

●General Description

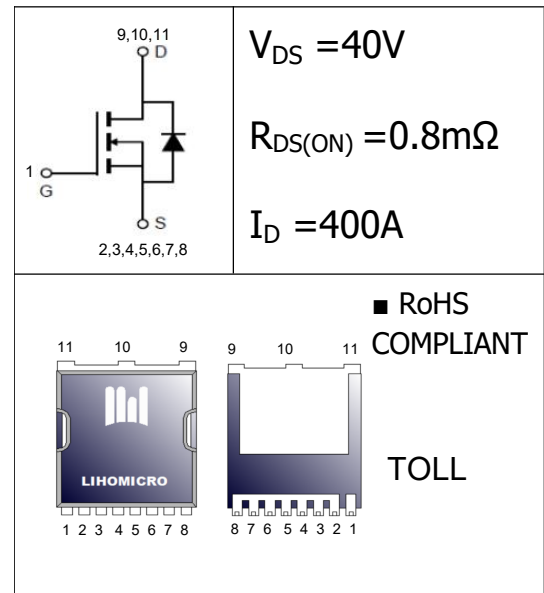
The SGT MOSFET LH008N04G has the low $R_{DS(on)}$, low gate charge, fast switching and excellent avalanche characteristics. This device is suitable for fast charge and lighting.

●Features

- Fast switching
- Low $R_{DS(on)}$ & FOM
- Low Gate Charge

●Application

- LED/LCD/TV and monitor Lighting
- Power Supplies
- DC/DC Converters



●Ordering Information:

Part Number	LH008N04G
Package	TOLL
Basic Ordering Unit (pcs)	2000
Normal Package Material Ordering Code	LH008N04GLL-TOLL-TAP
Halogen Free Ordering Code	LH008N04GLL-TOLL-TAP-HF

●Absolute Maximum Ratings (TC =25℃)

PARAMETER	SYMBOL	Value	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current , $T_C = 25^\circ\text{C}$	I_D	400	A
Pulsed drain current (TC = 25℃, tp limited by Tjmax) ¹	I_D pulse	1600	A
Single Pulse Avalanche Energy ²	E_{AS}	1300	mJ
Power Dissipation(TC=25℃)	P_D	300	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}	$V_{GS}=0V, I_D=250\mu A$	40	--	--	V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.6	3.0	V
Drain-source On Resistance ³	$R_{DS(ON)}$	$V_{GS}=10V, I_D=50A$	--	0.8	1.0	mΩ
		$V_{GS}=4.5V, I_D=20A$	--	1.1	1.3	
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=32V, V_{GS}=0V, T_J=25^{\circ}C$	--	--	1	μA
		$V_{DS}=32V, V_{GS}=0V, T_J=85^{\circ}C$	--	--	5	
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20, V_{DS}=0V$	--	--	±100	nA
Input Capacitance	C_{iss}	$V_{GS}=0V,$ $V_{DS}=20V$ $f=1.0MHz$	--	8296	--	pF
Output Capacitance	C_{oss}		--	3294	--	
Reverse transfer Capacitance	C_{rss}		--	55	--	
Turn -Off Delay Time	$T_d(off)$	$V_{GS}=10V,$ $I_D=50.0A$ $R_G=4.5\Omega$	--	153	--	ns
Turn-on delay time	$T_d(on)$		--	19	--	
Rise time	T_r		--	84	--	
Fall time	T_f		--	126	--	
Total Gate Charge	Q_g	$I_D=20A,$ $V_{DS}=20V$ $V_{GS}=50V$	--	148	---	nC
Gate-to-Source Charge	Q_{gs}		--	26	--	
Gate-to-Drain Charge	Q_{gd}		--	25	---	

●Diode Characteristics

Reverse Recovery Time	T_{RR}	$V_{GS}=10V, I_D=50A$ $di/dt=100A/\mu S$	--	97	--	nS
Reverse Recovery Charge	Q_{RR}		--	162	--	nC
Diode Forward Voltage	V_{SD}	$T_J=25^{\circ}C, I_S=50A$ $V_{GS}=0V$	--	1.1	1.3	V

Notes:

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

2. $I_{AS}=40A, V_{DD}=25V, R_G=25\Omega$, Starting $T_J=25^{\circ}C$

3. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%

● **Typical Characteristics**

Fig.1 Typical Output Characteristics

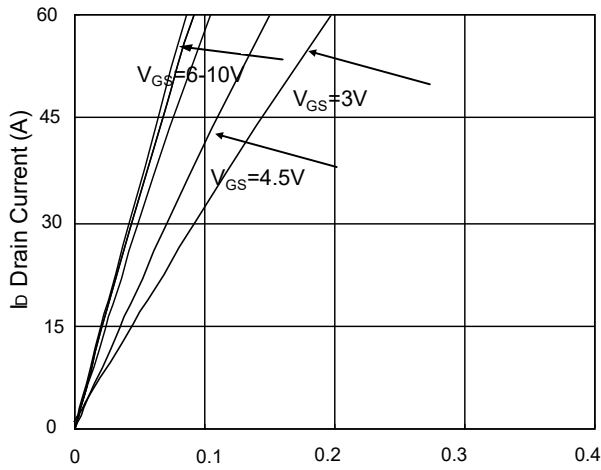


Fig.2 On-Resistance vs G-S Voltage

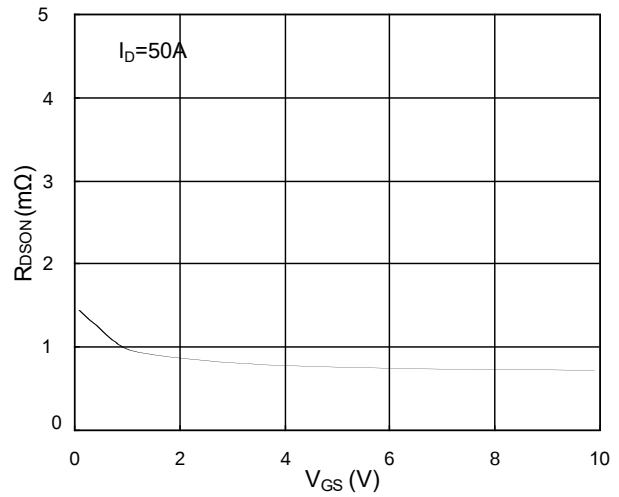


Fig.3 Source Drain Forward Characteristics

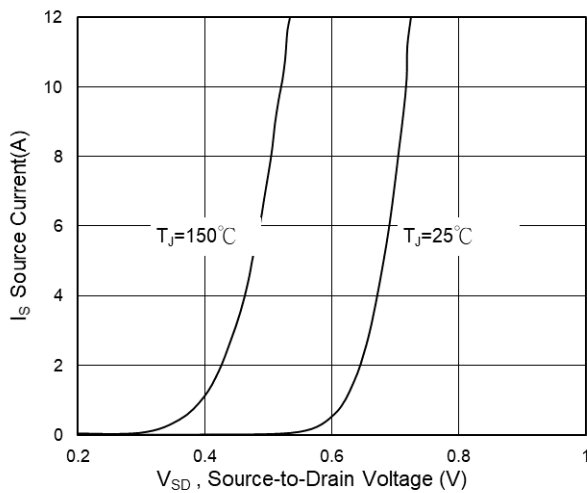


Fig.4 Capacitance

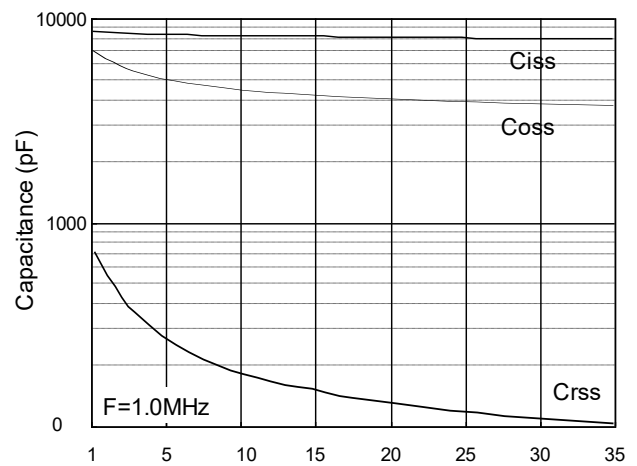


Fig.5 Normalized $V_{GS(th)}$ vs T_J

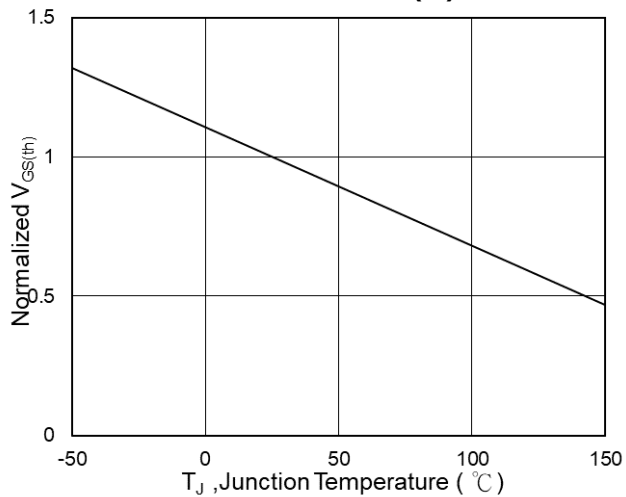
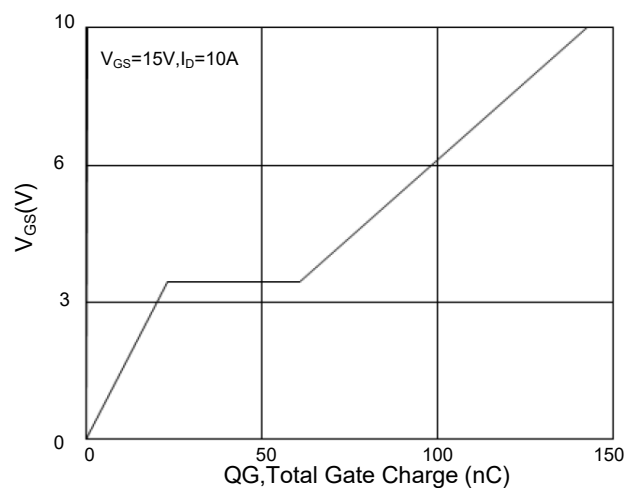


Fig.6 Gate-Charge Characteristics



•Typical Characteristics(cont.)

Fig.7 Normalized $R_{DS(on)}$ vs T_J

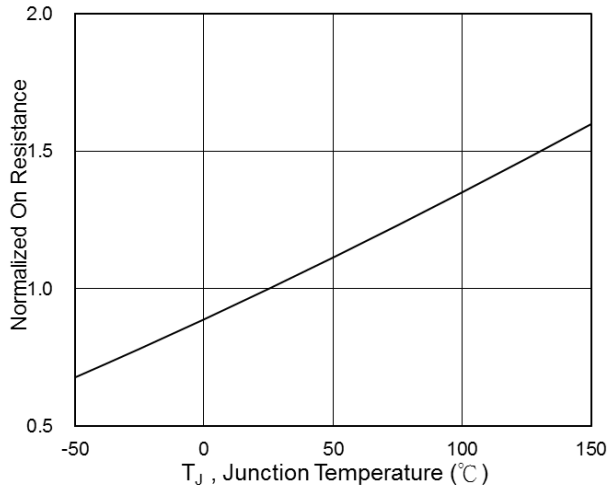


Fig.8 Safe Operating Area

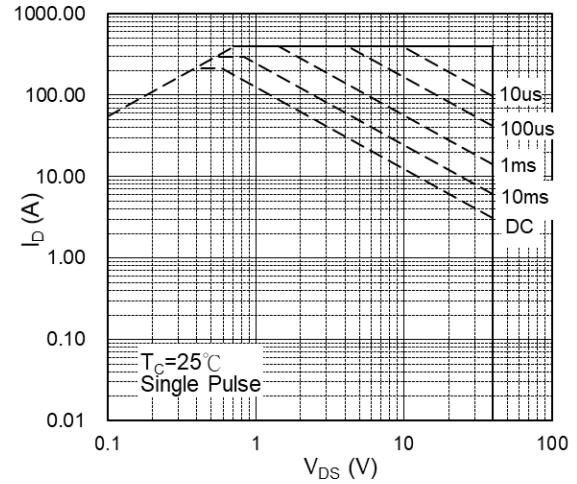
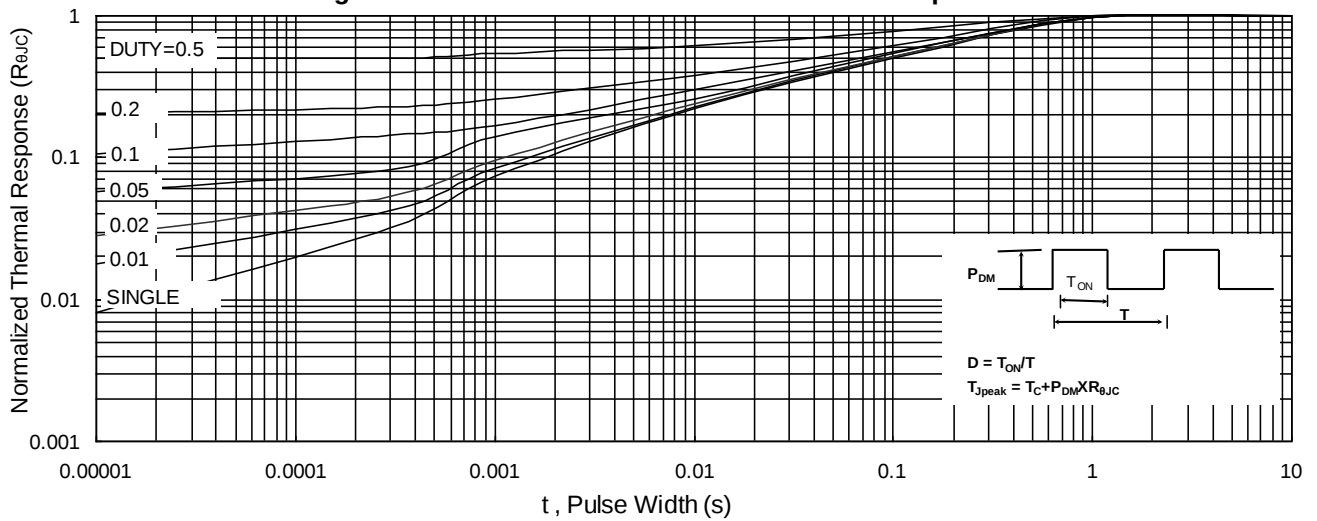


Fig.9 Normalized Maximum Transient Thermal Impedance



• Test Circuits & Waveforms

Fig1.EAS test Circuits

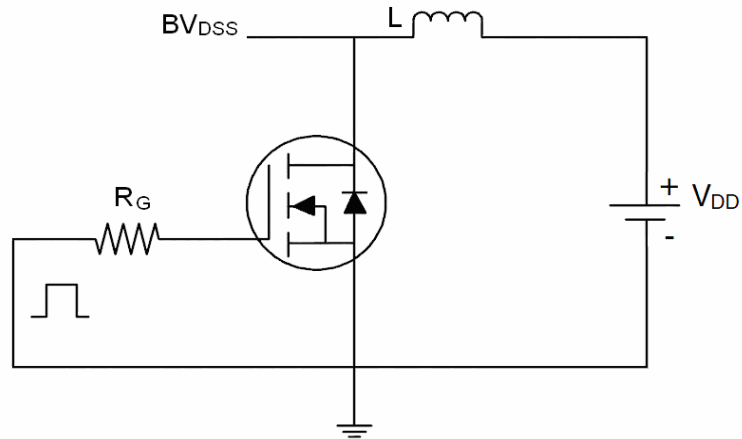


Fig2.Gate charge test Circuit

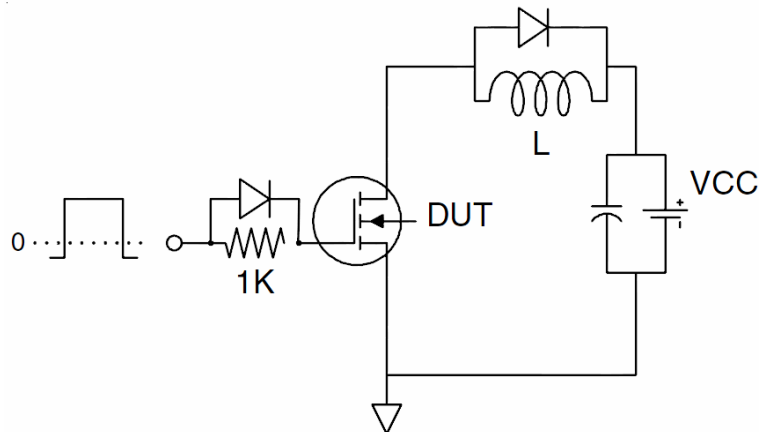
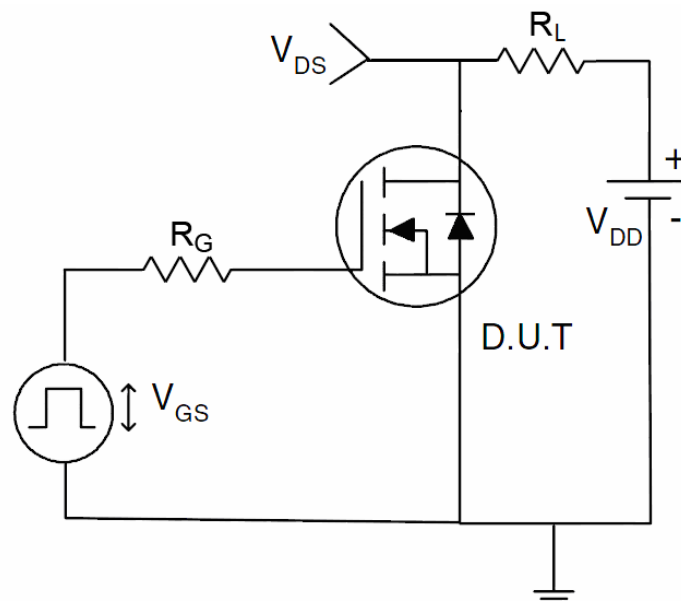


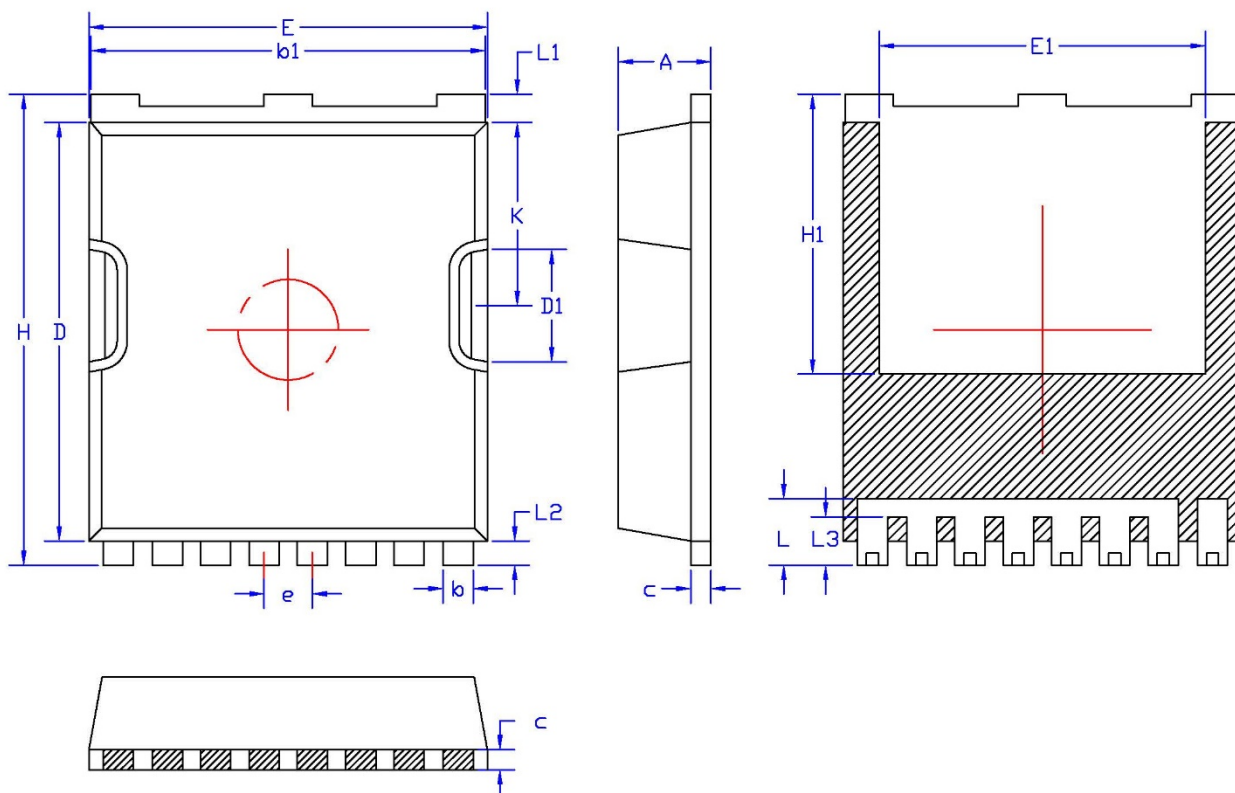
Fig3.Switch Time Test Circuit



•Dimensions (TOLL)

Unit: mm

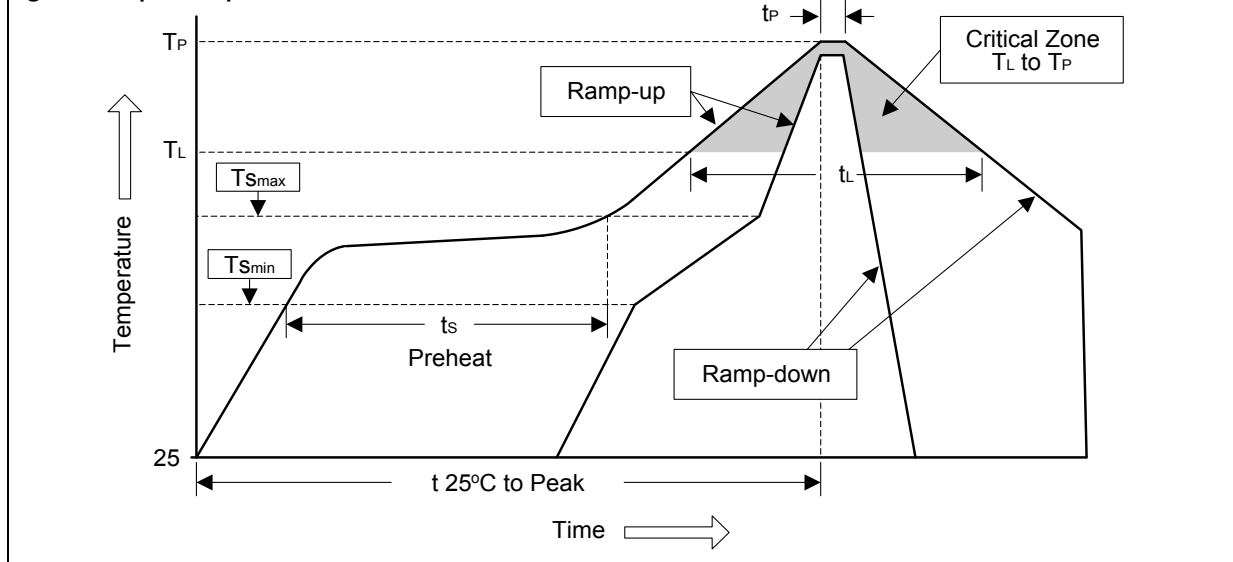
SYMBOL	min	max	SYMBOL	min	max
A	2.15	2.45	e	1.20BSC	
b	0.60	0.80	K	4.40	4.60
b1	9.70	9.90	L	1.50	1.90
c	0.45	0.75	L1	0.60	0.80
D	10.30	10.50	L2	0.50	0.70
D1	3.10	3.50	H	11.60	11.80
E	9.70	10.10	H1	6.80	7.10
E1	8.00	9.00			



• Soldering Methods for Lihomicro's Products

1. Storage environment: Temperature=10°C to 35°C Humidity=65%±15%
2. Reflow soldering of surface-mount devices

Figure 1: Temperature profile



Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
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) (t_s)	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

3. 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