# JLPI35B120RE2F7SN

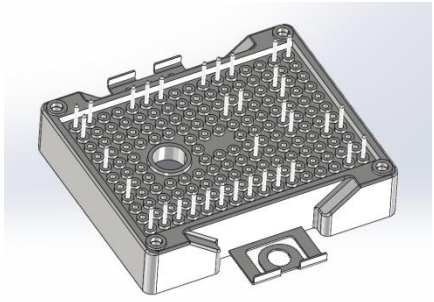
LE2 PACK module with Gen.7 Trench/Fieldstop IGBT and Emitter Controlled diode and NTC

RoHS

## Features

• Electrical features

- $V_{CES}$ = 1200 V
- $I_{C\ nom}$ = 35 A / $I_{CRM}$ = 70 A
- Low $V_{CEsat}$
-10μs short circuit capability
- Overload operation up to 175°C

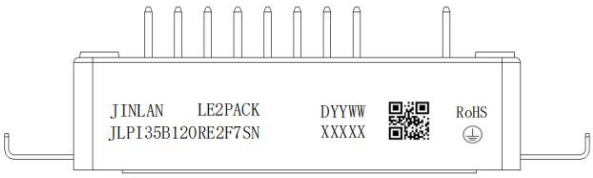


**LE2 Pack**

• Mechanical features

- Integrated NTC temperature sensor
- Isolated heatsink using DBC technology
- Low inductance case
- Solder contact technology

## MARKING DIAGRAM

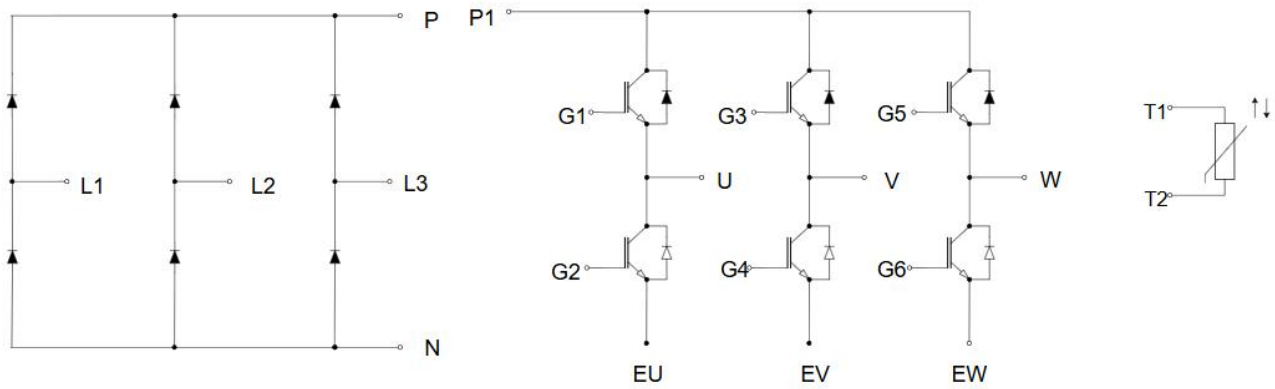



## Typical Applications

• Inverter for motor drive
• AC and DC servo drive amplifier
• Uninterruptible power supply

| | |
|---|---|
| JINLAN | = Company Name |
| JLPI35B120RE2F7SN | = Specific Device Code |
| YYWW | = Year and Work Week Code |
| XXXXX | = Serial Number |
| QR code | = Custom Assembly |

## 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 | ℃ |

## Package Characteristic values

| Parameter | Symbol | Note or test condition | Values | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| Stray Inductance | LCE | | -- | 30 | -- | nH |
| Module Lead Resistance, Terminal to Chip | $R_{AA'+CC'}$ | $T_C$=25℃, per switch | -- | 6.0 | -- | mΩ |
| Module Lead Resistance, Terminal to Chip | $R_{CC'+EE'}$ | $T_C$=25℃, per switch | -- | 5.0 | -- | mΩ |
| Storage Temperature Range | $T_{STG}$ | | -40 | | 125 | ℃ |
| Mounting Torque | M | M5, Screw | 40 | | 80 | N.m |
| Weight | G | | -- | 39 | -- | g |

# IGBT, Inverter

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

| Symbol | Description | Value | Unit |
|---|---|---|---|
| $V_{CES}$ | Collector-Emitter Voltage | 1200 | V |
| $V_{GES}$ | Gate-Emitter Voltage | ±30 | V |
| $I_C$ | Collector Current @ $T_C$=25℃ | 70 | A |
| | Collector Current @ $T_C$=80℃ | 35 | A |
| $I_{CM}$ | Pulsed Collector Current，$t_p$=1S | 105 | A |

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

| Symbol | Parameter | Test Condition | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $V_{CE(sat)}$ | Collector−Emitter Saturation Voltage | $I_C$=35A，$V_{GE}$=15V | $T_{vj}$=25°C | -- | 1.70 | 2.50 | V |
| | | | $T_{vj}$=175°C | -- | 1.90 | -- | |
| $V_{GE(th)}$ | Gate Threshold Voltage | $I_C$=1mA,$V_{CE}$=$V_{GE}$ | | 5.0 | 6.0 | 7.0 | V |
| $I_{CES}$ | Collector-Emitter Leakage Current | $V_{GE}$=0V,$V_{CE}$=1200V | | -- | -- | 10 | uA |
| $I_{GES}$ | Gate-Emitter Leakage Current | $V_{GE}$=30V,$V_{CE}$=0V | | -- | -- | 200 | nA |
| $R_{Gint}$ | Internal Gate Resistance | f=1MHz | | -- | 0.6 | -- | Ω |
| $C_{ies}$ | Input Capacitance | $V_{CE}$=25V,$V_{GE}$=0V, f=1MHz | | -- | 4.20 | -- | nF |
| $C_{oes}$ | Out Capacitance | | | -- | 0.107 | -- | nF |
| $C_{res}$ | Reverse Transfer | | | -- | 0.024 | -- | nF |
| $Q_G$ | Gate Charge | $V_{CE}$=960V, $I_C$=35A,$V_{GE}$=15V | | -- | 0.147 | -- | uC |
| $t_{d(on)}$ | Turn−On Delay Time | $V_{CE}$=600V,$I_C$=35A, $V_{GE}$=0/15V, $R_{gon}$=25Ω,$R_{goff}$=25Ω, Inductive Load $T_j$=25°C | | -- | 71 | -- | ns |
| $t_r$ | Rise Time | | | -- | 53 | -- | |
| $t_{d(off)}$ | Turn−off Delay Time | | | -- | 261 | -- | |
| $t_f$ | Fall Time | | | -- | 66.3 | -- | |
| $E_{on}$ | Turn−On Switching Loss per Pulse | | | -- | 2.34 | -- | mJ |
| $E_{off}$ | Turn Off Switching Loss per Pulse | | | -- | 1.44 | -- | |
| $t_{d(on)}$ | Turn−On Delay Time | $V_{CE}$=600V,$I_C$=35A, $V_{GE}$=0/15V, $R_{gon}$=25Ω,$R_{goff}$=25Ω, Inductive Load $T_j$=175°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 | | | -- | 3.64 | -- | mJ |
| $E_{off}$ | Turn Off Switching Loss per Pulse | | | -- | 2.00 | -- | |
| $I_{SC}$ | SC Data | $V_{GE}$=15V,$V_{CC}$≤600V, $t_{SC}$≤10us,$T_j$≤150°C | | -- | 150 | -- | A |
| $R_{thJC}$ | Thermal resistance | Junction-to-Case (per IGBT) | | -- | 0.5 | -- | 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, Inverter

### 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 | 35 | A |
| $I_{FM}$ | Diode Maximum Forward Current $t_p$=1ms | 105 | A |

### Characteristics (Tc=25℃ unless otherwise noted)

| Symbol | Parameter | Test Condition | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $V_F$ | Diode Forward Voltage | $I_F$=35A | $T_j$=25°C | -- | 1.70 | 2.50 | V |
| | | | $T_j$=175°C | -- | 1.90 | -- | |
| $Q_r$ | Recovered Charge | $V_{CE}$=600V,$I_C$=35A, $V_{GE}$=0/15V, $R_{gon}$=25Ω,$R_{goff}$=25Ω, Inductive Load $T_j$=25°C | | -- | 1.01 | -- | μC |
| $I_{RM}$ | Peak Reverse Recovery Current | | | -- | 37.7 | -- | A |
| $T_{rr}$ | Reverse Recovery Time | | | -- | 120 | -- | ns |
| $E_{rec}$ | Reverse Recovery Energy | | | -- | 0.42 | -- | mJ |
| $Q_r$ | Recovered Charge | $V_{CE}$=600V,$I_C$=35A, $V_{GE}$=0/15V, $R_{gon}$=25Ω,$R_{goff}$=25Ω, Inductive Load $T_j$=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) | | -- | 0.72 | -- | 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.

## Diode, Rectifier

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

| Symbol | Description | Value | Unit |
|---|---|---|---|
| $V_{RRM}$ | Repetitive Peak Reverse Voltage | 1600 | V |
| $I_F$ | Diode Continuous Forward Current | 35 | A |
| $I_{FM}$ | Diode Maximum Forward Current $t_p$=1ms | 70 | A |

### Characteristics (Tc=25℃ unless otherwise noted)

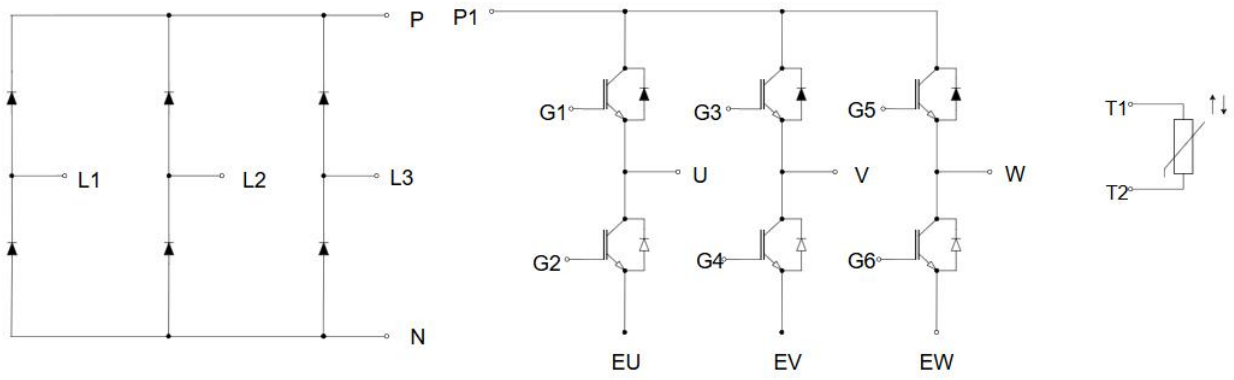
| Symbol | Parameter | Test Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $V_F$ | Diode Forward Voltage | $I_F$ = 35 A, $T_j$ = 150 °C | -- | 0.95 | -- | V |
| $I_R$ | Reverse Current | $T_j$=175 °C, $V_R$=1600V | -- | 1.0 | -- | mA |
| $R_{thJC}$ | Thermal resistance | Junction-to-Case (per diode) | -- | 0.53 | -- | K/W |
| $T_{vj\ op}$ | | Temperature under switching conditions | -40 | | 175[3)] | ℃ |

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

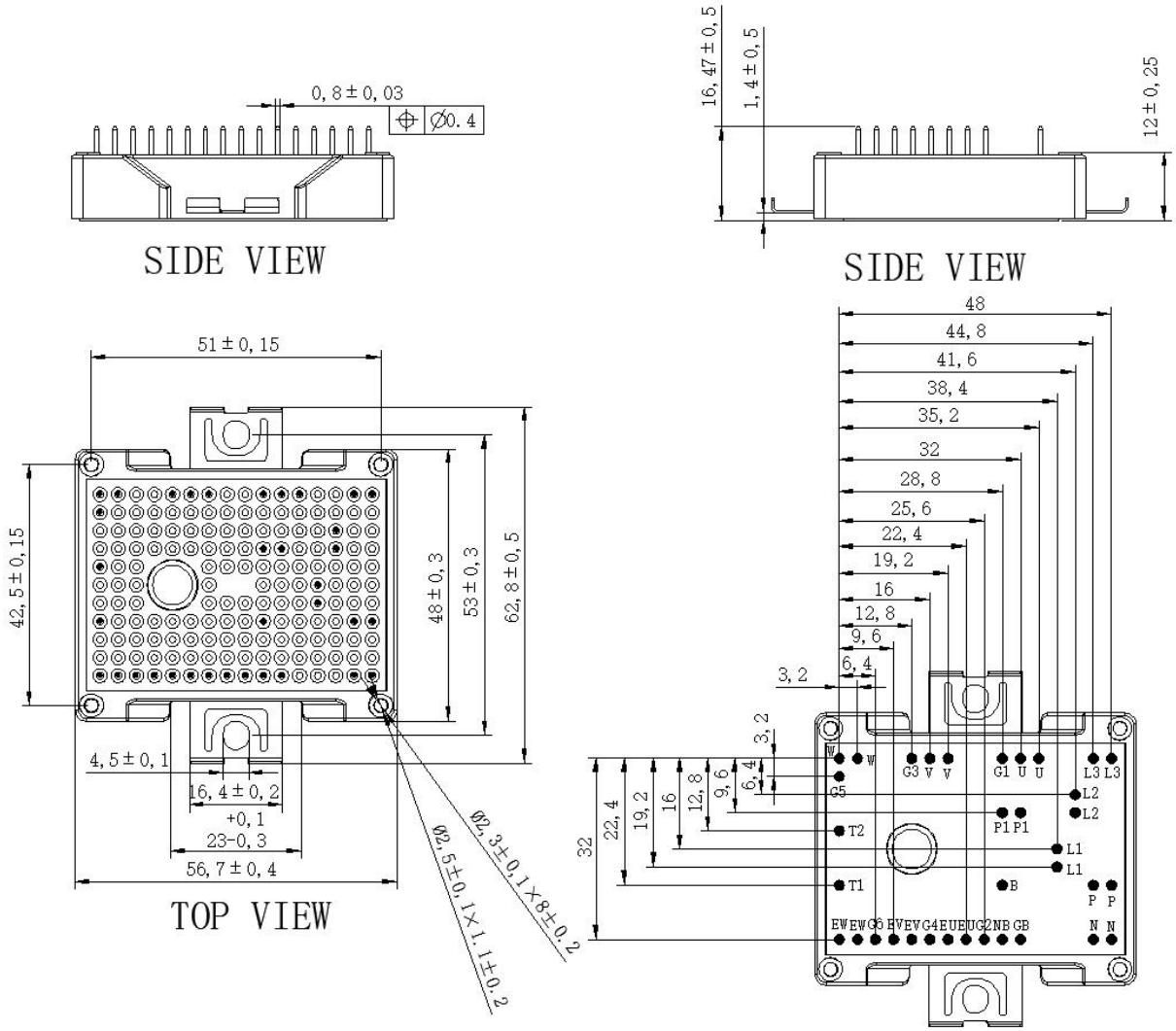
## NTC Characteristics (Tc = 25°C unless otherwise noted)

| 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 | 2025-06-06 | Preview |

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