

JLPI75B120RN2F7SN

LN2 PACK module with NCE Gen.7 Trench/Fieldstop IGBT and Emitter Controlled diode and NTC

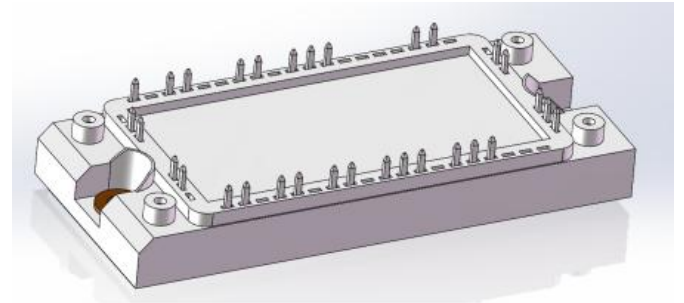
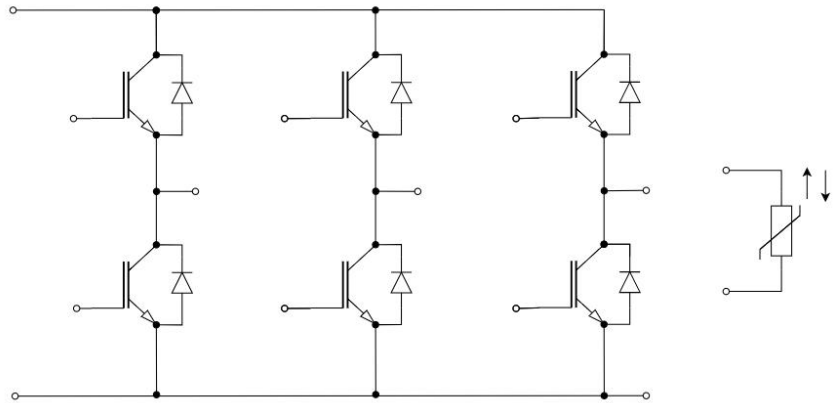
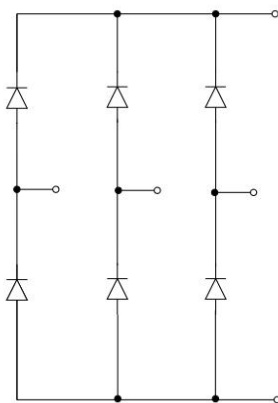
Features

- Electrical features
 - $V_{CES} = 1200\text{ V}$
 - $I_C \text{ nom} = 75\text{ A} / I_{CRM} = 150\text{ A}$
 - Low V_{CEsat}
 - Overload operation up to 175°C
- Mechanical features
 - High power and thermal cycling capability
 - Integrated NTC temperature sensor
 - Copper base plate
 - Al_2O_3 substrate with low thermal resistance

Typical Applications

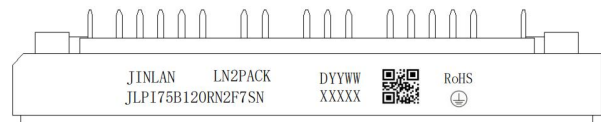
- Auxiliary inverters
- Motor drives
- Servo drives

Description



LN2 Pack

MARKING DIAGRAM



JINLAN	= Company Name
JLPI75B120RN2F7SN	= Specific Device Code
YYWW	= Year and Work Week Code
XXXXX	= Serial Number
QR code	= Custom Assembly Information



Package Insulation coordination

Parameter	Symbol	Note or test condition	Values	Unit
Isolation test voltage	V_{ISOL}	RMS, $f=50\text{Hz}$, $t=60\text{s}$	2.5	kV
Internal isolation		basic insulation(class 1, IEC 61140)	Al_2O_3	
Creepage distance	d_{creep}	terminal to heatsink	10.0	mm
Clearance	d_{clear}	terminal to heatsink	7.5	mm
Comparative tracking index (electrical)	CTI		>200	
RTI Elec.	RTI	housing	140	°C

Package Characteristic values

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Stray Inductance	LCE		--	35	--	nH
Module Lead Resistance, Terminal to Chip	$R_{AA'+CC'}$	$T_C=25^\circ\text{C}$, per switch	--	5.6	--	mΩ
Module Lead Resistance, Terminal to Chip	$R_{CC'+EE'}$	$T_C=25^\circ\text{C}$, per switch	--	5.3	--	mΩ
Storage Temperature Range	T_{STG}		-40		125	°C
Mounting Torque, Screw M5	M	M5, Screw	3		6	N.m
Weight	G		--	180	--	g



IGBT, Inverter

Absolute Maximum Ratings (T_C = 25°C unless otherwise noted)

Symbol	Description	Value	Unit
V _{CES}	Collector-Emitter Voltage	1200	V
V _{GES}	Gate-Emitter Voltage	±30	V
I _C	Collector Current @ T _C =25°C	150	A
	Collector Current @ T _C =80°C	75	A
I _{CM}	Pulsed Collector Current, t _p =1S	225	A

Characteristics (T_C = 25°C unless otherwise noted)

Symbol	Parameter	Test Condition		Min	Typ	Max	Unit
V _{CE(sat)}	Collector-Emitter Saturation Voltage	I _C =75A, V _{GE} =15V	T _{vj} =25°C	--	1.65	2.50	V
			T _{vj} = 175 °C	--	1.95	--	
V _{GE(th)}	Gate Threshold Voltage	I _C =1mA, V _{CE} =V _{GE}		5.0	6.0	7.0	V
I _{CES}	Collector-Emitter Leakage Current	V _{GE} =0V, V _{CE} =1200V		--	--	100	uA
I _{GES}	Gate-Emitter Leakage Current	V _{GE} =30V, V _{CE} =0V		--	--	200	nA
R _{Gint}	Internal Gate Resistance	f=1MHz		--	0.5	--	Ω
C _{ies}	Input Capacitance	V _{CE} =25V, V _{GE} =0V, f=1MHz		--	7.7	--	nF
C _{oes}	Out Capacitance				0.17		nF
C _{res}	Reverse Transfer			--	0.04	--	nF
Q _G	Gate Charge	V _{CE} =600V, I _C =50A, V _{GE} =15V		--	0.36	--	μC
t _{d(on)}	Turn-On Delay Time	V _{CC} = 600 V, I _C =75 A, R _{Gon} = 10Ω, R _{Goff} = 15Ω V _{GE} =±15V Inductive Load T _{vj} = 25°C		--	90	--	ns
t _r	Rise Time			--	61	--	
t _{d(off)}	Turn-off Delay Time			--	304	--	
t _f	Fall Time			--	45	--	
E _{on}	Turn-On Switching Loss per Pulse			--	4.17	--	mJ
E _{off}	Turn Off Switching Loss per Pulse			--	2.1	--	
t _{d(on)}	Turn-On Delay Time	V _{CC} = 600 V, I _C =75 A, R _{Gon} = 10Ω, R _{Goff} = 15Ω V _{GE} =±15V Inductive Load T _{vj} = 175°C		--	TBD	--	ns
t _r	Rise Time			--	TBD	--	
t _{d(off)}	Turn-off Delay Time			--	TBD	--	
t _f	Fall Time			--	TBD	--	
E _{on}	Turn-on Switching Loss per Pulse			--	TBD	--	mJ
E _{off}	Turn Off Switching Loss per Pulse			--	TBD	--	
I _{sc}	SC Data	t _p ≤10μs, V _{GE} ≤15V, T _{vj} ≤150°C, V _{CC} =800V, V _{CEmax} =V _{CES} -L _s CE·di/dt			330		A
R _{thJC}	Thermal resistance	Junction-to-Case (per IGBT)			0.473		K/W
T _{vj op}		Temperature under switching conditions		-40		175 ¹⁾	°C

¹⁾T_{vj op} > 150°C is only allowed for operation at overload conditions.



Diode, Inverter

Absolute Maximum Ratings (T_C = 25°C unless otherwise noted)

Symbol	Description	Value	Unit
V _{RRM}	Repetitive Peak Reverse Voltage	1200	V
I _F	Diode Continuous Forward Current	75	A
I _{FM}	Diode Maximum Forward Current t _p =1ms	225	A

Characteristics (T_C=25°C unless otherwise noted)

Symbol	Parameter	Test Condition		Min	Typ	Max	Unit
V _F	Diode Forward Voltage	I _F =75A	T _J =25°C	--	1.80	2.70	V
			T _J =175°C	--	1.75	--	
Q _r	Recovered Charge	I _F =75A, R _g =25Ω, T _J =25°C		--	1.24	--	μC
I _{RM}	Peak Reverse Recovery Current			--	27	--	A
T _{rr}	Reverse Recovery Time			--	175	--	ns
E _{rec}	Reverse Recovery Energy			--	1.23	--	mJ
Q _r	Recovered Charge	I _F =75A, R _g =25Ω, T _J =175°C		--	TBD	--	μC
I _{RM}	Peak Reverse Recovery Current			--	TBD	--	A
T _{rr}	Reverse Recovery Time			--	TBD	--	ns
E _{rec}	Reverse Recovery Energy			--	TBD	--	mJ
R _{thJC}	Thermal resistance	Junction-to-Case (per diode)			0.79		K/W
T _{vj op}		Temperature under switching conditions		-40		175 ²⁾	°C

²⁾T_{vj op} > 150°C is only allowed for operation at overload conditions.

Diode, Rectifier

Absolute Maximum Ratings (T_C = 25°C unless otherwise noted)

Symbol	Description	Value	Unit
V _{RRM}	Repetitive Peak Reverse Voltage	1600	V
I _F	Diode Continuous Forward Current	75	A
I _{FM}	Diode Maximum Forward Current t _p =1ms	150	A

Characteristics (T_C=25°C unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
V _F	Diode Forward Voltage	I _F = 75A, T _J = 150 °C		0.85		V
I _R	Reverse Current	T _J =175 °C, V _R =1600V		1.0		mA
R _{thJC}	Thermal resistance	Junction-to-Case (per diode)		0.54		K/W
T _{vj op}		Temperature under switching conditions	-40		175 ³⁾	°C

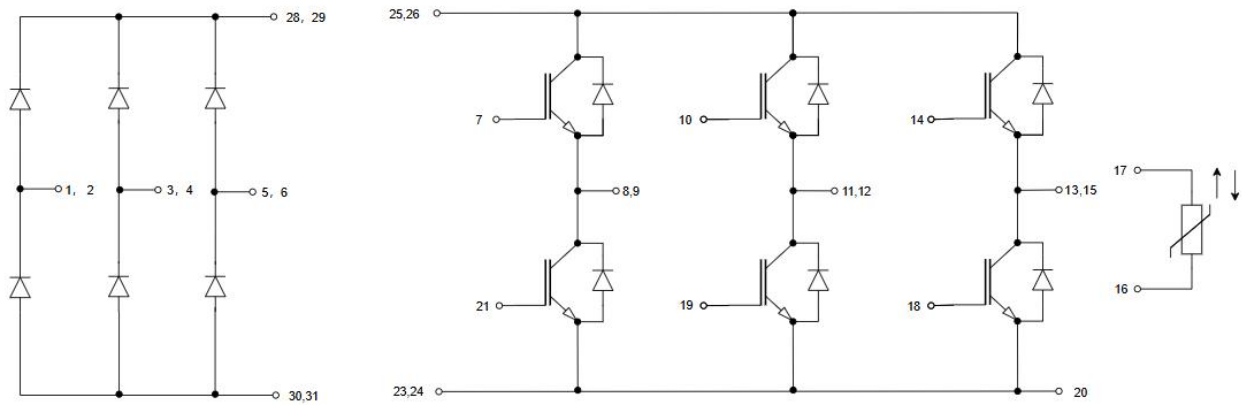
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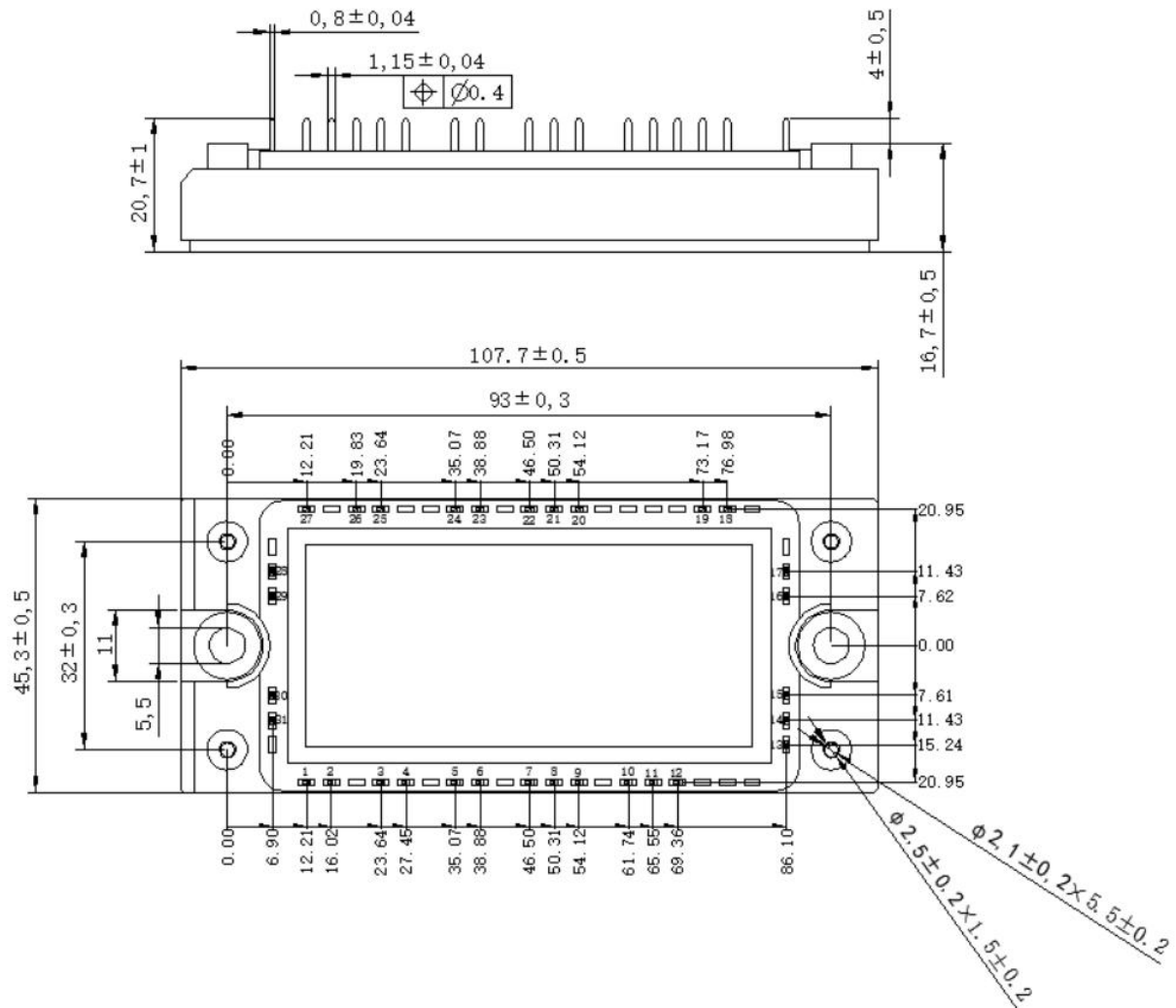
NTC Characteristics (Tc = 25°C unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
R25	Rated Resistance		--	5.0	--	kΩ
ΔR/R	Deviation of R100	Tc=100 °C,R100=493.3Ω	-5	--	5	%
P25	Power Dissipation		--	--	20.0	mW
B25/50	B-value	$R_2=R_{25}\exp[B_{25/50}(1/T_2-1/(298.15K))]$	--	3375	--	K
B25/80	B-value	$R_2=R_{25}\exp[B_{25/80}(1/T_2-1/(298.15K))]$	--	3411	--	K
B25/100	B-value	$R_2=R_{25}\exp[B_{25/100}(1/T_2-1/(298.15K))]$	--	3433	--	K

CIRCUIT DIAGRAM



PACKAGE DIMENSION





REVISION HISTORY

Document version	Date of release	Description of changes
Rev.00	2025-01-16	Preview



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