

•General Description

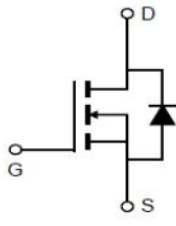
The SGT MOSFET LH026N100 has the low $R_{DS(on)}$, low gate charge, fast switching and excellent avalanche characteristics. This device is suitable for fast charge and lighting.

•Features

- Fast Switching
- Low $R_{DS(on)}$ & FOM
- Low Miller Capacitance

•Application

- Lighting
- Power Supplies
- PD Fast Charging



$V_{DS} = 100V$

$R_{DS(ON)} = 2.6m\Omega$

$I_D = 180A$



■ RoHS COMPLIANT

G D S

TO-247

•Ordering Information:

Part Number	LH026N100
Package	TO-247
Basic Ordering Unit (pcs)	450
Normal Package Material Ordering Code	LH026N100T2-TO247-TU
Halogen Free Ordering Code	LH026N100T2-TO247-TU-HF

•Absolute Maximum Ratings (TC =25℃)

PARAMETER	SYMBOL	Value	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current , $T_C = 25^\circ C$	I_D	180	A
Pulsed drain current (TC = 25℃, tp limited by Tjmax) ¹	I_D pulse	360	A
Single Pulse Avalanche Energy ²	E_{AS}	506	mJ
Power Dissipation(TC=25℃)	P_D	180	W
Operating Temperature	T_J	-55~+175	℃
Storage Temperature	T_{STG}	-55~+175	℃

●Electronic Characteristics

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	100	--	--	V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	--	4.0	V
Drain-source On Resistance ³	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$	--	2.2	2.6	mΩ
		$V_{GS}=6V, I_D=20A$	--	3.8	5.0	
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=85V, V_{GS}=0V, T_J=25^\circ C$	--	--	10	uA
		$V_{DS}=85V, V_{GS}=0V, T_J=125^\circ C$	--	--	100	
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	--	--	± 100	nA
Gate Resistance	R_g	$V_{GS}=0V, V_{DS}=0V, F=1MHz$	--	1.6	--	Ω
Forward Transconductance	g_{fs}	$V_{DS}=5V, I_D=20A$	--	43	--	S

DYNAMIC CHARACTERISTICS

Input Capacitance	C_{iss}	$V_{GS}=10V,$ $V_{DS}=50V$ $f=1.0MHz$	--	3600	--	pF
Output Capacitance	C_{oss}		--	1302	--	
Reverse transfer Capacitance	C_{rss}		--	80	--	
Turn-on delay time	$T_{d(on)}$	$V_{GS}=10V,$ $I_D=45A$ $R_G=3.6\Omega$	--	13.7	--	ns
Rise time	T_r		--	26	--	
Turn -Off Delay Time	$T_{d(off)}$		--	54.4	--	
Fall time	T_f		--	31.2	--	

GATE CHARGE CHARATERISTICS

Total Gate Charge	Q_g	$I_D=20A,$ $V_{DS}=50V$ $V_{GS}=10V$	--	74.3	---	nC
Gate-to-Source Charge	Q_{gs}		--	14	--	
Gate-to-Drain Charge	Q_{gd}		--	25	---	

DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS

Diode Forward Voltage	V_{SD}	$T_J=25^\circ C, I_S=20.0A$ $V_{GS}=0V$	--	--	1.2	V
Reverse Recovery Time	t_{rr}	$I_f=I_S$ $di_F/dt=100A/\mu s$	--	118	--	ns
Reverse Recovery Charge	Q_{rr}		--	311	--	uC

●Thermal Characteristics

PARAMETER	SYMBOL	MAX	UNIT
Thermal Resistance Junction-case	R_{thJC}	0.83	$^\circ C/W$
Thermal Resistance Junction-ambient	R_{thJA}	54.5	$^\circ C/W$

Notes:

1.Repetitive Rating: Pulse width limited by maximum junction temperature.

2. $I_{AS}=45A, V_{DD}=60V, R_G=50\Omega$, Starting $T_J=25^\circ C$

3. Pulse Test : Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$

•Typical Characteristics

Fig1.Output Characteristics

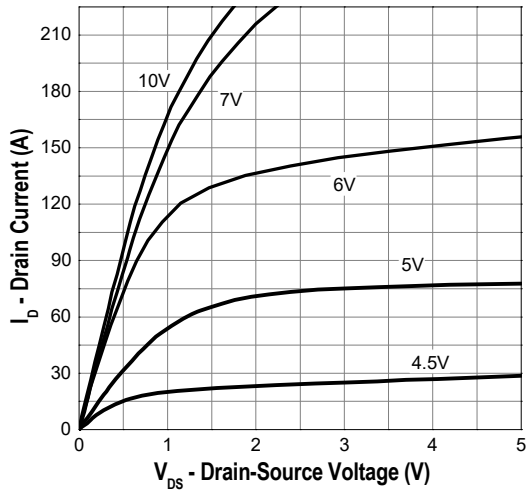


Fig2.Gate Threshold Voltage

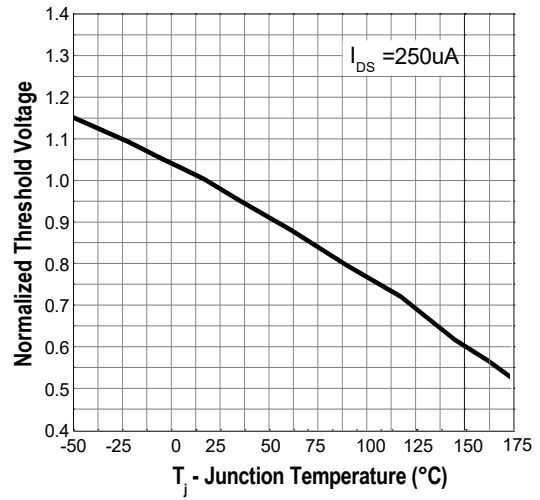


Fig3.Gate-Source On Resistance

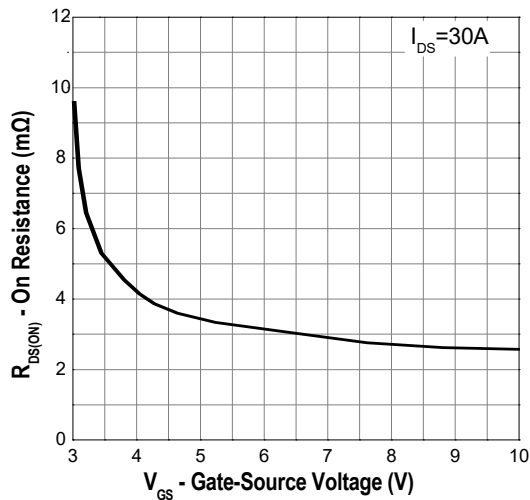


Fig4.Drain-Source On Resistance

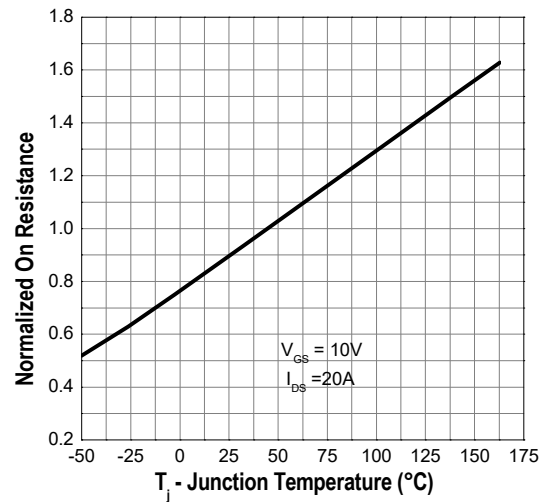


Fig5.Drain-Source On Resistance

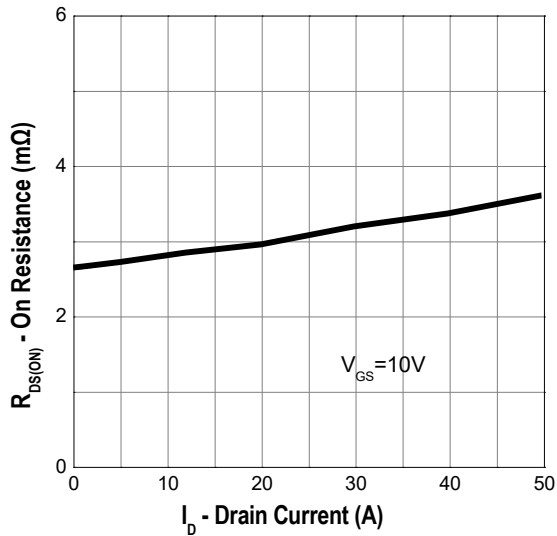
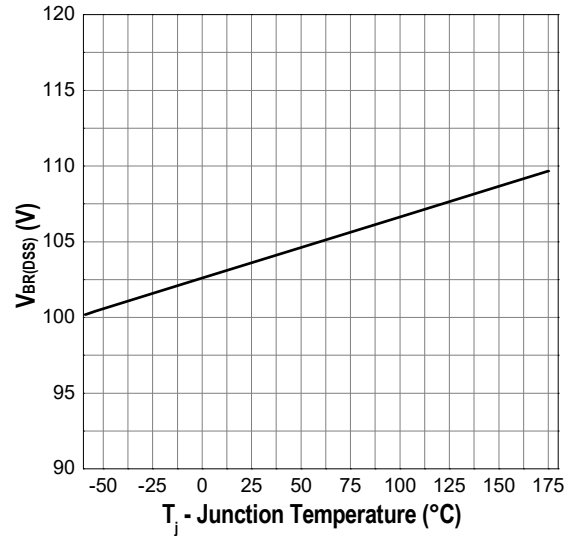


Fig6.Drain-source Breakdown Voltage



● **Typical Characteristics**_(cont.)

Fig7.Power Dissipation

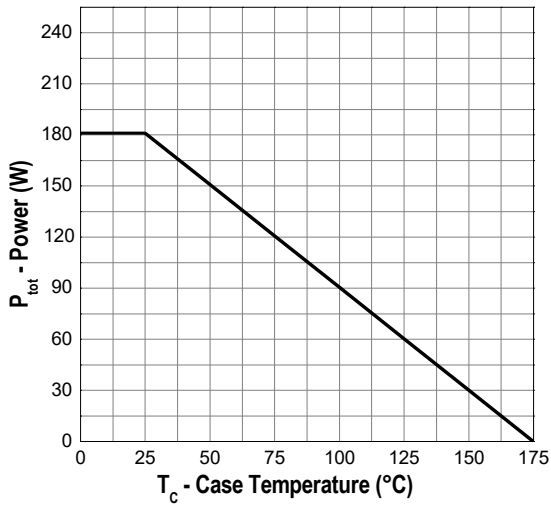


Fig8.Drain Current

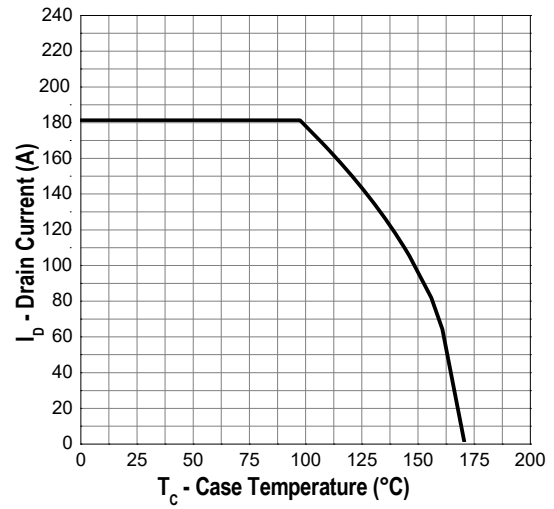


Fig9.Safe Operation Area

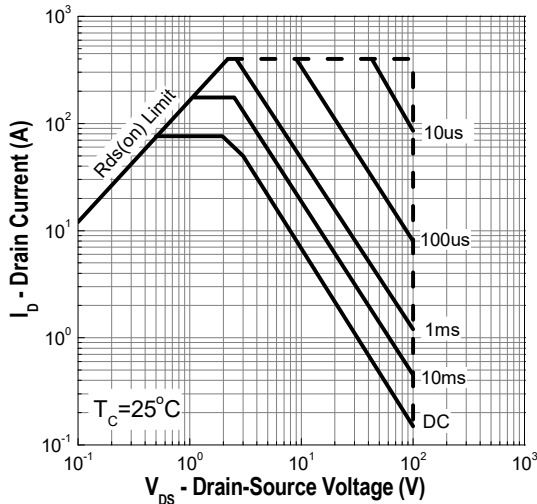


Fig10.Transient Thermal Impedance

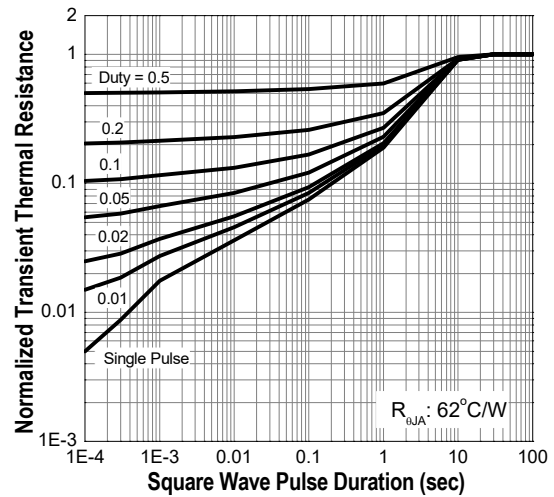


Fig11.Capacitance

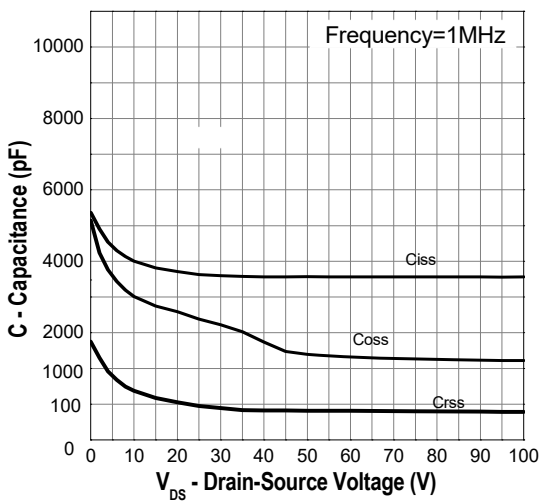
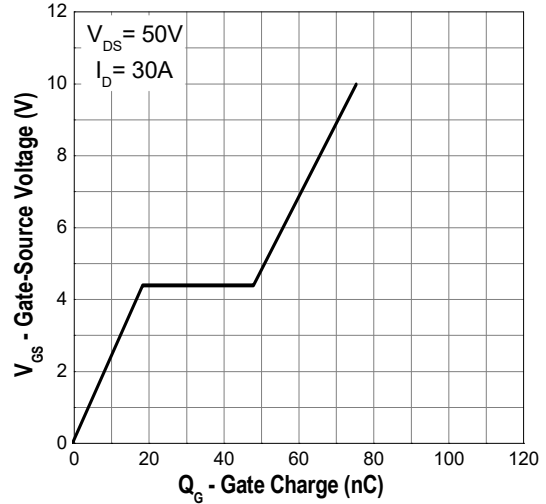


Fig12.Gate Charge



• Test Circuits & Waveforms

Fig.1 Gate Charge Waveform

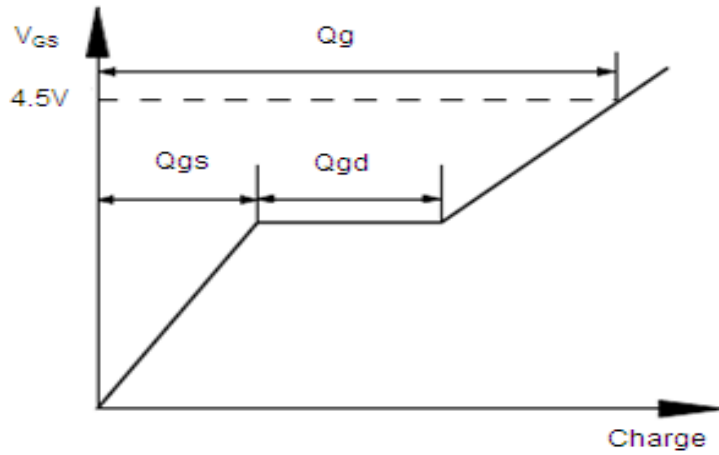


Fig.2 Switching Time Waveform

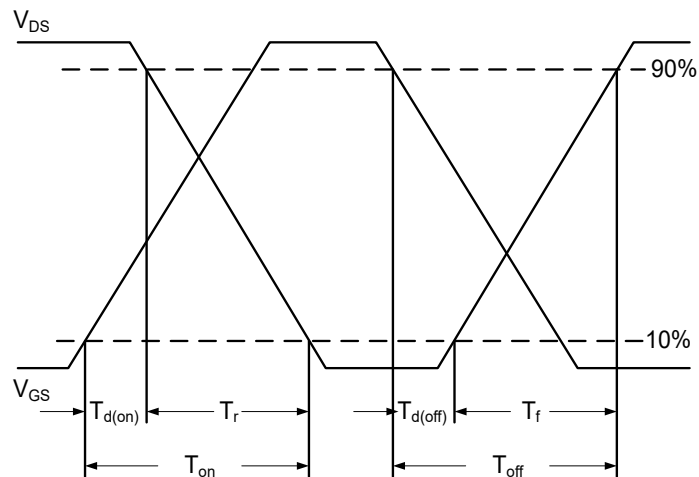
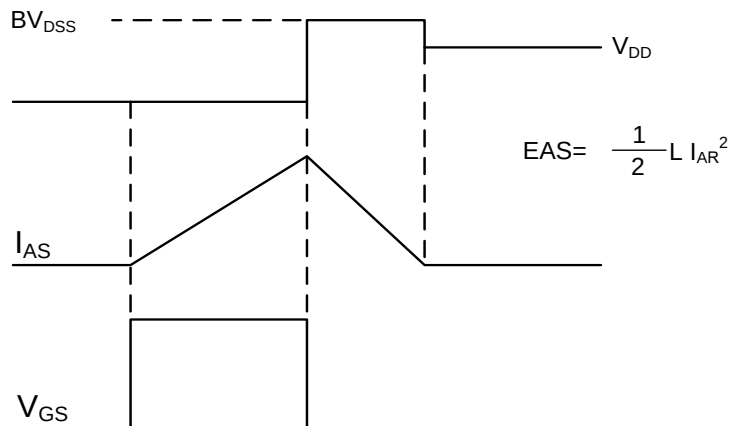


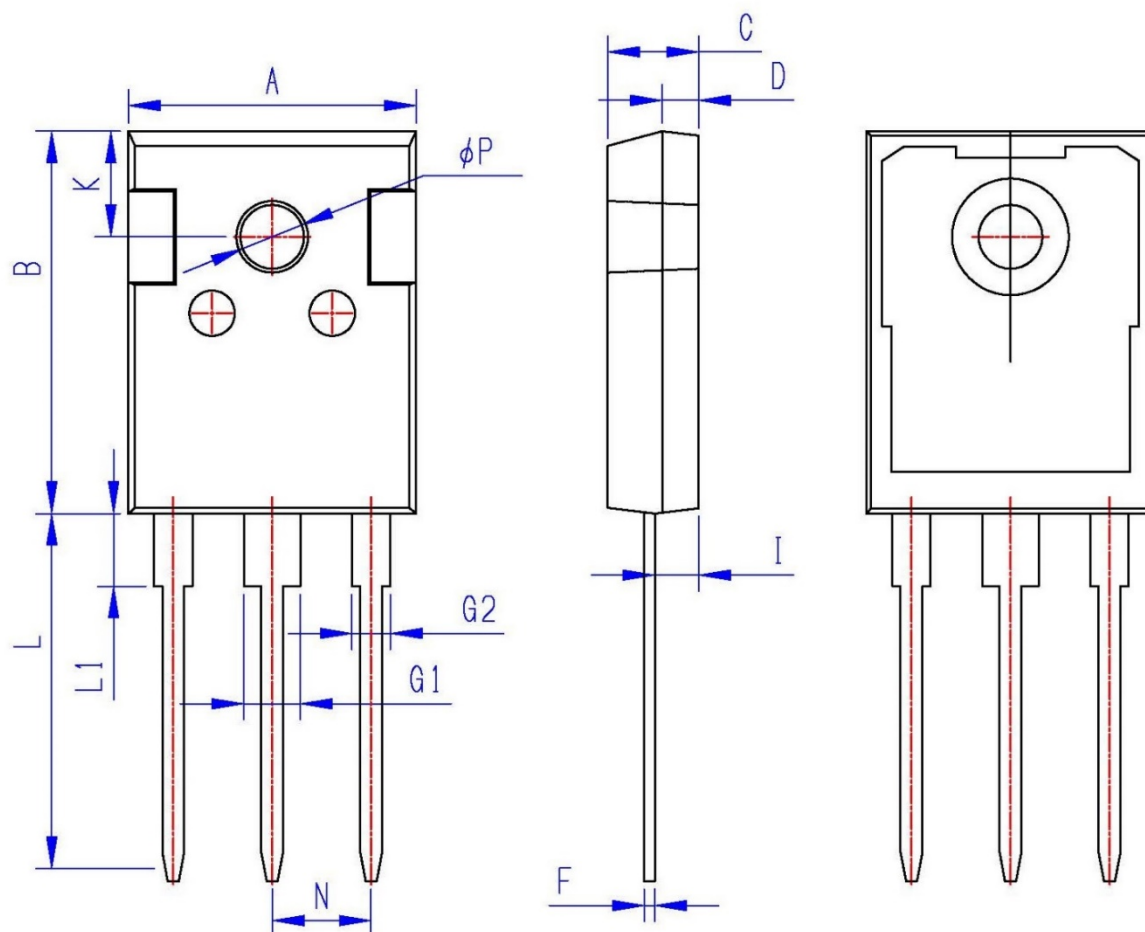
Fig.11 Unclamped Inductive Switching Waveform



●Dimensions (TO-247)

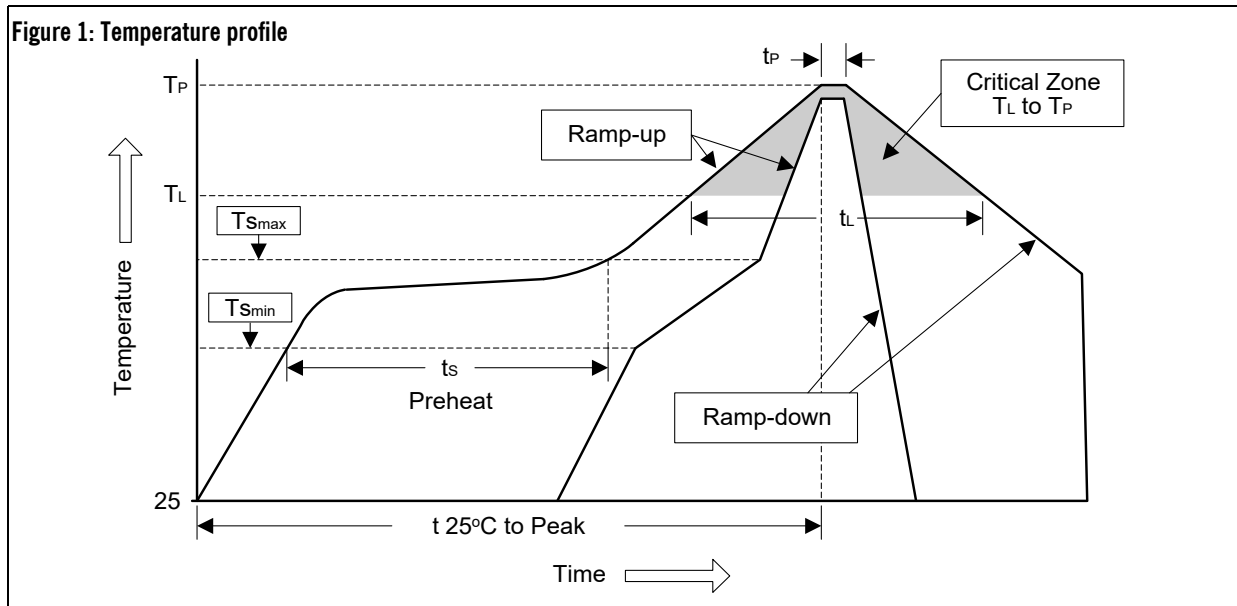
UNIT:mm

SYMBOL	min	max	SYMBOL	min	max
A	15.60	16.00	G2	1.95	2.25
B	20.80	21.20	N	5.25	5.65
C	4.85	5.15	L1	4.00	4.30
D	1.85	2.15	L	19.60	20.40
E	1.00	1.40	I	2.30	2.50
F	0.50	0.70	ΦP	3.30	3.70
G1	3.00	3.30			



• Soldering Methods for Lihomicro's Products

1. Storage environment: Temperature=10°C to 35°C Humidity=65%±15%
2. Molder Plastic: UL Flammability Classification Rating 94V-0
3. Reflow soldering of surface-mount devices



● Classification Reflow Profiles

Average ramp-up rate (T_L to T_P)	<3°C/sec	<3°C/sec
Preheat		
- Temperature Min (T_{smin})	100°C	150°C
- Temperature Max (T_{smax})	150°C	200°C
- Time (min to max) (ts)	60 to 120 sec	60 to 180 sec
T_{smax} to T_L		
- Ramp-up Rate	<3°C/sec	<3°C/sec
Time maintained above:		
- Temperature (T_L)	183°C	217°C
- Time (t_L)	60 to 150 sec	60 to 150 sec
Peak Temperature (T_P)	240°C +0/-5°C	260°C +0/-5°C
Time within 5°C of actual Peak Temperature (t_P)	10 to 30 sec	20 to 40 sec
Ramp-down Rate	<6°C/sec	<6°C/sec
Time 25°C to Peak Temperature	<6 minutes	<8 minutes

Flow (wave) soldering (solder dipping)

Products	Peak Temperature	Dipping Time
Pb devices.	245°C ±5°C	5sec ±1sec
Pb-Free devices.	260°C +0/-5°C	5sec ±1sec

● Reliability Test Program

Testitem	Method	Description
Solderability	JESD-22,B102	5sec , 245°C
Holt	JESD-22,A108	1000Hrs,Bias@125°C
PCT	JESD-22,A102	168Hrs,100%RH,2atm,121°C
TCT	JESD-22,A104	500Cycles, -65°C ~150°C