



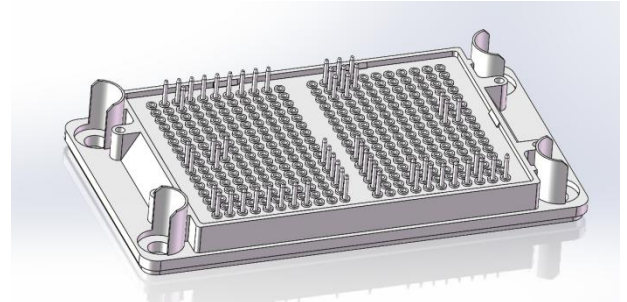
JL3I480V140RE3E7SS

LE3 Pack Module with NCE Gen.7 Trench/Fieldstop IGBT and SIC SBD and NTC



Features

- Neutral Point Clamped Three-Level Inverter Module
- Low Inductive Layout
- Solderable Pins
- Isolated copper baseplate using AMB technology
- Maximum junction temperature 175°C

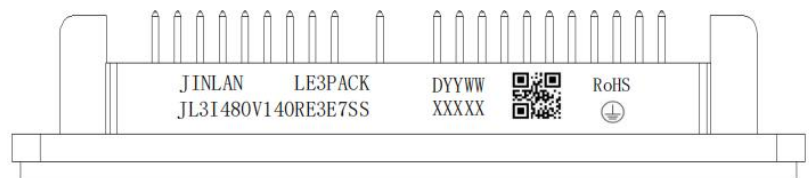


LE3 Pack

Typical Applications

- Solar Applications
- 3-level-applications Converters
- UPS Systems

MARKING DIAGRAM



JINLAN

JL3I480V140RE3E7SS

YYWW

XXXXX

QR code

= Company Name

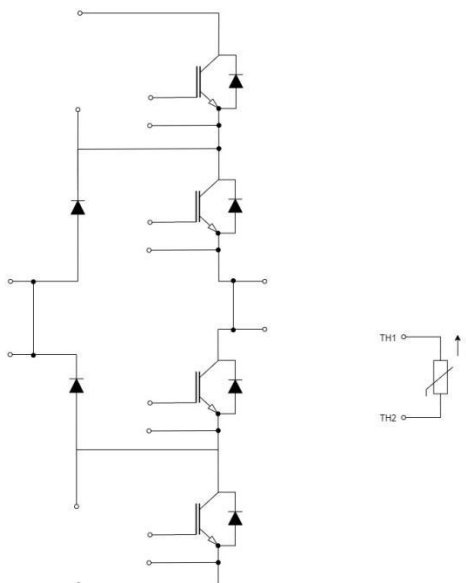
= Specific Device Code

= 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	VISOL	RMS,f=50 Hz,t=60 s	4	kV
Creepage distance	dcreep	terminal to heatsink	>12	mm
Clearance	dclear	terminal to heatsink	>11	mm
Comparative tracking index (electrical)	CTI		≥400	

Package Characteristic values

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Mounting torque for module mounting	M	Mounting according to valid application note	M5, Screw	3		5	nm
Storage Temperature Range	T _{STG}			-40		125	℃
Weight	G				250		g

**IGBT(Q1,Q2,Q3,Q4)****Absolute Maximum Ratings** ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Description	Value	Unit
V_{CES}	Collector-Emitter Voltage	1400	V
V_{GES}	Gate-Emitter Voltage	± 30	V
I_C	Collector Current @ $T_C=25^\circ\text{C}$	240	A
	Collector Current @ $T_C=80^\circ\text{C}$	480	A
I_{CM}	Pulsed Collector Current, t_p limited by $T_{vj\max}$	960	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	V _{GE} = 15 V, I _C =400 A	T _{vj} = 25°C	--	1.3	--	V		
			T _{vj} = 150°C	--	1.5	--			
V _{CE(sat)}	Collector–Emitter Saturation Voltage	V _{GE} = 15 V, I _C =480 A	T _{vj} = 25°C	--	1.7	2.4	V		
			T _{vj} = 150°C	--	1.9	--			
V _{GE(TH)}	Gate–Emitter Threshold Voltage	V _{GE} = V _{CE} , I _C =15 mA		4.0	5.0	6.0	V		
I _{CES}	Collector–Emitter Cutoff Current	V _{GE} = 0 V, V _{CE} =1400V ,T _{vj} = 25°C		--	--	800	μA		
I _{GES}	Gate Leakage Current	V _{GE} = ±20 V, V _{CE} = 0 V		--	--	400	nA		
R _{Gint}	Internal Gate Resistance	T _{vj} = 25 °C		--	0.5	--	Ω		
C _{iss}	Input Capacitance	V _{CE} = 25 V, V _{GE} = 0 V, f = 100 kHz		--	46.1	--	nF		
C _{oss}	Output Capacitance			--	1.09	--	nF		
C _{rss}	Reverse Transfer Capacitance			--	0.26	--	nF		
Q _g	Total Gate Charge	V _{GE} = ± 15 V		--	1.423	--	μC		
t _{d(on)}	Turn-On Delay Time	V _{CE} =700 V, I _C =240A V _{GE} = ± 15 V, R _{Gon} = 4.7Ω, R _{Goff} = 4.7Ω T _{vj} = 25°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			V _{CE} =700 V, I _C =240A V _{GE} = ± 15 V, R _{Gon} = 4.7Ω, R _{Goff} = 4.7Ω T _{vj} = 150°C		--	TBD	--	mJ
E _{off}	Turn Off Switching Loss per Pulse	--	TBD			--			
t _{d(on)}	Turn-On Delay Time	V _{CE} =700 V, I _C =240A V _{GE} = ± 15 V, R _{Gon} = 4.7Ω, R _{Goff} = 4.7Ω T _{vj} = 150°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			V _{CE} =700 V, I _C =240A V _{GE} = ± 15 V, R _{Gon} = 4.7Ω, R _{Goff} = 4.7Ω T _{vj} = 150°C		--	TBD	--	mJ
E _{off}	Turn Off Switching Loss per Pulse	--	TBD			--			
R _{thJC}	Thermal Resistance – Chip-to–Case					--	0.054	--	K/W
T _{vj op}	Temperature under switching conditions					–40	--	175 ¹⁾	°C

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

**Diode (D1, D2,D3, D4)****Absolute Maximum Ratings** ($T_c = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Description	Value	Unit
V_{RRM}	Peak Repetitive Reverse Voltage	1200	V
I_F	Continuous Forward Current @ $T_c = 80^\circ\text{C}$	480	A
I_{FRM}	$T_p=1\text{ms}$	960	A

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

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
V_F	Diode Forward Voltage	$I_F = 480\text{ A}, V_{GE}=0\text{ V}, T_{vj} = 25^\circ\text{C}$	--	TBD	--	V
		$I_F = 480\text{ A}, V_{GE}=0\text{ V}, T_{vj} = 150^\circ\text{C}$	--	TBD	--	
Q_r	Recovered Charge	$V_R = 700\text{ V}, I_F = 240\text{ A}$ $V_{GE} = \pm 15\text{ V},$ $R_{Gon} = 4.7\Omega, R_{Goff} = 4.7\Omega$ $T_{vj} = 25^\circ\text{C}$	--	TBD	--	μC
I_{RM}	Peak Reverse Recovery Current		--	TBD	--	A
T_{rr}	Reverse Recovery Time		--	TBD	--	ns
E_{rec}	Reverse Recovery Energy		--	TBD	--	mJ
Q_r	Recovered Charge	$V_R = 700\text{ V}, I_F = 240\text{ A}$ $V_{GE} = \pm 15\text{ V},$ $R_{Gon} = 4.7\Omega, R_{Goff} = 4.7\Omega$ $T_{vj} = 175^\circ\text{C}$	--	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)	--	0.27	--	K/W
$T_{vj\text{ op}}$	Temperature under switching conditions		-40	--	$175^{2)}$	$^\circ\text{C}$

²⁾ $T_{vj\text{ op}} > 175^\circ\text{C}$ 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°C unless otherwise noted)

Symbol	Description	Value	Unit
V _{RRM}	Peak Repetitive Reverse Voltage	1200	V
I _F	Continuous Forward Current @ T _c = 80°C	640	A
I _{FRM}	T _p =1 ms	1280	A

Characteristics (T_c=25°C unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
V _F	Diode Forward Voltage	I _F = 480 A, V _{GE} =0V, T _{vj} = 25°C	--	TBD	--	V
		I _F = 480 A, V _{GE} =0V, T _{vj} = 150°C	--	TBD	--	
Q _r	Recovered Charge	V _R =600 V, I _F =240A V _{GE} =±15 V, R _{Gon} = 4.7Ω, R _{Goff} = 4.7Ω T _{vj} =25°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
Q _r	Recovered Charge	V _R =600 V, I _F =240A V _{GE} =±15 V, R _{Gon} = 4.7Ω, R _{Goff} = 4.7Ω T _{vj} =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)	--	0.15	--	K/W
T _{vj op}	Temperature under switching conditions		-40	--	175 ³⁾	°C

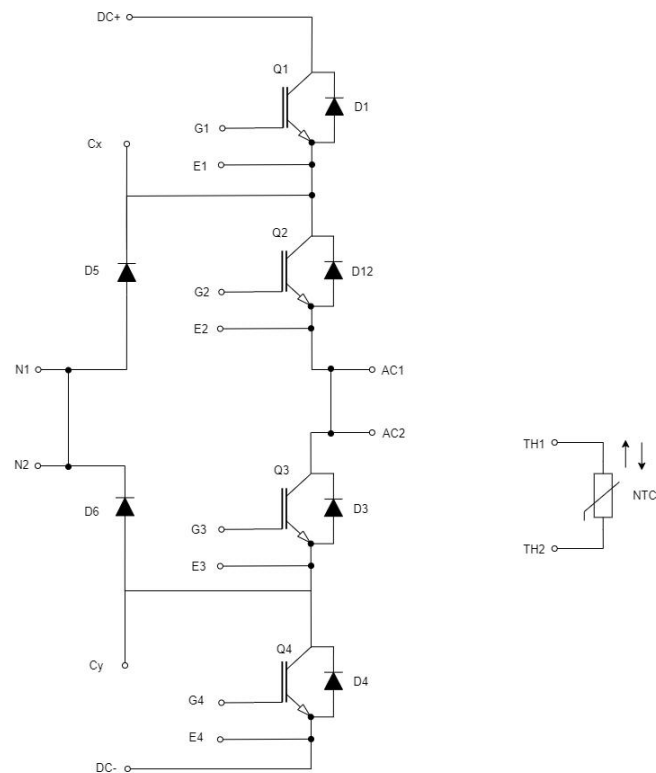
³⁾T_{vj op} > 175°C is only allowed for operation at overload conditions. For detailed specifications please refer to AN 2018-14

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

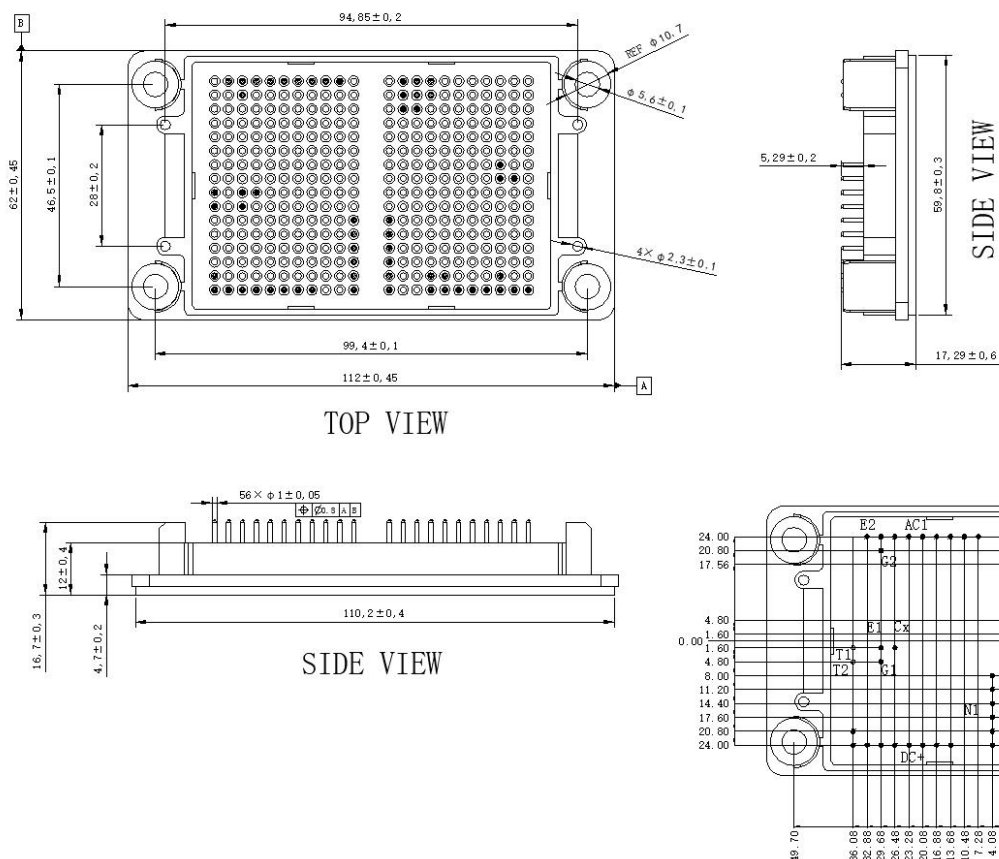
Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
R ₂₅	Rated Resistance		--	5.0	--	kΩ
ΔR/R	Deviation of R100	T _C =100 °C, R ₁₀₀ =493.3Ω	-5	--	5	%
P ₂₅	Power Dissipation		--	--	60	mW
B _{25/50}	B-value	R ₂ =R ₂₅ exp[B _{25/50} (1/T ₂ - 1/(298.15K))]	--	3375	--	K
B _{25/100}	B-value	R ₂ =R ₂₅ exp[B _{25/100} (1/T ₂ - 1/(298.15K))]	--	3433	--	K



CIRCUIT DIAGRAM



PACKAGE DIMENSIONS





REVISION HISTORY

Document version	Date of release	Description of changes
Rev.00	2024-9-13	Preview



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