

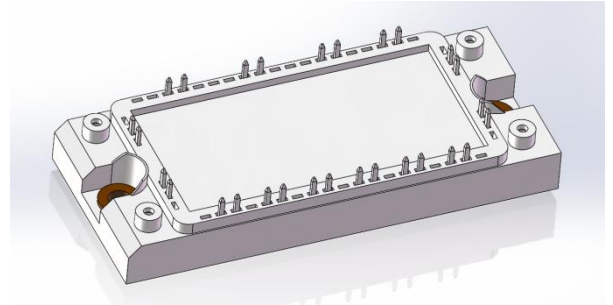
JLFF100B65RN2E7SN

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



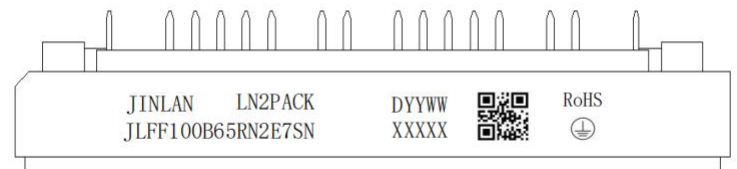
Features

- Low $V_{CE(sat)}$ Trench IGBT technology
- 10 μ s short circuit capability
- $V_{CE(sat)}$ with positive temperature coefficient
- Overload operation up to 175 $^{\circ}$ C
- Low inductance case
- Copper Base Plate
- Integrated NTC temperature sensor



LN2 Pack

MARKING DIAGRAM



Typical Applications

- Motor Drives

JINLAN

JLFF100B65RN2E7SN

YYWW

XXXXX

QR code

= Company Name

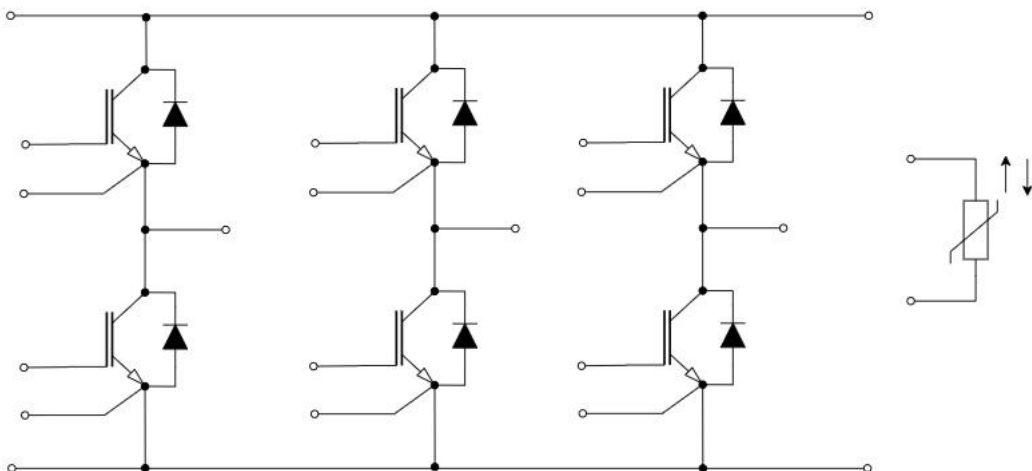
= Specific Device Code

= Year and Work Week Code

= Serial Number

= Custom Assembly

Description





Package Insulation coordination

Parameter	Symbol	Note or test condition	Values	Unit
Isolation test voltage	V_{ISOL}	RMS, f=50Hz, t=60s	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		--	19	--	nH
Module Lead Resistance, Terminal to Chip	$R_{CC'+EE'}$	$T_c=25^{\circ}C$, per switch	--	1.80	--	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** ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Description	Value	Unit
V_{CES}	Collector-Emitter Voltage	650	V
V_{GES}	Gate-Emitter Voltage	± 30	V
I_C	Collector Current @ $T_C=25^\circ\text{C}$	200	A
	Collector Current @ $T_C=80^\circ\text{C}$	100	A
I_{CM}	Pulsed Collector Current, $t_p=1\text{S}$	300	A

Characteristics ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Condition		Min	Typ	Max	Unit
V _{CE(sat)}	Collector–Emitter Saturation Voltage	I _C =100A, V _{GE} =15V	T _{vj} =25°C	--	1.20	2.00	V
			T _{vj} = 150°C	--	1.40	--	
V _{GE(th)}	Gate Threshold Voltage	I _C =3mA, V _{CE} =V _{GE}		4.5	5.75	6.5	V
I _{CES}	Collector-Emitter Leakage Current	V _{GE} =0V, V _{CE} =650V		--	--	500	uA
I _{GES}	Gate-Emitter Leakage Current	V _{GE} =30V, V _{CE} =0V		--	--	± 100	nA
R _{Gint}	Internal Gate Resistance	f=1MHz		--	0.8	--	Ω
C _{ies}	Input Capacitance	V _{CE} =25V, V _{GE} =0V, f=1MHz		--	7.25	--	nF
C _{oes}	Out Capacitance			--	0.32	--	nF
C _{res}	Reverse Transfer			--	0.048	--	nF
Q _G	Gate Charge	V _{CE} =400V, I _C =100A, V _{GE} =15V		--	0.27	--	μC
t _{d(on)}	Turn–On Delay Time	V _{CE} =400V, I _C =100A, V _{GE} =0/15V, R _g =25Ω, Inductive Load		--	107	--	ns
t _r	Rise Time			--	70	--	
t _{d(off)}	Turn–off Delay Time			--	294	--	
t _f	Fall Time			--	52	--	
E _{on}	Turn–On Switching Loss per Pulse			V _{CE} =400V, I _C =100A, V _{GE} =0/15V, R _g =25Ω, Inductive Load, T _j =175°C		--	8.52
E _{off}	Turn Off Switching Loss per Pulse	--	6.00			--	
t _{d(on)}	Turn–On Delay Time	--	TBD			--	ns
t _r	Rise Time	--	TBD			--	
t _{d(off)}	Turn–off Delay Time	--	TBD			--	
t _f	Fall Time	V _{CE} =400V, I _C =100A, V _{GE} =0/15V, R _g =25Ω, Inductive Load, T _j =175°C		--	TBD	--	mJ
E _{on}	Turn–on Switching Loss per Pulse			--	10.92	--	
E _{off}	Turn Off Switching Loss per Pulse			--	6.64	--	
I _{SC}	SC Data	V _{GE} =15V, V _{CC} ≤600V, t _{SC} ≤10us, T _j ≤150°C		--	500	--	A
R _{thJC}	Thermal resistance	Junction-to-Case (per IGBT)			0.48		K/W
T _{vj op}		Temperature under switching conditions		–40		175 ¹⁾	°C

¹⁾ $T_{vj op} > 150^\circ\text{C}$ is only allowed for operation at overload conditions. For detailed specifications please refer to AN 2018-14.



Diode, Inverter

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

Symbol	Description	Value	Unit
V _{RRM}	Repetitive Peak Reverse Voltage	650	V
I _F	Diode Continuous Forward Current	100	A
I _{FM}	Diode Maximum Forward Current t _p =1ms	200	A

Characteristics (T_C=25°C unless otherwise noted)

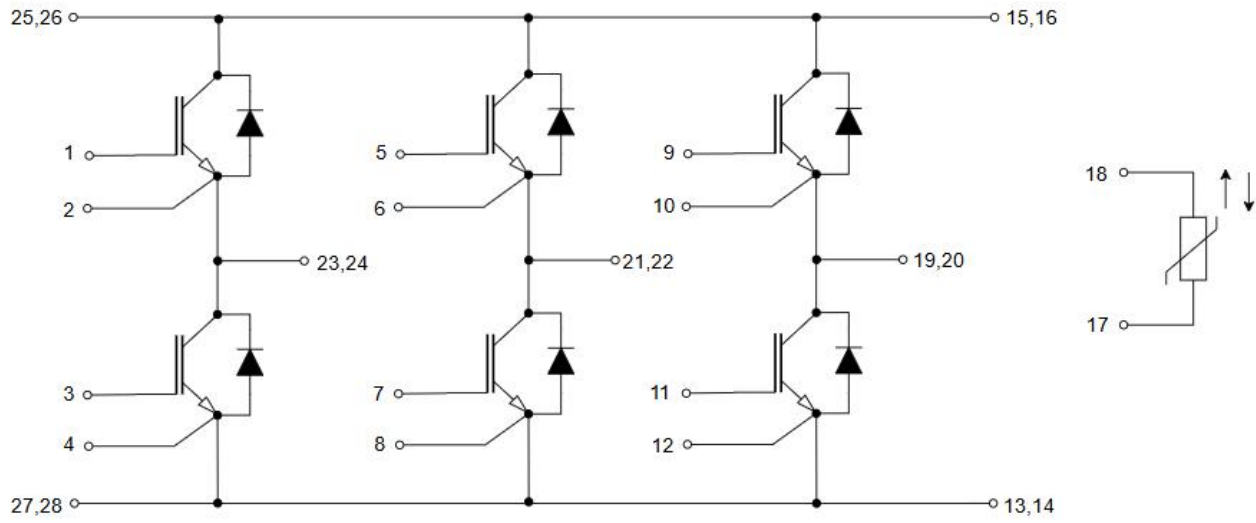
Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
V _F	Diode Forward Voltage	I _F = 100 A, T _J = 25°C	--	1.60	2.60	V
		I _F = 100 A, T _J = 175°C	--	1.50	--	
T _{rr}	Reverse Recovery Time	V _{CE} =400V V _{GE} = 15 V I _F =100A, R _g =25Ω, T _{vj} =25°C	--	290	--	ns
IRM	Peak Reverse Recovery Current		--	34.1	--	A
Q _{rr}	Recovered Charge		--	4.78	--	μC
E _{rec}	Reverse Recovery Energy		--	0.68	--	mJ
T _{rr}	Reverse Recovery Time	V _{CE} =400V V _{GE} = 15 V I _F =100A, R _g =25Ω, T _{vj} =175°C	--	391	--	ns
IRM	Peak Reverse Recovery Current		--	79.2	--	A
Q _{rr}	Recovered Charge		--	11.48	--	μC
E _{rec}	Reverse Recovery Energy		--	0.957	--	mJ
R _{thJC}	Thermal resistance	Junction-to-Case (per diode)	--	0.55	--	K/W
T _{vj op}		Temperature under switching conditions	-40		150 ²⁾	°C

²⁾T_{vj op} > 150°C is only allowed for operation at overload conditions. For detailed specifications please refer to AN 2018-14.

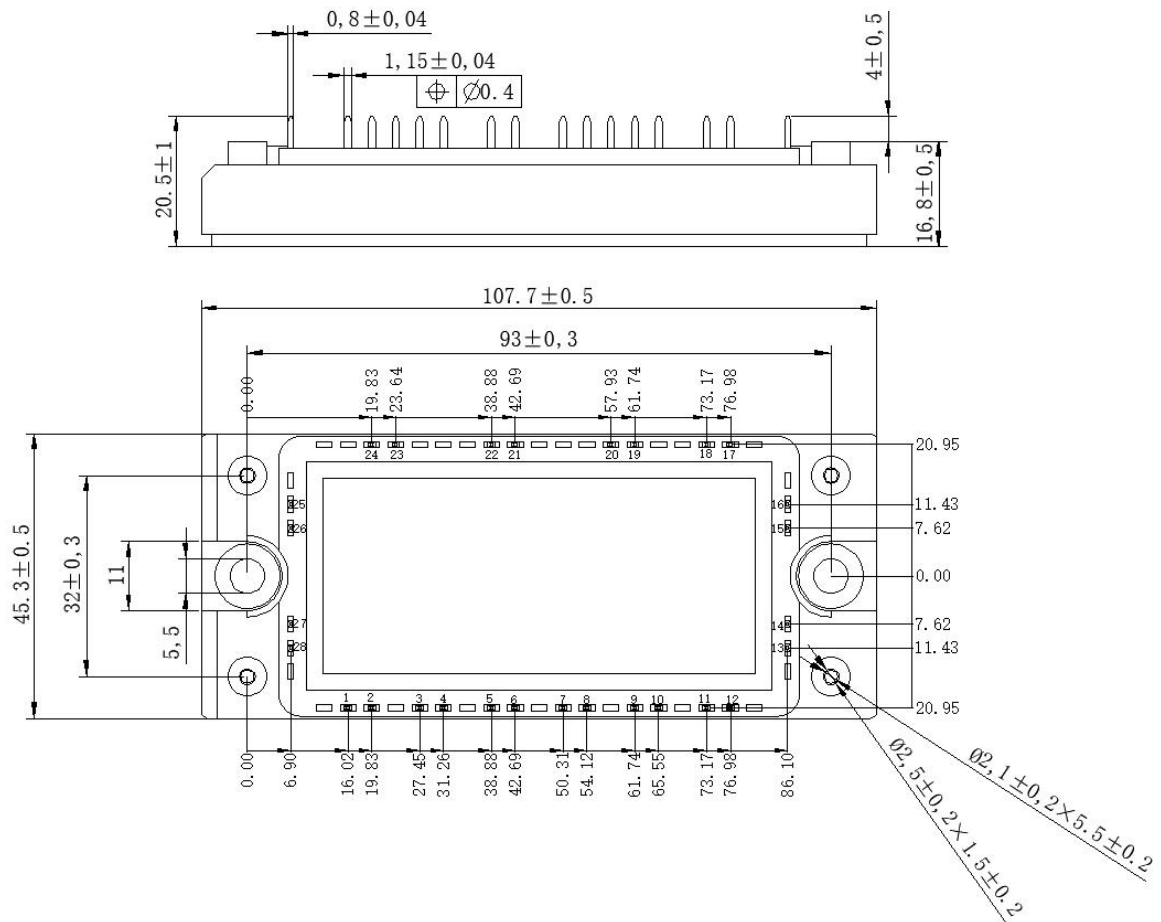
NTC Characteristics (T_C = 25°C unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
R ₂₅	Rated Resistance		--	5.0	--	kΩ
ΔR/R	Deviation of R100	T _C =100 °C, R100=493.3Ω	-5	--	5	%
P ₂₅	Power Dissipation		--	--	20.0	mW
B _{25/50}	B-value	R ₂ =R ₂₅ exp[B _{25/50} (1/T ₂ - 1/(298.15K))]	--	3375	--	K
B _{25/80}	B-value	R ₂ =R ₂₅ exp[B _{25/80} (1/T ₂ - 1/(298.15K))]	--	3411	--	K
B _{25/100}	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	2024-11-06	Preview



ATTENTION

■ Any and all Jinlan power products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your Jinlan Power Semiconductor representative nearest you before using any Jinlan power products described or contained herein in such applications.

■ Jinlan Power Semiconductor assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all Jinlan power modules described or contained herein.

■ Specifications of any and all Jinlan power products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.

■ Jinlan Power Semiconductor (Wuxi).co.,LTD. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.

■ In the event that any or all Jinlan power products (including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.

■ No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of Jinlan Power Semiconductor (Wuxi).co.,LTD.

■ Information (including circuit diagrams and circuit parameters) herein is for example only; it is not guaranteed for volume production. Jinlan Power Semiconductor believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

■ Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the Jinlan power product that you intend to use.

■ This catalog provides information as of Nov.2024. specifications and information herein are subject to change without notice.