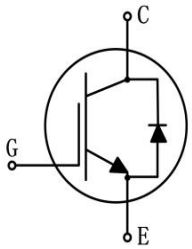
LGT10N65D/T

N-Channel Enhancement Mode Power IGBT

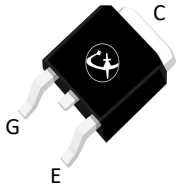
MAIN CHARACTERISTICS

$I_{C\ @TC=100℃}$	10A
V_{CE}	650V
$V_{GE(th)}$	5.8V
VCE(sat)-typ	1.8V



FEATURES

- •Trench and field-stop technology
- • Low switching losses
- • Positive temperature coefficient
- • Low Gate-Charge
- • RoHS compliant



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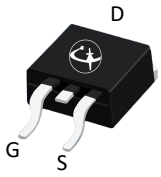


TO-263C

APPLICATIONS

- • UPS
- • Motor drives
- • Boost
- • PFC

MECHANICAL DATA

- • Case: Molded plastic
- • Mounting Position: Any
- • Molded Plastic: UL Flammability Classification Rating 94V-0
- • Lead free in compliance with EU RoHS 2011/65/EU directive
- • Solder bath temperature 275℃ maximum,10s per JESD 22-B106

Product specification classification

Part Number	Package	Mode Name	Pack
LGT10N65D	TO-252	LGT10N65D	Tape
LGT10N65T	TO-263C	LGT10N65T	Tape

LGT10N65D/T

N-Channel Enhancement Mode Power IGBT

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CES}	650	V
Gate-emitter voltage	V_{GES}	±20	V
Continuous collector current (TC=25℃)	I_C	20	A
Continuous collector current (TC=100℃)		10	A
Pulsed collector current, tp limited by Tvjmax	I_{CM}	40	A
Diode continuous forward current (TC=100℃)	I_F	10	A
Diode maximum current, tp limited by Tvjmax	I_{FM}	40	A
Short Circuit with Stand Time VGE=15V,VCC ≤400V,Allowed Number of Short Circuits＜1000, Times Between Short Circuits≥1.0s, TJ≤175°C	t_{SC}	10	μS
Power dissipation (TC=25℃)	P_{tot}	100	W
Power dissipation (TC=100℃)		50	W
Operating junction temperature range	T_{Jmax}	-40 to +175	°C
Storage temperature range	T_{Stg}	-55 to +150	°C

Thermal characteristics

Parameter	Symbol	Values	Unit
Thermal resistance, junction to case for IGBT	$R_{th(j-c)}$	1.5	K/ W
Thermal resistance, junction to case for Diode	$R_{th(j-c)}$	2	K/ W
Thermal resistance, junction to ambient	$R_{th(j-a)}$	62	K/ W

Note1:Pulse test: 300 μs pulse width, 2 % duty cycle

Electrical characteristics of IGBT at Tvj=25℃ unless otherwise specified

Static characteristics

Parameter	Test Condition	Symbol	Min	Typ	Max	Unit
Collector-emitter breakdown voltage	V_{GE}=0V, I_C=250μA	BV_{CES}	650	-	-	V
Collector-emitter leakage current	V_{CE}=650V, V_{GE}=0V	I_{CES}	-	-	50	μA
Gate leakage current, forward	V_{GE}=±20V, V_{CE}=0V	I_{GES}	-	-	±100	nA
Gate-emitter threshold voltage	V_{GE}=VCE, I_C=250μA	$V_{GE(th)}$	5.5	5.8	6.2	V
Collector-emitter saturation voltage	V_{GE}=15 V, I_C=10A, Tvj=25℃	$V_{CE(sat)}$	-	1.8		V
	V_{GE}=15 V, I_C=10A, Tvj=150℃		-	2.1	-	V
Diode forward voltage	I_F=10A,Tvj=25℃	V_F	-	1.4	-	V
	I_F=10A,Tvj=150℃		-	1.2	-	V

Electrical characteristics of IGBT at Tvj=25℃ unless otherwise specified

Dynamic characteristics

Parameter	Test Condition	Symbol	Min	Typ	Max	Unit
Input capacitance	V_{CE}=30V V_{GE}=0V f =1MHz	C_{ies}	-	667	-	pF
Output capacitance		C_{oes}	-	35	-	pF
Reverse transfer capacitance		C_{res}	-	9	-	pF
Total gate charge	V_{CC}=520V V_{GE}=15V I_C=10A	Q_g	-	27	-	nC

Switching characteristics

Parameter	Test Condition	Symbol	Min	Typ	Max	Unit
Turn-on delay time	V_{CC}=400V V_{GE}=15V I_C=10A R_G=10Ω Inductive load	td(on)	-	11	-	ns
Rise time		tr	-	9	-	ns
Turn-off delay time		td(off)	-	69	-	ns
Fall time		tf	-	73	-	ns
Turn-on energy		Eon	-	0.18	-	mJ
Turn-off energy		Eoff	-	0.17	-	mJ
Total switching energy		Ets	-	0.35	-	mJ
Turn-on delay time	V_{CC}=400V VGE=15V I_C=10A R_G=10Ω Inductive load Tvj =150℃	td(on)	-	9	-	ns
Rise time		tr	-	11	-	ns
Turn-off delay time		td(off)	-	85	-	ns
Fall time		tf	-	111	-	ns
Turn-on energy		Eon	-	0.21	-	mJ
Turn-off energy		Eoff	-	0.25	-	mJ
Total switching energy		Ets	-	0.46	-	mJ

Parameter	Test Condition	Symbol	Min	Typ	Max	Unit
Diode reverse recovery time	V_R=400V I_F=10A diF/dt=-750A/μs	trr	-	55	-	ns
Diode peak reverse recovery current		Irrm	-	11	-	A
Diode reverse recovery charge		Qrr	-	409	-	nC
Diode reverse recovery time	V_R=400V I_F=10A diF/dt=-750A/μs Tvj=150℃	trr	-	117	-	ns
Diode peak reverse recovery current		Irrm	-	11	-	A
Diode reverse recovery charge		Qrr	-	727	-	nC

RATINGS AND CHARACTERISTIC CURVES

Figure 1 Typical output characteristic(T_{vj}=25℃)

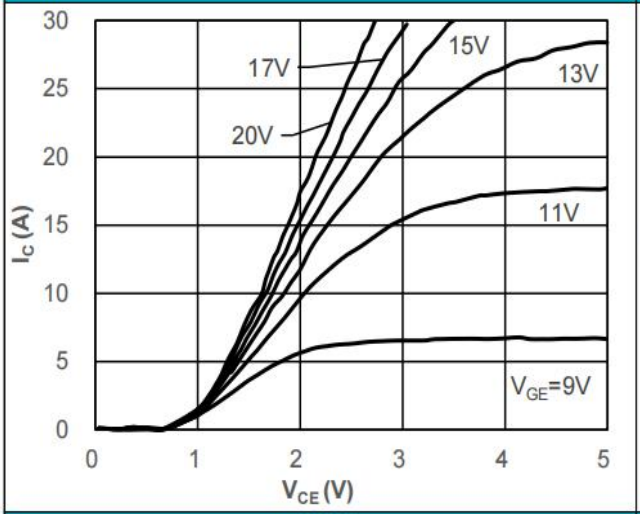


Figure 2 Typical output characteristic(T_{vj}=175℃)

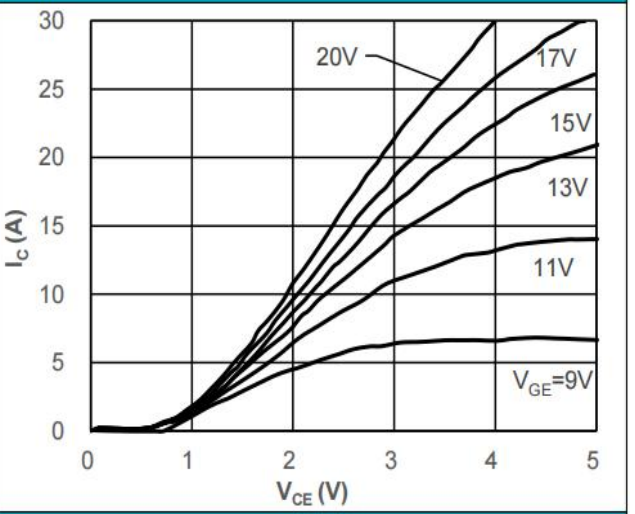


Figure 3 Power dissipation as a function of Tc

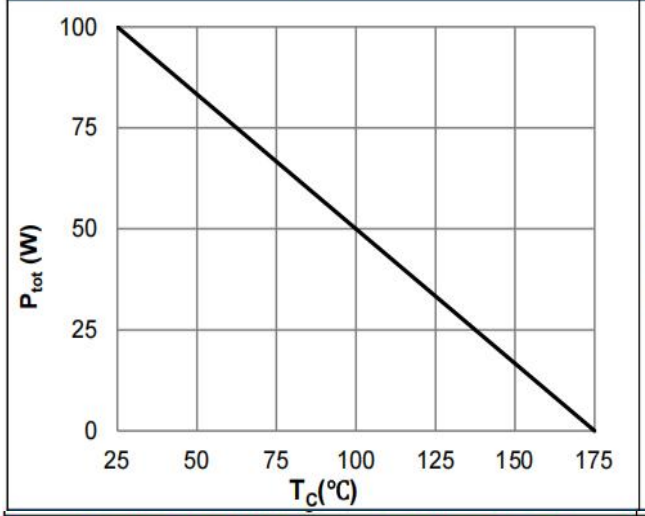


Figure 4 Typical Gate charge

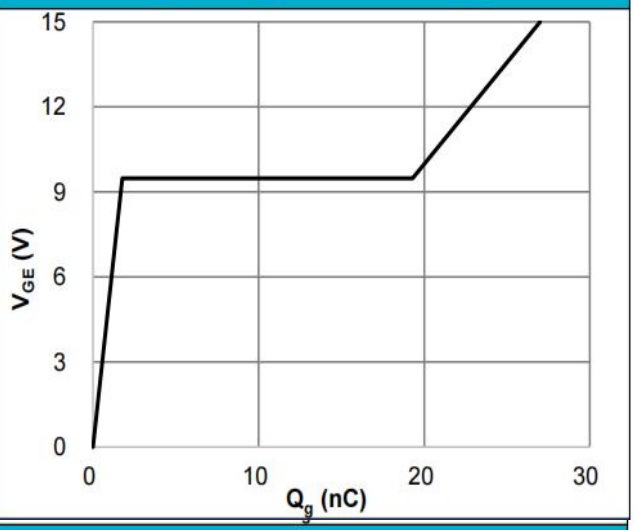


Figure 5 Typical $V_{GE(th)}$ as a function of T_{vj}(Ic=1mA)

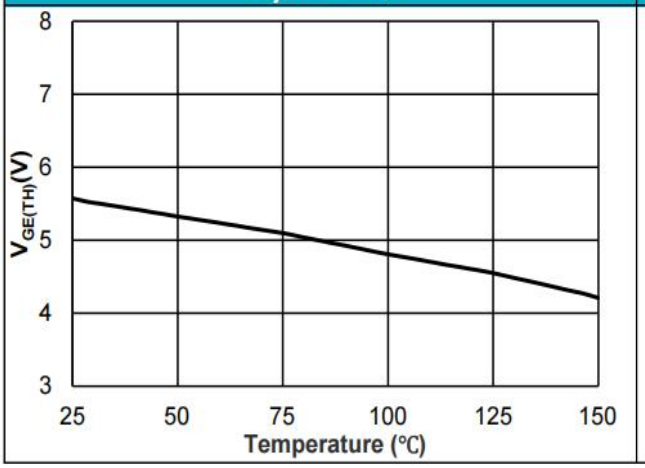
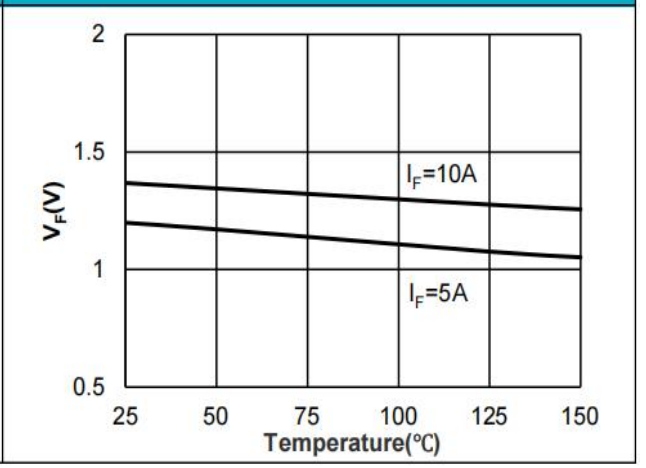


Figure 6 Typical V_F as a function of T_{vj}



RATINGS AND CHARACTERISTIC CURVES

Figure 7 Typical V_{CEsat} as a function of T_{vj}

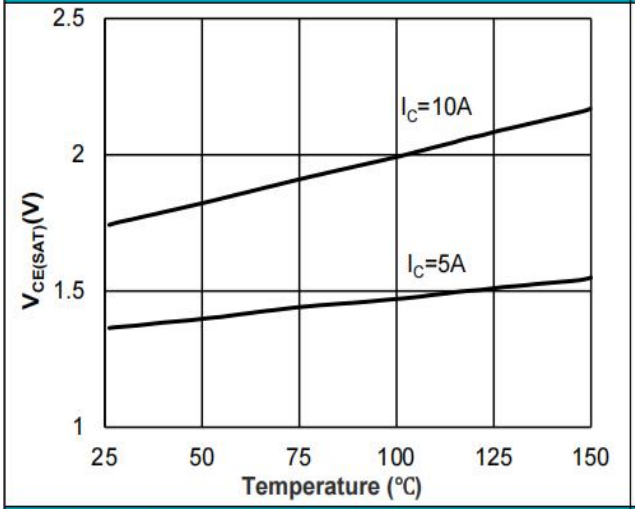


Figure 8 Typical I_F as a function of V_F

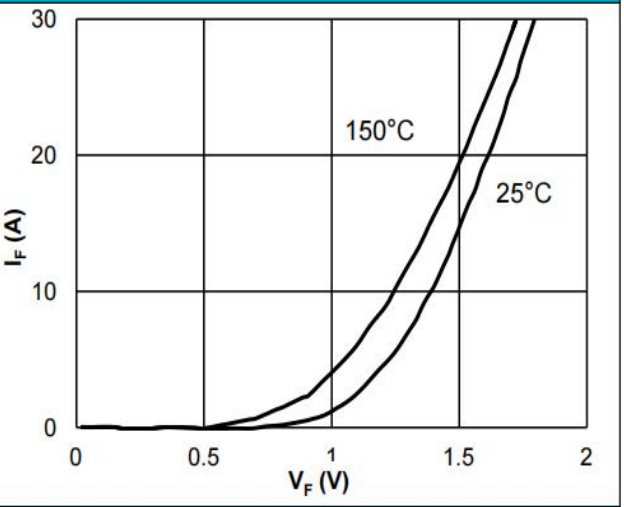


Figure 9 Typical switching time as a function of Ic

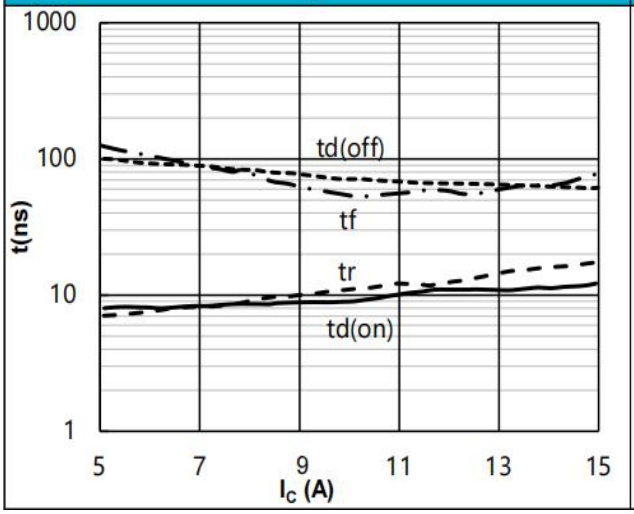


Figure 10 Typical switching time as a function of Rg

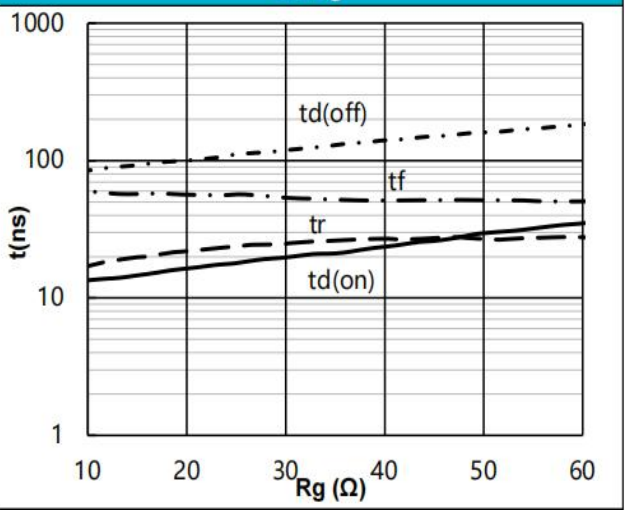


Figure 11 Typical switching energy losses as a function of Ic

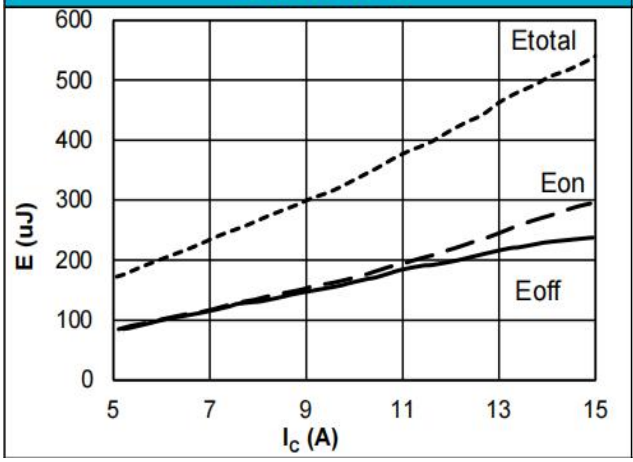
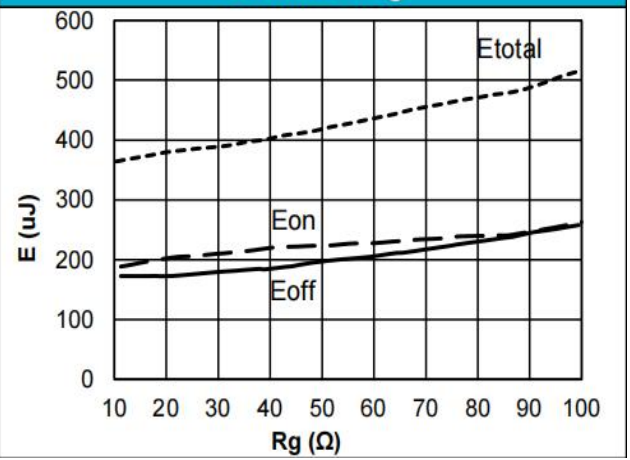
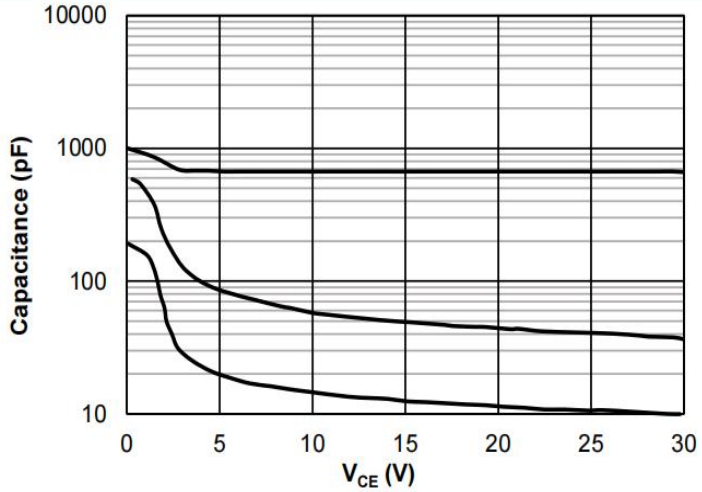


Figure 12 Typical switching energy losses as a function of Rg



RATINGS AND CHARACTERISTIC CURVES

Figure 13 Typical capacitance as a function of VCE (f=1Mhz, VGE=0V)



Package Outline Dimensions millimeters

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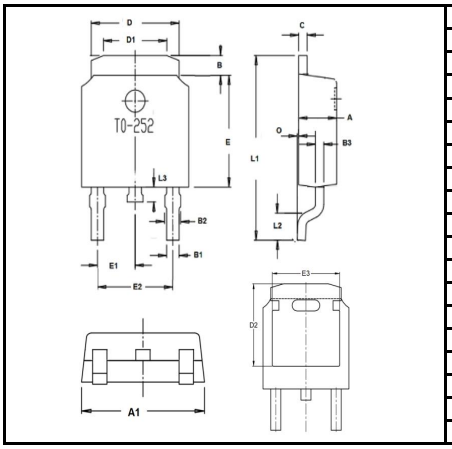

Dim.	Min.	Max.
A	2.1	2.5
A1	6.3	6.9
B	0.96	1.42
B1	0.74	0.86
B2	0.74	0.94
C	Typ0.5	
D	5.33	5.53
D1	3.65	4.05
D2	5	5.4
E	6	6.2
E1	Typ2.29	
E2	Typ4.58	
E3	4.6	5
O	0	0.15
L1	9.9	10.5
L2	Typ1.65	
L3	0.6	1
All Dimensions in millimeter		

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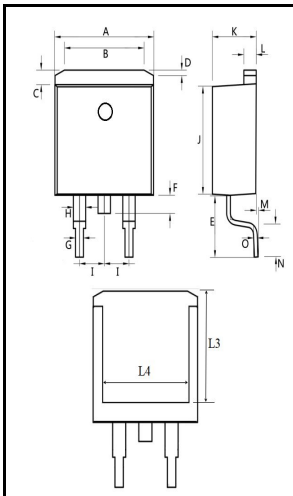
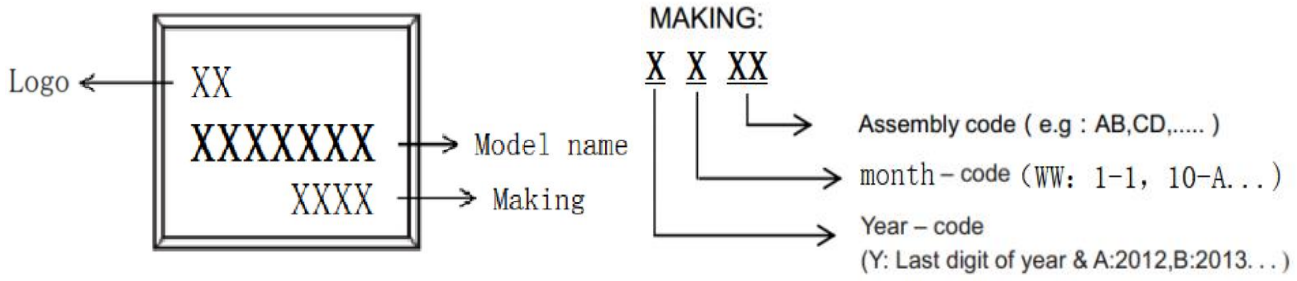


Dim.	Min.	Max.
A	9.8	10.2
B	6.1	6.7
C	1.1	1.4
D	0.5	1
E	4.6	5
F	1.4	1.6
G	0.7	0.9
H	1.17	1.37
I	Typ2.54	
J	9	9.2
K	4.3	4.7
L	1.25	1.35
L3	7.9	8.1
L4	7.5	7.7
M	0.02	0.23
N	2.2	2.8
O	0.45	0.55
All Dimensions in millimeter		

Marking on the body



packing instruction

PKG	Minimal Package	Mini Box	Box
TO-252			
	2500pcs/disk	5000pcs/disk	25000pcs/box
TO-263C			
	800pcs/disk	1600pcs/disk	8000pcs/box

Notice

All product,product specifications and data are subject to change without notice to improve.The right to explain is owned by LINGXUN electronics company.

Confirm that operation temperature is within the specified range described in the product specification. Avoid applying poer exceeding normal rated

poer; exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.

LINGXUN electronics shall not be in any way responsible or liable for failure induced under deviant condition from what is defined in this document.

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Revision History

Rev	Changes	Date
1.0	First version	2025-8-27
1.1	Add 263C packaging	2025-9-11