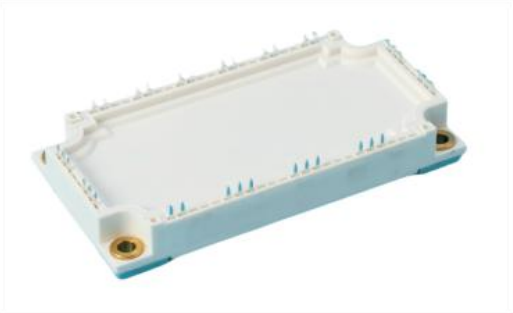
JLFF200B65RN3E7SN

LN3 PACK module with NCE Gen.7 Trench/Fieldstop IGBT and Emitter Controlled diode and NTC

RoHS

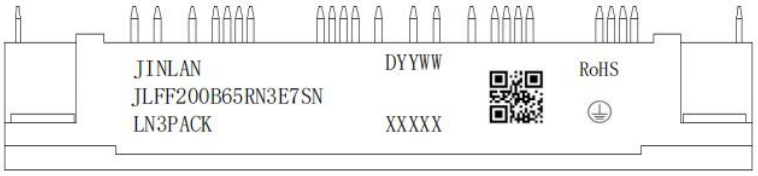
Features

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



LN3 Pack

MARKING DIAGRAM

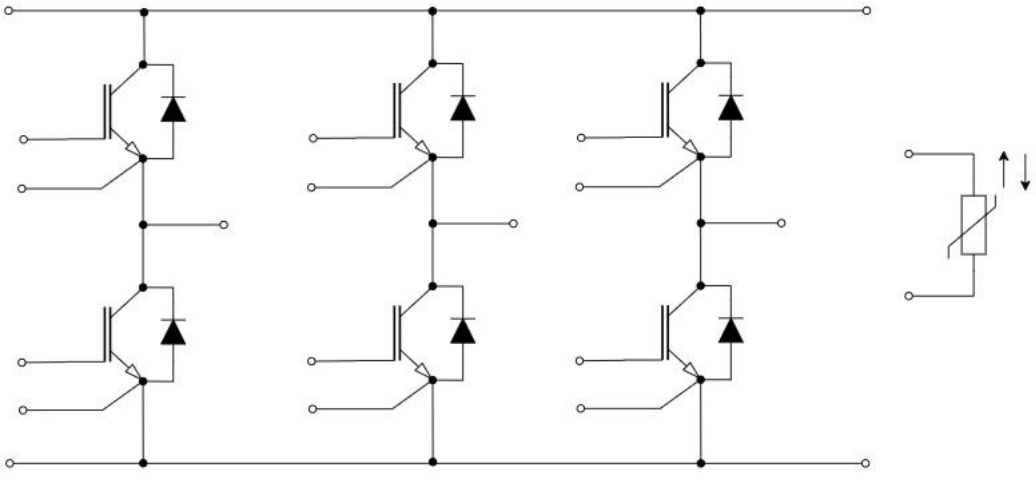


Typical Applications

- Motor Drives

JINLAN	= Company Name
JLFF200B65RN3E7SN	= Specific Device Code
YYWW	= Year and Work Week Code
XXXXX	= Serial Number
QR code	= 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	℃

Package Characteristic values

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Stray Inductance	L_{CE}		--	21	--	nH
Module Lead Resistance, Terminal to Chip	$R_{CC'+EE'}$	T_C=25℃, per switch	--	1.80	--	mΩ
Storage Temperature Range	T_{STG}		-40		125	℃
Mounting Torque, Screw M5	M	M5, Screw	3		6	N.m
Weight	G		--	300	--	g

IGBT, Inverter

Absolute Maximum Ratings (Tc = 25°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℃	400	A
	Collector Current @ T_C=80℃	200	A
I_{CM}	Pulsed Collector Current，t_p=1S	600	A

Characteristics (Tc = 25°C unless otherwise noted)

Symbol	Parameter	Test Condition		Min	Typ	Max	Unit
$V_{CE(sat)}$	Collector−Emitter Saturation Voltage	I_C=200A，V_{GE}=15V	T_{vj}=25°C	--	1.50	2.10	V
			T_{vj}= 175 °C	--	1.70	--	
$V_{GE(th)}$	Gate Threshold Voltage	I_C=5mA,V_{CE}=V_{GE}		--	5.25	--	V
I_{CES}	Collector-Emitter Leakage Current	V_{GE}=0V,V_{CE}=650V		--	--	100	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		--	12.52	--	nF
C_{oes}	Out Capacitance			--	0.430	--	nF
C_{res}	Reverse Transfer			--	0.055	--	nF
Q_G	Gate Charge	V_{CE}=400V, I_C=200A,V_{GE}=15V		--	0.39	--	μC
$t_{d(on)}$	Turn−On Delay Time	V_{CE}=400V,I_C=200A, V_{GE}=0/15V, R_g=25Ω, Inductive Load		--	135	--	ns
t_r	Rise Time			--	106	--	
$t_{d(off)}$	Turn−off Delay Time			--	310	--	
t_f	Fall Time			--	72	--	
E_{on}	Turn−On Switching Loss per Pulse			--	10.1	--	mJ
E_{off}	Turn Off Switching Loss per Pulse			--	6.0	--	
$t_{d(on)}$	Turn−On Delay Time	V_{CE}=400V,I_C=200A, V_{GE}=0/15V,R_g=25Ω, Inductive Load, T_j=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			--	14.5	--	mJ
E_{off}	Turn Off Switching Loss per Pulse			--	8.0	--	
I_{SC}	SC Data	V_{GE}=15V,V_{CC}≤600V, t_{SC}≤10us,T_j≤150°C		--	950	--	A
R_{thJC}	Thermal resistance	Junction-to-Case (per IGBT)			0.39		K/W
$T_{vj\ op}$		Temperature under switching conditions		-40		175[1)]	℃

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

Diode, Inverter

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

Symbol	Description	Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	650	V
I_F	Diode Continuous Forward Current	200	A
I_{FM}	Diode Maximum Forward Current t_p=1ms	400	A

Caracteristics （Tc=25℃ unless otherwise noted）

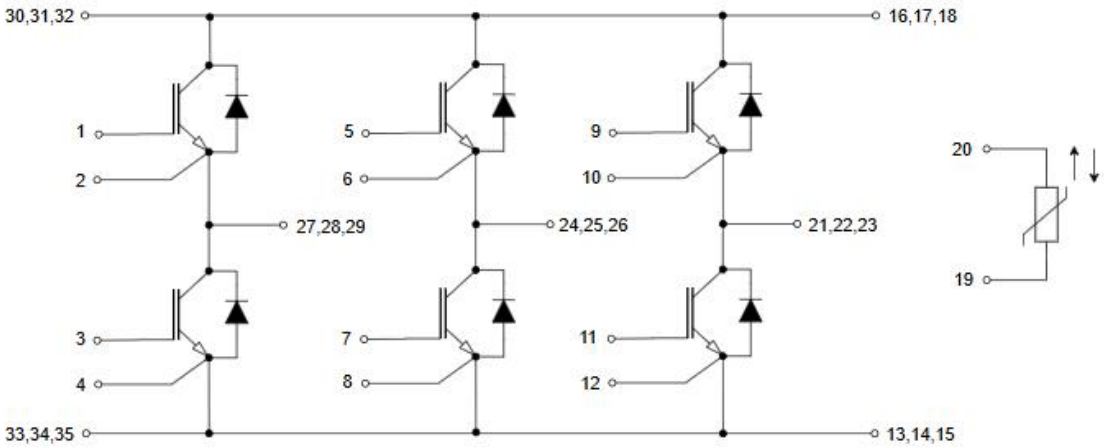
Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
V_F	Diode Forward Voltage	I_F = 200 A, T_J = 25°C	--	1.50	2.30	V
		I_F = 200 A, T_J = 175°C	--	1.35	--	
T_{rr}	Reverse Recovery Time	V_{CE}=400V, V_{GE}= −5 V to +15 V, I_F=200A,R_G=25Ω Tvj=25°C	--	277	--	ns
I_{RM}	Peak Reverse Recovery Current		--	66	--	A
Qrr	Recovered Charge		--	9.14	--	μC
E_{rec}	Reverse Recovery Energy		--	0.89	--	mJ
T_{rr}	Reverse Recovery Time	V_{CE}=400V, V_{GE}= −5 V to +15 V I_F=200A,R_G=25Ω, T_j=175°C	--	373	--	ns
I_{RM}	Peak Reverse Recovery Current		--	102	--	A
Qrr	Recovered Charge		--	19.02	--	μC
E_{rec}	Reverse Recovery Energy		--	1.53	--	mJ
R_{thJC}	Thermal resistance	Junction-to-Case (per diode)	--	0.267	--	K/W
$T_{vj\ op}$	Temperature under switching conditions		-40		175[2)]	℃

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

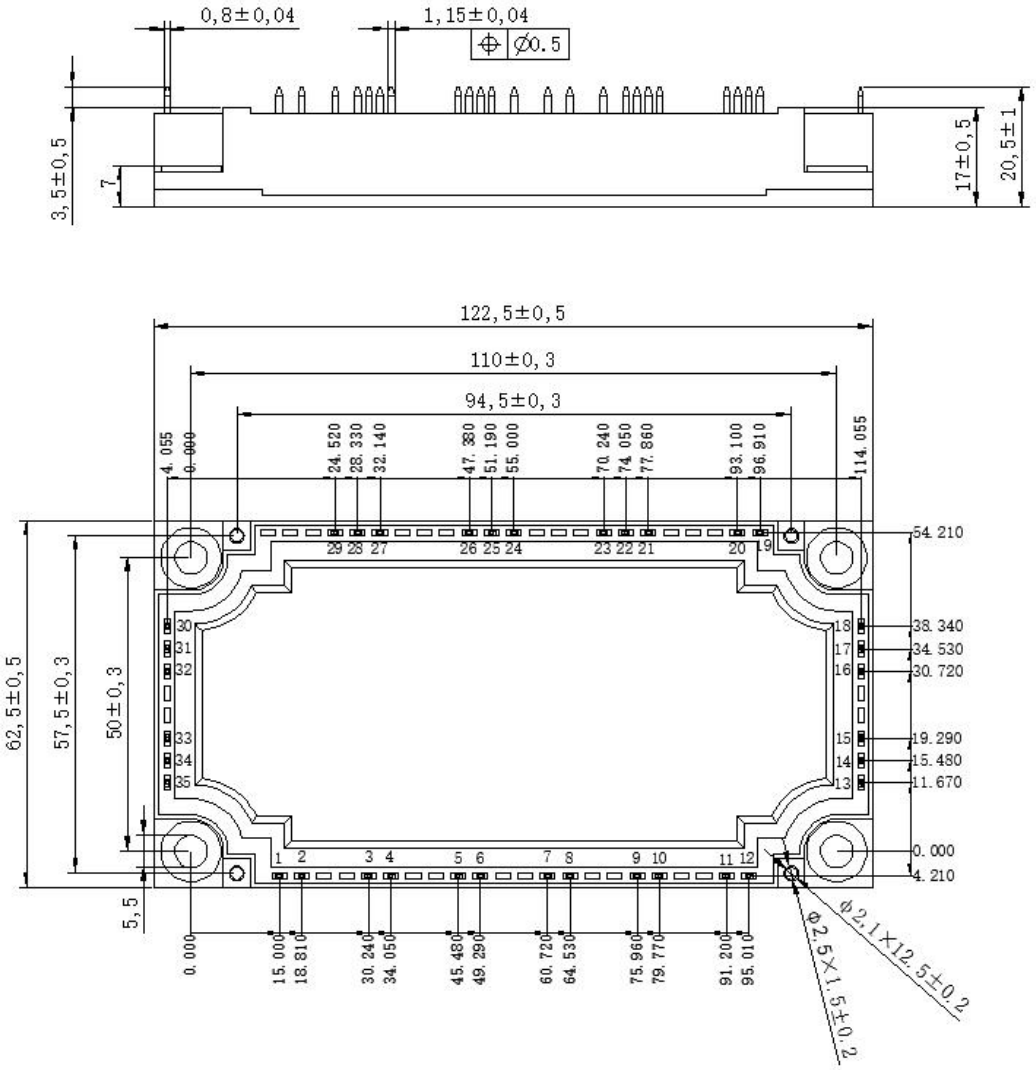
NTC Characteristics (Tc = 25°C unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
R_{25}	Rated Resistance		--	5.0	--	kΩ
ΔR/R	Deviation of R100	Tc=100 ℃,R_{100}=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	2024-09-04	Preview

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