

•General Description

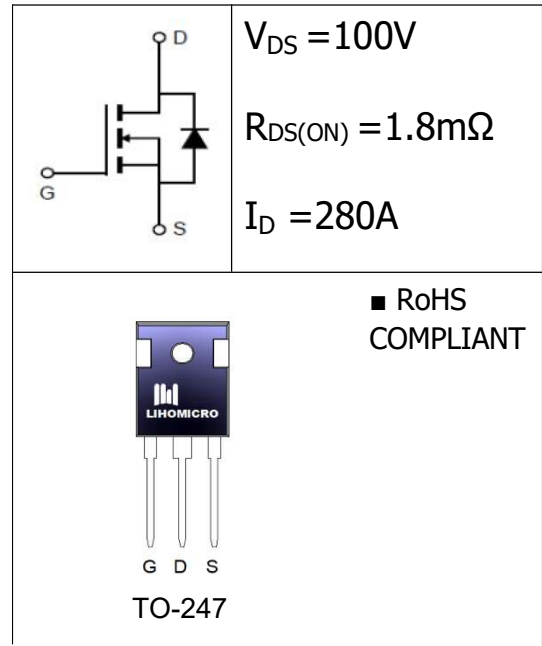
The N-Channel MOSFET LH018N100C has the low $R_{DS(on)}$, low gate charge, fast switching and excellent avalanche characteristics. This device is suitable for Power Supplies and Li-Battery.

•Features

- High Efficiency
- Low $R_{DS(on)}$ & FOM
- 100% EAS Guaranteed

•Application

- LED/LCD/PDP TV and monitor Lighting
- Power Supplies
- UPS
- DC-DC Converter


•Ordering Information:

Part Number	LH018N100C
Package	TO-247
Basic Ordering Unit (pcs)	450
Normal Package Material Ordering Code	LH018N100CT2-TO247-TU
Halogen Free Ordering Code	LH018N100CT2-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	$I_D(TC=25^{\circ}C)$	280	A
	$I_D(TC=100^{\circ}C)$	210	A
Pulsed drain current (TC = 25℃, tp limited by Tjmax) ¹	I_D pulse	560	A
Single Pulse Avalanche Energy ²	E_{AS}	700	mJ
Power Dissipation(TC=25℃)	P_D	330	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	$R_{DS(ON)}$	$V_{GS}=10V, I_D=30A$	--	1.8	2.3	mΩ
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=80V, V_{GS}=0V, T_J=25^\circ C$	--	--	1	μA
		$V_{DS}=80V, V_{GS}=0V, T_J=85^\circ C$	--	--	100	
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	--	--	±100	nA
Gate Resistance	R_g	f=1MHz, Open Drain	--	2.1	--	Ω
Input Capacitance	C_{iss}	$V_{GS}=0V,$ $V_{DS}=50V$ f = 1.0MHz	--	5500	--	pF
Output Capacitance	C_{oss}		--	3800	--	
Reverse transfer Capacitance	C_{rss}		--	1100	--	
Turn-on delay time	$T_{d(on)}$	$I_D=20A,$ $V_{DS}=50V$ $V_{GS}=10V$ $V_G=3\Omega$	--	37	--	nS
Rise time	T_r		--	28	--	
Turn -Off Delay Time	$T_{d(off)}$		--	102	--	
Fall time	T_f		--	38	--	
Total Gate Charge	Q_g	$I_D=20A,$ $V_{DS}=50V$ $V_{GS}=10V$	--	110	---	nC
Gate-to-Source Charge	Q_{gs}		--	31	--	
Gate-to-Drain Charge	Q_{gd}		--	27	---	
Continuous Diode Forward Current	I_S	--	--	--	280	A
Diode Forward Voltage	V_{SD}	$T_J=25^\circ C, I_S=1A$ $V_{GS}=0V$	--	--	1.2	V
Reverse Recovery Time	t_{rr}	$I_f=20A$ $di_F/dt=100A/\mu s$	--	85	--	ns
Reverse Recovery Charge	Q_{rr}		--	180	--	nC

●Thermal Characteristics

PARAMETER	SYMBOL	MAX	UNIT
Thermal Resistance Junction-case	R_{thJC}	0.45	°C/W
Thermal Resistance Junction-ambient	R_{thJA}	62	°C/W

Notes:

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

2.L= 0.5mH, $V_{DD}=50V$, $R_G=25\Omega$, $I_{AS}=65A$, Starting $T_J=25^\circ C$

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

•Typical Characteristics

Fig1.Output Characteristics

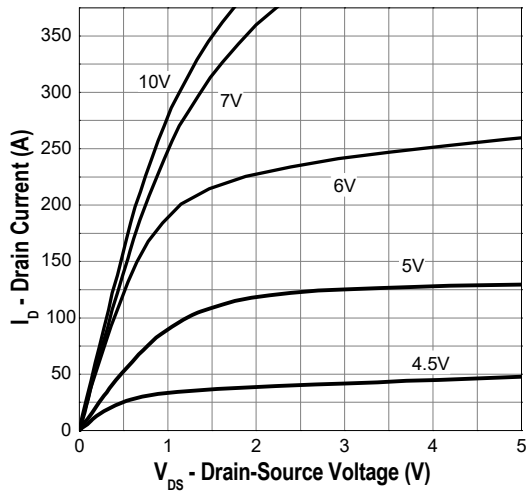


Fig2.Gate Threshold Voltage

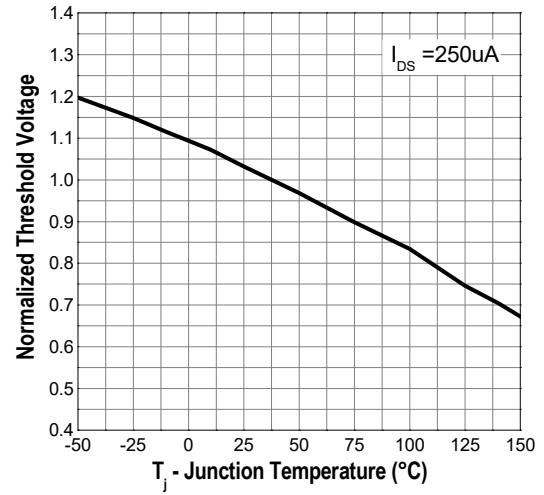


Fig3.Gate-Source On Resistance

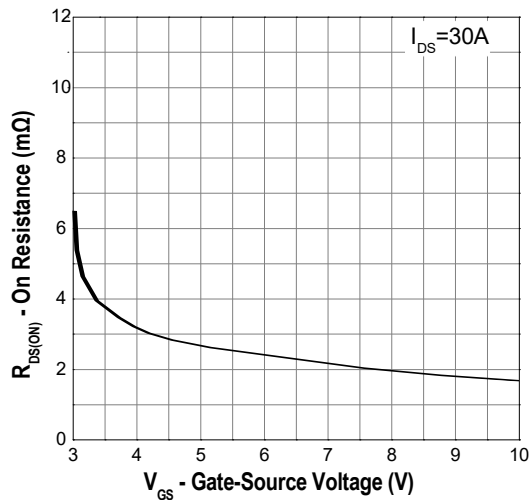


Fig4.Drain-Source On Resistance

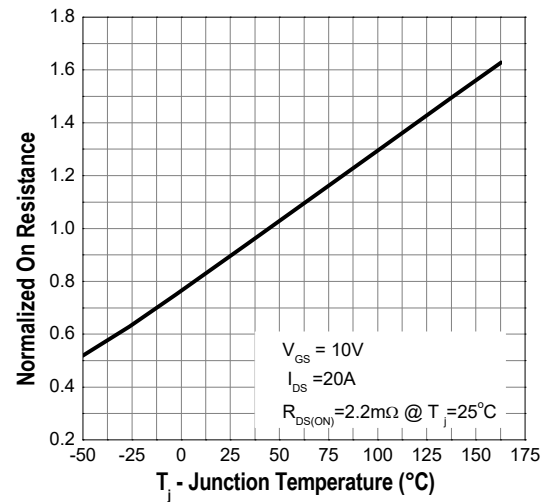


Fig5.Drain-Source On Resistance

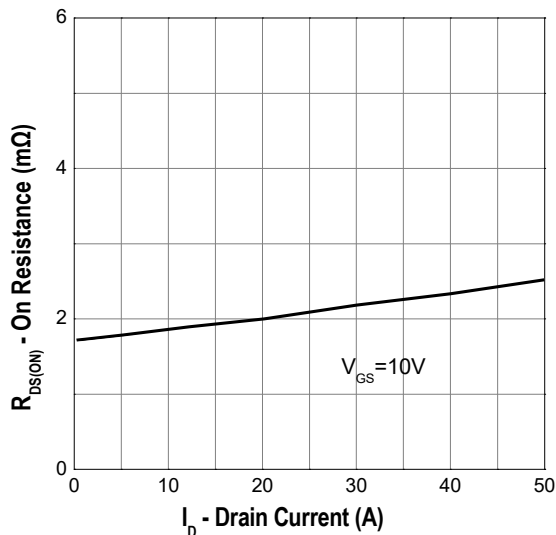
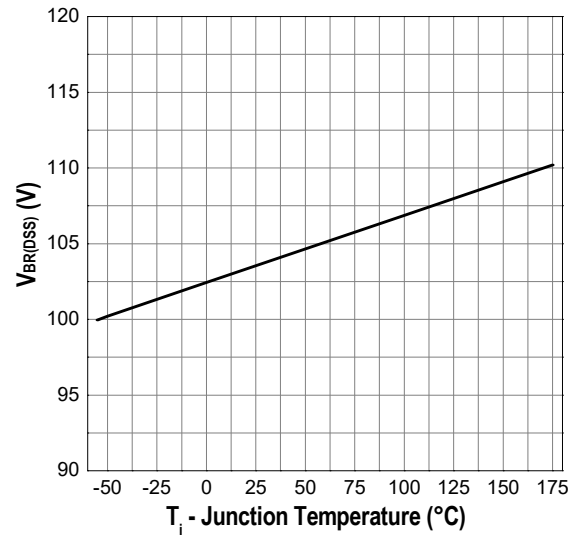


Fig6.Drain-source Breakdown Voltage



•Typical Characteristics(Cont .)

Fig7.Power Dissipation

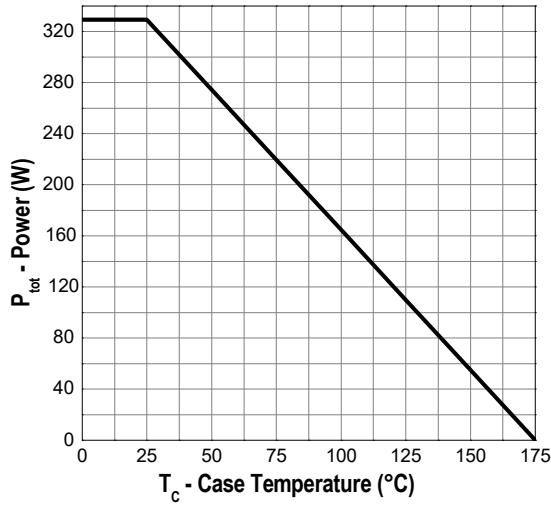


Fig8.Drain Current

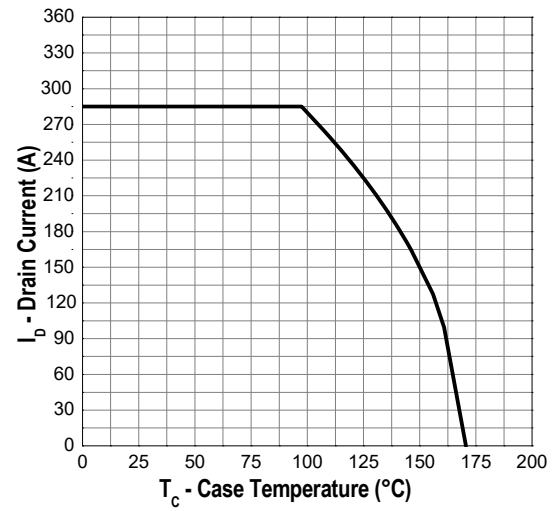


Fig9.Safe Operation Area

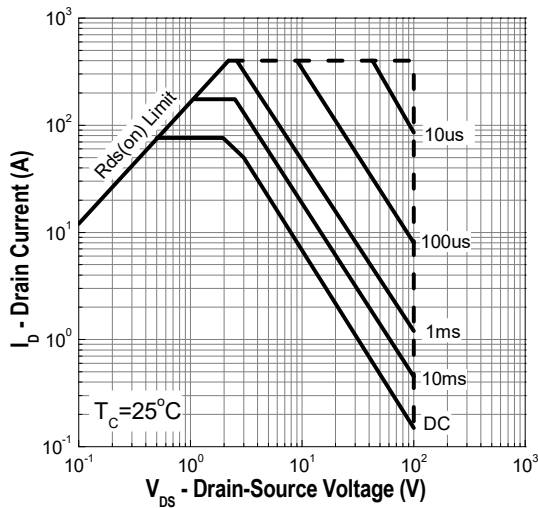


Fig10.Transient Thermal Impedance

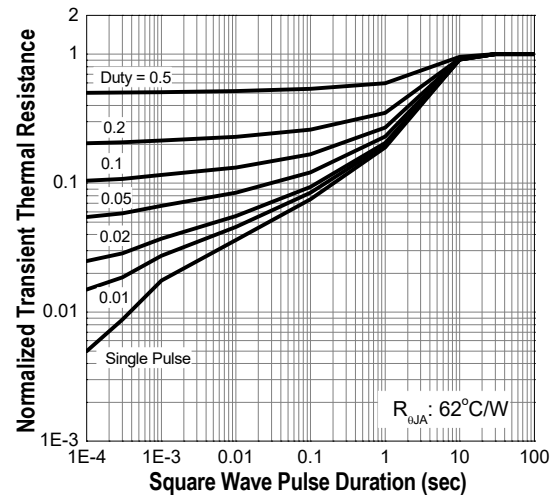


Fig11.Capacitance

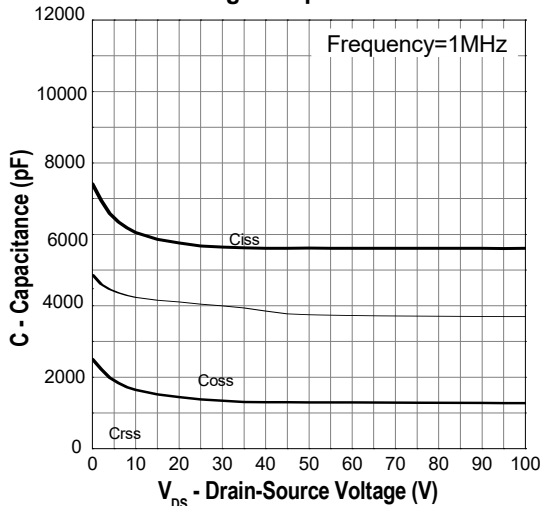
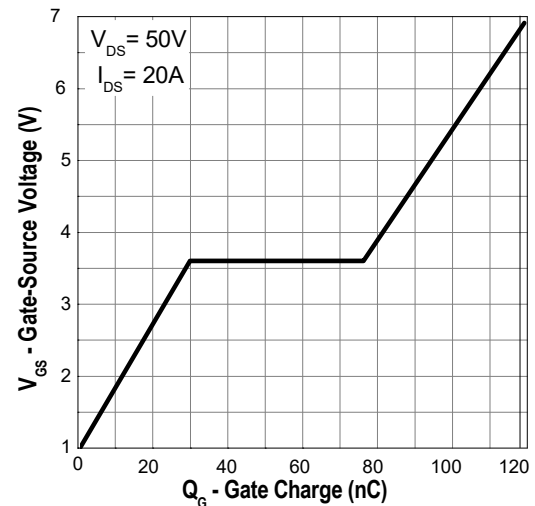


Fig12.Gate Charge



● **Test Circuits & Waveforms**

Fig1. Gate Charge Test Circuit & Waveform

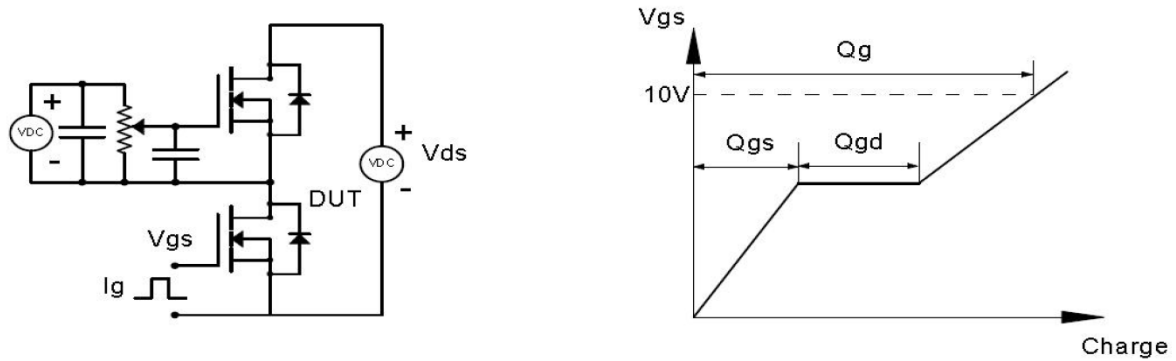


Fig2. Resistive Switching Test Circuit & Waveform

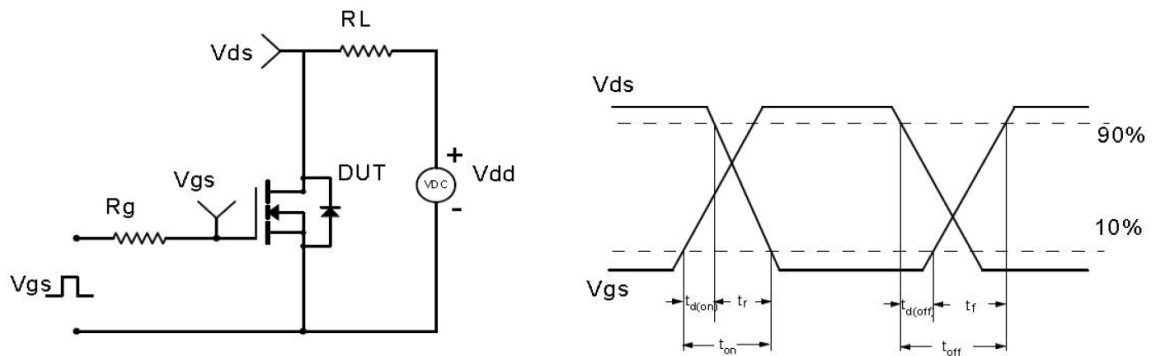


Fig3. Unclamped Inductive Switching Test Circuit & Waveform

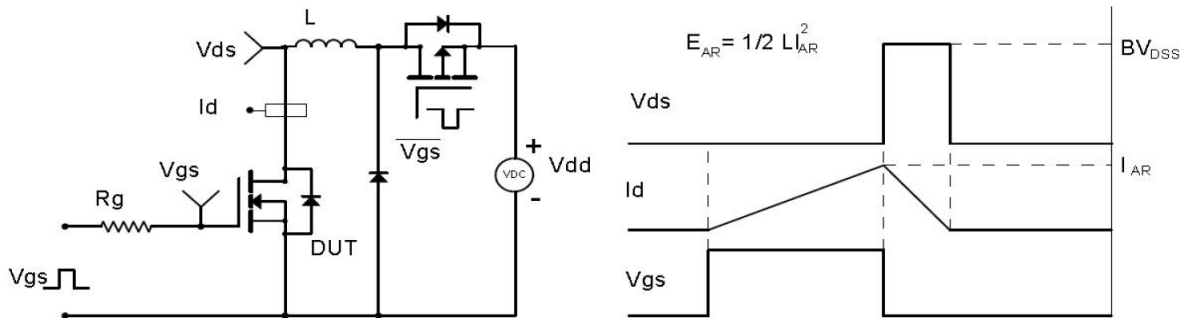
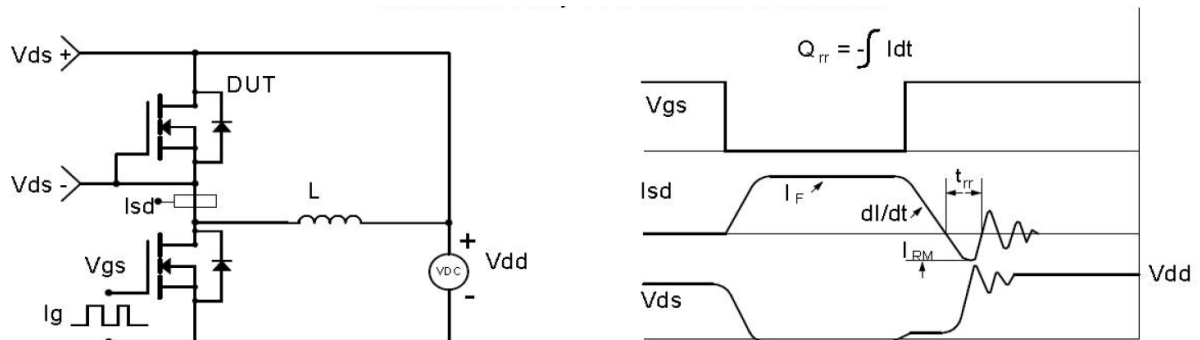


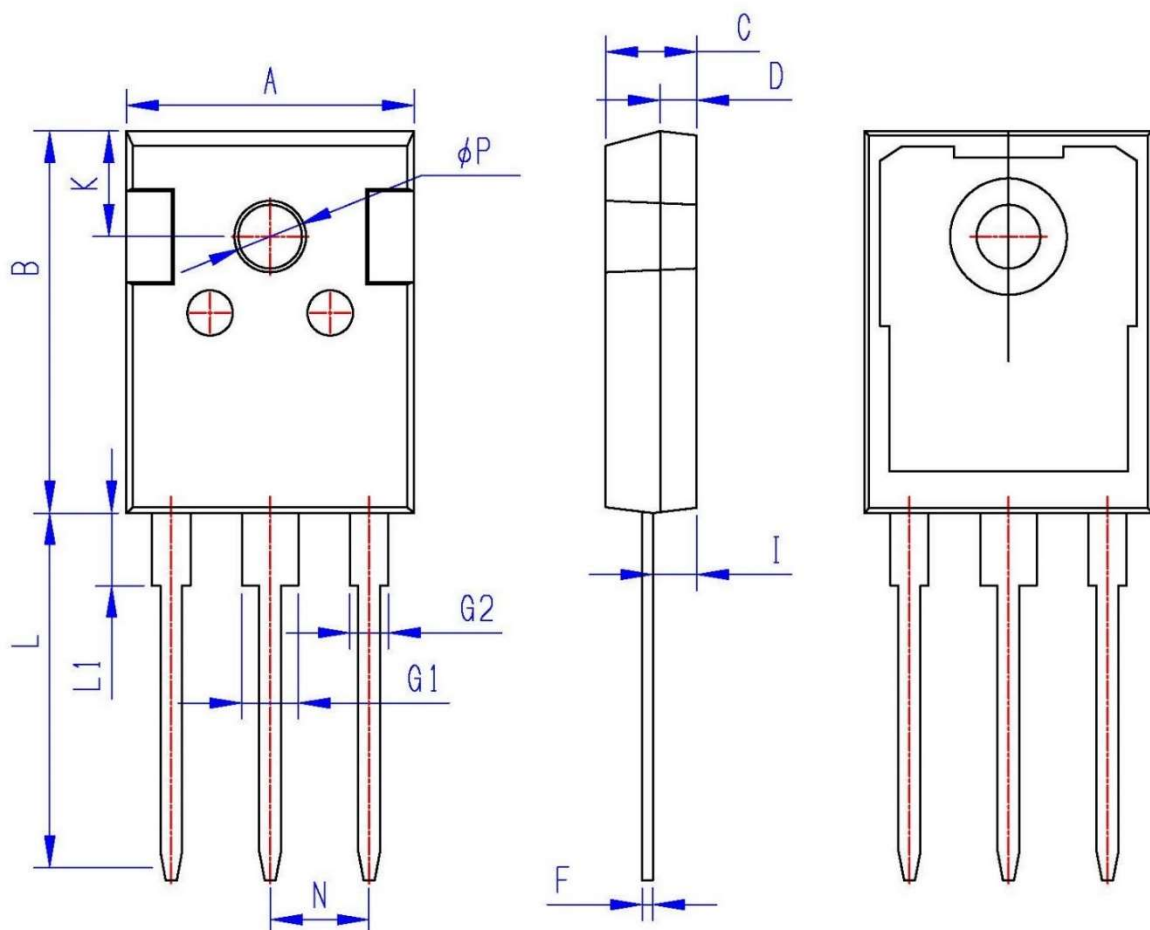
Fig4. Diode Recovery Switching Test Circuit & Waveform



●Dimensions (TO-247)

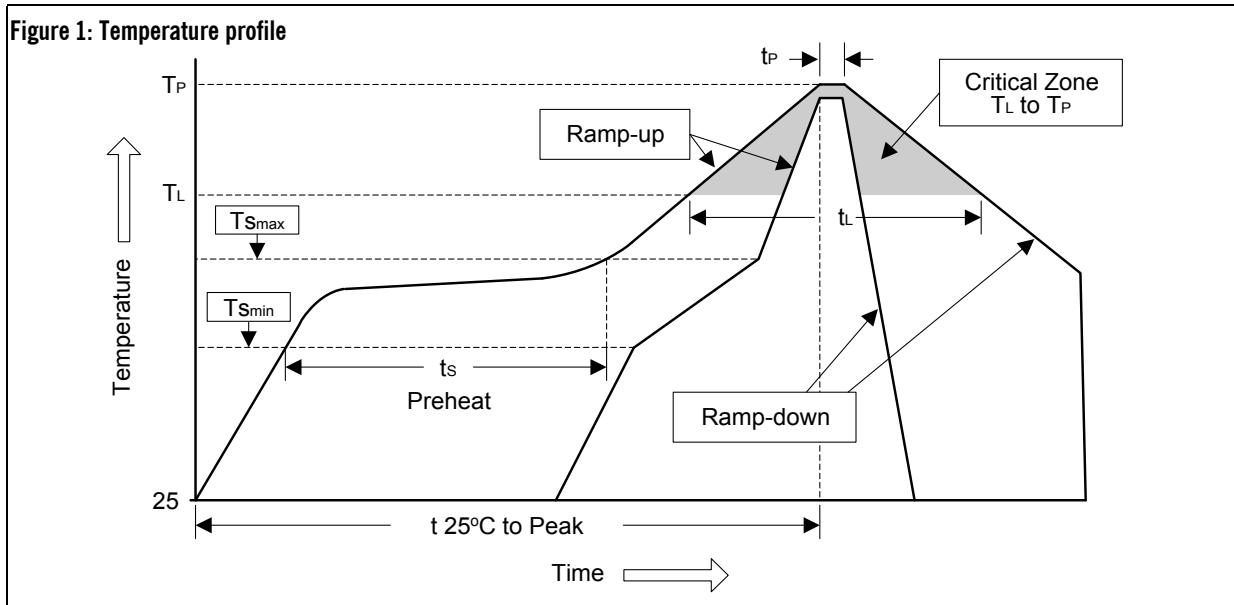
UNIT:mm

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. Reflow soldering of surface-mount devices



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}) - Temperature Max (T_{Smax}) - Time (min to max) (t_s)	100°C 150°C 60 to 120 sec	150°C 200°C 60 to 180 sec
T_{Smax} to T_L - Ramp-up Rate	<3°C/sec	<3°C/sec
Time maintained above: - Temperature (T_L) - Time (t_L)	183°C 60 to 150 sec	217°C 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