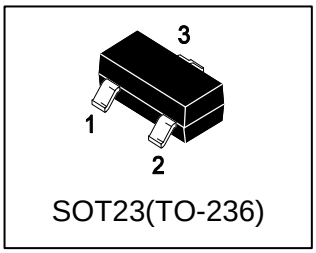
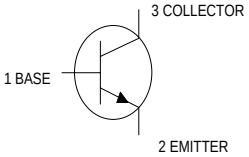
LMBT4401LT1G

General Purpose Transistors NPN Silicon



SOT23(TO-236)



1. FEATURES

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

2. DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
LMBT4401LT1G	2X	3000/Tape&Reel
LMBT4401LT3G	2X	13000/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	600	mA
Collector Current — Peak	ICM	900	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	° 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 = 0.1 mA, IE = 0)	VBR(CBO)	60	-	-	V
Emitter–Base Breakdown Voltage (IE = 0.1 mA, IC = 0)	VBR(EBO)	6	-	-	V
Collector Cutoff Current VCE = 35 V, VEB = 0.4V)	ICEX	-	-	0.1	μA
Base Cutoff Current (VCE = 35 V, VEB = 0.4V)	IBEV	-	-	0.1	μA
Collector Cutoff Current (VCB =60V，IE =0)	ICBO	-	-	100	nA
Emitter-Base cut-off current (IC = 0, VEB=5.0V)	IEBO	-	-	100	nA
Collector-Emitter cutoff Current (VCE＝40V, IB=0)	ICEO	-	-	10	μA

ON CHARACTERISTICS (Note 2.)

DC Current Gain					
(IC = 0.1 mA, VCE = 1.0 V)	HFE	20	-	-	
(IC = 1.0 mA, VCE = 1.0 V)		40	-	-	
(IC = 10 mA, VCE = 1.0 V)		80	-	-	
(IC = 150 mA, VCE = 1.0 V)		100	-	300	
(IC = 500 mA, VCE = 2.0 V)		40	-	-	
Collector–Emitter Saturation Voltage					
(IC = 150 mA, IB = 15 mA)	VCE(sat)	-	-	0.4	V
(IC = 500 mA, IB = 50 mA)		-	-	0.75	
Base–Emitter Saturation Voltage					
(IC = 150 mA, IB = 15 mA)	VBE(sat)	0.75	-	0.95	V
(IC = 500 mA, IB = 50 mA)		-	-	1.2	

SMALL–SIGNAL CHARACTERISTICS

Current–Gain — Bandwidth Product (IC = 20mA, VCE= 20V, f = 100MHz)	fT	250	-	-	MHz
Output Capacitance (VCB = 5.0 V, IE = 0, f = 1.0 MHz)	Cobo	-	-	6.5	pF
Input Capacitance (VEB = 0.5 V, IC = 0, f = 1.0 MHz)	Cibo	-	-	30	pF

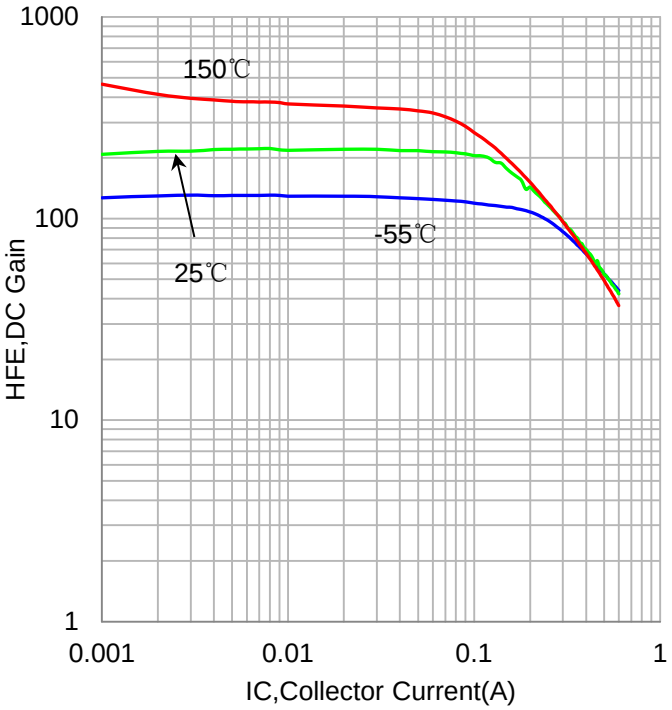
5. ELECTRICAL CHARACTERISTICS (Ta= 25°C)

SWITCHING CHARACTERISTICS

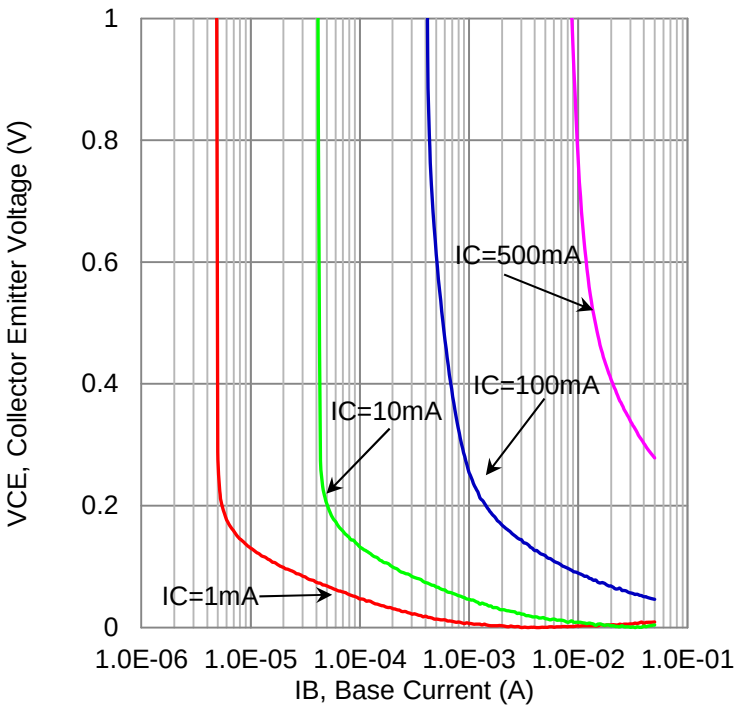
Delay Time	(VCC = 30 V, VEB=2.0V,IC = 150 mA, IB1 = 15 mA)	td	-	-	15	ns
Rise Time		tr	-	-	20	
Storage Time	(VCC = 30 V, IC =150 mA,IB1 = IB2 =15 mA)	ts	-	-	225	
Fall Time		tf	-	-	30	

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

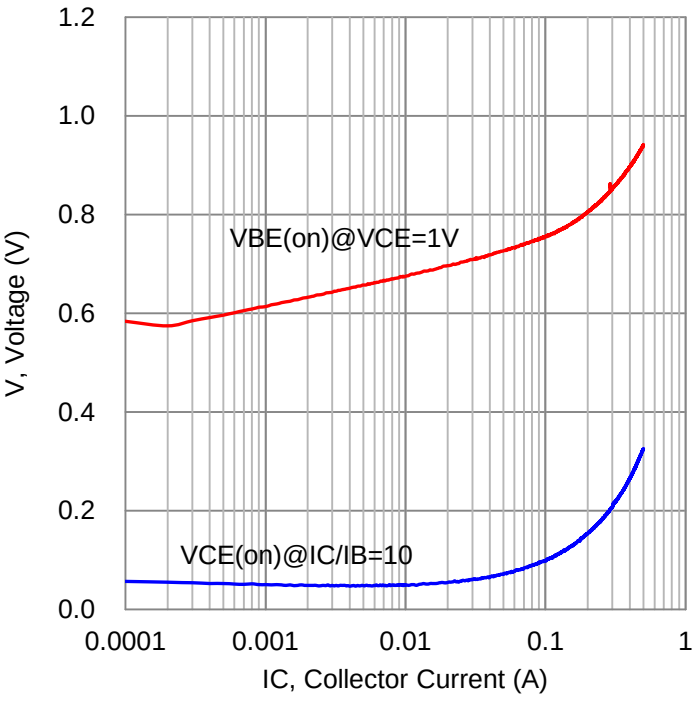
6. ELECTRICAL CHARACTERISTICS CURVES



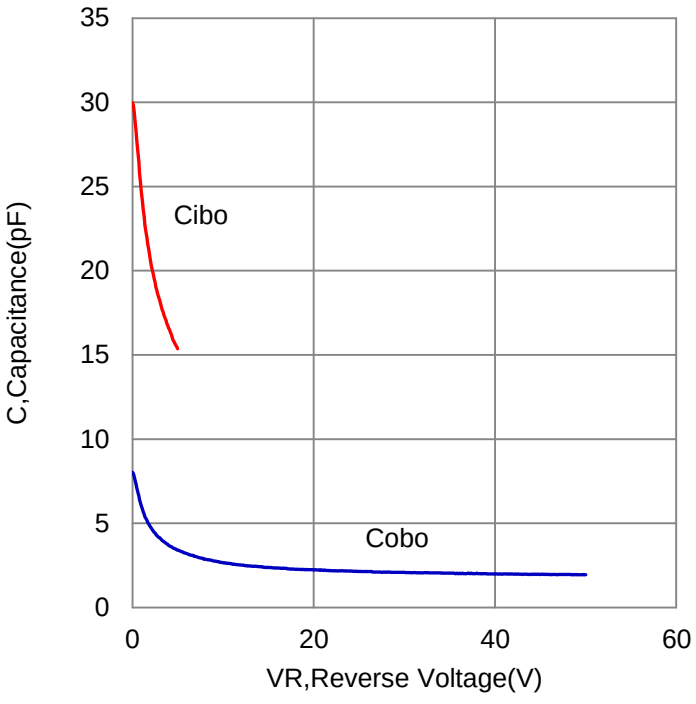
DC Current Gain



Collector Saturation Region

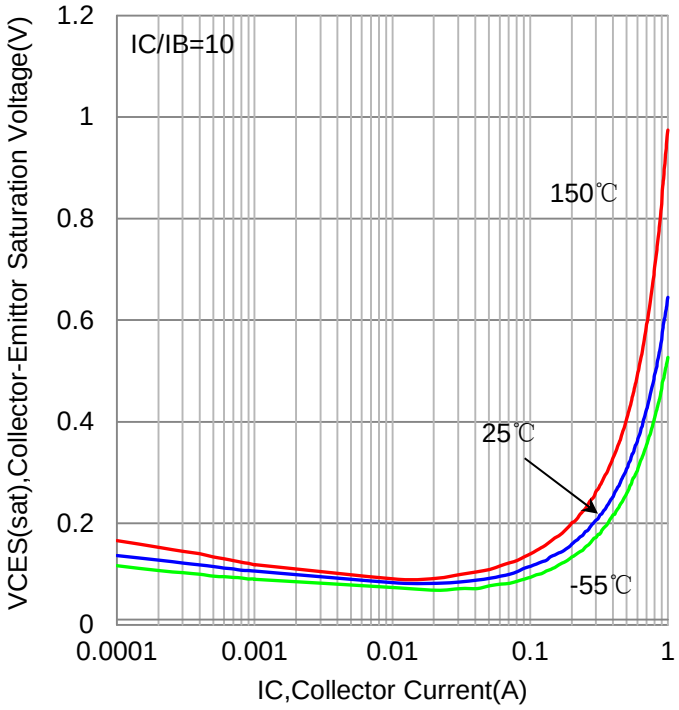


"On" Voltage

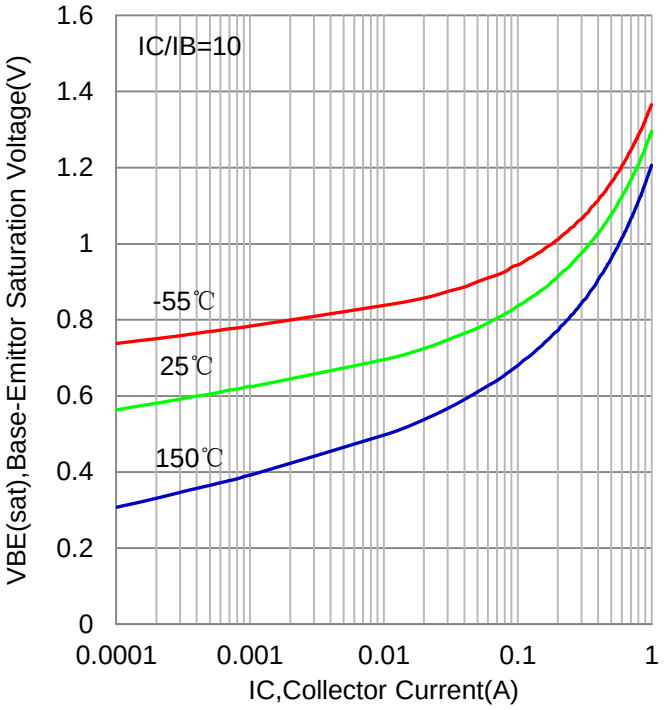


Capacitance

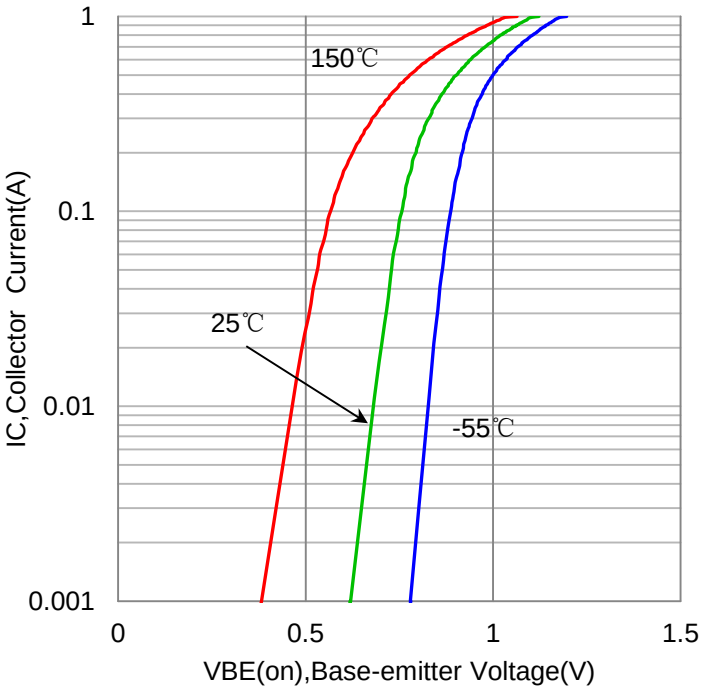
6. ELECTRICAL CHARACTERISTICS CURVES(Con.)



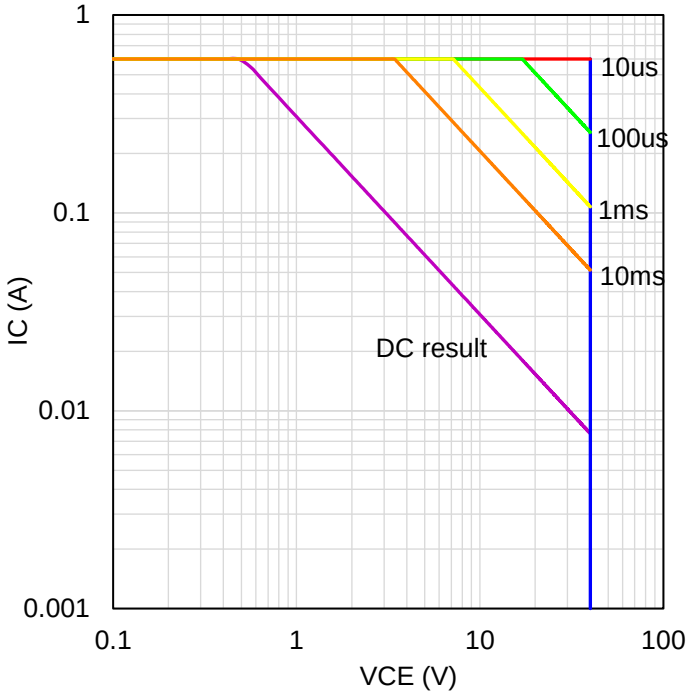
VCE(sat) vs. IC



VBE(sat) vs. IC

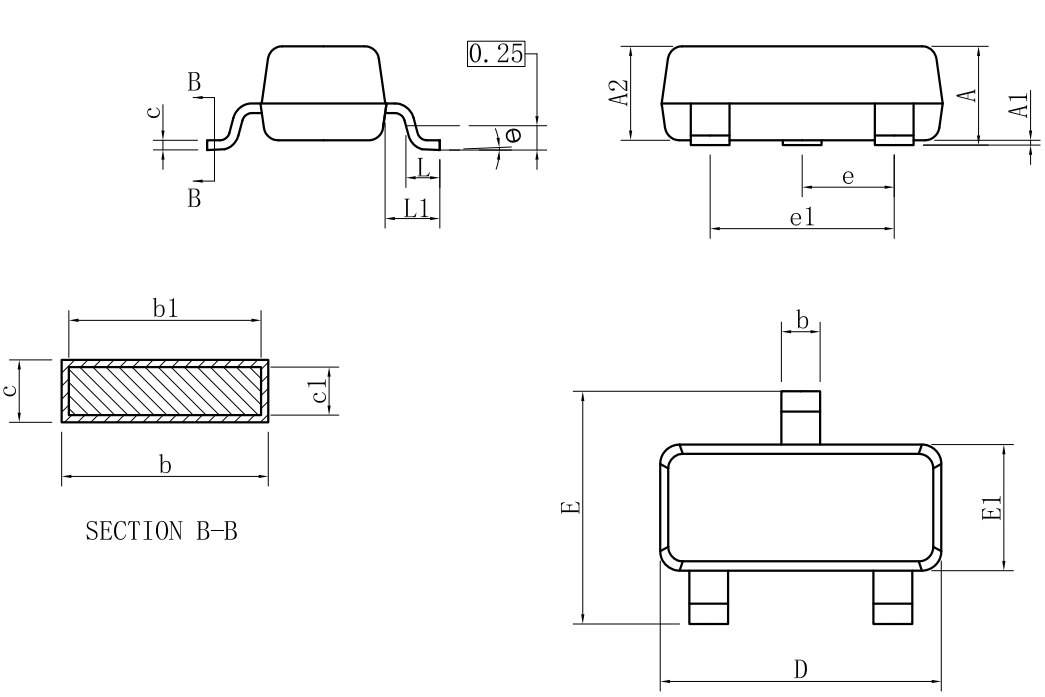


IC vs. VBE(on)



SAFE OPERATING AREA

7.OUTLINE AND DIMENSIONS

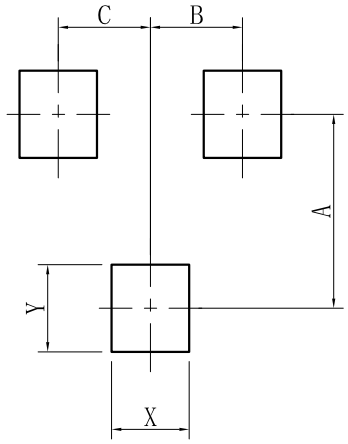


SOT23			
DIM	MIN	NOR	MAX
A	0.89	-	1.12
A1	0.01	-	0.10
A2	0.88	0.95	1.02
b	0.30	-	0.50
b1	0.30	0.40	0.45
c	0.08	-	0.20
c1	0.08	0.10	0.16
D	2.80	2.90	3.04
E	2.10	-	2.64
E1	1.20	1.30	1.40
e	0.95BSC		
e1	1.90BSC		
L	0.40	0.46	0.60
L1	0.54REF		
θ	0°	-	8°
All Dimensions in mm			

GENERAL NOTES

1. Top package surface finish Ra0.4±0.2um
2. Bottom package surface finish Ra0.7±0.2um
3. Side package surface finish Ra0.4±0.2um

8.SOLDERING FOOTPRINT



SOT-23	
DIM	(mm)
X	0.80
Y	0.90
A	2.00
B	0.95
C	0.95

DISCLAIMER

- Curve guarantee in the specification. The curve of test items with electric parameter is used as quality guarantee. The curve of test items without electric parameter is used as reference only.

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