

PM200DVA120**FLAT-BASE TYPE
INSULATED PACKAGE****TOTAL SYSTEM**

Symbol	Parameter	Condition	Ratings	Unit
V _{CC(Prot)}	Supply Voltage Protected by SC	V _D = 13.5 ~ 16.5V, Inverter Part, T _J = 125°C Start	800	V
V _{CC(surge)}	Supply Voltage (Surge)	Applied between : C1-E2, Surge value or without switching	1000	V
T _C	Module Case Operating Temperature		-20 ~ +100	°C
T _{stg}	Storage Temperature		-40 ~ +125	°C
V _{iso}	Isolation Voltage	60Hz, Sinusoidal, Charged part to Base, AC 1 min.	2500	V _{rms}

ELECTRICAL CHARACTERISTICS (T_J = 25°C, unless otherwise noted)**INVERTER PART**

Symbol	Parameter	Test Condition		Limits			Unit
				Min.	Typ.	Max.	
V _{CE(sat)}	Collector-Emitter Saturation Voltage	V _D = 15V, I _C =200A	T _J = 25°C	—	2.65	3.30	V
		V _{CIN} = 0V	T _J = 125°C	—	2.75	3.35	
V _{EC}	FWDi Forward Voltage	-I _C = 200A, V _D = 15V, V _{CIN} = 5V		—	2.50	3.50	V
t _{on}	Switching Time	V _D = 15V, I _{CIN} = 0V↔5V V _{CC} = 600V, I _C = 200A T _J = 125°C Inductive Load (upper and lower arm)		0.4	0.9	2.3	μs
t _{rr}				—	0.2	0.3	
t _{c(on)}				—	0.4	1.0	
t _{off}				—	2.4	3.4	
t _{c(off)}				—	0.7	1.2	
I _{CES}	Collector-Emitter Cutoff Current	V _{CE} = V _{CES} , V _D = 15V	T _J = 25°C	—	—	1	mA
			T _J = 125°C	—	—	10	

CONTROL PART

Symbol	Parameter	Test Condition		Limits			Unit
				Min.	Typ.	Max.	
ID	Circuit Current	VD = 15V, VCIN = 5V	VN1-VNC	—	27	38	mA
			VP1-VPC	—	27	38	
Vth(ON)	Input ON Threshold Voltage	Applied between : CPI-VPC, CNI -VNC		1.2	1.5	1.8	V
Vth(OFF)	Input OFF Threshold Voltage			1.7	2.0	2.3	
SC	Short Circuit Trip Level	−20≤ TJ ≤ 125°C, VD = 15V		240	—	—	A
toff(SC)	Short Circuit Current Delay Time	VD = 15V		—	10	—	μs
OT	Over Temperature Protection	Base-plate	Trip level	111	118	125	°C
OTr	(Lower-arms only)	Temperature detection, VD = 15V	Reset level	—	100	—	
UV	Supply Circuit Under-Voltage	−20 ≤ TJ ≤ 125°C	Trip level	11.5	12.0	12.5	V
UVr	Protection		Reset level	—	12.5	—	
I _{FO} (H)	Fault Output Current (Note-1)	VD = 15V, VFO = 15V		—	—	0.01	mA
I _{FO} (L)				—	10	15	
tFO	Minimum Fault Output Pulse Width (Note-1)	VD = 15V		1.0	1.8	—	ms
VSXR	SXR Terminal Output Voltage	−20 ≤ TJ ≤ 125°C, Rin=6.8kΩ		4.5	5.1	5.6	V

(Note-1) Fault output is given only when the internal SC, OT & UV protection.

Fault output of OT protection operate by lower arm

Fault output of OT, UV protection given pulse while over level.

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Symbol	Parameter	Test Condition	Limits			Unit
			Min.	Typ.	Max.	
R _{th(j-c)Q}	Junction to case Thermal	Inverter IGBT part (per 1/2 module)	—	—	0.121	°C/W
R _{th(j-c)F}	Resistances	Inverter FWDi part (per 1/2 module)	—	—	0.18	
R _{th(c-f)}	Contact Thermal Resistance	Case to fin, Thermal grease applied (per 1/2 module)	—	—	0.075	

MECHANICAL RATINGS AND CHARACTERISTICS

Symbol	Parameter	Test Condition	Limits			Unit
			Min.	Typ.	Max.	
—	Mounting torque	Mounting part screw : M6	3.92	4.90	5.88	N • m
—	Mounting torque	Main terminal screw : M6	3.92	4.90	5.88	N • m
—	Weight		—	510	—	g

RECOMMENDED CONDITIONS FOR USE

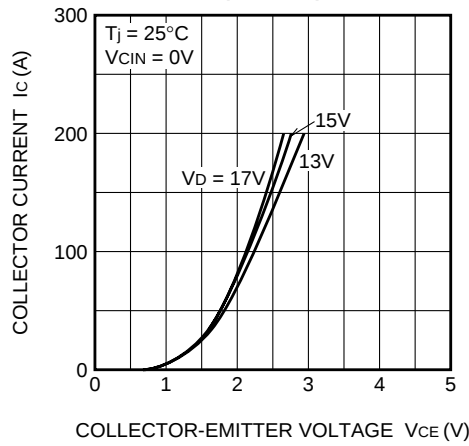
Symbol	Parameter	Test Condition	Recommended value	Unit
V _{CC}	Supply Voltage	Applied across C1-E2 terminals	≤ 800	V
V _D	Control Supply Voltage	Applied between : V _{P1} -V _{PC} , V _{N1} -V _{NC}	15 ± 1.5	V
V _{CIN(ON)}	Input ON Voltage	Applied between : C _{P1} -V _{PC} , C _{N1} -V _{NC}	≤ 0.8	V
V _{CIN(OFF)}	Input OFF Voltage		≥ 4.0	
t _{dead}	Arm Shoot-through Blocking Time	For IPM's each input signals	≥ 3.5	μs
f _{PWM}	PWM Input Frequency	Using Application Circuit input signal of IPM, 3φ Sinusoidal PWM VVVF inverter	≤ 20	kHz

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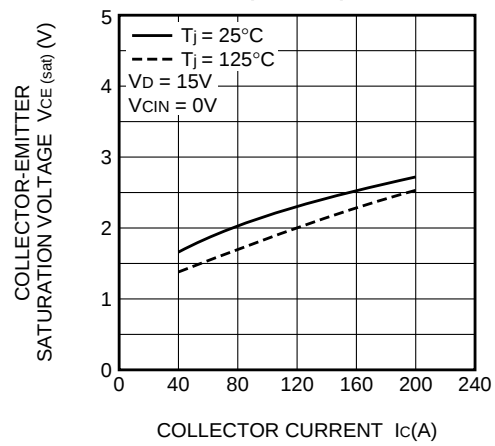
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PERFORMANCE CURVES

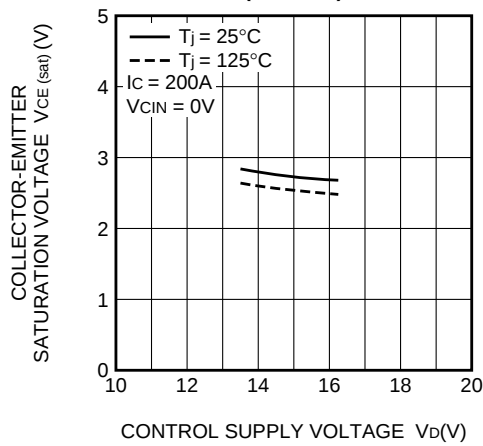
OUTPUT CHARACTERISTICS
(TYPICAL)



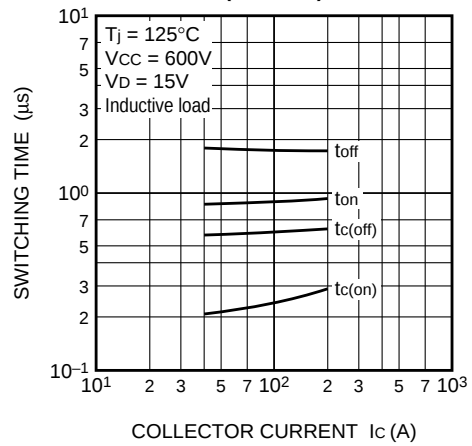
COLLECTOR-EMITTER SATURATION
VOLTAGE CHARACTERISTICS
(TYPICAL)



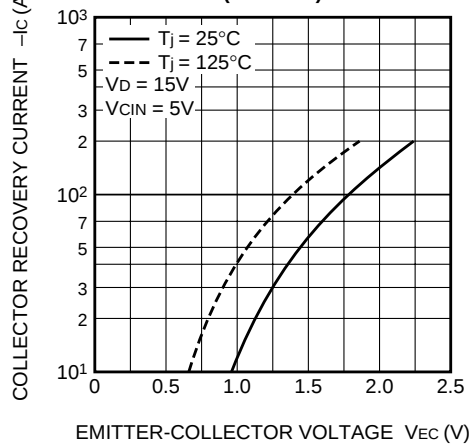
COLLECTOR-EMITTER SATURATION
VOLTAGE CHARACTERISTICS
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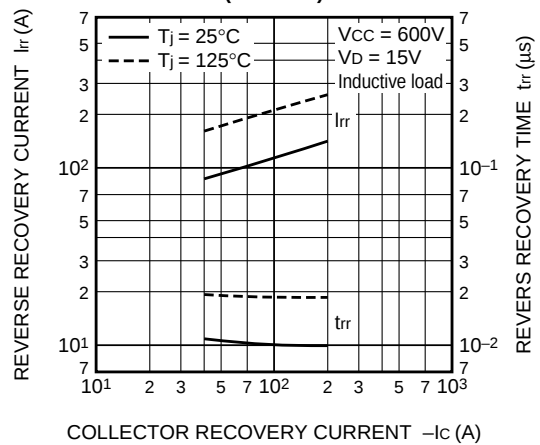
SWITCHING CHARACTERISTICS
(TYPICAL)



DIODE FORWARD CHARACTERISTICS
(TYPICAL)



DIODE REVERSE RECOVERY CHARACTERISTICS
(TYPICAL)



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