

設計驗證
工程課
2023.12.15
發行
台灣科技開發股份有限公司

承　　認　　書

Specification Approval

CUSTOMER : 鈺緯科技開發股份有限公司

BRAND: LRC

PART NO : LMBT3904LT1G

CUSTOMER PART NO: 3BBT390430Y (B0137)

APPROVED BY: Frankie Wang　　DATE: 2023/12/8

AVNET ASIA PTE. LTD.	CUSTOMER APPROVAL STAM
Avnet Asia Pte., Ltd. Taiwan Br. (Singapore) 新加坡商安富利股份有限公司台灣分公司 台北市南港區園區街 3 號 5 樓 Tel ： (02)2655-8688 Fax： (02)2655-8666	設計驗證 工程課 2023.12.15 發行 鈺緯科技開發股份有限公司

新加坡商安富利股份有限公司台灣分公司

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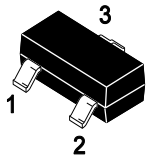
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LMBT3904LT1G
S-LMBT3904LT1G

General Purpose Transistors NPN Silicon

1. FEATURES

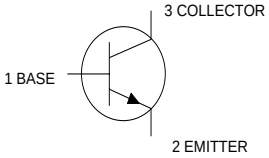
- We declare that the material of product compliance with RoHS requirements and Halogen Free.
- S- prefix for automotive and other applications requiring unique site and control change requirements; AEC-Q101 qualified and PPAP capable.



SOT23(TO-236)

2. DEVICE MARKING AND ORDERING INFORMATION

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



3. MAXIMUM RATINGS(Ta = 25ºC)

Parameter	Symbol	Limits	Unit
Collector–Emitter Voltage	VCEO	40	V
Collector–Base Voltage	VCBO	60	V
Emitter–Base Voltage	VEBO	6	V
Collector Current — Continuous	IC	200	mA

4. THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Total Device Dissipation,	PD		
FR−5 Board (Note 1) @ TA = 25ºC		225	mW
Derate above 25ºC		1.8	mW/ºC
Thermal Resistance, Junction–to–Ambient(Note 1)	RΘJA	556	ºC/W
Junction and Storage temperature	TJ,Tstg	−55~+150	º C

1. FR–5 = 1.0×0.75×0.062 in.

5. ELECTRICAL CHARACTERISTICS (Ta= 25°C)

OFF CHARACTERISTICS

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Collector–Emitter Breakdown Voltage (IC = 1.0 mA, IB = 0)	VBR(CEO)	40	-	-	V
Collector–Base Breakdown Voltage (IC = 10 μA, IE = 0)	VBR(CBO)	60	-	-	V
Emitter–Base Breakdown Voltage (IE = 10 μA, IC = 0)	VBR(EBO)	6	-	-	V
Collector Cutoff Current (VCE = 30 V, VEB = 3.0V)	ICEX	-	-	50	nA
Base Cutoff Current (VCE = 30 Vdc, VEB = 3.0Vdc)	IBL	-	-	50	nA

ON CHARACTERISTICS (Note 2.)

DC Current Gain	HFE				
(IC = 0.1 mA, VCE = 1.0 V)		40	-	-	
(IC = 1.0 mA, VCE = 1.0 V)		70	-	-	
(IC = 10 mA, VCE = 1.0 V)		100	-	300	
(IC = 50 mA, VCE = 1.0 V)		60	-	-	
(IC = 100 mA, VCE = 1.0 V)		30	-	-	
Collector–Emitter Saturation Voltage	VCE(sat)				V
(IC = 10 mA, IB = 1.0 mA)		-	-	0.2	
(IC = 50 mA, IB = 5.0 mA)		-	-	0.3	
Base–Emitter Saturation Voltage	VBE(sat)				V
(IC = 10 mA, IB = 1.0 mA)		-	-	0.85	
(IC = 50 mA, IB = 5.0 mA)		-	-	0.95	

SMALL–SIGNAL CHARACTERISTICS

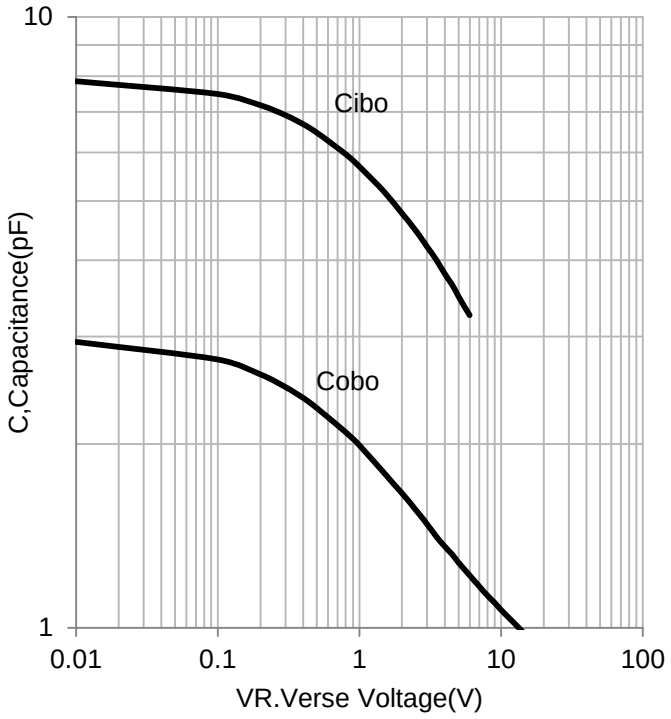
Current–Gain — Bandwidth Product (IC = 10mA, VCE= 20V, f = 100MHz)	fT	300	-	-	MHz
Output Capacitance (VCB = 5.0 V, IE = 0, f = 1.0 MHz)	Cobo	-	-	4	pF
Input Capacitance (VEB = 0.5 V, IC = 0, f = 1.0 MHz)	Cibo	-	-	8	pF

SWITCHING CHARACTERISTICS

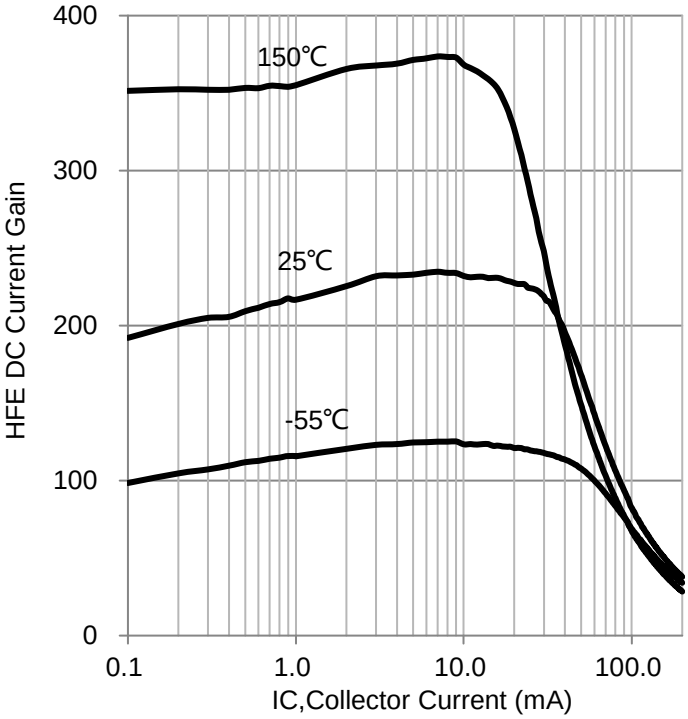
Delay Time	(VCC = 3.0 V,VBE=-0.5V, IC = 10mA, IB1 = 1.0 mA)	td	-	-	35	ns
Rise Time		tr	-	-	35	
Storage Time	(VCC = 3.0 V, IC = 10 mA,IB1 = IB2 = 1.0 mA)	ts	-	-	200	
Fall Time		tf	-	-	50	

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

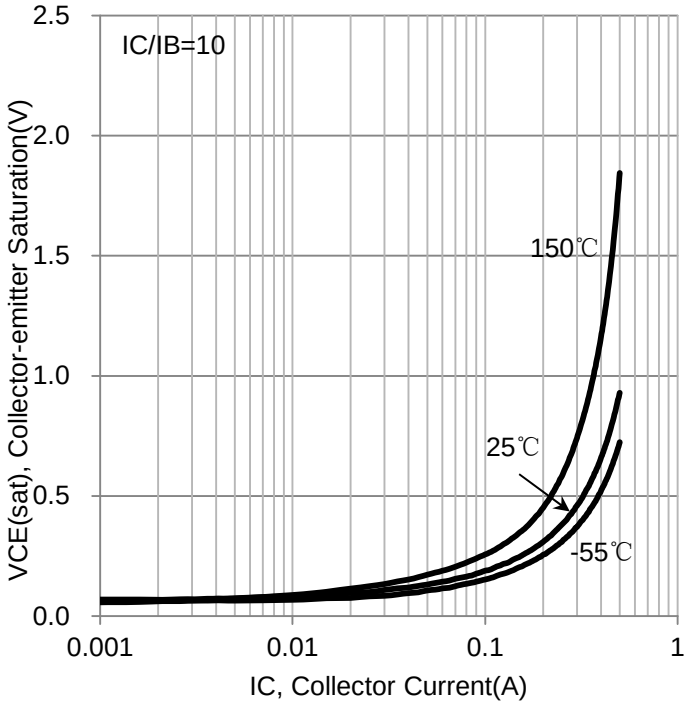
6. ELECTRICAL CHARACTERISTICS CURVES



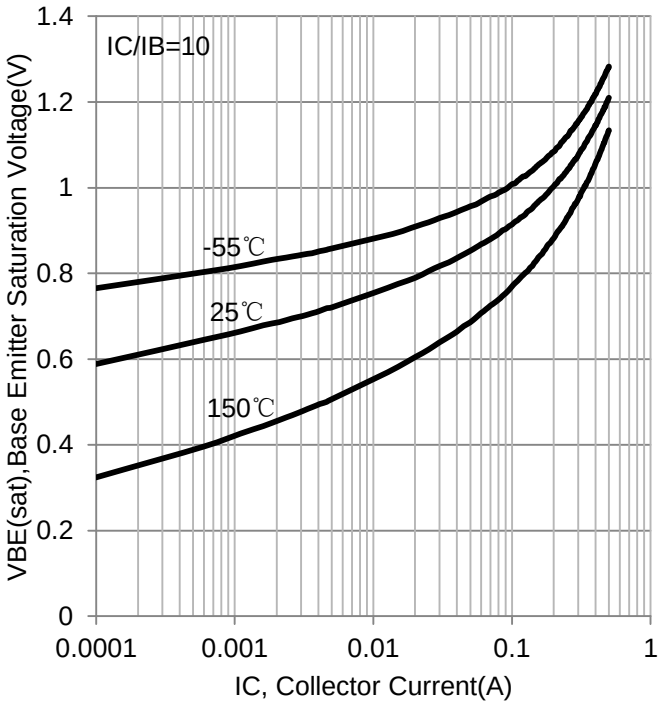
Capacitance



DC Current Gain

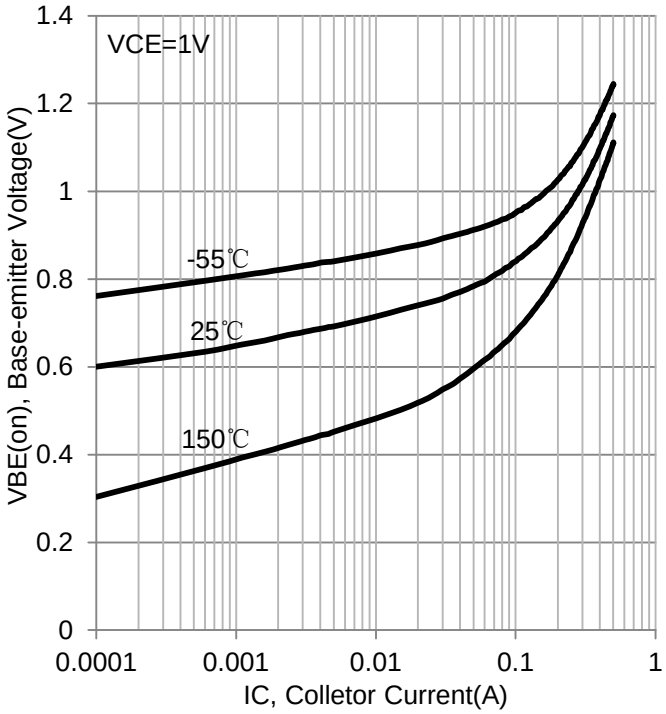


VCE(sat) vs. IC

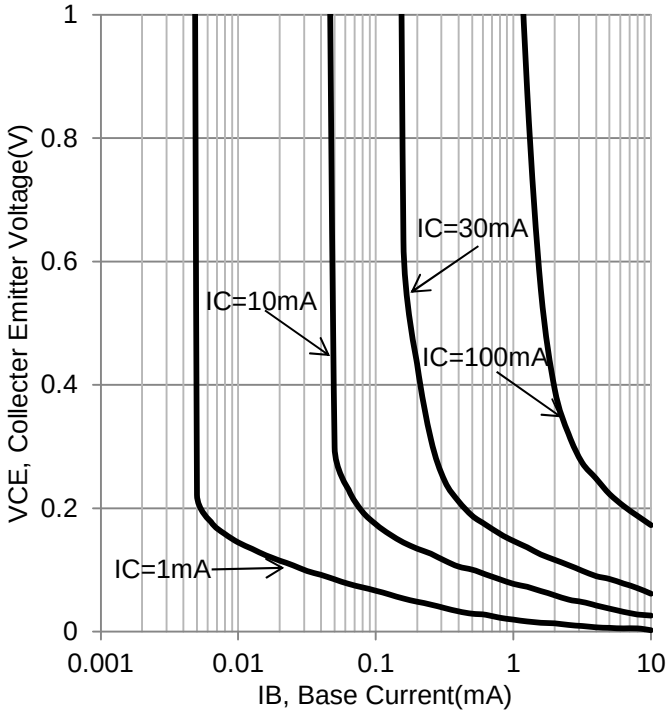


VBE(sat) vs. IC

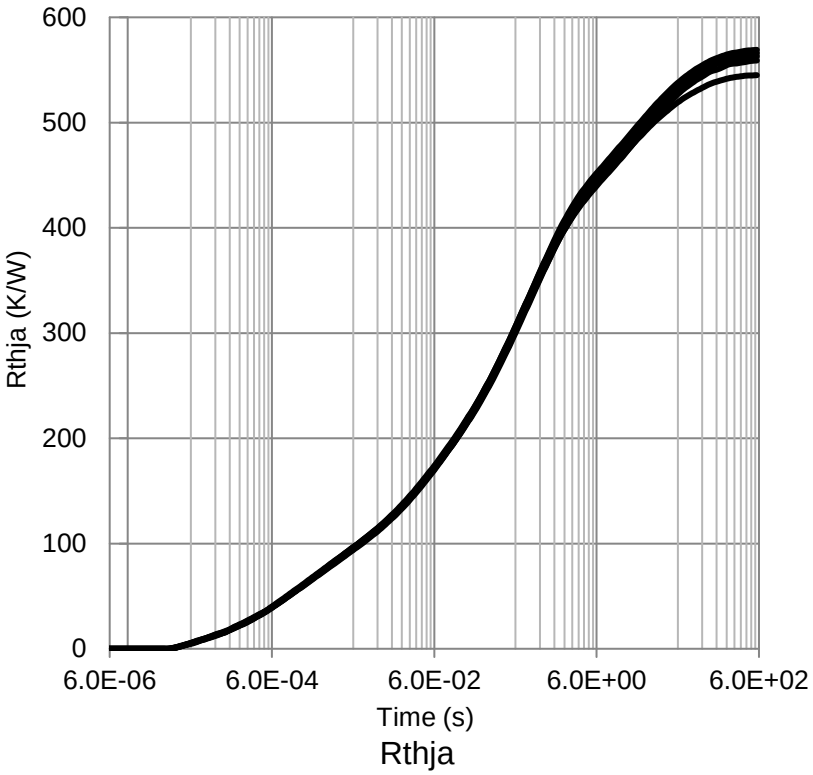
6. ELECTRICAL CHARACTERISTICS CURVES(Con.)



VBE(on) vs. IC

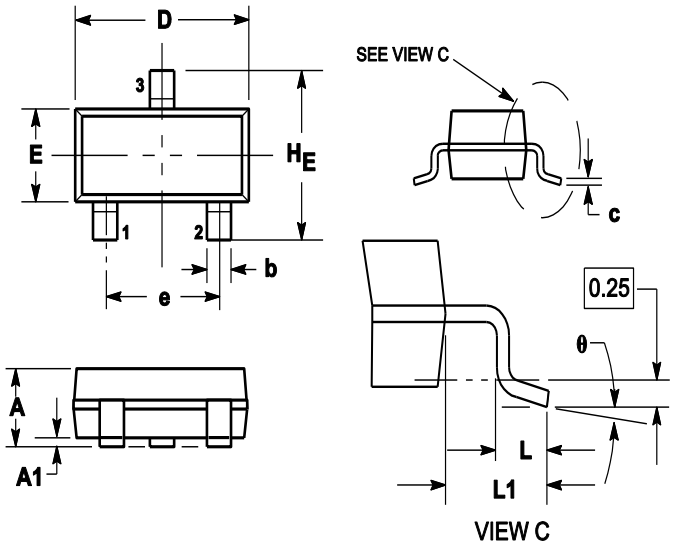


Collector Saturation Region



Rthja

7.OUTLINE AND DIMENSIONS



Notes:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1	1.11	0.035	0.04	0.044
A1	0.01	0.06	0.1	0.001	0.002	0.004
b	0.37	0.44	0.5	0.015	0.018	0.02
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.9	3.04	0.11	0.114	0.12
E	1.20	1.3	1.4	0.047	0.051	0.055
e	1.78	1.9	2.04	0.07	0.075	0.081
L	0.10	0.2	0.3	0.004	0.008	0.012
L1	0.35	0.54	0.69	0.014	0.021	0.029
H_E	2.10	2.4	2.64	0.083	0.094	0.104
θ	0°	---	10°	0°	---	10°

8.SOLDERING FOOTPRINT

