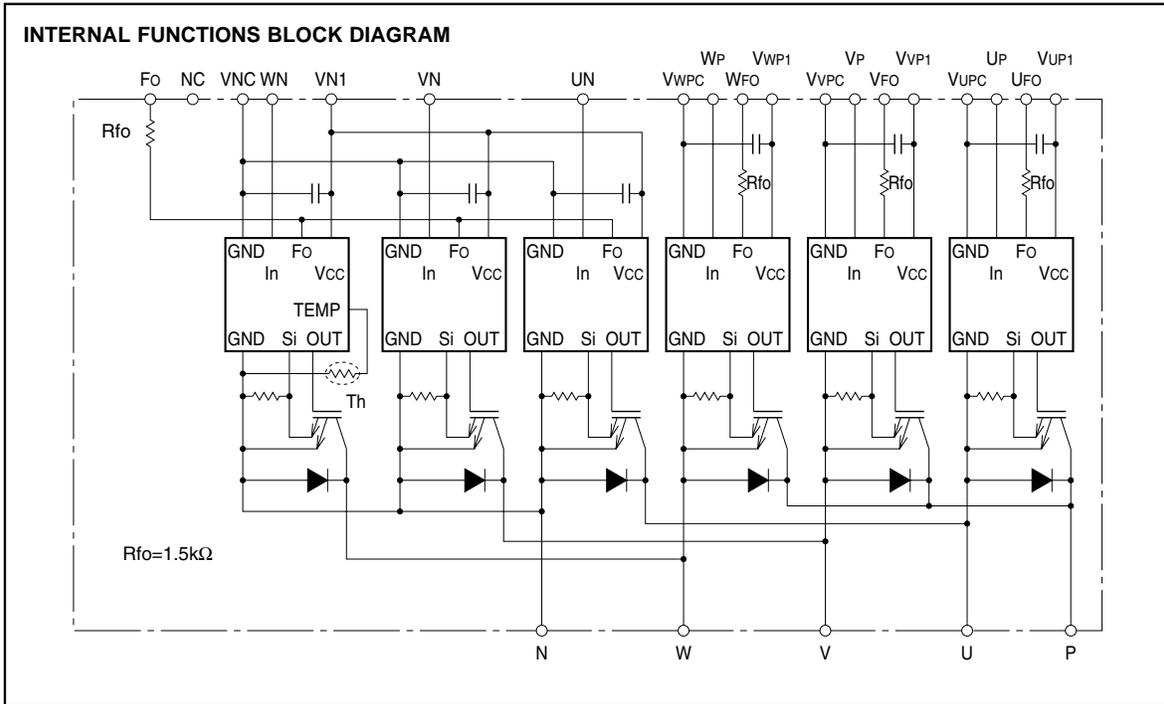


PM75CVA120

FLAT-BASE TYPE
INSULATED PACKAGE



MAXIMUM RATINGS ($T_j = 25^\circ\text{C}$, unless otherwise noted)

INVERTER PART

Symbol	Parameter	Condition	Ratings	Unit
V_{CES}	Collector-Emmitter Voltage	$V_D = 15V, V_{CIN} = 15V$	1200	V
$\pm I_C$	Collector Current	$T_C = 25^\circ\text{C}$	75	A
$\pm I_{CP}$	Collector Current (Peak)	$T_C = 25^\circ\text{C}$	150	A
P_C	Collector Dissipation	$T_C = 25^\circ\text{C}$	455	W
T_j	Junction Temperature		-20 ~ +150	$^\circ\text{C}$

CONTROL PART

Symbol	Parameter	Condition	Ratings	Unit
V_D	Supply Voltage	Applied between : $V_{UP1}-V_{UPC}$ $V_{VP1}-V_{VPC}, V_{WP1}-V_{WPC}, V_{N1}-V_{NC}$	20	V
V_{CIN}	Input Voltage	Applied between : $U_P-V_{UPC}, V_P-V_{VPC}, W_P-V_{WPC}$ $U_N \cdot V_N \cdot W_N-V_{NC}$	20	V
V_{FO}	Fault Output Supply Voltage	Applied between : $U_{FO}-V_{UPC}, V_{FO}-V_{VPC}, W_{FO}-V_{WPC}$ F_O-V_{NC}	20	V
I_{FO}	Fault Output Current	Sink current at U_{FO}, V_{FO}, W_{FO} and F_O terminal	20	mA

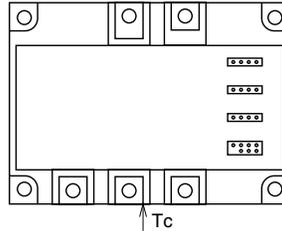
PM75CVA120

FLAT-BASE TYPE
INSULATED PACKAGE

TOTAL SYSTEM

Symbol	Parameter	Condition	Ratings	Unit
VCC(PROT)	Supply Voltage Protected by SC	V _D = 13.5 ~ 16.5V, Inverter Part, T _j = 125°C Start	800	V
VCC(surge)	Supply Voltage (Surge)	Applied between : P-N, Surge value or without switching	1000	V
T _c	Module Case Operating Temperature	(Note-1)	-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}

(Note-1) T_c measurement point is below. (3mm depth at the center of the side of base plate)



ELECTRICAL CHARACTERISTICS (T_j = 25°C, unless otherwise noted)

INVERTER PART

Symbol	Parameter	Test Condition	Limits			Unit	
			Min.	Typ.	Max.		
VCE(sat)	Collector-Emitter Saturation Voltage	V _D = 15V, I _c = 75A V _{CIN} = 0V	T _j = 25°C	—	2.65	3.30	V
			T _j = 125°C	—	2.75	3.35	
VEC	FWDI Forward Voltage	-I _c = 75A, V _D = 15V, V _{CIN} = 15V	—	2.50	3.50	V	
t _{on}	Switching Time	V _D = 15V, V _{CIN} = 0V ↔ 15V V _{CC} = 600V, I _c = 75A 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		
ICES	Collector-Emitter Cutoff Current	V _{CE} = V _{CES} , V _{CIN} = 15V	T _j = 25°C	—	—	1	mA
			T _j = 125°C	—	—	10	

CONTROL PART

Symbol	Parameter	Test Condition	Limits			Unit	
			Min.	Typ.	Max.		
I _D	Circuit Current	V _D = 15V, V _{CIN} = 15V	V _{N1} -V _{NC}	—	40	35	mA
			V*P1-V*PC	—	13	18	
V _{th(ON)}	Input ON Threshold Voltage	Applied between : UP-VUPC, VP-VVPC, WP-VWPC UN • VN • WN-VNC	1.2	1.5	1.8	V	
V _{th(OFF)}	Input OFF Threshold Voltage		1.7	2.0	2.3		
SC	Short Circuit Trip Level	-20 ≤ T _j ≤ 125°C, V _D = 15V	105	—	—	A	
t _{off(SC)}	Short Circuit Current Delay Time	V _D = 15V	—	10	—	μs	
OT	Over Temperature Protection	Base-plate Temperature detection, V _D = 15V	Trip level	111	118	125	°C
			Reset level	—	100	—	
UV	Supply Circuit Under-Voltage Protection	-20 ≤ T _j ≤ 125°C	Trip level	11.5	12.0	12.5	V
			Reset level	—	12.5	—	
I _{FO(H)}	Fault Output Current	V _D = 15V, V _{FO} = 15V	(Note-2)	—	—	0.01	mA
I _{FO(L)}				—	10	15	
t _{FO}	Minimum Fault Output Pulse Width	V _D = 15V	(Note-2)	1.0	1.8	—	ms

(Note-2) 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.

PM75CVA120**FLAT-BASE TYPE
INSULATED PACKAGE****THERMAL RESISTANCES**

Symbol	Parameter	Test Condition	Limits			Unit
			Min.	Typ.	Max.	
Rth(j-c)Q	Junction to case Thermal Resistances	Inverter IGBT part (per 1/6 module)	—	—	0.275	°C/W
Rth(j-c)F		Inverter FWDi part (per 1/6 module)	—	—	0.51	
Rth(c-f)	Contact Thermal Resistance	Case to fin, Thermal grease applied (per 1 module)	—	—	0.022	

MECHANICAL RATINGS AND CHARACTERISTICS

Symbol	Parameter	Test Condition	Limits			Unit
			Min.	Typ.	Max.	
—	Mounting torque	Mounting part screw : M5	2.5	3.0	3.5	N • m
—	Mounting torque	Main terminal screw : M5	2.5	3.0	3.5	N • m
—	Weight		—	730	—	g

RECOMMENDED CONDITIONS FOR USE

Symbol	Parameter	Test Condition	Recommended value	Unit
VCC	Supply Voltage	Applied across P-N terminals	≤ 800	V
Vd	Control Supply Voltage	Applied between : VUP1-VUPC, VVP1-VVPC VWP1-VWPC, VN1-VNC (Note-3)	15 ± 1.5	V
VCIN(ON)	Input ON Voltage	Applied between : UP-VUPC, VP-VVPC, WP-VWPC UN • VN • WN-VNC	≤ 0.8	V
VCIN(OFF)	Input OFF Voltage		≥ 4.0	
t _{dead}	Arm Shoot-through Blocking Time	For IPM's each input signals	≥ 3.0	μs
f _{PWM}	PWM Input Frequency	Using Application Circuit input signal of IPM, 3φ Sinusoidal PWM VVVF inverter	≤ 20	kHz

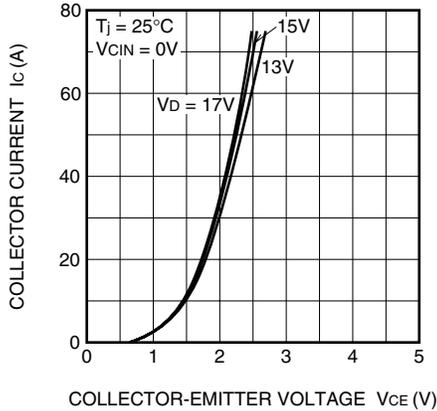
(Note-3) With ripple satisfying the following conditions dv/dt swing ≤ ±5V/μs, Variation ≤ 2V peak to peak

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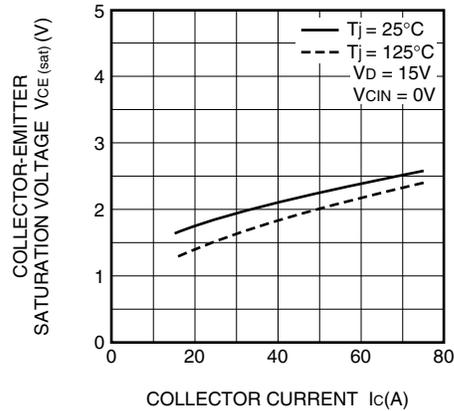
FLAT-BASE TYPE
INSULATED PACKAGE

PERFORMANCE CURVES

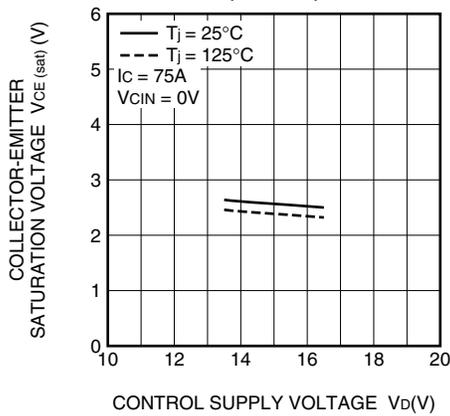
OUTPUT CHARACTERISTICS
(TYPICAL)



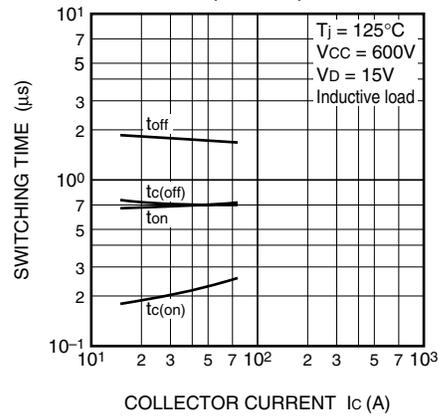
COLLECTOR-EMITTER SATURATION
VOLTAGE CHARACTERISTICS
(TYPICAL)



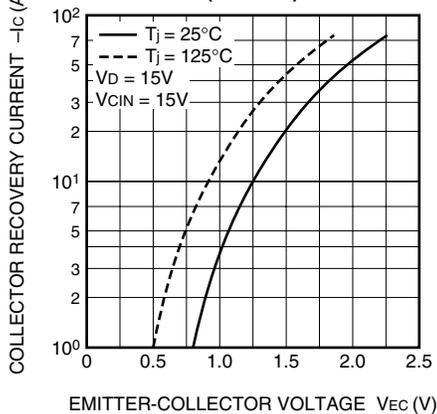
COLLECTOR-EMITTER SATURATION
VOLTAGE CHARACTERISTICS
(TYPICAL)



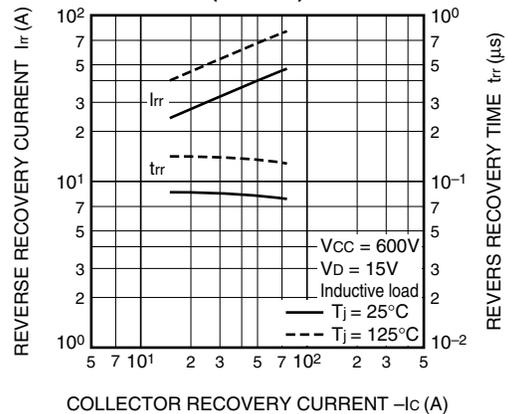
SWITCHING CHARACTERISTICS
(TYPICAL)



DIODE FORWARD CHARACTERISTICS
(TYPICAL)



DIODE REVERSE RECOVERY CHARACTERISTICS
(TYPICAL)



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FLAT-BASE TYPE
INSULATED PACKAGE

