



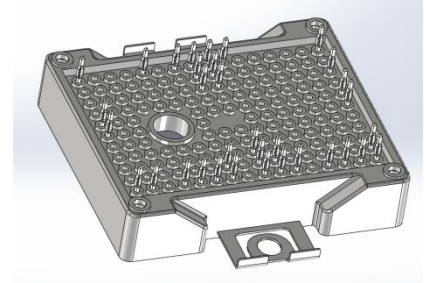
JL3I100V65SE2E7PN

3-Level NPC Inverter Module with 650V Trench Stop IGBTs

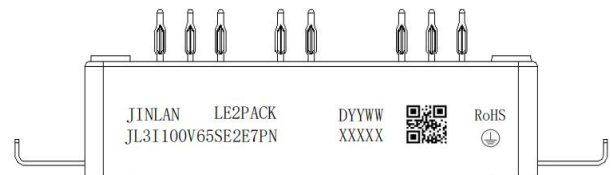


Features

- Electrical features
 - 650V Trench Stop IGBTs
 - Low Inductive Design
 - Low Switching Losses
 - Low Inductive Layout
 - Thermistor
- Mechanical features
 - Compact Design
 - Pressfit contact technology
 - Al₂O₃ Substrate with Low Thermal Resistance



LE2 Pack



Typical Applications

- 3-Level-Applications
- Solar Applications
- UPS Systems

JINLAN

JL3I100V65SE2E7PN

YYWW

XXXXX

QR code

= Company Name

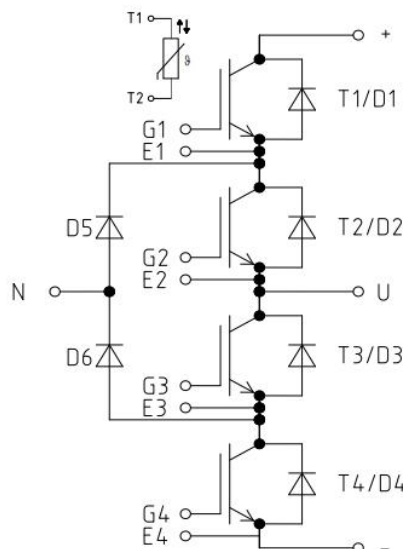
= Specific Device Code

= Year and Work Week Code

= Serial Number

= Custom Assembly Information

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	11.5	mm
Clearance	d_{clear}	terminal to heatsink	10	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		--	15	--	nH
Module Lead Resistance, Terminal to Chip	$R_{CC'+EE'}$		--	2.00	--	mΩ
Storage Temperature Range	T_{STG}		-40		125	°C
Mounting torque for module mounting	M	-Mounting according to valid application note	40	--	80	N
Weight	G		--	39	--	g

**IGBT (T1、T2、T3、T4)****Absolute Maximum Ratings** (T_C = 25°C unless otherwise noted)

Symbol	Description	Value	Unit
V _{CES}	Collector-Emitter Voltage	650	V
V _{GES}	Gate-Emitter Voltage	±30	V
I _{CDC}	Continuous Collector Current @ T _C = 80°C (T _{JMAX} = 175°C)	100	A
I _{CM}	Pulsed Collector Current, t _p limited by T _{vj max}	200	A
T _{jmax}	Maximum Junction Temperature	175	°C
P _D	Power Dissipation @ T _C = 25°C	318	W
	Power Dissipation @ T _C = 100 °C	127	W

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 = 100A, V _{GE} = 15V	T _{vj} = 25 °C	--	1.25	1.70	V
			T _{vj} = 175 °C	--	1.45	--	
V _{GE(TH)}	Gate-Emitter Threshold Voltage	I _C =1mA, V _{CE} =V _{GE}		4.0	--	5.5	V
I _{CES}	Collector-Emitter Cutoff Current	V _{GE} = 0 V, V _{CE} = 650 V		--	--	100	μA
I _{GES}	Gate-Emitter Leakage Current	V _{GE} = ±30 V, V _{CE} = 0 V, T _{vj} = 25°C		--	--	±100	nA
R _{Gint}	Internal Gate Resistance	T _{vj} = 25°C		--	0.8	--	Ω
C _{ies}	Input Capacitance	V _{CE} =25V, V _{GE} =0V, f=1MHz		--	7250	--	pF
C _{oes}	Output capacitance			--	320	--	pF
C _{res}	Reverse Transfer			--	48	--	pF
Q _G	Gate Charge	V _{CE} = 480 V, I _C = 100 A V _{GE} = -5 V to +15 V		--	0.121	--	μC
t _{d(on)}	Turn-On Delay Time	V _{CE} =400V, I _C =100A, V _{GE} = -5 V to +15 V, R _g =5Ω Inductive Load T _{vj} =25°C		--	65	--	ns
t _r	Rise Time			--	42	--	
t _{d(off)}	Turn-off Delay Time			--	178	--	
t _f	Fall Time			--	32	--	
E _{on}	Turn-On Switching Loss per Pulse			--	5.2	--	mJ
E _{off}	Turn Off Switching Loss per Pulse			--	2.8	--	
t _{d(on)}	Turn-On Delay Time	V _{CE} =400V, I _C =100A, V _{GE} = -5 V to +15 V, R _g =5Ω T _J =175°C		--	72	--	ns
t _r	Rise Time			--	50	--	
t _{d(off)}	Turn-off Delay Time			--	194	--	
t _f	Fall Time			--	38	--	
E _{on}	Turn-on Switching Loss per Pulse			--	6.6	--	mJ
E _{off}	Turn Off Switching Loss per Pulse			--	4.0	--	
R _{thJC}	Thermal resistance	Junction-to-Case (per IGBT)		--	0.35	--	K/W
T _{vj op}		Temperature under switching conditions		-40		150 ¹⁾	°C

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



Diode (D1、D2、D3、D4)

Absolute Maximum Ratings ($T_c = 25^\circ\text{C}$ 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 $t_p=1\text{ms}$	200	A

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

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
V_F	Diode Forward Voltage	$I_F = 100\text{ A}, T_J = 25^\circ\text{C}$	--	1.45	2.00	V
		$I_F = 100\text{ A}, T_J = 175^\circ\text{C}$	--	1.35	--	
T_{rr}	Reverse Recovery Time	$V_{CE}=400\text{V}$ $V_{GE}=-5\text{ V to }+15\text{ V}$ $I_F=100\text{A}, R_g=5\Omega$ $T_{vj}=25^\circ\text{C}$	--	176	--	ns
I_{RM}	Peak Reverse Recovery Current		--	20.7	--	A
Q_{rr}	Recovered Charge		--	2.9	--	μC
E_{rec}	Reverse Recovery Energy		--	0.4	--	mJ
T_{rr}	Reverse Recovery Time	$V_{CE}=400\text{V}$ $V_{GE}=-5\text{ V to }+15\text{ V}$ $I_F=100\text{A}, R_g=5\Omega$ $T_{vj}=175^\circ\text{C}$	--	237	--	ns
I_{RM}	Peak Reverse Recovery Current		--	39.3	--	A
Q_{rr}	Recovered Charge		--	7.0	--	μC
E_{rec}	Reverse Recovery Energy		--	0.6	--	mJ
R_{thJC}	Thermal resistance	Junction-to-Case (per diode)	--	0.4	--	K/W
$T_{vj\text{ op}}$		Temperature under switching conditions	-40		150 ²⁾	$^\circ\text{C}$

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

Diode (D5、D6)

Absolute Maximum Ratings ($T_c = 25^\circ\text{C}$ 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 $t_p=1\text{ms}$	200	A

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

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
V_F	Diode Forward Voltage	$I_F = 100\text{ A}, T_J = 25^\circ\text{C}$	--	1.35	1.90	V
		$I_F = 100\text{ A}, T_J = 175^\circ\text{C}$	--	1.25	--	
T_{rr}	Reverse Recovery Time	$V_{CE}=400\text{V}$ $V_{GE}=-5\text{ V to }+15\text{ V}$ $I_F=100\text{A}, R_g=5\Omega$ $T_{vj}=25^\circ\text{C}$	--	135	--	ns
I_{RM}	Peak Reverse Recovery Current		--	15.9	--	A
Q_{rr}	Recovered Charge		--	2.2	--	μC
E_{rec}	Reverse Recovery Energy		--	0.3	--	mJ
T_{rr}	Reverse Recovery Time	$V_{CE}=400\text{V}$ $V_{GE}=-5\text{ V to }+15\text{ V}$ $I_F=100\text{A}, R_g=5\Omega$ $T_{vj}=175^\circ\text{C}$	--	182	--	ns
I_{RM}	Peak Reverse Recovery Current		--	30.2	--	A
Q_{rr}	Recovered Charge		--	5.4	--	μC
E_{rec}	Reverse Recovery Energy		--	0.5	--	mJ
R_{thJC}	Thermal resistance	Junction-to-Case (per diode)	--	0.31	--	K/W
$T_{vj\text{ op}}$		Temperature under switching conditions	-40		150 ³⁾	$^\circ\text{C}$

³⁾ $T_{vj\text{ op}} > 150^\circ\text{C}$ is only allowed for operation at overload conditions. For detailed specifications please refer to AN 2018-14.

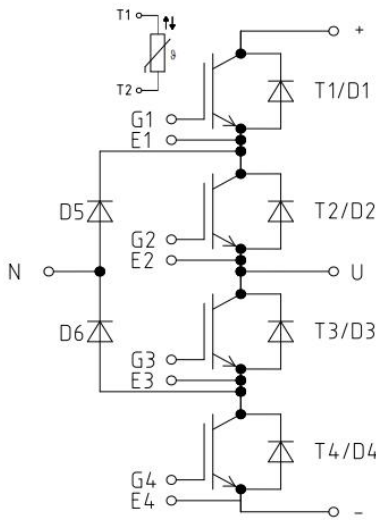


NTC Characteristics (Tc = 25°C unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
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

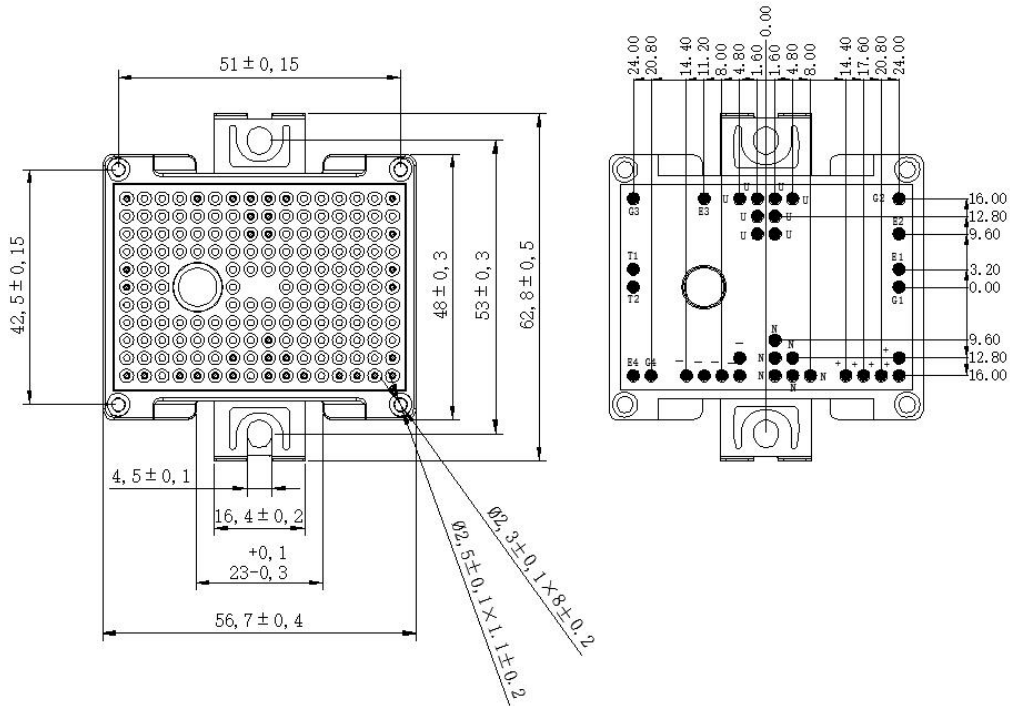
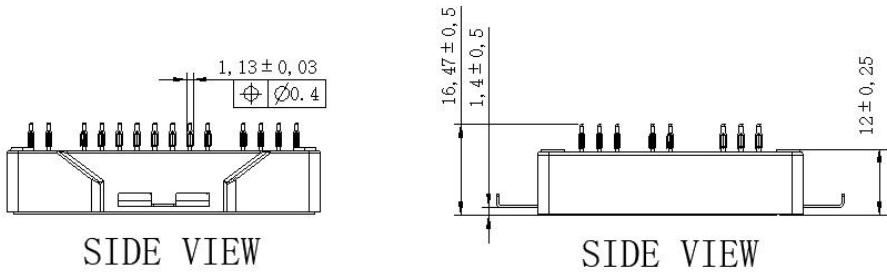


CIRCUIT DIAGRAM



PACKAGE DIMENSION

Dimensions in Millimeters





REVISION HISTORY

Document version	Date of release	Description of changes
Rev.00	2024-10-30	Preview
Rev.01	2025-1-14	PIN location degree modification



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