

Excellent Integrated System Limited

Stocking Distributor

Click to view price, real time Inventory, Delivery & Lifecycle Information:

[Powerex Inc.](#)
[PM75CLB120](#)

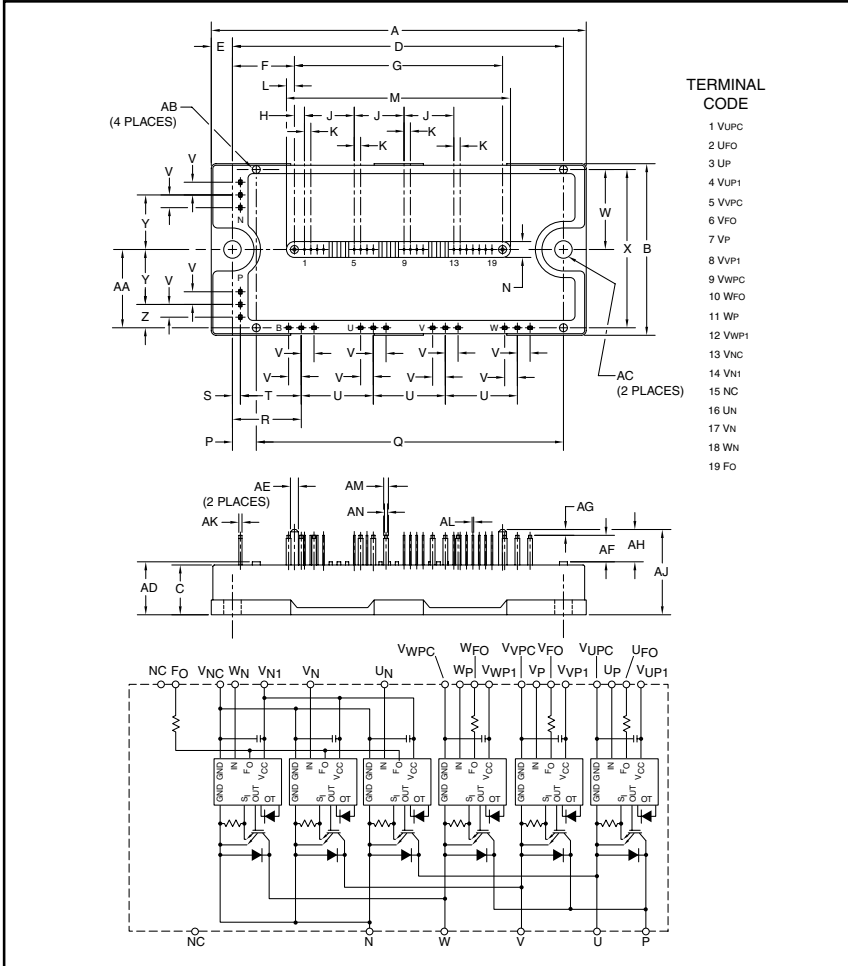
For any questions, you can email us directly:
sales@integrated-circuit.com



Powerex, Inc., 200 E. Hillis Street, Youngwood, Pennsylvania 15697-1800 (724) 925-7272

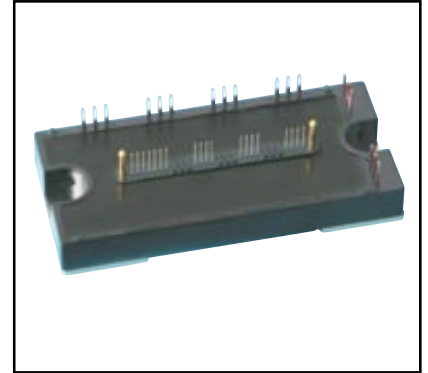
PM75CLB120

Intellimod™ L-Series Three Phase IGBT Inverter 75 Amperes/1200 Volts



TERMINAL CODE

1	VUPC
2	VFO
3	UP
4	VUP1
5	VVPC
6	VFO
7	VP
8	VVP1
9	VVPC
10	WFO
11	WP
12	VWP1
13	VNC
14	VN1
15	NC
16	UN
17	VN
18	WN
19	FO



Description:

Powerex Intellimod™ Intelligent Power Modules are isolated base modules designed for power switching applications operating at frequencies to 20kHz. Built-in control circuits provide optimum gate drive and protection for the IGBT and free-wheel diode power devices.

Features:

- Complete Output Power Circuit
- Gate Drive Circuit
- Protection Logic
 - Short Circuit
 - Over Temperature
 - Using On-chip Temperature Sensing
 - Under Voltage
- Low Loss Using 5th Generation IGBT Chip

Applications:

- Inverters
- UPS
- Motion/Servo Control
- Power Supplies

Ordering Information:

Example: Select the complete part number from the table below -i.e. PM75CLB120 is a 1200V, 75 Ampere Intellimod™ Intelligent Power Module.

Type	Current Rating Amperes	V _{CES} Volts (x 10)
PM	75	120

Outline Drawing and Circuit Diagram

Dimensions	Inches	Millimeters
A	4.72	120.0
B	2.17	55.0
C	0.63	16.0
D	4.17	106.0
E	0.28	7.0
F	0.78	19.75
G	2.62	66.5
H	0.13	3.25
J	0.63	16.0
K	0.08	2.0
L	0.10	2.5
M	2.81	71.5
N	0.20	5.0
P	0.31	7.75
Q	3.87	98.25
R	0.87	22.0
S	0.10	2.5
T	0.77	19.5
U	0.91	23.0

Dimensions	Inches	Millimeters
V	0.16	4.0
W	1.01	25.75
X	2.00	50.75
Y	0.69	17.5
Z	0.30	7.5
AA	0.98	25.0
AB	0.10 Dia.	Dia. 2.5
AC	0.22 Dia.	Dia. 5.5
AD	0.67	17.0
AE	0.10 Dia.	Dia. 2.5
AF	0.33	8.5
AG	0.08	2.0
AH	0.41	10.5
AJ	1.08	27.5
AK	0.04	1.0
AL	0.02 Sq.	Sq. 0.5
AM	0.06	1.5
AN	0.04	1.0



Powerex, Inc., 200 E. Hillis Street, Youngwood, Pennsylvania 15697-1800 (724) 925-7272

PM75CLB120
Intellimod™ L-Series
Three Phase IGBT Inverter
 75 Amperes/1200 Volts

Absolute Maximum Ratings, $T_j = 25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	PM75CLB120	Units
Power Device Junction Temperature	T_j	-20 to 150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 to 125	$^\circ\text{C}$
Mounting Torque, M5 Mounting Screws	—	31	in-lb
Module Weight (Typical)	—	340	Grams
Supply Voltage, Surge (Applied between P - N)	$V_{\text{CC(surge)}}$	1000	Volts
Self-protection Supply Voltage Limit (Short Circuit protection Capability)*	$V_{\text{CC(prot.)}}$	800	Volts
Isolation Voltage, AC 1 minute, 60Hz Sinusoidal	V_{ISO}	2500	Volts

*VD = 13.5 ~ 16.5V, Inverter Part, $T_j = 125^\circ\text{C}$

IGBT Inverter Sector

Collector-Emitter Voltage ($V_D = 15\text{V}$, $V_{\text{CIN}} = 15\text{V}$)	V_{CES}	1200	Volts
Collector Current ($T_C = 25^\circ\text{C}$)	$\pm I_C$	75	Amperes
Peak Collector Current ($T_C = 25^\circ\text{C}$)	$\pm I_{\text{CP}}$	150	Amperes
Collector Dissipation ($T_C = 25^\circ\text{C}$)	P_C	457	Watts

Control Sector

Supply Voltage (Applied between $V_{\text{UP1}}-V_{\text{UPC}}$, $V_{\text{VP1}}-V_{\text{VPC}}$, $V_{\text{WP1}}-V_{\text{WPC}}$, $V_{\text{N1}}-V_{\text{NC}}$)	V_D	20	Volts
Input Voltage (Applied between U_P-V_{UPC} , V_P-V_{VPC} , W_P-V_{WPC} , U_N-V_N , W_N-V_{NC})	V_{CIN}	20	Volts
Fault Output Supply Voltage (Applied between $U_{\text{FO}}-V_{\text{UPC}}$, $V_{\text{FO}}-V_{\text{VPC}}$, $W_{\text{FO}}-V_{\text{WPC}}$, F_O-V_{NC})	V_{FO}	20	Volts
Fault Output Current (U_{FO} , V_{FO} , W_{FO} , F_O Terminals)	I_{FO}	20	mA

Electrical and Mechanical Characteristics, $T_j = 25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Collector-Emitter Cutoff Current	I_{CES}	$V_{\text{CE}} = V_{\text{CES}}$, $V_D = 15\text{V}$, $T_j = 25^\circ\text{C}$	—	—	1.0	mA
		$V_{\text{CE}} = V_{\text{CES}}$, $V_D = 15\text{V}$, $T_j = 125^\circ\text{C}$	—	—	10	mA
Diode Forward Voltage	V_{EC}	$-I_C = 75\text{A}$, $V_{\text{CIN}} = 15\text{V}$, $V_D = 15\text{V}$	—	2.5	3.5	Volts
Collector-Emitter Saturation Voltage	$V_{\text{CE(sat)}}$	$V_D = 15\text{V}$, $V_{\text{CIN}} = 0\text{V}$, $I_C = 75\text{A}$, $T_j = 25^\circ\text{C}$	—	1.8	2.3	Volts
		$V_D = 15\text{V}$, $V_{\text{CIN}} = 0\text{V}$, $I_C = 75\text{A}$, $T_j = 125^\circ\text{C}$	—	1.9	2.4	Volts
Inductive Load Switching Times	t_{on}		0.5	1.0	2.5	μs
	t_{rr}	$V_D = 15\text{V}$, $V_{\text{CIN}} = 0 \Leftrightarrow 15\text{V}$	—	0.5	0.8	μs
	$t_{\text{C(on)}}$	$V_{\text{CC}} = 600\text{V}$, $I_C = 75\text{A}$	—	0.4	1.0	μs
	t_{off}	$T_j = 125^\circ\text{C}$	—	2.0	3.0	μs
	$t_{\text{C(off)}}$		—	0.7	1.2	μs



Powerex, Inc., 200 E. Hillis Street, Youngwood, Pennsylvania 15697-1800 (724) 925-7272

PM75CLB120
Intellimod™ L-Series
Three Phase IGBT Inverter
 75 Amperes/1200 Volts

Electrical and Mechanical Characteristics, T_j = 25°C unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Control Sector						
Short Circuit Trip Level	SC	-20°C ≤ T _j ≤ 125°C, V _D = 15V	150	—	—	Amperes
Short Circuit Current Delay Time	t _{off(SC)}	V _D = 15V	—	0.2	—	μs
Over Temperature Protection	OT	Trip Level	135	145	155	°C
(Detect T _j of IGBT Chip)	OT _R	Reset Level	—	125	—	°C
Supply Circuit Under-voltage Protection	UV	Trip Level	11.5	12.0	12.5	Volts
(-20 ≤ T _j ≤ 125°C)	UV _R	Reset Level	—	12.5	—	Volts
Circuit Current	I _D	V _D = 15V, V _{CIN} = 15V, V _{N1} -V _{NC}	—	15	25	mA
		V _D = 15V, V _{CIN} = 15V, V _{XP1} -V _{XPC}	—	5	10	mA
Input ON Threshold Voltage	V _{th(on)}	Applied between U _P -V _{UPC} ,	1.2	1.5	1.8	Volts
Input OFF Threshold Voltage	V _{th(off)}	V _P -V _{VPC} , W _P -V _{WPC} , U _N -V _N -W _N -V _{NC}	1.7	2.0	2.3	Volts
Fault Output Current*	I _{FO(H)}	V _D = 15V, V _{CIN} = 15V	—	—	0.01	mA
	I _{FO(L)}	V _D = 15V, V _{CIN} = 15V	—	10	15	mA
Fault Output Pulse Width*	t _{FO}	V _D = 15V	1.0	1.8	—	ms

*Fault output is given only when the internal SC, OT and UV protections schemes of either upper or lower devide operate to protect it.

Thermal Characteristics

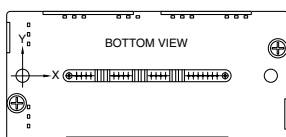
Characteristic	Symbol	Condition	Min.	Typ.	Max.	Units
Junction to Case Thermal Resistance	R _{th(j-c)Q}	IGBT (Per 1/6 Module)	—	—	0.21	°C/Watt
	R _{th(j-c)D}	FWDi (Per 1/6 Module)	—	—	0.30	°C/Watt
Contact Thermal Resistance	R _{th(c-f)}	Case to Fin Per Module, Thermal Grease Applied	—	—	0.038	°C/Watt

Recommended Conditions for Use

Characteristic	Symbol	Condition	Value	Units
Supply Voltage	V _{CC}	Applied across P-N Terminals	≤800	Volts
Control Supply Voltage**	V _D	Applied between V _{UP1} -V _{UPC} , V _{VP1} -V _{VPC} , V _{WP1} -V _{WPC} , V _{N1} -V _{NC}	15.0 ± 1.5	Volts
Input ON Voltage	V _{CIN(on)}	Applied between U _P -V _{UPC} ,	≤0.8	Volts
Input OFF Voltage	V _{CIN(off)}	V _P -V _{VPC} , W _P -V _{WPC} , U _N -V _N -W _N -V _{NC}	≥9.0	Volts
PWM Input Frequency	f _{PWM}	—	≤20	kHz
Arm Shoot-through Blocking Time	t _{DEAD}	Input Signal	≥2.5	μs

** With ripple satisfying the following conditions: dv/dt swing ≤ ±5V/μs, Variation ≤ 2V peak to peak.

T_C Measurement Point



Arm Axis	UP		VP		WP		UN		VN		WN	
	IGBT	FWDi	IGBT	FWDi	IGBT	FWDi	IGBT	FWDi	IGBT	FWDi	IGBT	FWDi
X	28.3	28.3	65.0	65.0	87.0	87.0	39.3	39.3	54.0	54.0	76.0	76.0
Y	-8.2	2.0	-8.2	2.0	-8.2	2.0	6.2	-4.0	6.2	-4.0	6.2	-4.0



Powerex, Inc., 200 E. Hillis Street, Youngwood, Pennsylvania 15697-1800 (724) 925-7272

PM75CLB120
Intellimod™ L-Series
Three Phase IGBT Inverter
 75 Amperes/1200 Volts

