JLHF600B120E62E7DN

L62 PACK module with Gen7 IGBT and Emitter Controlled 7 diode

RoHS

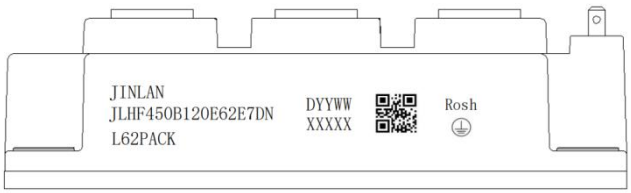
Features

- 1200V Trench Stop IGBTs
- $T_{vj\ op}$=150℃
- V_{CEsat} with positive temperature coefficient
- 10μs short circuit capability
- For higher switching frequencies up to 12kHz
- Standard housing
- 4 kV AC 1 min insulation
- Low inductance case
- Insulated copper baseplate using DBC technology
- High creepage and clearance distances

L62 Pack

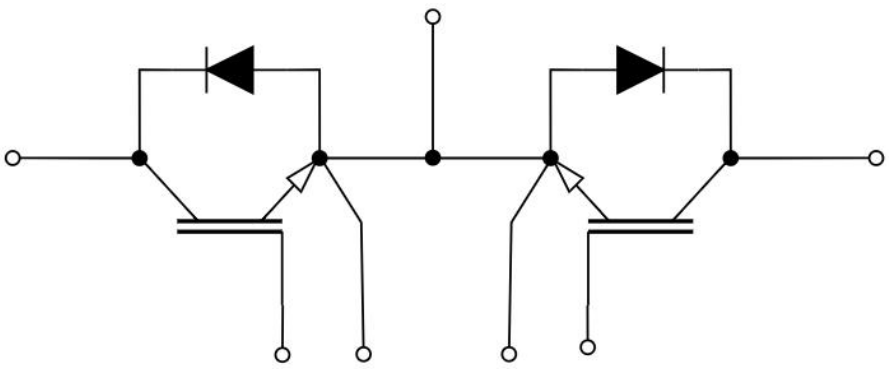
Typical Applications

- Matrix Inverter
- Bidirectional switch



JINLAN	= Company Name
JLHF600B120E62E7DN	= 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	4.0	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		>500	
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		--	0.5	--	mΩ
Storage Temperature Range	T_{STG}			-40		125	℃
M	Mounting torque for module mounting	-Mounting according to valid application note	M5, Screw	3.0	--	6.0	Nm
M	Terminal connection torque	-Mounting according to valid application note	M6, Screw	2.5	--	5.0	Nm
Weight	G			--	340	--	g

IGBT

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

Symbol	Description	Note or test condition		Value	Unit
V_{CES}	Collector-Emitter Voltage	T_{vj} = 25 °C		1200	V
I_{CDC}	Continuous DC collector current	$T_{vj\,max}$ = 175 °C	T_C = 90 °C	600	A
I_{CRM}	Repetitive peak collector current	t_p limited by $T_{vj\,op}$		1200	A
V_{GES}	Gate-emitter peak voltage			±20	V

Characteristics (Tc = 25°C unless otherwise noted)

Symbol	Parameter	Test Condition		Min	Typ	Max	Unit
$V_{CE(sat)}$	Collector−Emitter Saturation Voltage	I_C =600 A, V_{GE} = 15 V	T_{vj} = 25 °C	--	1.45	1.95	V
			T_{vj} = 150 °C	--	1.70	--	
			T_{vj} = 175 °C	--	1.75	--	
$V_{GE(TH)}$	Gate−Emitter Threshold Voltage	V_{GE} = V_{CE} , I_C = 5 mA,T_{vj} = 25°C		5.0	5.8	6.5	V
I_{CES}	Collector−Emitter Cutoff Current	V_{GE} = 0 V, V_{CE} =1200V ,T_{vj}= 25°C		--	--	100	uA
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		--	1.34	--	Ω
C_{ies}	Input Capacitance	f = 100 kHz, T_{vj} = 25 °C, V_{CE} = 25 V, V_{GE} = 0 V		--	73.9	--	nF
C_{oes}	Out Capacitance			--	1.7	--	nF
C_{res}	Reverse Transfer			--	0.2	--	nF
Q_G	Gate Charge	V_{GE} = ±15 V, V_{CC} = 600 V		--	2.40	--	μC
$t_{d(on)}$	Turn−On Delay Time	I_C = 600 A, V_{CC} = 600 V, V_{GE} = 15 /-5V, R_G = 1.0 Ω	T_{vj} = 25 °C	--	0.441	--	μS
			T_{vj} = 150 °C	--	0.500	--	
			T_{vj} = 175 °C	--	0.507	--	
t_r	Rise Time	I_C =600 A, V_{CC} = 600 V, V_{GE} = 15 /-5V, R_G = 1.0 Ω	T_{vj} = 25 °C	--	0.080	--	μS
			T_{vj} = 150 °C	--	0.096	--	
			T_{vj} = 175 °C	--	0.097	--	
$t_{d(off)}$	Turn−off Delay Time	I_C = 600 A, V_{CC} = 600 V, V_{GE} = 15 /-5V, R_{Goff} = 1.0 Ω	T_{vj} = 25 °C	--	0.896	--	μS
			T_{vj} = 150 °C	--	1.021	--	
			T_{vj} = 175 °C	--	1.043	--	
t_f	Fall Time	I_C = 600 A, V_{CC} = 600 V, V_{GE} = 15 /-5V, R_G = 1.0 Ω	T_{vj} = 25 °C	--	0.109	--	μS
			T_{vj} = 150 °C	--	0.244	--	
			T_{vj} = 175 °C	--	0.248	--	
E_{on}	Turn−On Switching Loss per Pulse	I_C =600 A, V_{CC} = 600 V, V_{GE} = 15 /-5V, R_G = 1.0 Ω ($T_{vj\,max}$= 175 °C)	T_{vj} = 25 °C	--	13.52	--	mJ
			T_{vj} = 150 °C	--	26.94	--	
			T_{vj} = 175 °C	--	29.98	--	
E_{off}	Turn Off Switching Loss per Pulse	I_C = 600 A, V_{CC} = 600 V, V_{GE} = 15 /-5V, R_G = 1.0 Ω ($T_{vj\,max}$= 175 °C)	T_{vj} = 25 °C	--	58.73	--	mJ
			T_{vj} = 150 °C	--	78.24	--	
			T_{vj} = 175 °C	--	80.84	--	

I_{SC}	SC Data	$V_{GE} \le 15$ V, V_{CC} = 800 V, $V_{CEmax}=V_{CES}-L_{sCE}.di/dt$	$t_P \le 10$ µs, T_{vj}=150 °C	--	2173	--	A
			$t_P \le 10$ µs, T_{vj}=175 °C	--	2044	--	
R_{thJC}	Thermal resistance	Junction-to-Case (per IGBT)		--	0.053	0.064	K/W
$T_{vj\,op}$	Temperature under switching conditions			-40	--	175[1)]	℃

[1)] $T_{vj\,op}$ > 175℃ 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)

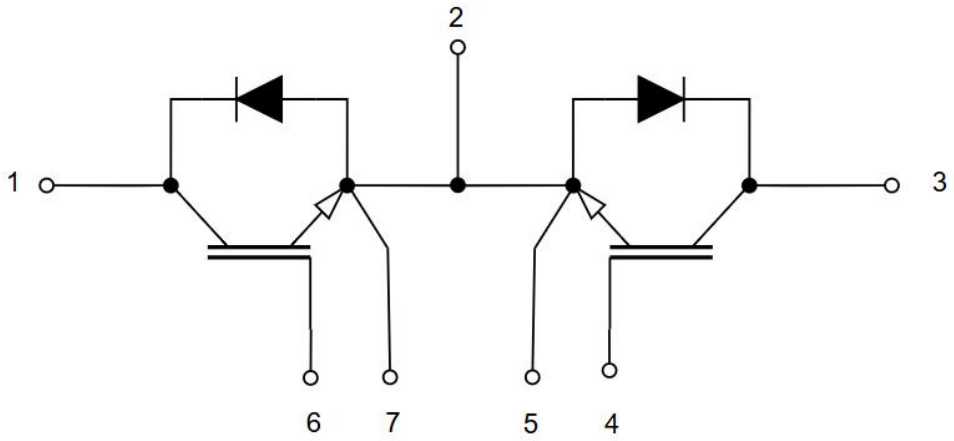
Symbol	Description	Note or test condition	Value	Unit
V_{RRM}	Repetitive peak reverse voltage	T_{vj} = 25 °C	1200	V
I_F	Continuous DC forward current		600	A
I_{FRM}	Repetitive peak forward current	t_P = 1 ms	1200	A

Characteristics （Tc=25℃ unless otherwise noted）

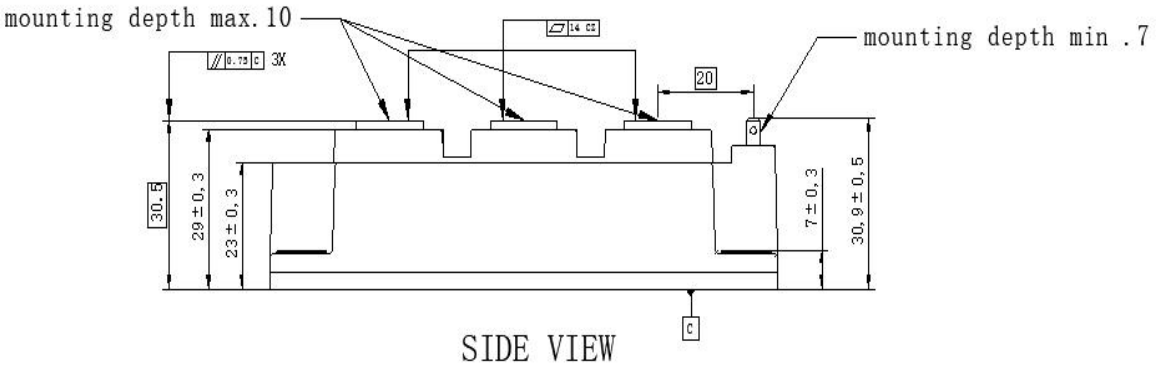
Symbol	Parameter	Test Condition		Value			Unit
				Min	Typ	Max	
V_F	Diode Forward Voltage	I_F = 600 A, V_{GE} = 0 V	T_{vj} = 25 °C	--	2.00	2.80	V
			T_{vj} = 150 °C	--	1.95	--	
			T_{vj} = 175 °C	--	1.85	--	
Q_r	Recovered Charge	I_C = 600 A, V_{CC} = 600 V, V_{GE} = 15 /-5V, R_G = 1.0 Ω ($T_{vj\,max}$= 175 °C)	T_{vj} = 25 °C	--	10.1	--	µC
			T_{vj} = 150 °C	--	33.3	--	
			T_{vj} = 175 °C	--	40.7	--	
I_{RM}	Peak Reverse Recovery Current	I_C = 600 A, V_{CC} = 600 V, V_{GE} = 15 /-5V, R_G = 1.0 Ω ($T_{vj\,max}$= 175 °C)	T_{vj} = 25 °C	--	345	--	A
			T_{vj} = 150 °C	--	433	--	
			T_{vj} = 175 °C	--	456	--	
E_{rec}	Reverse Recovery Energy	I_C = 600 A, V_{CC} = 600 V, V_{GE} = 15 /-5V, R_G = 1.0 Ω ($T_{vj\,max}$= 175 °C)	T_{vj} = 25 °C	--	10.8	--	mJ
			T_{vj} = 150 °C	--	29.6	--	
			T_{vj} = 175 °C	--	34.5	--	
R_{thJC}	Thermal resistance, junction to case	per diode		--	0.076	0.086	K/W
$T_{vj\,op}$	Temperature under switching conditions			-40	--	175[2)]	℃

[2)] $T_{vj\,op}$ > 175℃ is only allowed for operation at overload conditions. For detailed specifications please refer to AN 2018-14.

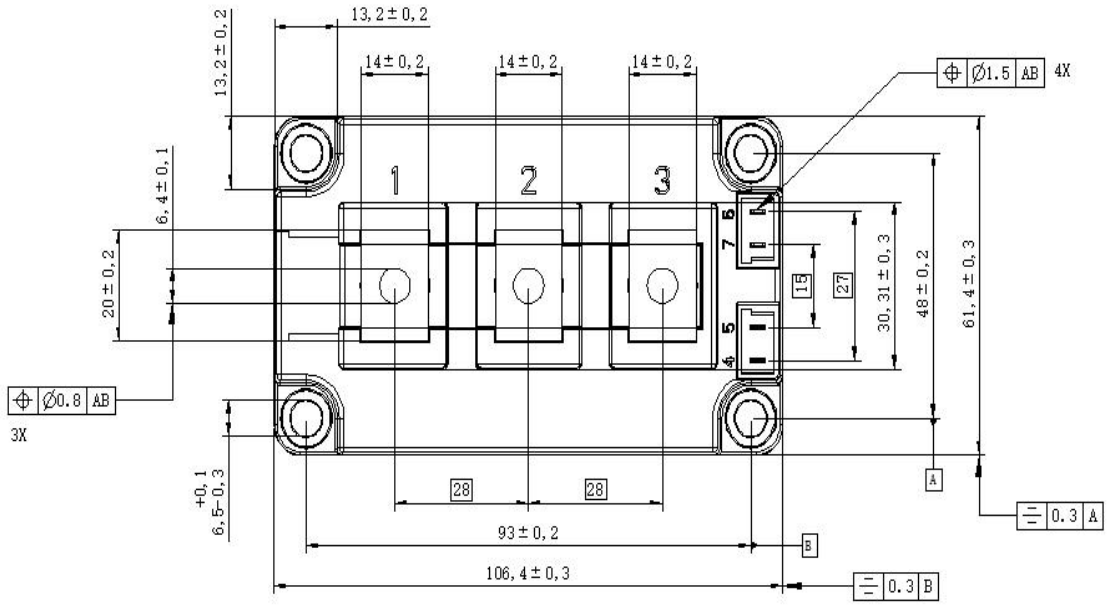
CIRCUIT DIAGRAM



PACKAGE DIMENSION



SIDE VIEW



TOP VIEW

REVISION HISTORY

Document version	Date of release	Description of changes
Rev.00	2024-05-31	Preliminary Data

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