LRC COMPONENT SPECIFICATION

CUSTOMER PART NO.	SUPPLIER PART NO	PART DESCRIPTION
057G 417518	LMBT3904LT1G	TRANSISTOR
	SOT-23	
CUSTOMER	TPV SUPPLIER CODE	FACTORY
TPV	1759401	CHINA

Safety Controlled Marking		☐YES■NO	■1st source ☐2nd source	First Source Vendor	
CCC	☐YES ■NO	CQC	☐YES ■NO	Classify Code	
Verify Model		Verify Location		Tracking Code	

NOTE:

1：LMBT3904LT1G 为 RoHS 料件。

2：来料外包装标示绿色 RoHS 印章。

NOTICE :

1. Any specification changed of component, especially following items: Raw Material, Process, Tooling, Factory, Label, halftone, and any engineering changed of production, should be approved by TPV.
2. Any engineering changed of component should be in version record, provide old version parts management information to TPV if required.
3. All row material of supplied parts should be meet the TPV standard (RDEMS-01) or its latest version, and the requirement of regional or country laws and ordinances.

ADD:中国广东省东莞市新城市中心区东莞大道第一国际 F 座 18 楼 1803 室

TEL:+86-769-22026262 **FAX:** +86-769-22026261

E-mail: tommy.xiong@gmail.com **Website:**

DESIGN: 王骏 **CHECK:** 熊樂天 **APP:** herrick

APPROVAL SHEET NO.	APPROVAL CONDITION	VERSION	RELEASED DATE
	正式承认	A	DEC.05.2007

CUSTOMER APPROVED

COMPONENT ENGINEER		ELECTRONIC PROJECT ENGINEER	
SAFETY ENGINEER		MECHANICAL PROJECT ENGINEER	
EMC ENGINEER		CHECKED BY	
APPROVER BY			

COMPONENT SPEC VERSION RECORD

TPV PART NO.	057G 417518	SUPPLIER PART NO.	LMBT3904LT1G

VER	MINUTE OF CHANGES	SUPPLIER CHECK	RELEASE DATE
A	CHECKED AND RELEASED	熊樂天	DEC.05.2007

测试项目管控 LIST

项次	参数	测试条件	管控重点
1	$V_{(BR)CEO}$	I_C=1.0mA, I_B=0	Min 40V
2	$V_{(BR)CBO}$	I_C=10uA, I_E=0	Min 60V
3	$V_{(BR)EBO}$	I_E=10uA, I_C=0	Min 6.0V
4	h_{FE}	I_C=10mA,V_{CE}=1.0V	100~300
5	$V_{CE(sat)}$	I_C=10mA,I_B=1.0mA	Max 0.2V
6	$V_{BE(sat)}$	I_C=10mA,I_B=10mA	0.65 ~ 0.85V
7			
8			

General Purpose Transistor

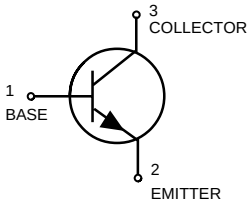
- We declare that the material of product compliance with RoHS requirements.

LMBT3904LT1G

ORDERING INFORMATION

Device	Marking	Shipping
LMBT3904LT1G	1AM	3000/Tape & Reel
LMBT3904LT3G	1AM	10000/Tape & Reel

SOT–23



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CEO}	40	Vdc
Collector–Base Voltage	V_{CBO}	60	Vdc
Emitter–Base Voltage	V_{EBO}	6.0	Vdc
Collector Current — Continuous	I_C	200	mAdc

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR– 5 Board, (1) T_A = 25°C	P_D	225	mW
Derate above 25°C		1.8	mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	°C/W
Total Device Dissipation Alumina Substrate, (2) T_A = 25°C	P_D	300	mW
Derate above 25°C		2.4	mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	°C/W
Junction and Storage Temperature	T_J , T_{stg}	–55 to +150	°C

DEVICE MARKING

LMBT3904LT1G = 1AM

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector–Emitter Breakdown Voltage(3) (I_C = 1.0 mAdc)	$V_{(BR)CEO}$	40	—	Vdc
Collector–Base Breakdown Voltage (I_C = 10 µAdc)	$V_{(BR)CBO}$	60	—	Vdc
Emitter–Base Breakdown Voltage (I_E = 10 µAdc)	$V_{(BR)EBO}$	6.0	—	Vdc
Base Cutoff Current (V_{CE}= 30 Vdc, V_{EB} = 3.0 Vdc,)	I_{BL}	—	50	nAdc
Collector Cutoff Current (V_{CE} = 30Vdc, V_{BE} = 3.0Vdc)	I_{CEX}	—	50	nAdc

1. FR–5 = 1.0 x 0.75 x 0.062 in.
2. Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.
3. Pulse Test: Pulse Width ≤300 µs, Duty Cycle ≤2.0%.

LMBT3904LT1G

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted) (Continued)

Characteristic	Symbol	Min	Max	Unit
ON CHARACTERISTICS (3)				
DC Current Gain(1)	h_{FE}			—
(I_C =0.1 mAdc, V_{CE} =1.0 Vdc)		40	—	
(I_C = 1.0 mAdc, V_{CE} = 1.0 Vdc)		70	—	
(I_C = 10 mAdc, V_{CE} = 1.0 Vdc)		100	300	
(I_C = 50mAdc, V_{CE} = 1.0Vdc)		60	—	
(I_C = 100mAdc, V_{CE} =1.0 Vdc)		30	—	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$			Vdc
(I_C = 10 mAdc, I_B = 1.0 mAdc)(3)		—	0.2	
(I_C = 50 mAdc, I_B = 5.0mAdc)		—	0.3	
Base–Emitter Saturation Voltage(3)	$V_{BE(sat)}$			Vdc
(I_C = 10 mAdc, I_B = 1.0mAdc)		0.65	0.85	
(I_C = 50mAdc, I_B = 5.0mAdc)		—	0.95	
I_{CM} peak collector current		–	200	mA
I_{BM} peak base current		–	200	mA

SMALL–SIGNAL CHARACTERISTICS

Current–Gain — Bandwidth Product (I_C = 10mAdc, V_{CE}= 20Vdc, f = 100MHz)	f_T	300	—	MHz
Output Capacitance (V_{CB} = 5.0Vdc, I_E = 0, f = 1.0 MHz)	C_{obo}	—	4.0	pF
Input Capacitance (V_{BE} = 0.5Vdc, I_C = 0, f = 1.0 MHz)	C_{ibo}	—	8.0	pF
Input Impedancen (V_{CE} = 10Vdc, I_C = 1.0mAdc, f = 1.0 kHz)	h_{ie}	1.0	10	kΩ
Voltage Feedback Ratio (V_{CE} = 10 Vdc, I_C = 1.0 mAdc, f = 1.0 kHz)	h_{re}	0.5	8.0	X10 $^{-4}$
Small–Signal Current Gain (V_{CE} = 10 Vdc, I_C = 1.0 mAdc, f = 1.0 kHz)	h_{fe}	100	400	—
Output Admittance (V_{CE} = 10 Vdc, I_C = 1.0 mAdc, f = 1.0 kHz)	h_{oe}	1.0	40	μmhos
Noise Figure (V_{CE} = 5.0 Vdc, I_C = 100μAdc, R_S = 1.0 k Ω, f = 1.0 kHz)	NF	—	5.0	dB

SWITCHING CHARACTERISTICS

Delay Time	(V_{CC} = 3.0 Vdc,V_{BE} = –0.5Vdc	t_d	—	35	ns
Rise Time	I_C = 10 mAdc, I_{B1} = 1.0mAdc)	t_r	—	35	
Storage Time	(V_{CC} = 3.0Vdc,	t_s	—	200	ns
Fall Time	I_C = 10 mAdc,I_{B1} = I_{B2} = 1.0 mAdc)	t_f	—	50	

3. Pulse Test: Pulse Width ≤300 μs, Duty Cycle ≤2.0%.

LMBT3904LT1G

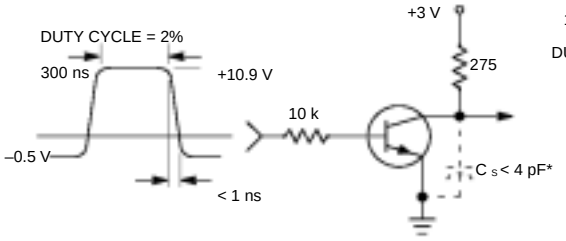


Figure 1. Delay and Rise Time Equivalent Test Circuit

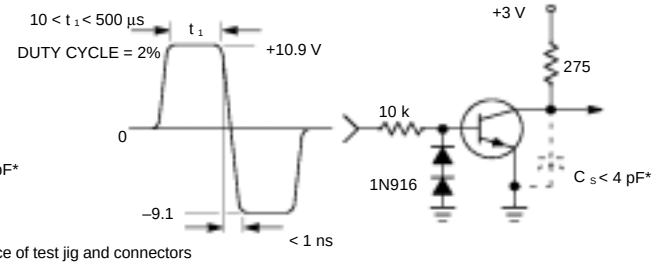


Figure 2. Storage and Fall Time Equivalent Test Circuit

TYPICAL TRANSIENT CHARACTERISTICS

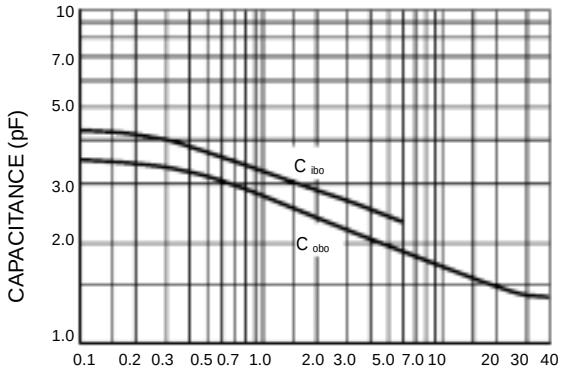


Figure 3. Capacitance

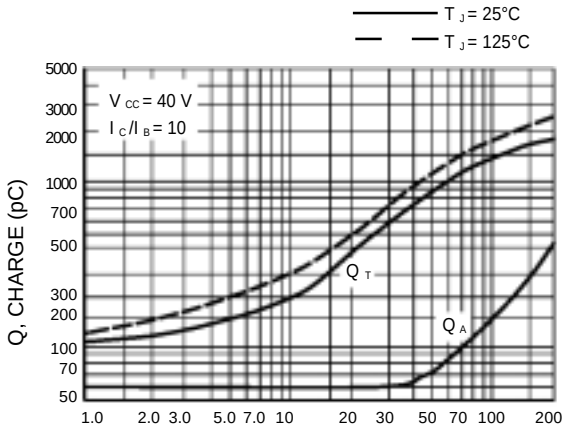


Figure 4. Charge Data

LMBT3904LT1G

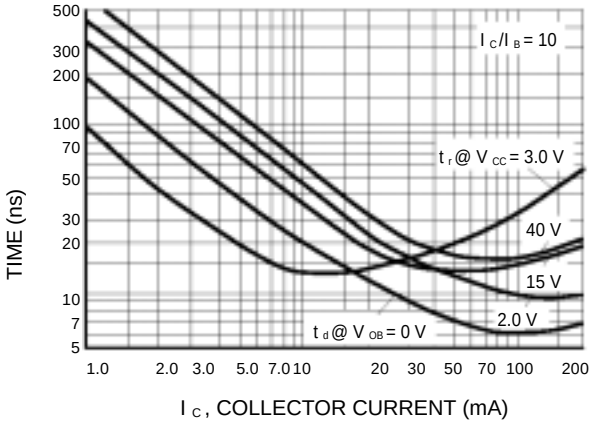


Figure 5. Turn–On Time

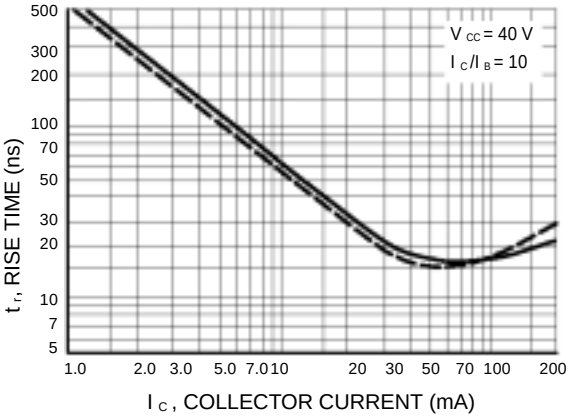


Figure 6. Rise Time

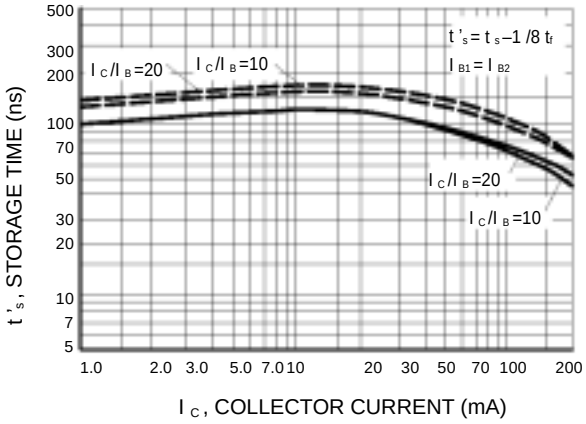


Figure 7. Storage Time

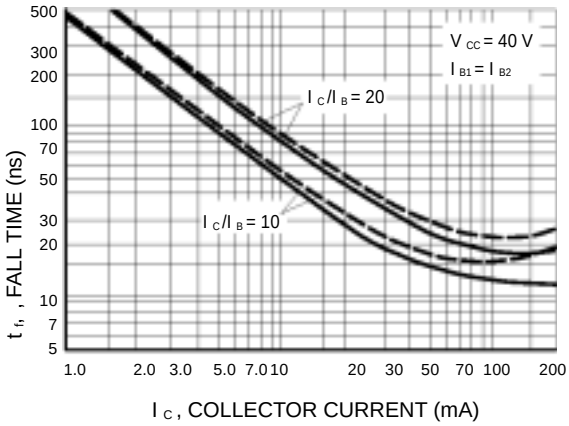


Figure 8. Fall Time

TYPICAL AUDIO SMALL–SIGNAL CHARACTERISTICS

NOISE FIGURE VARIATIONS

(V_{CE} = 5.0 Vdc, T_A = 25°C, Bandwidth = 1.0 Hz)

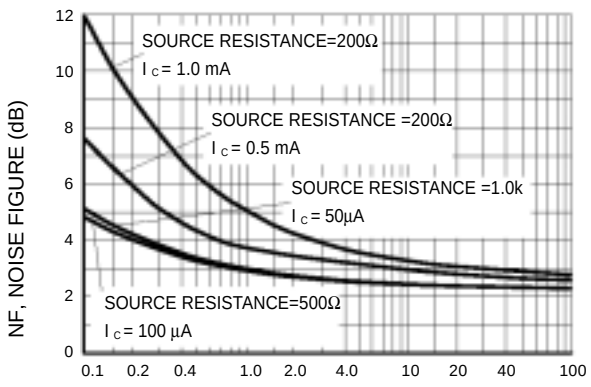


Figure 9.

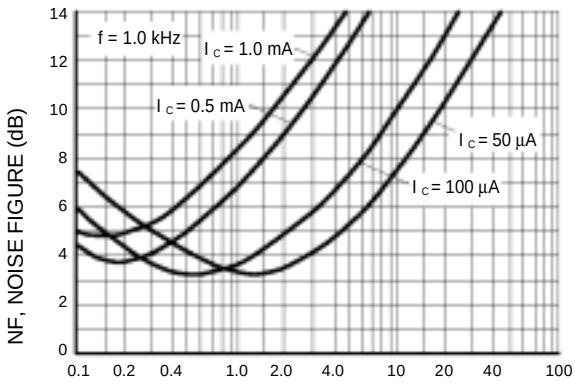


Figure 10.

LMBT3904LT1G

h PARAMETERS

(V_{CE} = 10 Vdc, f = 1.0 kHz, T_A = 25°C)

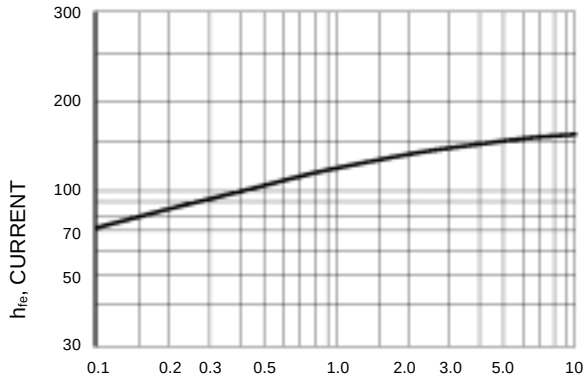


Figure 11. Current Gain

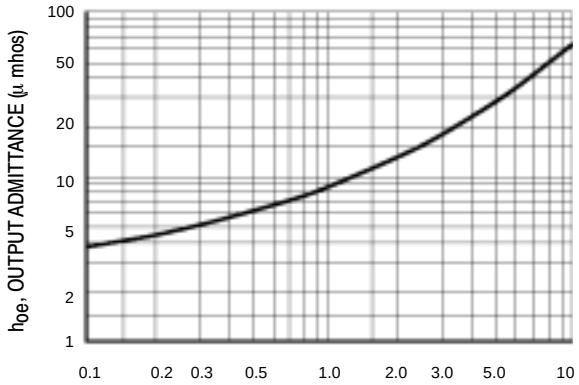


Figure 12. Output Admittance

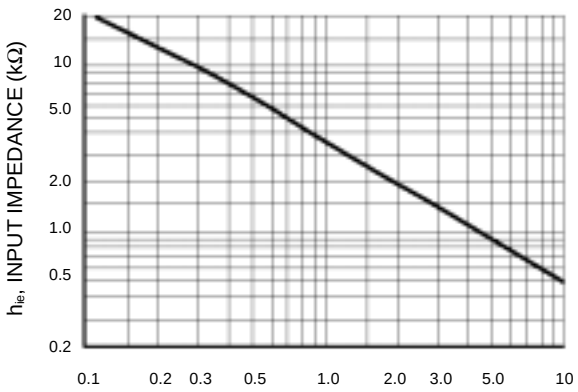


Figure 13. Input Impedance

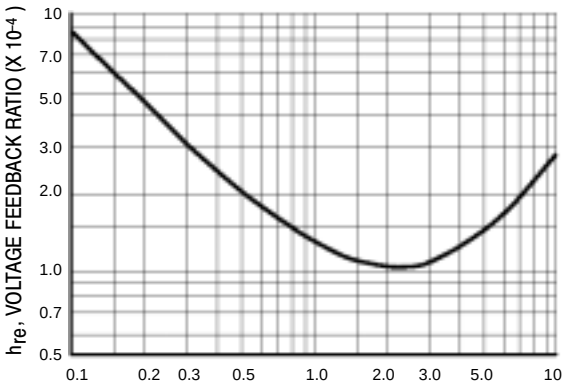


Figure 14. Voltage Feedback Ratio

TYPICAL STATIC CHARACTERISTICS

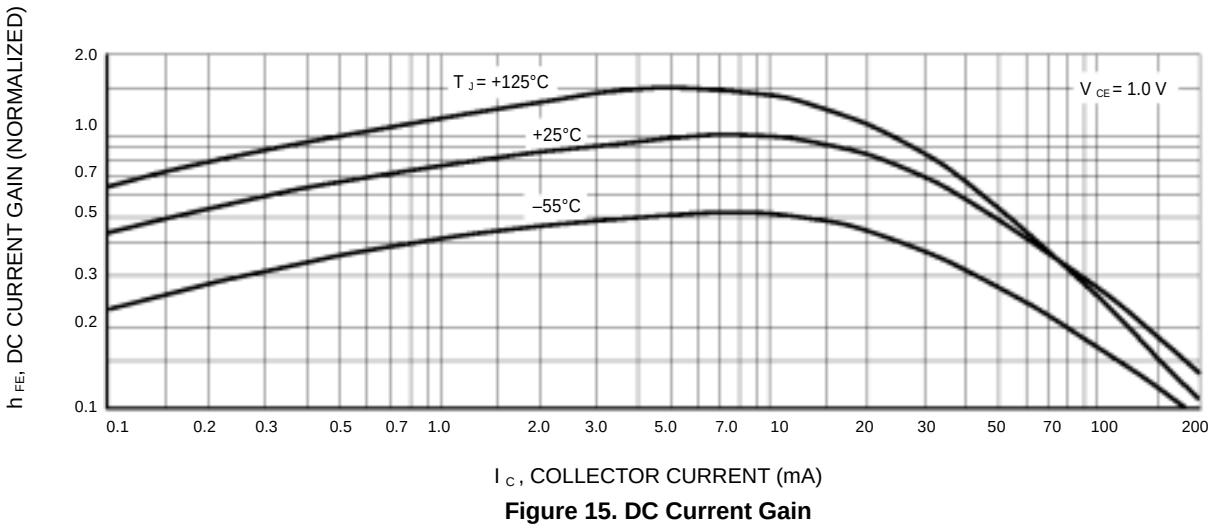


Figure 15. DC Current Gain

LMBT3904LT1G

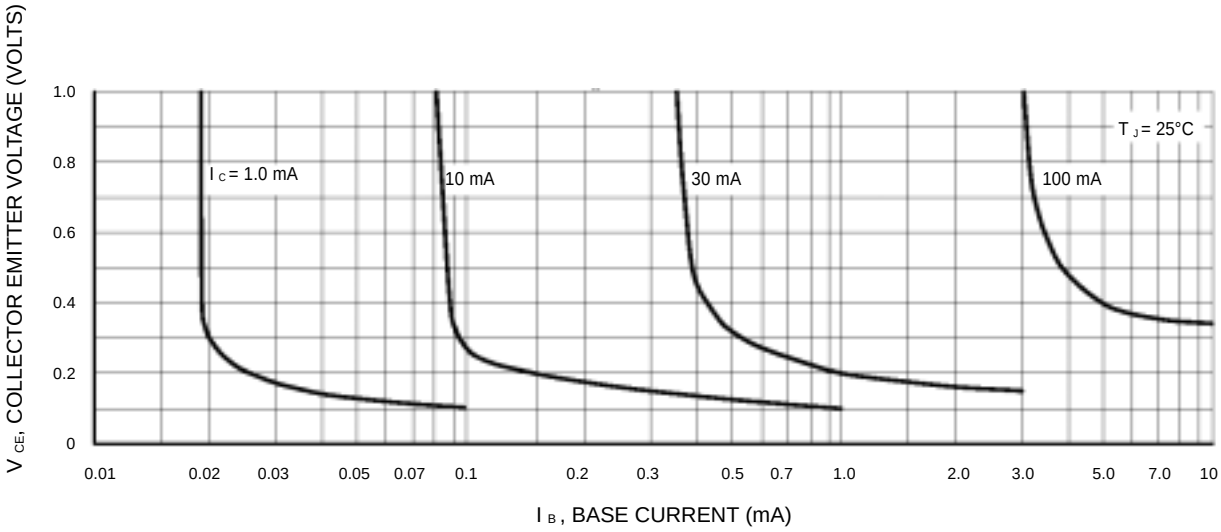


Figure 16. Collector Saturation Region

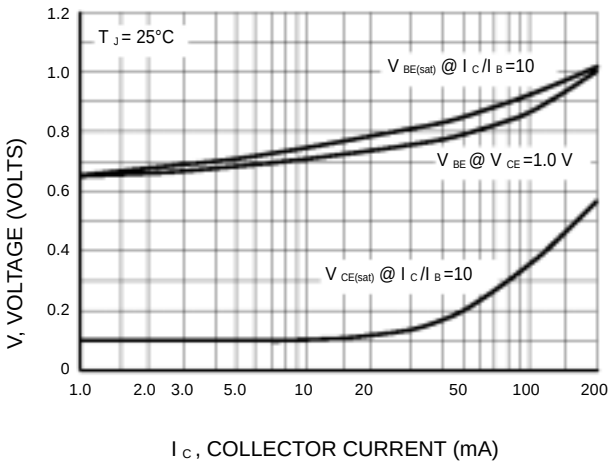


Figure 17. “ON” Voltages

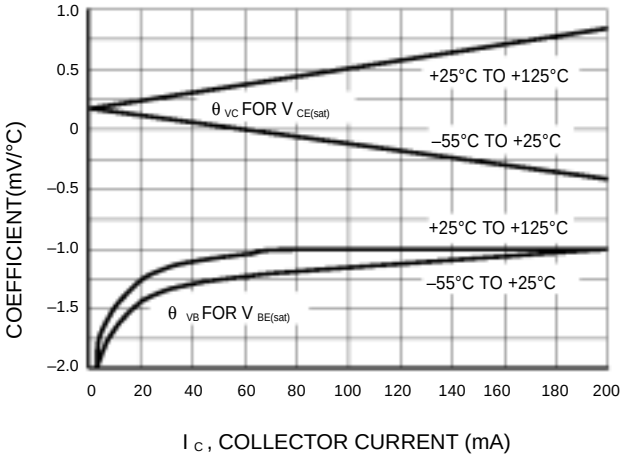


Figure 18. Temperature Coefficients

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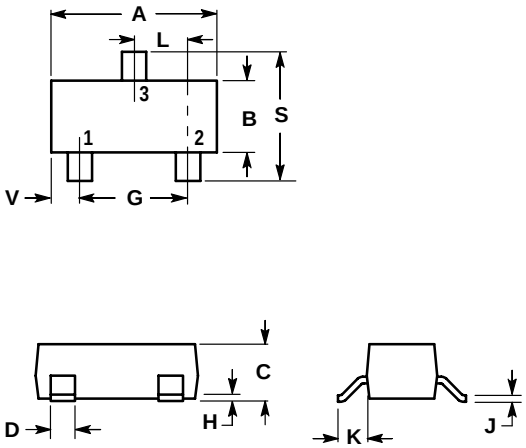
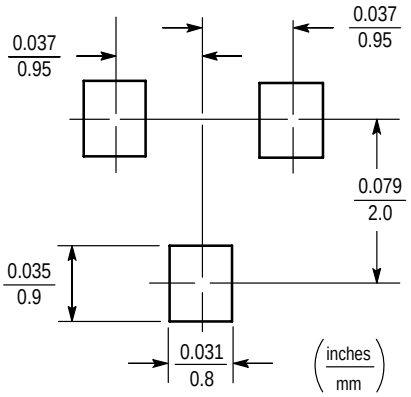


NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

PIN 1. BASE
2. EMITTER
3. COLLECTOR



RELIABILITY REPORT

Device:	General Purpose Transistor
Type:	LMBT3906LT1G
Polarity:	PNP
Device Marking:	2A
Sample Size:	112PCS
Package:	SOT-23
Test Site:	LRC
Assy Site:	LPS
Test Date:	May 24, 2006 to July 6 , 2006

ENVIRONMENTAL & LIFE TESTS

○Temperature Cycle
○Autoclave
○High Temperature Storage Life
○Steady State Operating Life

Test Conclusion:

Reliability demonstration testing meets requirements of LRC test criteria.

Reference Document :LRC/QMD-009

Reviewed By:Han Hui Fang Approved By: Xu Jun Sen

Test Lab. Leshan Radio Co., Ltd.
Date:July 6, 2006

ENVIRONMENTAL & LIFE TESTS ACCEPTANCE CRITERIA

Parameter	Measurement Conditions	Failure Definition				
		Initial-End Points			Delta Limits	
		Min.	Max.	Units	Max.	Base
V_{CEO}	Ic=-1.0mA Ib=0	-40	None	V	20%	Initial
h_{FE}	Ic=-50mA VCE=-1.0V	60	None	None	20%	Initial
V_{CE}(sat)	Ic=-50mA Ib=-5mA	None	-0.4	V	20%	Initial

ENVIRONMENTAL & LIFE TEST SUMMARY

Test Items	Test Condition	Sample Size	Failure Q'ty	Test Result	Tester
Autoclave	Ta=121℃ P=2atm RH=100% Duration:96hours	28	0	Pass	Yuan Fa Chong
Temperature Cycle	-55℃(15min) to 150℃(15min) Air to Air Transition Time<20s Cycle Times:200Cycles	28	0	Pass	Yuan Fa Chong
High Temperature Storage Life	Ta=150℃ Test Duration:1000hours	28	0	Pass	Yuan Fa Chong
Steady State Operating Life	P_D=225mW Test Duration:1000hours	28	0	Pass	Yuan Fa Chong

Steady State Operating Life Test Data

Device General Purpose Transistor

Type LMBT3906LT1G

Electrical Characteristics V_{CEO}>-40V @ Ic=-1.0mA Ib=0 Temp=25 ℃

h_{FE}>60 @ V_{CE}=-1.0V Ic=-50mA Temp=25 ℃

V_{CE}(sat)<-0.4V @Ic=-50mA Ib=-5mA Temp=25 ℃

Test Condition P_D=225mW

Duration:1000hours

Test Result Complies With Specifications

Test Data As Below Sample Size:28PCS

Sample Number	Initial			Final		
	V_{CEO}(V)	h_{FE}	V_{CE}(V)	V_{CEO}(V)	h_{FE}	V_{CE}(V)
1	61	208	0.149	61	208	0.152
2	61	215	0.147	61	208	0.149
3	59	223	0.139	59	223	0.141
4	61	208	0.147	61	208	0.149
5	59	231	0.131	59	231	0.138
6	61	208	0.140	61	208	0.141
7	60	208	0.140	61	189	0.142
8	60	215	0.141	60	208	0.148
9	61	208	0.148	61	202	0.149
10	61	215	0.149	61	208	0.151
11	59	223	0.139	59	223	0.141
12	59	231	0.131	59	216	0.138
13	59	231	0.139	59	223	0.141
14	60	231	0.139	59	208	0.140
15	61	208	0.150	61	208	0.152
16	59	223	0.137	59	223	0.139
17	60	223	0.141	60	215	0.142
18	61	208	0.142	61	208	0.147
19	60	223	0.130	60	231	0.133
20	60	208	0.139	60	208	0.141
21	61	223	0.131	59	216	0.137
22	60	208	0.149	60	208	0.150
23	58	231	0.138	58	223	0.139
24	61	208	0.150	61	201	0.151
25	60	215	0.139	61	208	0.141
26	61	208	0.140	61	189	0.142
27	59	231	0.131	59	223	0.138
28	60	208	0.140	61	189	0.141

High Temperature Storage Life Test Data

Device General Purpose Transistor

Type LMBT3906LT1G

Electrical Characteristics V_{CEO}>-40V @ Ic=-1.0mA Ib=0 Temp=25 ℃

h_{FE}>60 @ V_{CE}=-1.0V Ic=-50mA Temp=25 ℃

V_{CE}(sat)<-0.4V @Ic=-50mA Ib=-5mA Temp=25 ℃

Test Condition Ta=150℃

Duration:1000hours

Test Result Complies With Specifications

Test Data As Below Sample Size:28PCS

Sample Number	Initial			Final		
	V_{CEO}(V)	h_{FE}	V_{CE}(V)	V_{CEO}(V)	h_{FE}	V_{CE}(V)
1	61	215	0.141	61	216	0.148
2	61	208	0.149	61	208	0.151
3	58	231	0.138	58	223	0.140
4	61	215	0.148	61	208	0.150
5	60	223	0.141	60	223	0.142
6	59	231	0.137	59	231	0.139
7	60	231	0.138	58	223	0.140
8	58	231	0.138	58	231	0.140
9	61	215	0.142	61	208	0.148
10	60	223	0.140	60	223	0.141
11	61	208	0.141	61	208	0.148
12	61	215	0.141	61	208	0.148
13	60	215	0.141	60	208	0.148
14	59	208	0.138	61	189	0.140
15	61	208	0.149	61	208	0.151
16	61	208	0.142	61	208	0.149
17	61	208	0.149	61	208	0.151
18	59	231	0.139	59	231	0.141
19	60	215	0.140	61	223	0.141
20	59	223	0.138	60	223	0.140
21	60	223	0.139	60	216	0.141
22	61	215	0.150	61	208	0.152
23	61	223	0.140	61	216	0.142
24	59	223	0.139	59	223	0.141
25	59	223	0.140	59	223	0.141
26	61	208	0.140	61	189	0.141
27	59	231	0.140	59	223	0.141
28	60	208	0.141	61	189	0.142

Temperature Cycle Test Data

Device General Purpose Transistor

Type LMBT3906LT1G

Electrical Characteristics V_{CEO}>-40V @ Ic=-1.0mA Ib=0 Temp=25 ℃

h_{FE}>60 @ V_{CE}=-1.0V Ic=-50mA Temp=25 ℃

V_{CE}(sat)<-0.4V @Ic=-50mA Ib=-5mA Temp=25 ℃

Test Condition -55℃(15min) to +150℃ (15min) Air to Air

Transition Time<20s Cycle Times: 200cycles

Test Result Complies With Specifications

Test Data As Below Sample Size:28PCS

Sample Number	Initial			Final		
	V_{CEO}(V)	h_{FE}	V_{CE}(V)	V_{CEO}(V)	h_{FE}	V_{CE}(V)
1	60	215	0.147	60	215	0.149
2	59	223	0.141	59	223	0.147
3	59	223	0.140	59	223	0.141
4	61	215	0.148	61	216	0.149
5	59	231	0.138	59	231	0.139
6	61	208	0.140	61	208	0.141
7	59	208	0.141	61	208	0.142
8	61	208	0.149	61	201	0.151
9	61	208	0.148	61	208	0.148
10	59	223	0.140	59	223	0.142
11	59	223	0.140	59	223	0.141
12	60	215	0.138	60	216	0.139
13	61	208	0.138	61	208	0.139
14	60	208	0.140	61	208	0.141
15	59	223	0.138	59	223	0.139
16	59	215	0.142	59	215	0.149
17	60	215	0.142	60	208	0.148
18	61	208	0.144	61	208	0.149
19	60	231	0.140	60	223	0.141
20	58	231	0.130	59	231	0.131
21	60	231	0.130	59	231	0.132
22	59	223	0.141	59	223	0.141
23	61	208	0.148	61	202	0.148
24	61	208	0.148	61	202	0.149
25	60	223	0.140	60	223	0.141
26	59	223	0.138	60	215	0.140
27	60	223	0.140	60	223	0.141
28	59	208	0.140	59	208	0.140

Autoclave Test Data

Device General Purpose Transistor

Type LMBT3906LT1G

Electrical Characteristics V_{CEO}>-40V @ Ic=-1.0mA Ib=0 Temp=25 ℃

h_{FE}>60 @ V_{CE}=-1.0V Ic=-50mA Temp=25 ℃

V_{CE}(sat)<-0.4V @Ic=-50mA Ib=-5mA Temp=25 ℃

Test Condition Ta=121℃ P=2atm RH=100%

Duration:96hours

Test Result Complies With Specifications

Test Data As Below Sample Size:28PCS

Sample Number	Initial			Final		
	V_{CEO}(V)	h_{FE}	V_{CE}(V)	V_{CEO}(V)	h_{FE}	V_{CE}(V)
1	61	208	0.149	60	208	0.151
2	61	208	0.148	61	208	0.149
3	61	208	0.147	60	202	0.149
4	60	223	0.141	60	223	0.148
5	60	223	0.141	60	223	0.142
6	61	208	0.141	59	208	0.147
7	60	215	0.139	59	215	0.140
8	61	208	0.141	60	208	0.148
9	59	223	0.139	59	223	0.141
10	61	215	0.148	59	208	0.149
11	60	215	0.141	58	208	0.142
12	58	240	0.129	57	231	0.130
13	61	208	0.140	61	208	0.141
14	60	208	0.141	60	208	0.142
15	61	208	0.149	60	208	0.150
16	59	223	0.140	58	223	0.141
17	60	223	0.140	59	215	0.141
18	59	231	0.141	58	223	0.147
19	60	223	0.141	58	223	0.147
20	59	231	0.132	58	223	0.139
21	60	208	0.140	58	208	0.147
22	61	208	0.150	59	202	0.152
23	56	240	0.130	56	231	0.131
24	61	208	0.148	60	202	0.149
25	59	223	0.139	58	223	0.141
26	61	208	0.140	60	208	0.141
27	59	231	0.138	58	231	0.140
28	60	223	0.139	58	215	0.141

环境管理物质合格保证书

敝司保证敝司（包括敝司的子公司，联营公司，以下类同）直接或通过第 3 方向冠捷及其关联公司提供的制品或部品（附属物，包装及其它随制品一起提供的所有物品）中所包含的所有物质符合冠捷技术标准（RDEMS-01 (A.02)）或其后的更新版本；及各国法令、法规中对环境管理物质的规定，包括以下指定的物质。

1. 镉（Cd）和镉的化合物
2. 铅（Pb）和铅的化合物
3. 汞（Hg）和汞的化合物
4. 六价铬（Cr^{6+}）化合物
5. 多氯联苯（PCB）
6. 多氯化萘（PCN）
7. 聚氯三联苯（PCT）
8. 氯代烷烃（CP）
9. 其它有机氯化合物
10. 灭蚁灵（Mirex）
11. 多溴联苯（PBB）
12. 多溴二苯醚（PBDE）
13. 其它有机溴化合物（TBBP-A-bis）
14. 有机锡化合物
15. 石棉及石棉化合物
16. 特定偶氮化合物
17. 甲醛
18. 聚氯乙烯（PVC）及聚氯乙烯化合物

签名(Signature): 彭小波

职位 (Position): 总经理

日期 (Date): 2022

公章 (Cachet): 长虹无线电股份有限公司 SICHUAN CHANGHONG RADIO COMPANY LTD.

环境管理物质不使用证书
(原材料及原材料厂家 LIST)

向贵司销售的零部件及组件的使用材料、包装材料等中未使用 **TPV** 要求（**RDEMS-01**）的管理物质（禁止使用对象）及其用途，特此证明。
且：零部件及组件的使用在材料，由以下成分构成。特此报告。

1、零件料号：LMBT3906LT1G、LMBT3906LT1G

以下清单所列原材料为本料件所使用到的所有料件

TPV P/N	ITEM	Raw Material	Raw Material Supplier	Cd		Pb		Cr^{6+}		Hg		PBB/PBDE	
				含量 (ppm)	SGS/ITS 测试报告号码	含量 (ppm)	SGS/ITS 测试报告号码	含量 (ppm)	SGS/ITS 测试报告号码	含量 (ppm)	SGS/ITS 测试报告号码	含量 (ppm)	SGS/ITS 测试报告号码
	MOLD COMPOUND	MOLD COMPOUND	Nitto	N.D.	LPCI/13758/07	N.D.	LPCI/13758/07	N.D.	LPCI/13758/07	N.D.	LPCI/13758/07	N.D.	LPCI/13758/07
	LEADFRAME	LEADFRAME	Sumiko	N.D.	SH7020978/CHEM	N.D.	SH7020978/CHEM	Negative	SH7020978/CHEM	N.D.	SH7020978/CHEM	---	---
	DIE	DIE	Phenitec	N.D.	JP/2007/101725	N.D.	JP/2007/101725	N.D.	JP/2007/101725	N.D.	JP/2007/101725	N.D.	JP/2007/101725
	PLATING	PLATING	Alpha	N.D.	SH7021712/CHEM	82	SH7021712/CHEM	Negative	SH7021712/CHEM	N.D.	SH7021712/CHEM	N.D.	SH7021712/CHEM
	WIRE BOND	WIRE BOND	Tanaka	N.D.	LPCI/23058(B-2)/06	N.D.	LPCI/23058(B-2)/06	N.D.	LPCI/23058(B-2)/06	N.D.	LPCI/23058(B-2)/06	N.D.	LPCI/23058(B-2)/06

2、 ICP 测试对象物质（塑料（含橡胶）涂料、油墨和线材料中的镉和铅）测试要求的 ICP 数据另附。ICP 测试对象物质的成分表或 MSDS 另附。

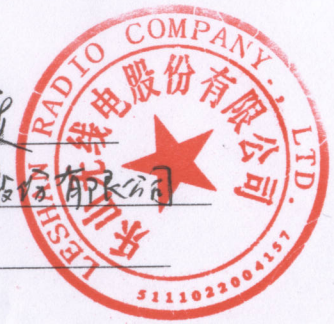
备注：请填写该类零部件用到的所有部件、原材料、辅助材料的详细信息。

必须详细、正确的填写部件、原材料、辅助材料的供应商名称、材料型号

主管/职位：

公司全称：

公司公章：公司公章



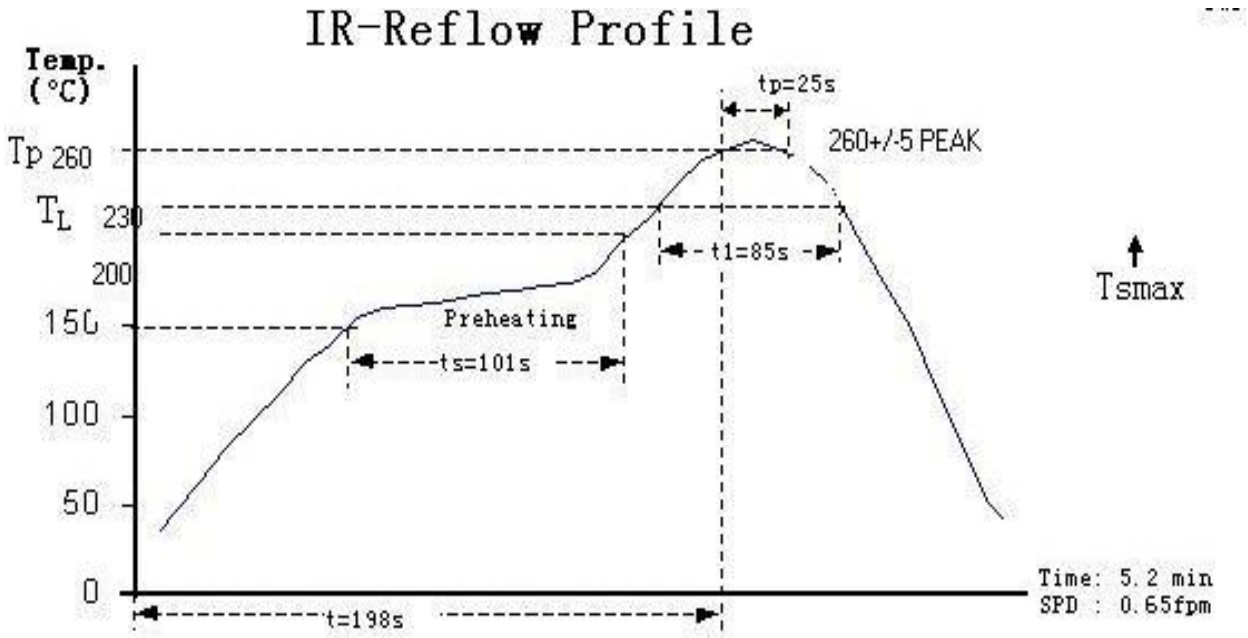
Profile Feature	Pb free assembly	
	large body (Pkg.thickness≥2.5mm or Pkg. ≥350mm^3)	small body (Pkg.thickness ＜2.5mm or Pkg. ＜350mm^3)
Average ramp-up rate (T_l to T_p)	3℃/sencond Max	3℃/sencond Max
Preheat -Temperature Min(Ts_{min}) -Temperature Max(Ts_{max}) -Time(Min to Max)(ts)	200℃	150℃ 60-180 seconds
Ts_{max} to T_l -Ramp-uprate	3℃/sencond Max	
Time maintained above -Temperature(T_l) -Time(t_l)	217℃	60-150seconds
Peak Temperature(T_P)	245℃+0/-5℃	260℃+0/-5℃
Time within 5℃ of actual Peak Temperature(T_P)	10-30 seconds	20-40 seconds
Ramp-down rate	6℃/sencond Max	
Time 25℃ to Peak temperature	8 minutes Max	

Soldering Information

Conform to JEDEC J-STD-020B, the package can bear 260 Deg.C of reflow soldering.

Meet MSL 1 under 260 Deg.C.

SnAg3.0-4.0Cu0.5-1.0 is the recommendation of solder paste..

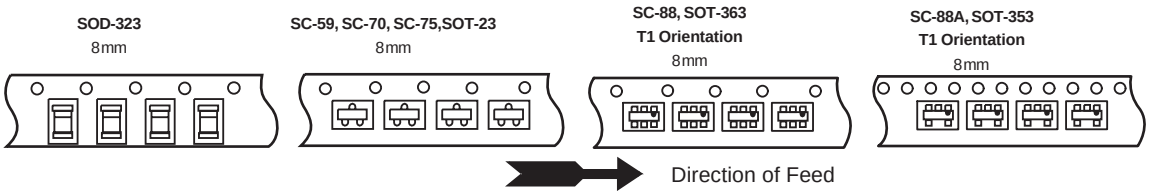


Tape & Reel and Packaging Specifications for Small-Signal Transistors, FETs and Diodes

Embossed Tape and Reel is used to facilitate automatic pick and place equipment feed requirements. The tape is used as the shipping container for various products and requires a minimum of handling. The antistatic/conductive tape provides a secure cavity for the product when sealed with the “peel–back” cover tape.

- Two Reel Sizes Available (7"and 13",)
- Used for Automatic Pick and Place Feed Systems
- Minimizes Product Handling
- EIA 481, –1, –2
- SOT–23, SC–70/SOT–323, SC–89, SC–88/SOT–363, SC–88A/SOT–353, SOD–323, SOD-523 in 8 mm Tape

Use the standard device title and add the required suffix as listed in the option table below (Table 1). Note that the individual reels have a finite number of devices depending on the type of product contained in the tape. Also note the minimum lot size is one full reel for each line item, and orders are required to be in increments of the single reel quantity.

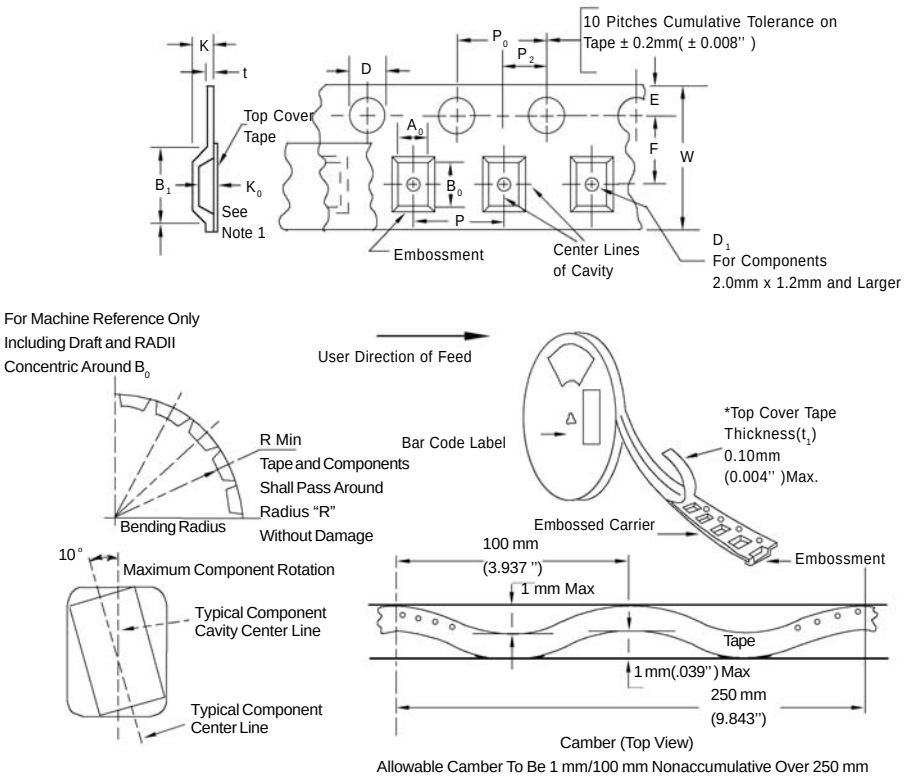


Typical Reel Orientations

Table 1. EMBOSSED TAPE AND REEL ORDERING INFORMATION

Package	Tape Width (mm)	Pitch mm	Reel Size mm(inch)	Devices Per Reel and Minimum Order Quantity	Device Suffix
SOT–23	8	4	178	(7)	3,000 T1
	8		330	(13)	10,000 T3
SC–70/SOT–323	8	4	178	(7)	3,000 T1
	8		330	(13)	10,000 T3
SC–89	8	4	178	(7)	3,000 T1
	8		330	(13)	10,000 T3
SC–88/SOT-363	8	4	178	(7)	3,000 T1
	8		330	(13)	10,000 T3
SC–88A/SOT-353	8	4	178	(7)	3,000 T1
	8		330	(13)	10,000 T3
SOD-323	8	4	178	(7)	3,000 T1
	8		330	(13)	10,000 T3
SOD-523	8	4	178	(7)	3,000 T1
	8		330	(13)	10,000 T3

EMBOSSED TAPE AND REEL DATA FOR DISCRETES
CARRIER TAPE SPECIFICATIONS



DIMENSIONS

Tape Size	B_1 Max	D	D_1	E	F	K	P_0	P_2	RMin	TMax	WMax
8mm	4.55mm (.179'')	1.5+0.1mm - 0.0	1.0Min (.039'')	1.75±0.1mm (.069±.004)	3.5±0.05mm (.138±.002'')	2.4mmMax (.094'')	4.0±0.1mm (.157±.004'')	2.0±0.1mm (.079±.002'')	25mm (.98'')	0.6mm (.024'')	8.3mm (.327'')
12mm	8.2mm (.323'')	(.059+.004'' - 0.0)	1.5mmMin (.060'')		5.5±0.05mm (.217±.002'')	6.4mmMax (.252'')			30mm (1.18'')		12±.30mm (.470±.012'')
16mm	12.1mm (.476'')				7.5±0.10mm (.295±.004'')	7.9mmMax (.311'')					16.3mm (.642'')
24mm	20.1mm (.791'')				11.5±0.1mm (.453±.004'')	11.9mmMax (.468'')					24.3mm (.957'')

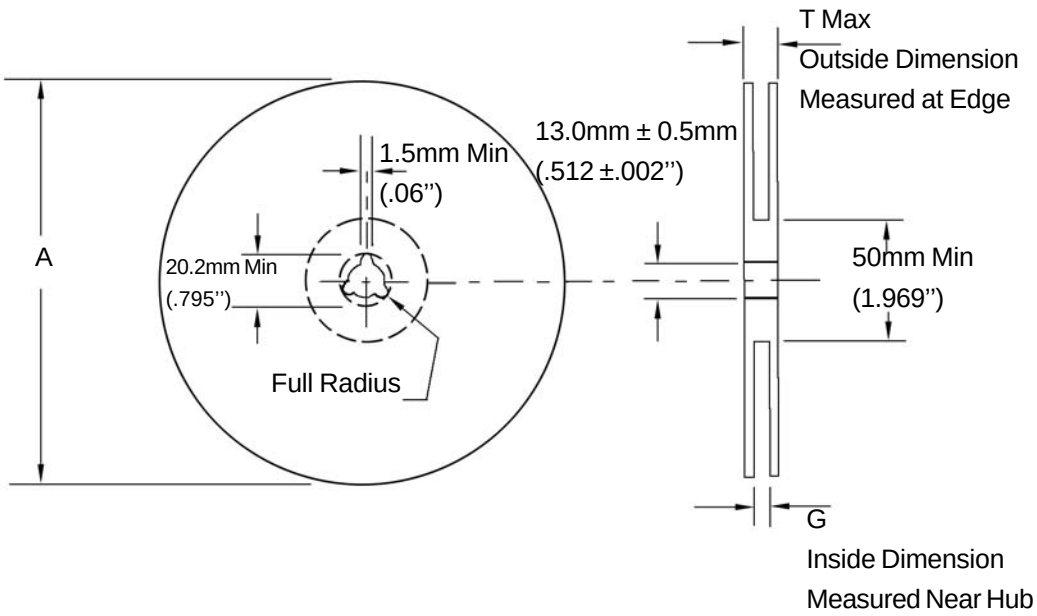
Metric dimensions govern - English are in parentheses for reference only.

NOTE 1: A_0, B_0, and K_0 are determined by component size. The clearance between the components and the cavity must be within .05 mm min. to.50 mm max.,

NOTE 2: the component cannot rotate more than 10° within the determined cavity.

NOTE 3: If B_1 exceeds 4.2 mm (.165") for 8 mm embossed tape, the tape may not feed through all tape feeders.

EMBOSSED TAPE AND REEL DATA
FOR DISCRETES



Size	A Max	G	T Max
8 mm	330mm (12.992")	8.4mm+1.5mm, -0.0 (.33"+.059", -0.00)	14.4mm (.56")
12mm	330mm (12.992")	12.4mm+2.0mm, -0.0 (.49 "+ .079", -0.00)	18.4mm (.72")
16mm	360mm (14.173")	16.4mm+2.0mm, -0.0 (.646"+.078", -0.00)	22.4mm (.882")
24 mm	360mm (14.173")	24.4mm+2.0mm, -0.0 (.961"+.070", -0.00)	30.4mm (1.197")

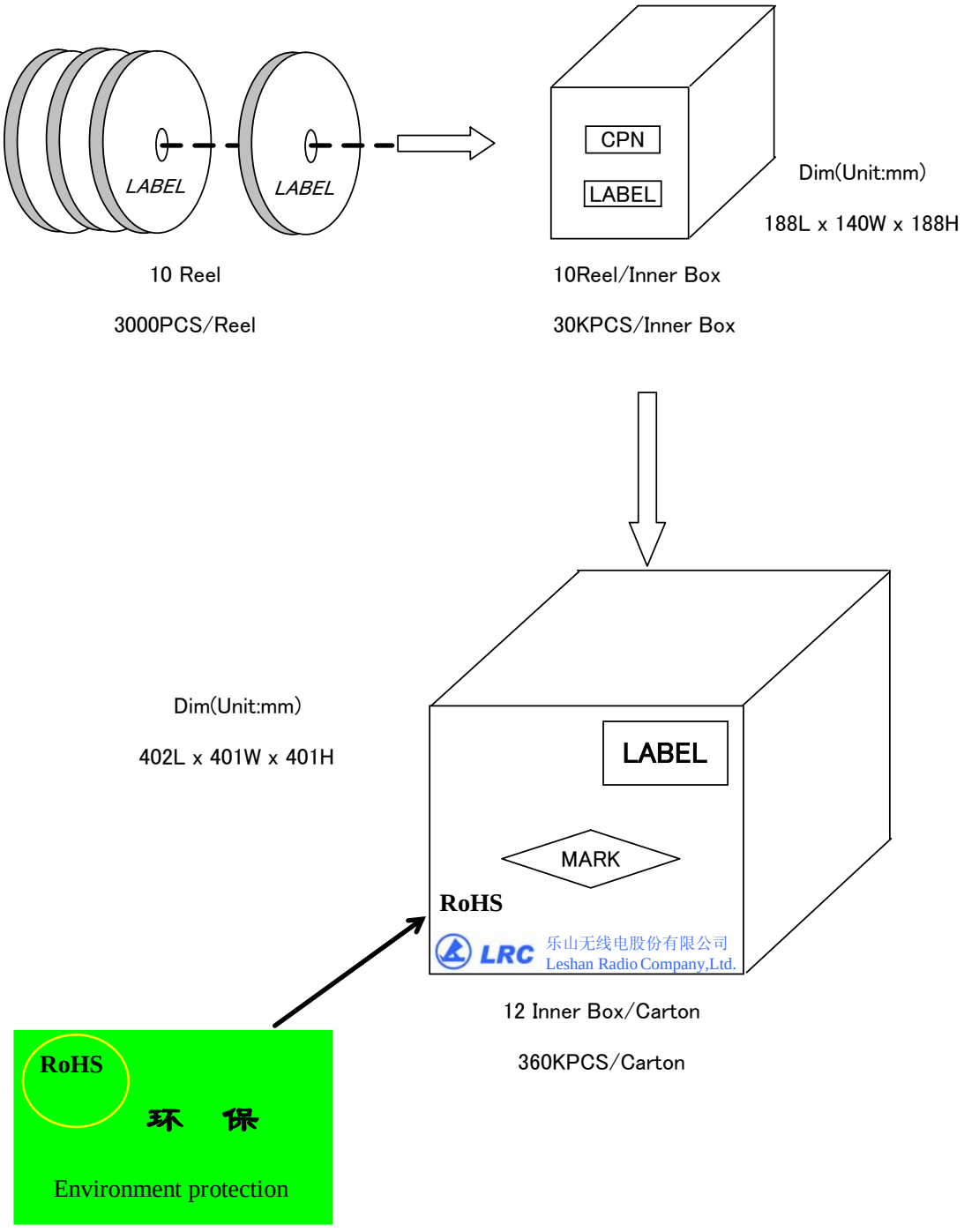
Reel Dimensions

Metric Dimensions Govern — English are in parentheses for reference only

Storage Conditions

Temperature: 5 to 40 Deg.C (20 to 30 Deg. C is preferred)
Humidity: 30 to 80 RH (40 to 60 is preferred)
Recommended Period: One year after manufacturing
(This recommended period is for the soldering condition only. The characteristics and reliabilities of the products are not restricted to this limitation)

Shipment Specification

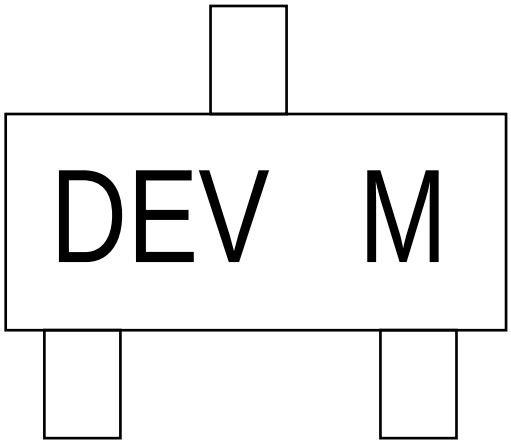


外形尺寸：30×15 mm（内包装）

50×20 mm（外包装）

THE MARKING INFORMATION

	SOT-23
Max # of device codes	3
Device code height	.016"- .025"
Month code height	.014"- .020"



(DEV=Device code, M=Date code)

MONTHLY DATE CODES:

ODD YEARS (99/01/03)		EVEN YEARS (98/00/02)	
Jan	1	Jan	E
Feb	2	Feb	F
Mar	3	Mar	H
Apr	4	Apr	J
May	5	May	K
Jun	6	Jun	L
Jul	7	Jul	N
Aug	8	Aug	P
Sep	9	Sep	U
Oct	T	Oct	X
Nov	V	Nov	Y
Dec	C	Dec	Z

贮存条件

温度: 5 到 40度(20到30度优先)

湿度: 30到80的相对湿度(40到60的相对湿度优先)

贮存时限推荐: 生产后的一年
(此贮存时限推荐针对焊接条件，产品的电参数和可靠性不受此影响)