

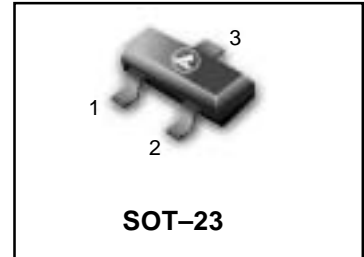
# High Voltage Transistors

● Pb-Free Package is available.

## DEVICE MARKING AND ORDERING INFORMATION

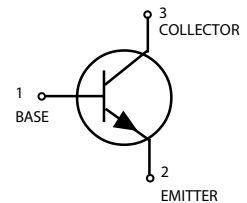
Device	Marking	Package	Shipping
LMBTA42LT1	1D	SOT-23	3000/Tape&Reel
LMBTA42LT1G	1D (Pb-Free)	SOT-23	3000/Tape&Reel
LMBTA43LT1	M1E	SOT-23	3000/Tape&Reel
LMBTA43LT1G	M1E (Pb-Free)	SOT-23	3000/Tape&Reel

**LMBTA42LT1**  
**LMBTA43LT1**



## MAXIMUM RATINGS

Rating	Symbol	Value		Unit
		LMBTA42	LMBTA43	
Collector–Emitter Voltage	$V_{CEO}$	300	200	Vdc
Collector–Base Voltage	$V_{CBO}$	300	200	Vdc
Emitter–Base Voltage	$V_{EBO}$	6.0	6.0	Vdc
Collector Current — Continuous	$I_C$	500		mAdc



## THERMAL CHARACTERISTICS

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

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
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## OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage(3) ( $I_C = 1.0 \text{ mAdc}, I_E = 0$ )	$V_{(BR)CEO}$			Vdc
	LMBTA42	300	—	
	LMBTA43	200	—	
Collector–Base Breakdown Voltage ( $I_C = 100 \mu\text{Adc}, I_E = 0$ )	$V_{(BR)CBO}$			Vdc
	LMBTA42	300	—	
	LMBTA43	200	—	
Emitter–Base Breakdown Voltage ( $I_E = 100 \mu\text{Adc}, I_C = 0$ )	$V_{(BR)EBO}$	6.0	—	Vdc
Collector Cutoff Current ( $V_{CB} = 200\text{Vdc}, I_E = 0$ )	$I_{CBO}$			$\mu\text{Adc}$
	LMBTA42	—	0.1	
	LMBTA43	—	0.1	
Emitter Cutoff Current ( $V_{EB} = 6.0\text{Vdc}, I_C = 0$ )	$I_{EBO}$			$\mu\text{Adc}$
	LMBTA42	—	0.1	
	LMBTA43	—	0.1	

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  $\leq 300 \mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

**LMBTA42LT1 LMBTA43LT1**

**ELECTRICAL CHARACTERISTICS** (T<sub>A</sub> = 25°C unless otherwise noted) (Continued)

Characteristic	Symbol	Min	Max	Unit
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**ON CHARACTERISTICS (3)**

DC Current Gain (I <sub>C</sub> = 1.0 mA, V <sub>CE</sub> = 10 Vdc)	Both Types	25	—	—
(I <sub>C</sub> = 10 mA, V <sub>CE</sub> = 10 Vdc)	Both Types	40	—	—
	LMBTA42	40	—	—
(I <sub>C</sub> = 30 mA, V <sub>CE</sub> = 10 Vdc)	LMBTA43	40	—	—
Collector–Emitter Saturation Voltage (I <sub>C</sub> = 20 mA, I <sub>B</sub> = 2.0 mA)	LMBTA42	—	0.5	Vdc
	LMBTA43	—	0.5	Vdc
Base–Emitter Saturation Voltage (I <sub>C</sub> = 20 mA, I <sub>B</sub> = 2.0 mA)		—	0.9	Vdc

**SMALL–SIGNAL CHARACTERISTICS**

Current –Gain–Bandwidth Product (V <sub>CE</sub> = 20 Vdc, I <sub>C</sub> = 10mA, f = 100 MHz)		50	—	MHz
Collector – Base Capacitance (V <sub>CB</sub> = 20 Vdc, I <sub>E</sub> = 0, f = 1.0 MHz)	LMBTA42	—	3.0	pF
	LMBTA43	—	4.0	pF

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

LMBTA42LT1 LMBTA43LT1

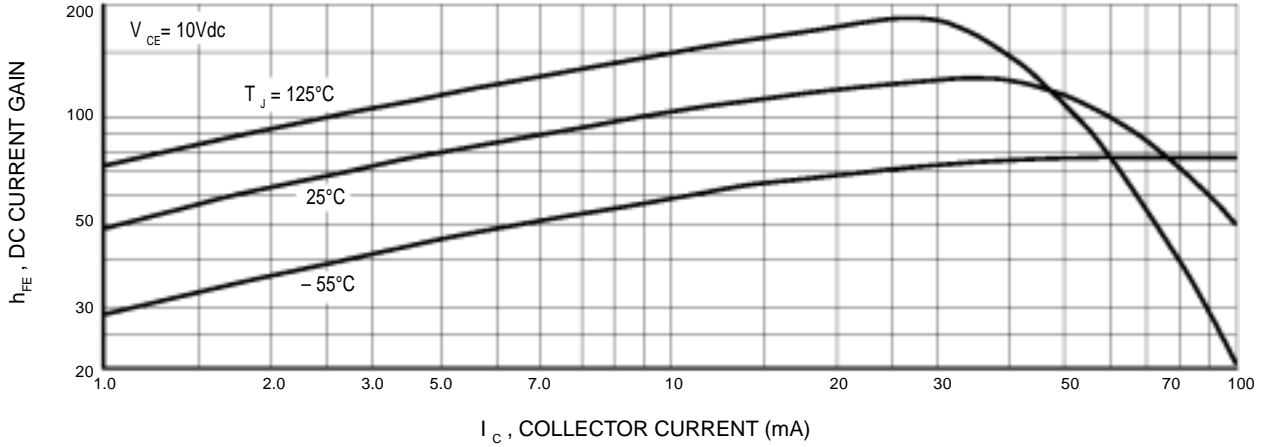


Figure 8. DC Current Gain

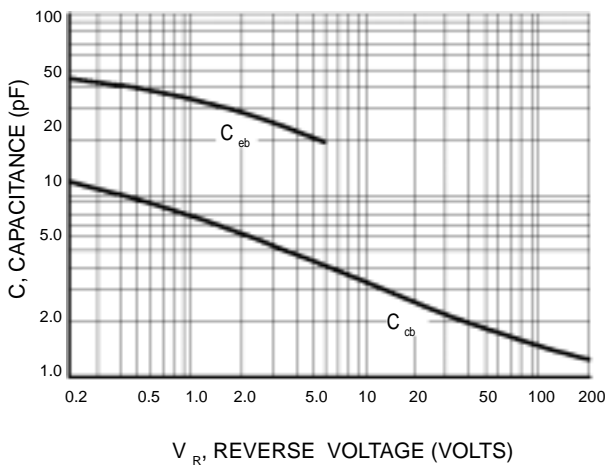


Figure 2. Capacitance

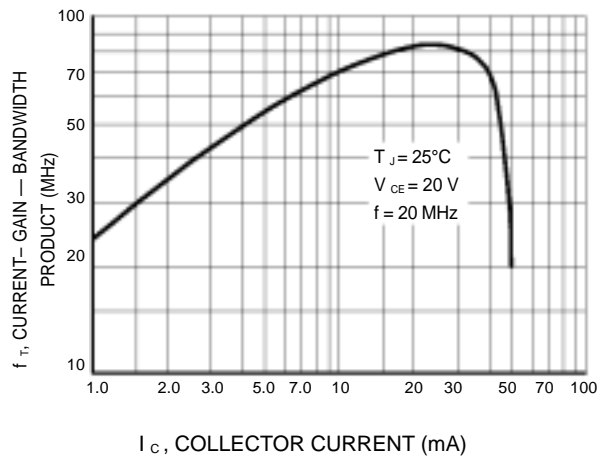


Figure 3. Current-Gain — Bandwidth Product

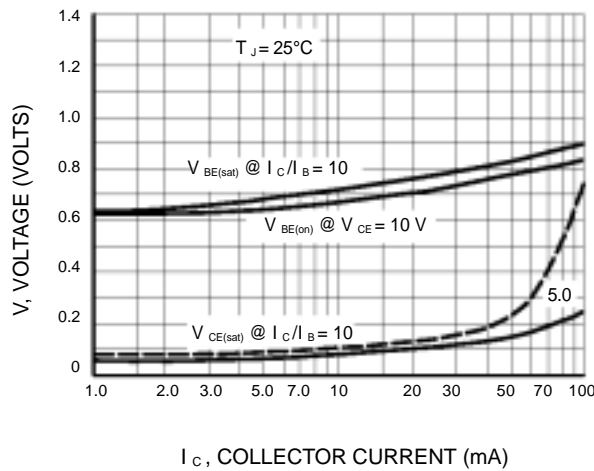
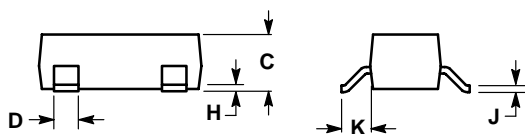
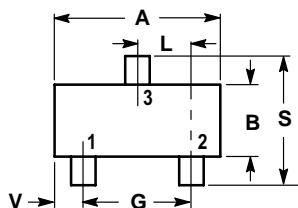


Figure 4. "On" Voltages

LMBTA42LT1 LMBTA43LT1

SOT-23



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

