±20	V	
Ic	Collector current	DC, Tc = 80°C ^{*1}	300			
Ісм	Collector current	Pulse	(Note 2)	600	- A	
IE (Note 1)	Emitter current			300	^	
IEM (Note 1)	Emilier current	Pulse	(Note 2)	600	A	
PC (Note 3)	Maximum collector dissipation	$Tc = 25^{\circ}C^{*1}$		1890	W	
Tj	Junction temperature			-40 ~ +150	°C	
Tstg	Storage temperature			-40 ~ +125	°C	
Viso	Isolation voltage	Terminals to base plate, f = 60Hz, AC 1 min	ute	2500	Vrms	
_	Taxana atropath	Main terminals M6 screw		3.5 ~ 4.5	— N • m	
_	Torque strength	Mounting M6 screw		3.5 ~ 4.5		
_	Weight	Typical value		400	g	

ELECTRICAL CHARACTERISTICS (Tj = 25°C, unless otherwise specified)

Cumhal	Parameter	Test conditions		Limits			11-14
Symbol	Parameter			Min.	Тур.	Max.	Unit
ICES	Collector cutoff current	VCE = VCES, VGE = 0V		_	_	1	mA
VGE(th)	Gate-emitter threshold voltage	IC = 30mA, VCE = 10V		6	7	8	V
IGES	Gate leakage current	\pm VGE = VGES, VCE = 0V		_	_	0.5	μA
VCE(sat)	Collector-emitter saturation voltage		Γj = 25°C	—	2.1	3.0	V
		IC = 300A, VGE = 15V	Гј = 125°С	—	2.4	—	
Cies	Input capacitance			_	_	47	nF
Coes	Output capacitance	VCE = 10V	_	_	4		
Cres	Reverse transfer capacitance	VGE = 0V				0.9	
QG	Total gate charge	VCC = 600V, IC = 300A, VGE = 15V		_	1350	—	nC
td(on)	Turn-on delay time		_	_	550	ns	
tr	Turn-on rise time	Vcc = 600V, Ic = 300A VGE = $\pm 15V$ RG = 1.0 Ω , Inductive load IE = 300A		_	_		180
td(off)	Turn-off delay time			_	_		600
tf	Turn-off fall time			_	_		350
trr (Note 1)	Reverse recovery time			_	_	250	ns
Qrr (Note 1)	Reverse recovery charge				9.0	_	μC
VEC(Note 1)	Emitter-collector voltage	IE = 300A, VGE = 0V		_	_	3.8	V
Rth(j-c)Q	Thermal resistance	IGBT part (1/2 module) ^{*1}		_	_	0.066	K/W
Rth(j-c)R		FWDi part (1/2 module)*1		_	_	0.12	
Rth(c-f)	Contact thermal resistance	Case to heat sink, Thermal compound Applied (1/2 module)*1,*2			0.02	_	
RG	External gate resistance			1.0		16	Ω

*1 : Case temperature (Tc), heat sink temperature (Tt) measured point is just under the chips. *2 : Typical value is measured by using thermally conductive grease of $\lambda = 0.9[W/(m \cdot K)]$.

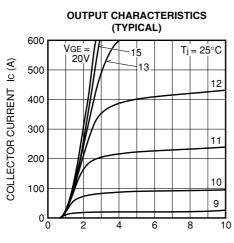
Note 1. IE, VEC, trr & Qrr represent characteristics of the anti-parallel, emitter-collector free-wheel diode (FWDi).

Pulse with and repetition rate should be such that the device junction temperature (Tj) does not exceed Tjmax rating.
Junction temperature (Tj) should not increase beyond 150°C.



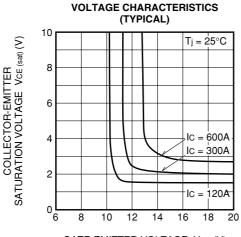
HIGH POWER SWITCHING USE





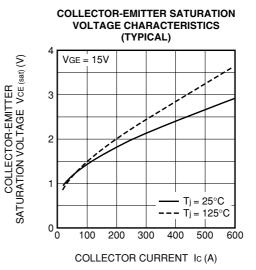
COLLECTOR-EMITTER VOLTAGE VCE (V)

COLLECTOR-EMITTER SATURATION

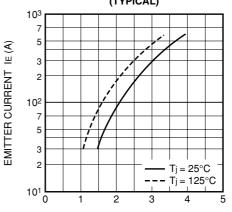


GATE-EMITTER VOLTAGE VGE (V)

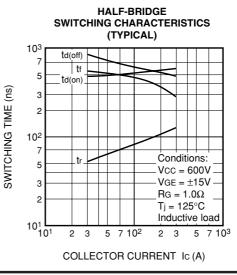
CAPACITANCE-VCE CHARACTERISTICS (TYPICAL) 10² 75 Cies, Coes, Cres (nF) Cies 3 2 10¹ 5 3 Coes CAPACITANCE 2 100 7 5 res 3 2 VGE = 0V10-1 10^{-1} 2 3 5 7 10⁰ 2 3 5 7 10¹ 2 3 5 7 10² COLLECTOR-EMITTER VOLTAGE VCE (V)



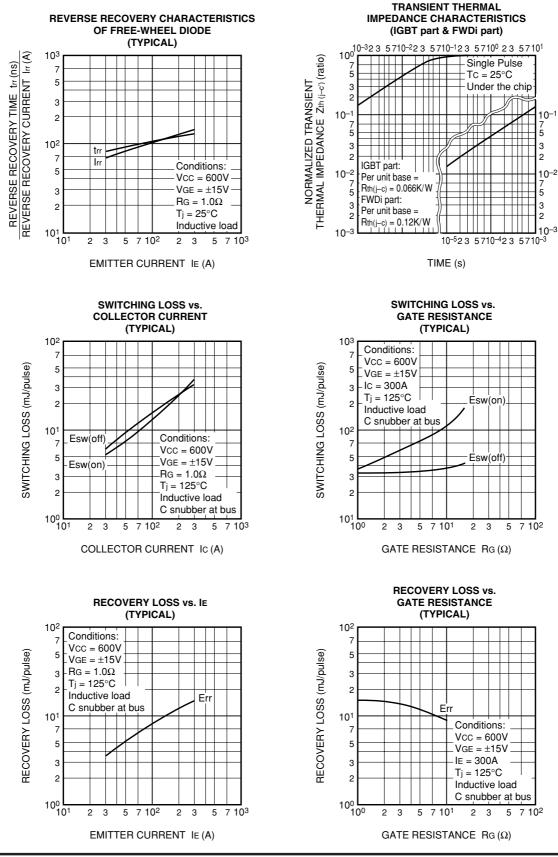
FREE-WHEEL DIODE FORWARD CHARACTERISTICS (TYPICAL)



EMITTER-COLLECTOR VOLTAGE VEC (V)

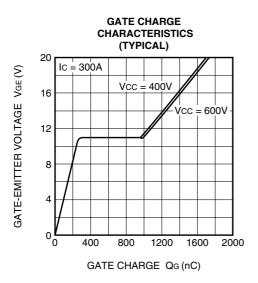


HIGH POWER SWITCHING USE





HIGH POWER SWITCHING USE





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