

High Voltage Transistor

PNP Silicon

FEATURE

- High voltage.
- For Telephony or Professional communication equipment applications.
- NPN complement: LMBTA42LT1, LMBTA43LT1.
- Pb-Free Package is available.

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DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
LMBTA92LT1	2D	3000/Tape&Reel
LMBTA92LT1G	2D (Pb-Free)	3000/Tape&Reel
LMBTA93LT1	2E	3000/Tape&Reel
LMBTA93LT1G	2E (Pb-Free)	3000/Tape&Reel

MAXIMUM RATINGS

Rating	Symbol	Value		Unit
		LMBTA92	LMBTA93	
Collector–Emitter Voltage	V_{CEO}	–300	–200	Vdc
Collector–Base Voltage	V_{CBO}	–300	–200	Vdc
Emitter–Base Voltage	V_{EBO}	–5.0		Vdc
Collector Current — Continuous	I_C	–500		mAdc

THERMAL CHARACTERISTICS

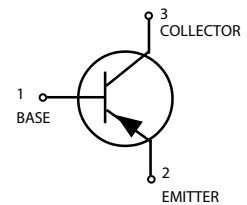
Characteristic	Symbol	Max	Unit
Total Device Dissipation FR– 5 Board, (1) $T_A = 25^\circ\text{C}$	P_D	225	mW
Derate above 25°C		1.8	mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	$^\circ\text{C}/\text{W}$
Total Device Dissipation Alumina Substrate, (2) $T_A = 25^\circ\text{C}$	P_D	300	mW
Derate above 25°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	$^\circ\text{C}$

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 $\leq 2.0\%$.

LMBTA92LT1
LMBTA93LT1



SOT–23



LMBTA92LT1 LMBTA93LT1

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) ($I_C = -1.0\text{ mA}$, $I_B = 0$)	LMBTA92	-300	—	Vdc
	LMBTA93	-200	—	Vdc
Collector–Emitter Breakdown Voltage ($I_C = -100\text{ }\mu\text{A}$, $I_E = 0$)	LMBTA92	-300	—	Vdc
	LMBTA93	-200	—	Vdc
Emitter–Base Breakdown Voltage ($I_E = -100\text{ }\mu\text{A}$, $I_C = 0$)		-5.0	—	Vdc
Collector Cutoff Current ($V_{CB} = -200\text{ Vdc}$, $I_E = 0$)	LMBTA92	—	-0.25	nAdc
	LMBTA93	—	-0.25	nAdc
Collector Cutoff Current ($V_{CB} = -3.0\text{ Vdc}$, $I_C = 0$)		—	-0.1	μAdc

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

Characteristic	Symbol	Min	Max	Unit
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ON CHARACTERISTICS (3)

DC Current Gain ($I_C = -1.0\text{ mA}$, $V_{CE} = -10\text{ Vdc}$)	Both Types	25	—	—
($I_C = -10\text{ mA}$, $V_{CE} = -10\text{ Vdc}$)	Both Types	40	—	—
($I_C = -30\text{ mA}$, $V_{CE} = -10\text{ Vdc}$)	LMBTA92	25	—	—
	LMBTA93	25	—	—
Collector–Emitter Saturation Voltage ($I_C = -20\text{ mA}$, $I_B = -2.0\text{ mA}$)	LMBTA92	—	-0.5	Vdc
	LMBTA93	—	-0.5	Vdc
Base–Emitter Saturation Voltage ($I_C = -20\text{ mA}$, $I_B = -2.0\text{ mA}$)		—	-0.9	Vdc

SMALL–SIGNAL CHARACTERISTICS

Current–Gain — Bandwidth Product(3),(4) ($I_C = -10\text{ mA}$, $V_{CE} = -20\text{ Vdc}$, $f = 100\text{ MHz}$)	f_T	50	—	MHz
Collector – Base Capacitance ($V_{CB} = -20\text{ Vdc}$, $I_E = 0$, $f = 1.0\text{ MHz}$)	C_{cb}	—	6.0	pF
		—	8.0	pF

3. Pulse Test: Pulse Width $\leq 300\text{ }\mu\text{s}$, Duty Cycle $\leq 2.0\%$.

LMBTA92LT1 LMBTA93LT1

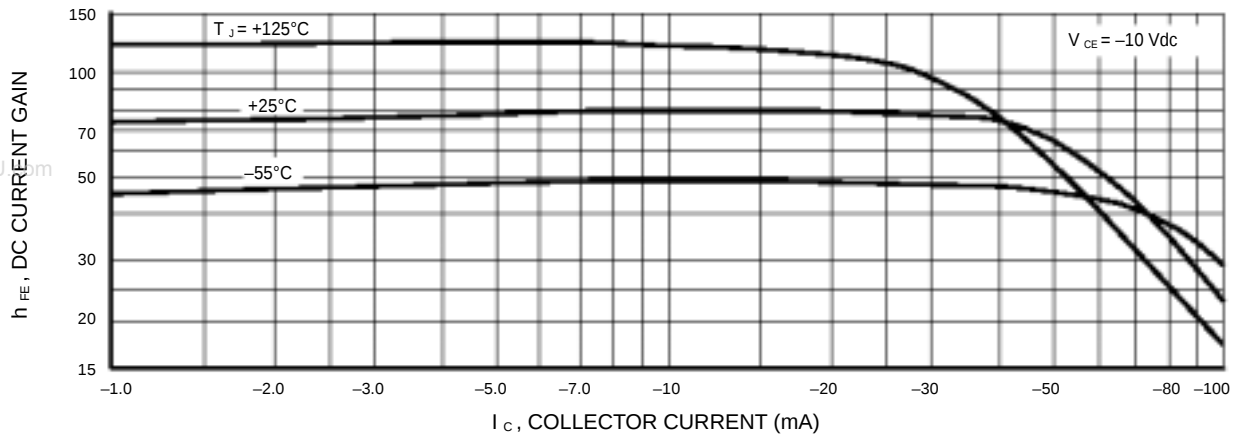


Figure 1. DC Current Gain

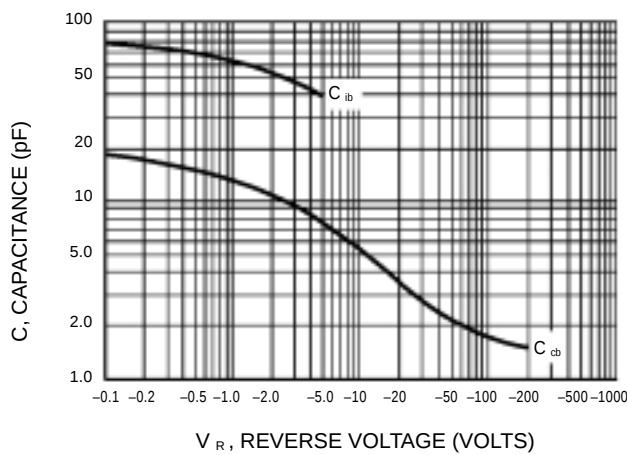


Figure 2. Capacitances

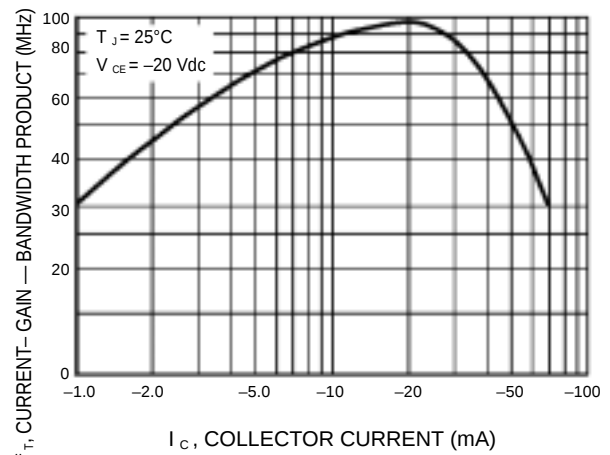


Figure 3. Current-Gain — Bandwidth Product

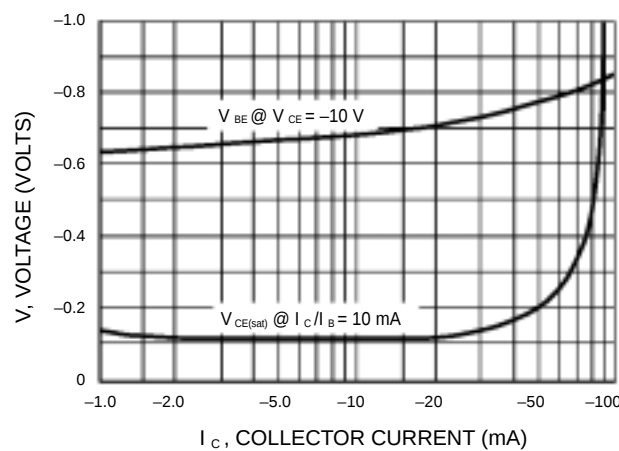
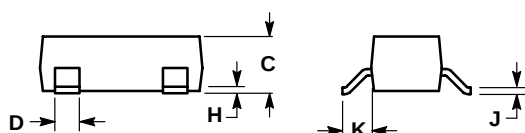
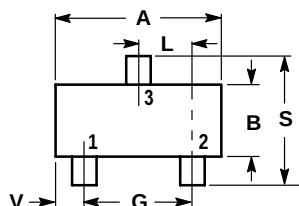


Figure 4. "On" Voltages

LMBTA92LT1 LMBTA93LT1
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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

