

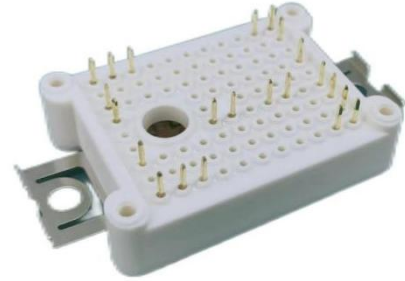
JLFF25B120RE1E6SN

LE1 PACK module with Trench/Fieldstop IGBT and Emitter Controlled diode and NTC



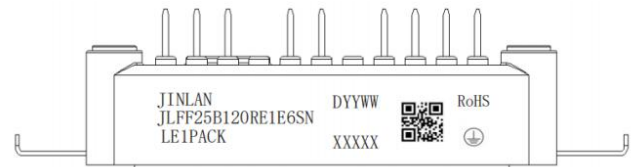
Features

- Low $V_{CE(sat)}$ Trench IGBT technology
- 10 μ s short circuit capability
- $V_{CE(sat)}$ with positive temperature coefficient
- Maximum junction temperature 175°C
- Low inductance case
- Al₂O₃ substrate with low thermal resistance
- Solder Contact Technology
- Rugged mounting due to integrated mounting clamps



LE1 Pack

MARKING DIAGRAM

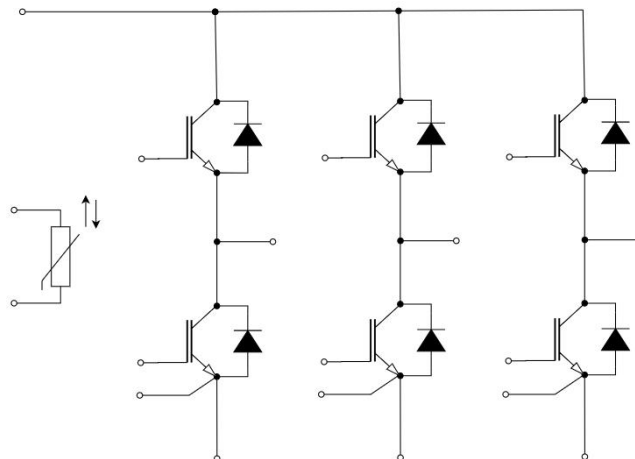


Typical Applications

- AC motor control
- Motion/servo control
- Inverter and power supplies

JINLAN	= Company Name
JLFF25B120RE1E6SN	= Specific Device Code
YYWW	= Year and Work Week Code
XXXXX	= Serial Number
QR code	= 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
Creepage distance	d_{creep}	terminal to terminal	6.3	mm
Clearance	d_{clear}	terminal to heatsink	10	mm
Clearance	d_{clear}	terminal to terminal	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		--	30	--	nH
Storage Temperature Range	T_{STG}		-40		125	°C
Mountig force per clamp	F		20	--	50	N
Weight	G		--	24	--	g

**IGBT****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	±25	V
I _C	Collector Current @ T _C =25°C	50	A
	Collector Current @ T _C =100°C	25	A
I _{CM}	Pulsed Collector Current, t _p limited by T _{vj max}	50	A

Characteristics (T_C = 25°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 = 25 A, T _{vj} = 25°C	--	1.55	1.90	V
		V _{GE} = 15 V, I _C = 25 A, T _{vj} = 150°C	--	1.80	--	
V _{GE(TH)}	Gate-Emitter Threshold Voltage	V _{GE} = V _{CE} , I _C = 1mA, T _{vj} = 25°C	5.0	6.0	7.0	V
I _{CES}	Collector-Emitter Cutoff Current	V _{GE} = 0 V, V _{CE} = V _{CES} , T _{vj} = 25°C	--	--	150	μA
I _{GES}	Gate-Emitter Leakage Current	V _{GE} = V _{GES} , V _{CE} = 0 V, T _{vj} = 25°C	--	--	200	nA
R _{Gint}	Internal Gate Resistance	f=1MHz	--	0.5	--	Ω
C _{ies}	Input Capacitance	V _{CE} =30V, f=1MHz, V _{GE} =0V	--	2674	--	pF
C _{oes}	Output Capacitance		--	72	--	pF
C _{res}	Reverse Transfer		--	59	--	pF
Q _G	Gate Charge	V _{CC} =960V, V _{GE} =15V, I _C =25A	--	146	--	nC
t _{d(on)}	Turn-On Delay Time	V _{CC} = 600 V, I _C = 25 A R _{Gon} = 25Ω, R _{Goff} = 25Ω , V _{GE} = ±15V Inductive Load T _{vj} = 25°C	--	23	--	ns
t _r	Rise Time		--	21	--	
t _{d(off)}	Turn-off Delay Time		--	206	--	
t _f	Fall Time		--	22	--	
E _{on}	Turn-On Switching Loss per Pulse		--	1.5	--	mJ
E _{off}	Turn Off Switching Loss per Pulse		--	0.8	--	
E _{ts}	Total Switching Loss		--	2.3	--	
t _{d(on)}	Turn-On Delay Time	V _{CC} = 600 V, I _C = 25 A R _{Gon} = 25Ω, R _{Goff} = 25Ω , V _{GE} = ±15V Inductive Load 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		--	TBD	--	mJ
E _{off}	Turn Off Switching Loss per Pulse		--	TBD	--	
E _{ts}	Total Switching Loss		--	TBD	--	
I _{sc}	SC Data	t _p ≤ 10μs, V _{GE} ≤ 15V, T _{vj} = 150°C, V _{CC} = 600V	--	100	--	A
R _{thJC}	Thermal resistance	Junction-to-Case (per IGBT)		0.873		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

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	25	A
I _{FM}	Diode Maximum Forward Current t _p =1ms	50	A

Characteristics (T_C = 25°C unless otherwise noted)

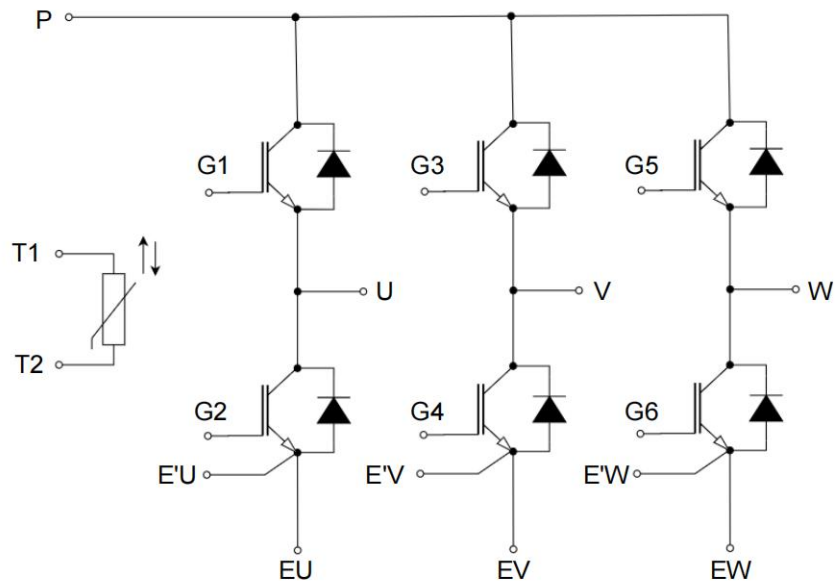
Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
V _F	Diode Forward Voltage	I _F = 25A, V _{GE} = 0V, T _{vj} = 25°C	--	2.2	3.0	V
		I _F = 25A, V _{GE} = 0V, T _{vj} = 150°C	--	2.0	--	
Q _r	Recovered Charge	V _{CC} = 600 V, I _C = 25 A R _{Gon} = 25Ω, R _{Goff} = 25Ω V _{GE} = ±15V Inductive Load T _{vj} = 25°C	--	2.5	--	μC
IRM	Peak Reverse Recovery Current		--	12	--	A
T _{rr}	Reverse Recovery Time		--	190	--	ns
Q _r	Recovered Charge	V _{CC} = 600 V, I _C = 25 A R _{Gon} = 25Ω, R _{Goff} = 25Ω V _{GE} = ±15V Inductive Load T _{vj} = 150°C	--	2.5	--	μC
IRM	Peak Reverse Recovery Current		--	12	--	A
T _{rr}	Reverse Recovery Time		--	190	--	ns
R _{thJC}	Thermal resistance	Junction-to-Case (per diode)	--	1.570	--	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.

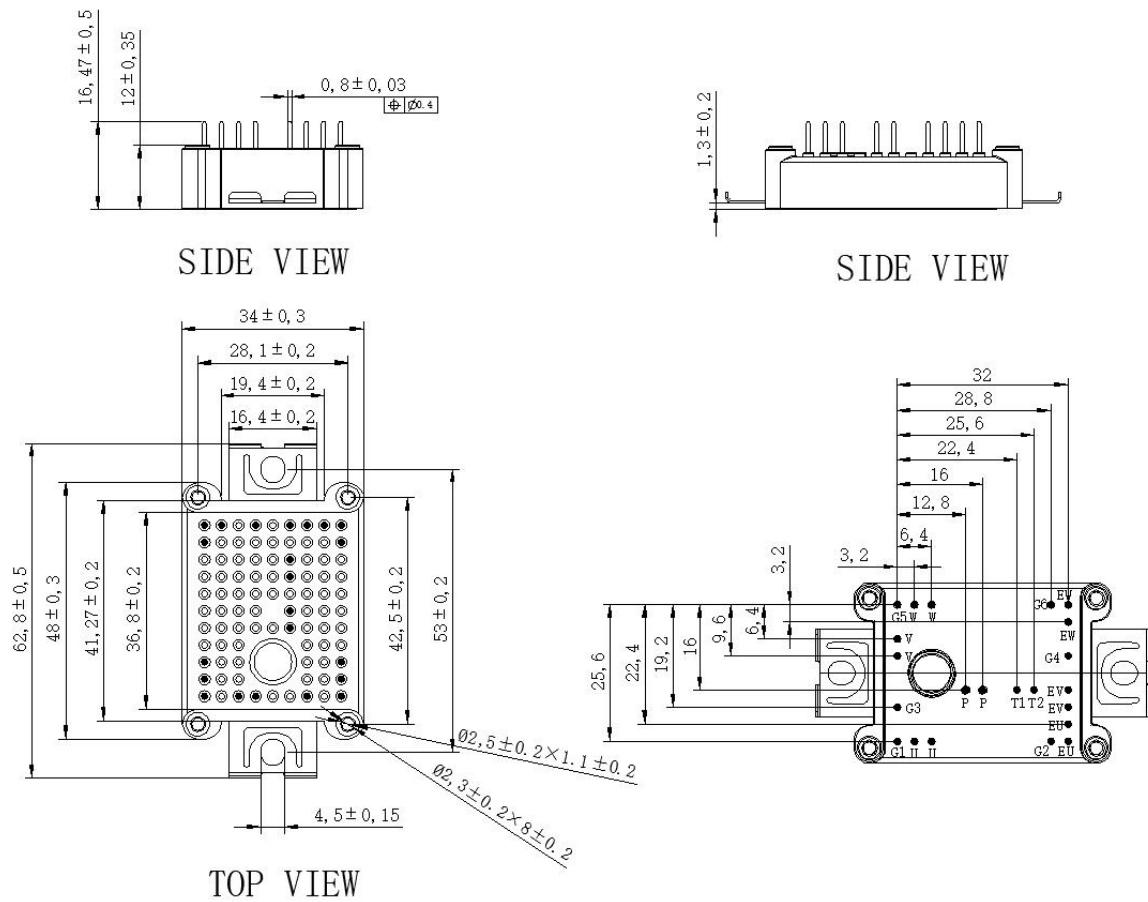
NTC Characteristics (T_C = 25°C unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
R ₂₅	Rated Resistance		--	5.0	--	kΩ
ΔR/R	Deviation of R ₁₀₀	T _C = 100 °C, R ₁₀₀ = 493.3 Ω	-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	2025-06-12	Preview



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