JLHF350B120R62E7DN

L62 PACK module with Trench/Fieldstop IGBT and Emitter Controlled diode and NTC

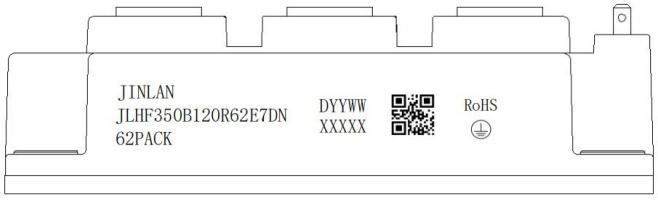
RoHS

Features

- Low $V_{CE(sat)}$ Trench IGBT technology
- $V_{CE(sat)}$ with positive temperature coefficient
- Maximum junction temperature 175℃
- Low inductance case
- 10μs short circuit capability
- Al_2O_3 substrate with low thermal resistance

L62 Pack

MARKING DIAGRAM

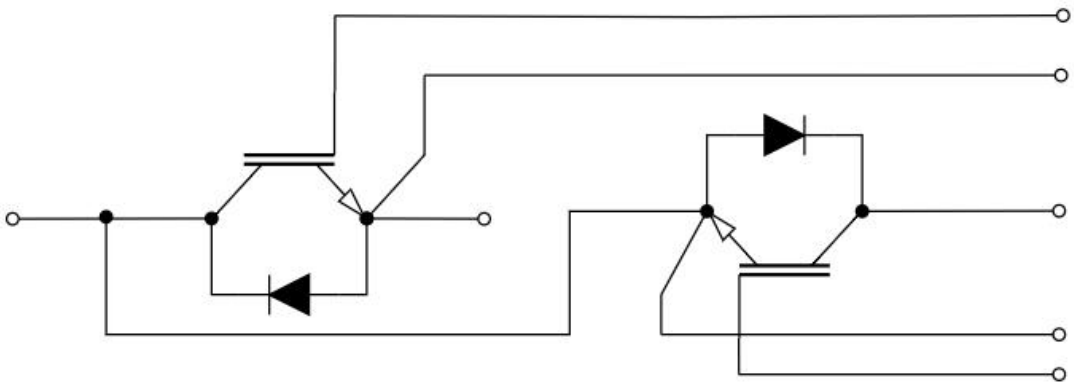


JINLAN	= Company Name
JLHF350B120R62E7DN	= Specific Device Code
YYWW	= Year and Work Week Code
XXXXX	= Serial Number
QR code	= Custom Assembly Information

Typical Applications

- 48 V power distribution
- Motor Drives
- High voltage direct current (HVDC)
- Photovoltaic
- Power conversion

Description



Package Insulation coordination

Parameter	Symbol	Note or test condition	Values	Unit
Isolation test voltage	V_{ISOL}	RMS,f = 50 Hz,t = 60 s	2.5	kV
Internal isolation		basic insulation(class 1, IEC 61140)	Al_2O_3	
Creepage distance	d_{creep}	terminal to heatsink	29.0	mm
Creepage distance	d_{creep}	terminal to terminal	23.0	mm
Clearance	d_{clear}	terminal to heatsink	23.0	mm
Clearance	d_{clear}	terminal to terminal	11.0	mm
Comparative tracking index (electrical)	CTI		>400	
RTI Elec.	RTI	housing	140	℃

Package Characteristic values

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Stray Inductance	L_{CE}			--	20	--	nH
Module Lead Resistance, Terminal to Chip	$R_{CC'+EE'}$	T_C=25°C, per switch		--	0.7	--	mΩ
Storage temperature	T_{stg}			-40	--	125	°C
Mounting torque for module mounting	M	-Mounting according to valid application note	M6, Screw	3	--	6	Nm
Terminal connection torque	M	-Mounting according to valid application note	M6, Screw	2.5	--	5.0	Nm
Weight	G			--	340	--	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	±30	V
I_{CDC}	Continuous Collector Current @ T_C = 100 C	350	A
I_{CM}	Pulsed Collector Current，t_p =1ms	700	A
P_{tot}	Total power dissipation,T_C = 25 °C, $T_{vj\,max}$ = 175 °C	1700	W

Characteristics （T_c=25℃ unless otherwise noted）

Symbol	Parameter	Test Condition		Min	Typ	Max	Unit
$V_{CE(sat)}$	Collector−Emitter Saturation Voltage	I_C=350 A, V_{GE} = 15 V	T_{vj} = 25 °C	--	1.50	2.20	V
			T_{vj} = 125 °C	--	1.65	--	
			T_{vj} = 175 °C	--	1.70	--	
$V_{GE(TH)}$	Gate−Emitter Threshold Voltage	I_C=3 mA,V_{CE}=V_{GE}		5.0	6.0	7.0	V
I_{CES}	Collector−Emitter Cutoff Current	V_{GE} = 0 V, V_{CE} = 1200 V		--	--	500	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	f=1 MHz		--	0.2	--	Ω
C_{ies}	Input Capacitance	V_{CE}=30 V,V_{GE}=0 V, f=1 MHz			47.2		nF
C_{oes}	Output Capacitance			--	1.12	--	nF
C_{res}	Reverse Transfer			--	0.268	--	nF
Q_G	Gate Charge	V_{CC}=960V, V_{GE}=15V，I_C=350A		--	1.46	--	μC
$t_{d(on)}$	Turn−On Delay Time	V_{CC}=600V,I_C=350A, V_{GE}=0/15V, R_g=25Ω, Inductive Load T_{vj} = 25 °C		--	287	--	ns
t_r	Rise Time			--	196	--	
$t_{d(off)}$	Turn−off Delay Time			--	907	--	
t_f	Fall Time			--	148	--	
E_{on}	Turn−On Switching Loss per Pulse			--	22.17	--	mJ
E_{off}	Turn Off Switching Loss per Pulse			--	15.37	--	
$t_{d(on)}$	Turn−On Delay Time	V_{CC}=600V,I_C=350A, V_{GE}=0/15V, R_g=25Ω, Inductive Load T_{vj} = 125 °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	--	
$t_{d(on)}$	Turn−On Delay Time	V_{CC}=600V,I_C=350A, V_{GE}=0/15V, R_g=25Ω, Inductive Load T_{vj} = 175 °C		--	TBD	--	ns
tr	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	--	
$I_{c(sc)}$	Short circuit collector current Max.1000 Short circuits Time between short circuits:≥1.0s	V_{GE}=15V,V_{CC}≤600V, t_{SC}≤10us,T_j≤150°C		--	2400	--	A
R_{thJC}	Thermal resistance	Junction-to-Case (per IGBT)		--	0.078	-	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

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

Symbol	Description	Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V
I_F	Diode Continuous Forward Current	350	A
I_{FM}	Diode Maximum Forward Current t_p=1ms	700	A

Characteristics （Tc=25℃ unless otherwise noted）

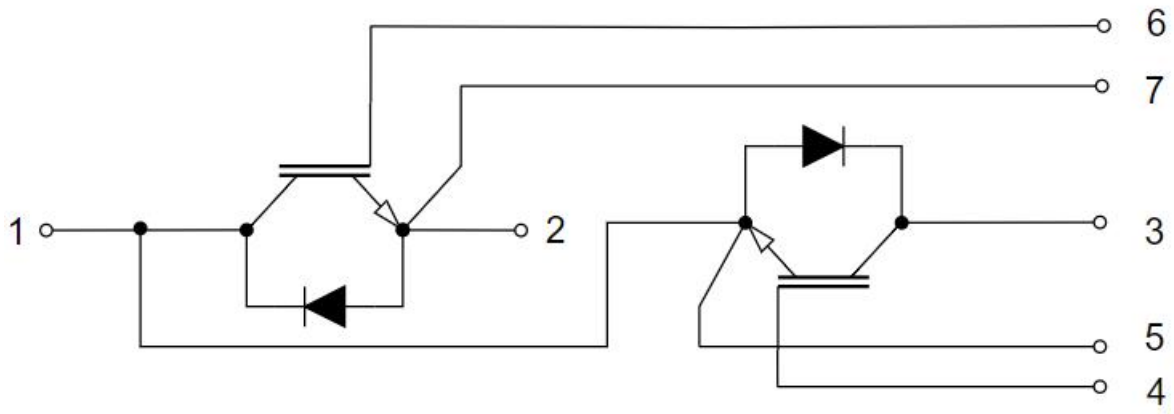
Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
V_F	Diode Forward Voltage	I_F = 350 A, T_{vj} = 25 °C	--	1.90	2.90	V
		I_F =350 A, T_{vj} = 125 °C	--	1.80	--	
		I_F =350 A, T_{vj} = 175 °C	--	1.85	--	
T_{rr}	Reverse Recovery Time	I_F=350 A,R_G=25 Ω T_{vj} = 25 °C	--	307	--	ns
I_{RM}	Peak Reverse Recovery Current		--	45.3	--	A
Q_{rr}	Recovered Charge		--	2.11	--	μC
E_{rec}	Reverse Recovery Energy		--	1.814	--	mJ
T_{rr}	Reverse Recovery Time	I_F=350 A,R_G=25 Ω T_{vj} = 125 °C	--	TBD	--	ns
I_{RM}	Peak Reverse Recovery Current		--	TBD	--	A
Q_{rr}	Recovered Charge		--	TBD	--	μC
E_{rec}	Reverse Recovery Energy		--	TBD	--	mJ
T_{rr}	Reverse Recovery Time	I_F=350 A,R_G=25Ω T_{vj} = 175 °C	--	183	--	ns
I_{RM}	Peak Reverse Recovery Current		--	30	--	A
Q_{rr}	Recovered Charge		--	3.01	--	μC
E_{rec}	Reverse Recovery Energy		--	1.06	--	mJ
R_{thJC}	Thermal resistance	Junction-to-Case (per diode)	--	0.15	--	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.

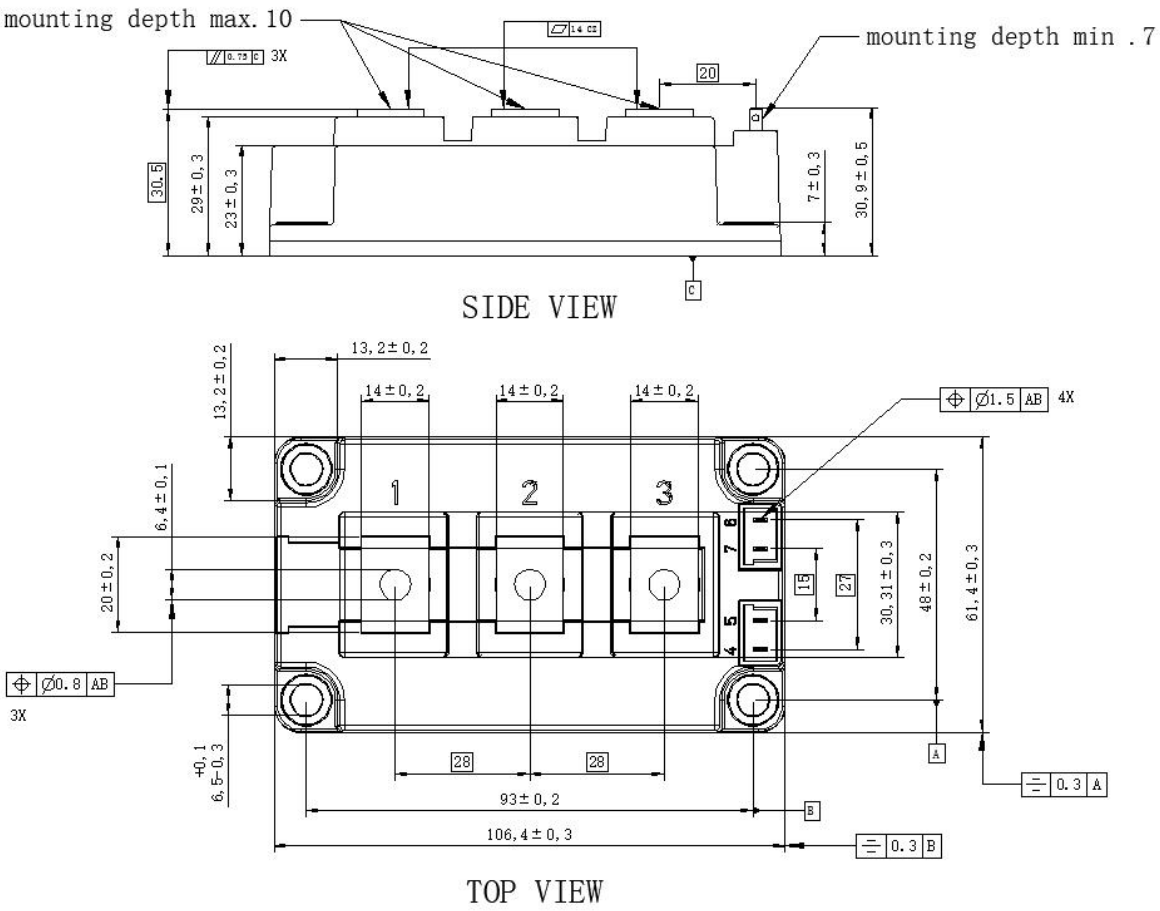
NTC Characteristics (Tc = 25°C unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
R_{25}	Rated Resistance		--	5.0	--	kΩ
ΔR/R	Deviation of R_{100}	T_C=100 ℃,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	2024-10-21	Preview

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