



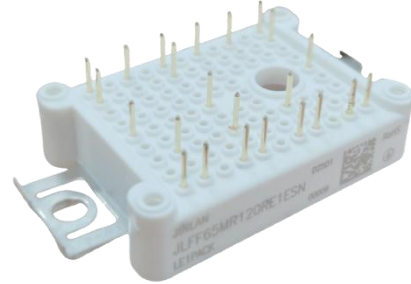
JLFF65MR120RE1ESN

LE1 PACK module with SiC Mosfet and NTC



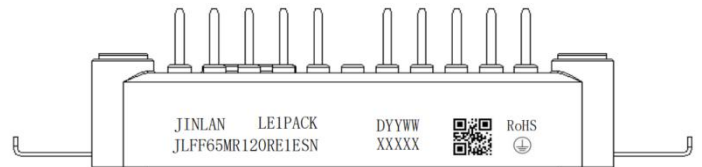
Features

- $V_{DS} = 1200\text{ V}$
- $T_{yp. RDS(on)} = 65\text{ m}\Omega @ V_{GS} = 18\text{ V}$
- Ultra Low Gate Charge ($Q_{G(tot)} = 57\text{ nC}$)
- High Speed Switching with Low Capacitance
- Al_2O_3 substrate with low thermal resistance
- Solder Contact Technology
- Rugged mounting due to integrated mounting clamps



LE1 Pack

MARKING DIAGRAM

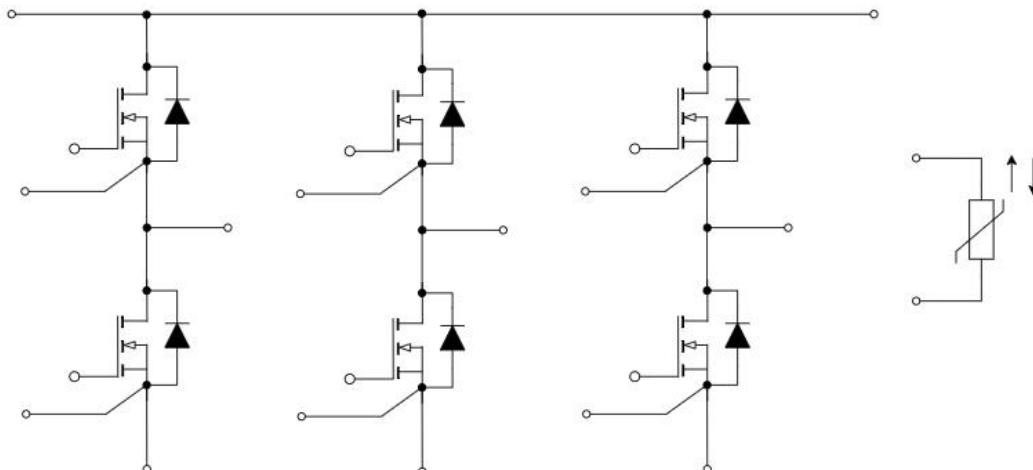


JINLAN	= Company Name
JLFF65MR120RE1ESN	= Specific Device Code
YYWW	= Year and Work Week Code
XXXXX	= Serial Number
QR code	= Custom Assembly Information

Typical Applications

- High-frequency switching application
- DC/DC converter
- Motor drives
- UPS systems

Description





Package Insulation coordination

Parameter	Symbol	Note or test condition	Values	Unit
Isolation test voltage	V_{ISOL}	RMS, f=50Hz, t=60s	3	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	L_{CE}		--	20	--	nH
Storage Temperature Range	T_{STG}		-40		125	°C
Mounting force per clamp	F		20	--	50	N
Weight	G		--	24	--	g



MOSFET

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

Symbol	Parameter	Description	Value	Unit
V _{DSS}	Drain-source voltage	T _{vj} =25°C	1200	V
I _{DN}	Implemented drain current	Collector Current @T _{vj} =150°C, V _{GS} =18V, T _c =25°C	25	A
I _{DDC}	Continuous DC drain current	Collector Current @T _{vj} =150°C, V _{GS} =18V, T _c =95°C	17	A
I _{DRM}	Repetitive peak drain current	verified by design, t _p limited by T _{vj max}	34	A
V _{GS max}	Gate-source voltage, max. transient voltage	< 100 ns	暂无数据	V
V _{GS OP}	Gate-source voltage, max.static voltage (Recommended)		-3/+18	V

Characteristics (T_c = 25°C unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
R _{DS(on)}	Drain-source on-resistance	V _{GS} = 18 V, I _{DN} = 15 A, T _{vj} = 25°C	--	65		mΩ
		V _{GS} = 18 V, I _{DN} = 15 A, T _{vj} = 175°C	--	136	--	
V _{GS(TH)}	Gate Threshold Voltage	V _{GS} = V _{DS} , I _D = 7 mA	2.04	2.9	4.4	V
I _{DSS}	Drain-Source Leakage Current	V _{GS} = 0 V, V _{DS} = 1200V	--	--	100	μA
I _{GSS}	Gate-Source Leakage Current	V _{GS} = -10V, V _{DS} = 0V	--	--	± 1	μA
I _{GSS}	Gate-Source Leakage Current	V _{GS} = +22V, V _{DS} = 0V	--	--	± 1	μA
R _{Gint}	Internal Gate Resistance	f = 1 MHz	--	4.3	--	Ω
C _{iSS}	Input Capacitance	V _{GS} = 0 V, f = 1 MHz, V _{DS} = 800 V		1230		pF
C _{OSS}	Output capacitance		--	57	--	pF
C _{RSS}	Reverse Transfer		--	5	--	pF
Q _G	Total Gate Charge	V _{GS} = -3/18 V, V _{DS} = 800 V, I _D = 15 A	--	57	--	nC
t _{d(on)}	Turn-On Delay Time	V _{GS} = -3/18 V, V _{DS} = 800 V, I _D = 15 A, R _G = 4.7Ω Inductive load	--	9.2	--	ns
t _r	Rise Time		--	11	--	
t _{d(off)}	Turn-off Delay Time		--	29	--	
t _f	Fall Time		--	8.8	--	
E _{on}	Turn-On Switching Loss per Pulse		--	124	--	mJ
E _{off}	Turn Off Switching Loss per Pulse		--	36	--	
R _{thJC}	Thermal resistance	Junction-to-Case (per IGBT)	--	1.09	--	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.



Body Diode

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

Symbol	Description	Value	Unit
I _{SD}	Tvj = 150 °C, VGS = -3 V, Tc = 95°C	10	A

Characteristics (T_c=25°C unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
V _{SD}	Diode Forward Voltage	V _{GS} = -3 V, I _{SD} = 15 A	--	4.7	--	V
t _{RR}	Reverse Recovery Time	V _{GS} = -3/18 V, I _{SD} = 15 A, dI _S /dt = 1000 A/μs, V _{DS} = 800 V	--	14.4	--	ns
Q _{RR}	Reverse Recovery Charge		--	60	--	μC
E _{rec}	Reverse Recovery Energy		--	4.8	--	μJ
I _{RRM}	Peak Reverse Recovery Current		--	8.4	--	A
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 R100	T _C =100 °C, R ₁₀₀ =493.3Ω	-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



Figure1.output characteristic MOSFET (typical)
 $T_{vj}=25^{\circ}\text{C}$

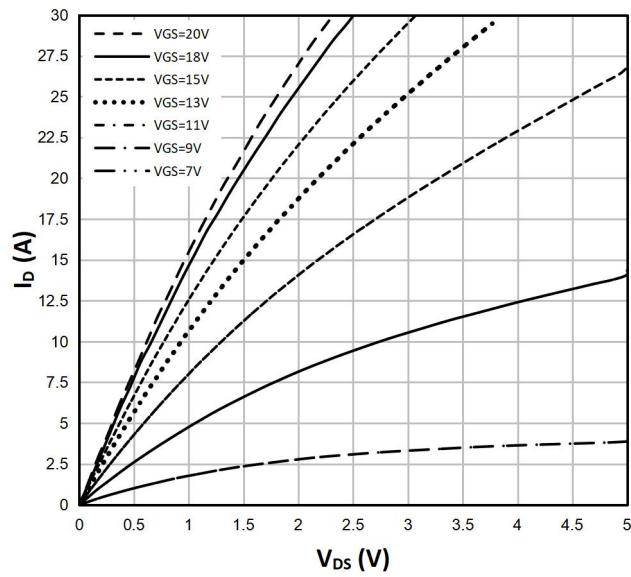


Figure1.output characteristic MOSFET (typical)
 $T_{vj}=150^{\circ}\text{C}$

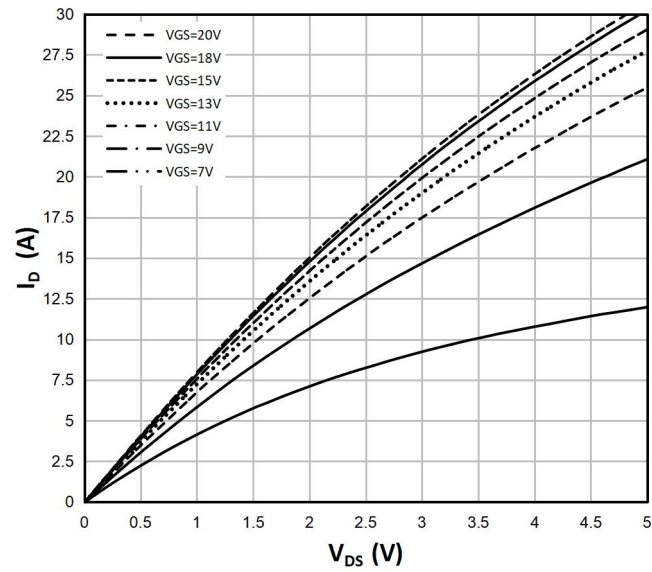


Figure3.transfer characteristic MOSFET (typical)
 $V_{DS}=10\text{V}$

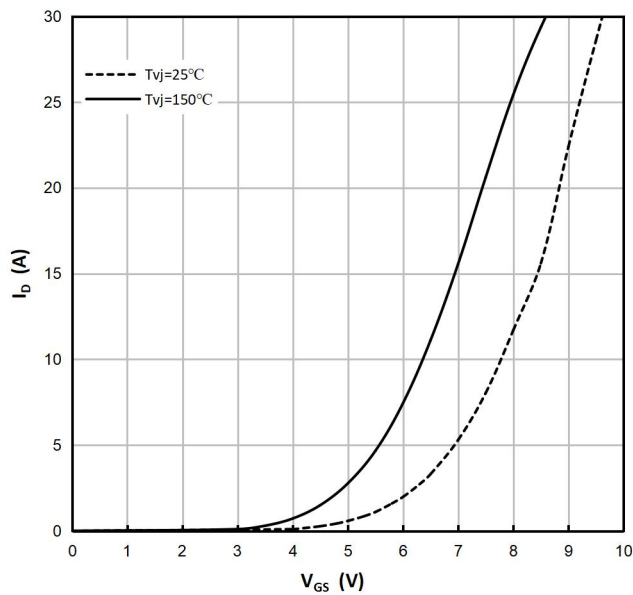


Figure4. V_{TH} vs. Temperature
 $I_C=7\text{mA}$

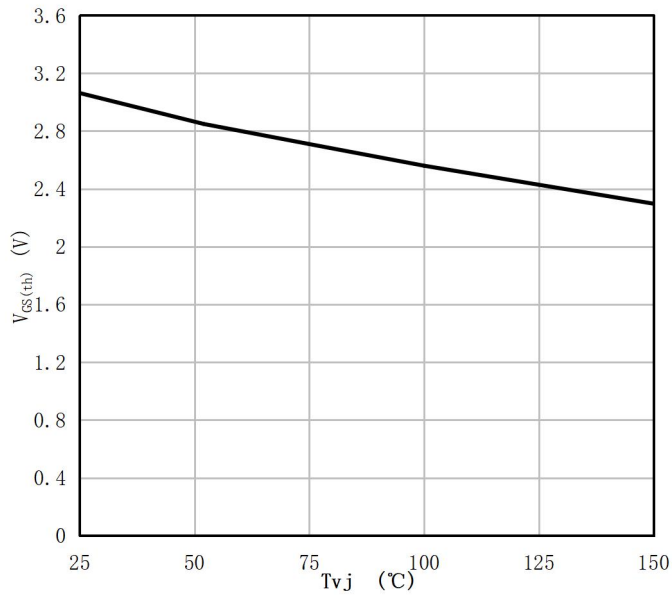




Figure5.forward characteristic of Body Diode,
MOSFET (typical)
 $T_{vi}=25^{\circ}\text{C}$

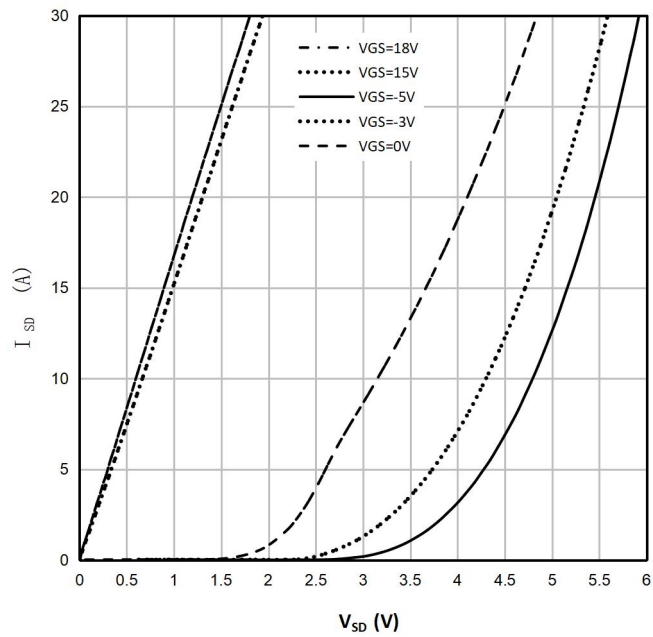
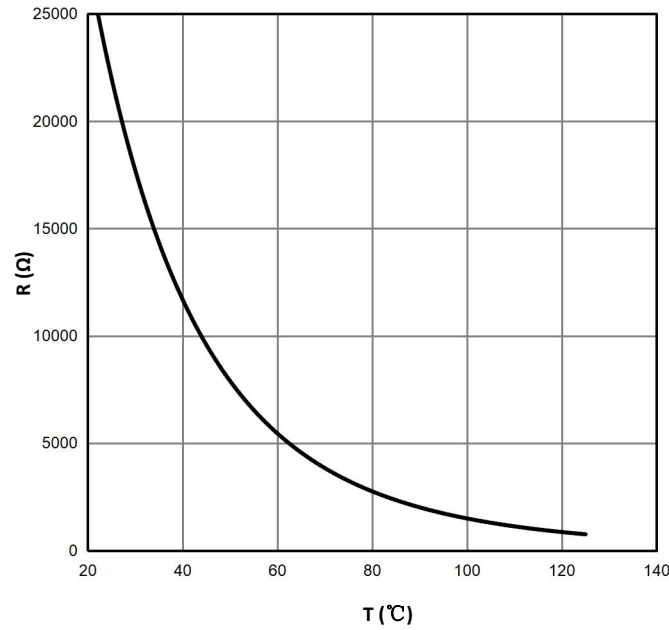
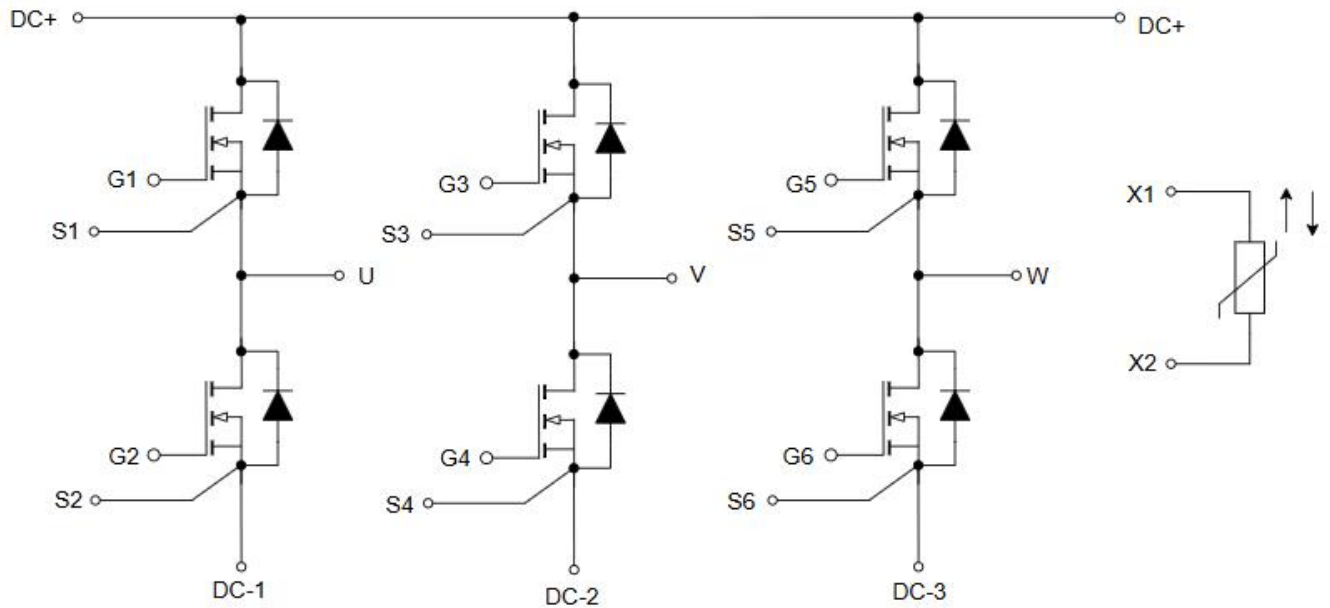


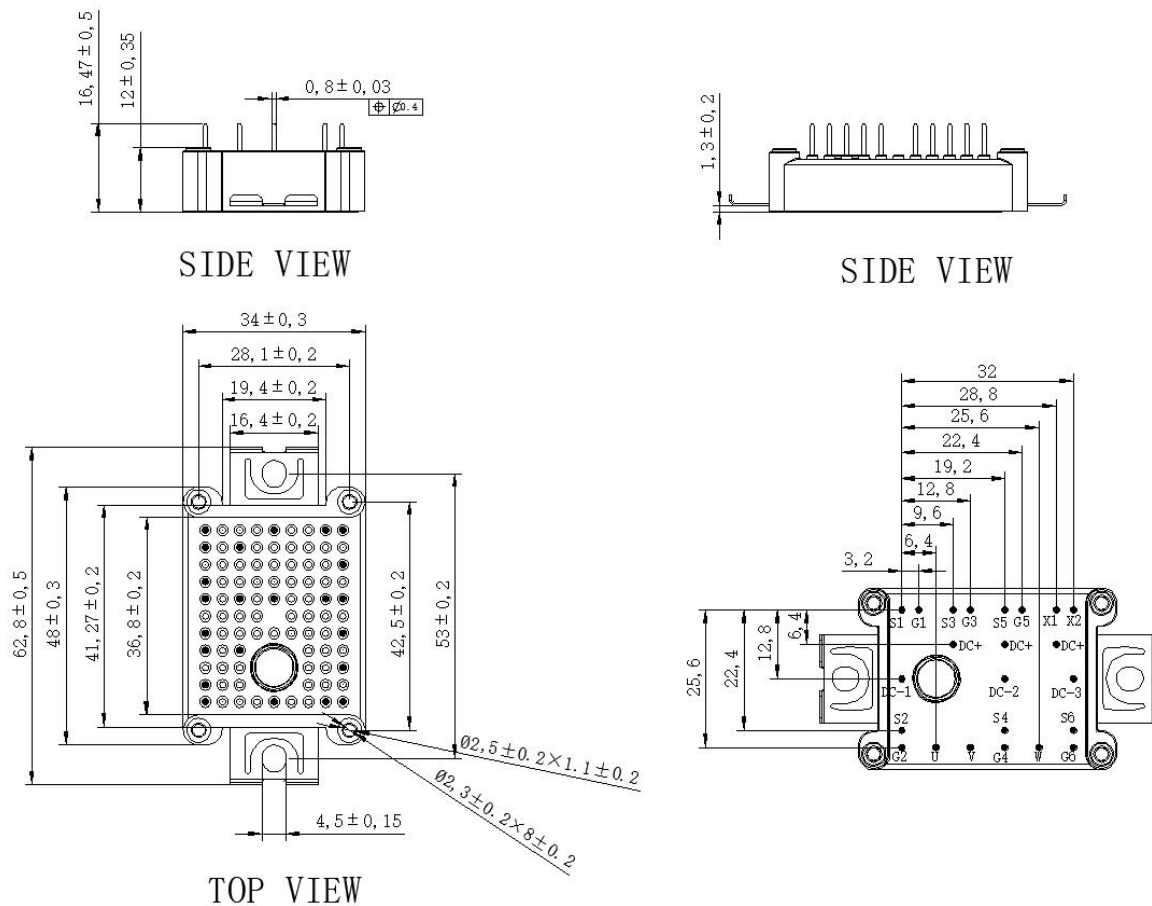
Figure6.NTC-Thermistor-temperature characteristic(typical)



CIRCUIT DIAGRAM



PACKAGE DIMENSION





REVISION HISTORY

Document version	Date of release	Description of changes
Rev.00	2025- 01-13	Preview



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