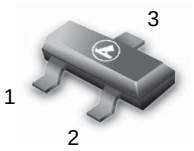
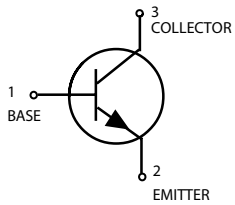
High Voltage Transistors

- We declare that the material of product compliance with RoHS requirements.
- S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

LMBTA42LT1G
LMBTA43LT1G
S-LMBTA42LT1G
S-LMBTA43LT1G



SOT–23



DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Package	Shipping
LMBTA42LT1G	1D	SOT-23	3000/Tape&Reel
LMBTA42LT3G	1D	SOT-23	10000/Tape&Reel
LMBTA43LT1G	M1E	SOT-23	3000/Tape&Reel
LMBTA43LT3G	M1E	SOT-23	10000/Tape&Reel

MAXIMUM RATINGS

Rating	Symbol	Value LMBTA42	Value LMBTA43	Unit
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°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

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

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Breakdown Voltage(3)		$V_{(BR)CEO}$			Vdc
(I_C = 1.0 mAdc, I_B = 0)	LMBTA42		300	—	
	LMBTA43		200	—	
Collector–Base Breakdown Voltage		$V_{(BR)CBO}$			Vdc
(I_C= 100 µAdc, I_E= 0)	LMBTA42		300	—	
	LMBTA43		200	—	
Emitter–Base Breakdown Voltage (I_E= 100 µAdc, I_C= 0)		$V_{(BR)EBO}$	6.0	—	Vdc
Collector Cutoff Current		I_{CBO}			µAdc
(V_{CB}= 200Vdc, I_E= 0)	LMBTA42		—	0.1	
(V_{CB}= 160Vdc, I_E= 0)	LMBTA43		—	0.1	
Emitter Cutoff Current		I_{EBO}			µAdc
(V_{EB}= 6.0Vdc, I_C= 0)	LMBTA42		—	0.1	
(V_{EB}= 4.0Vdc, I_C= 0)	LMBTA43		—	0.1	

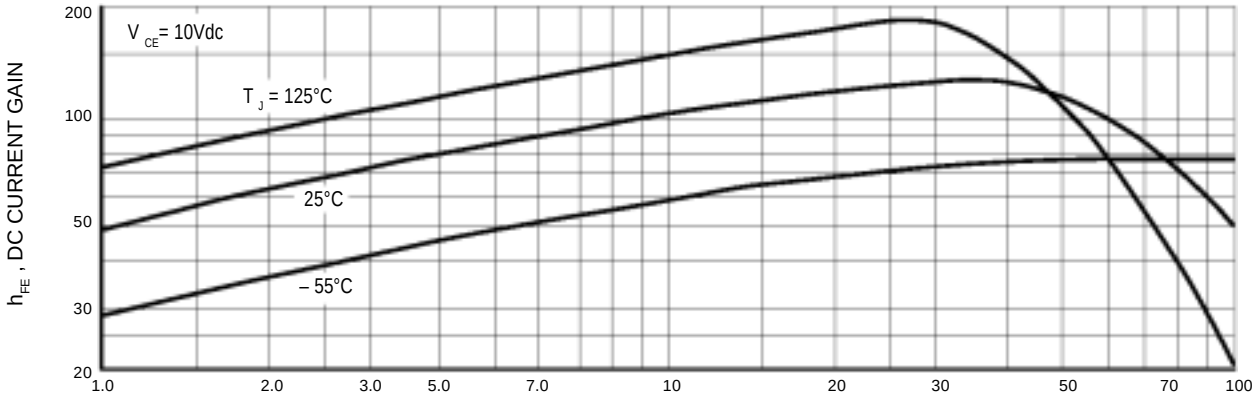
1. FR–5 = 1.0 x 0.75 x 0.062 in.
2. Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.
3. Pulse Test: Pulse Width ≤300 µs, Duty Cycle ≤2.0%.

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

Characteristic		Symbol	Min	Max	Unit
ON CHARACTERISTICS (3)					
DC Current Gain		h_{FE}			—
(I_C = 1.0 mAdc, V_{CE} = 10 Vdc)	Both Types		25	—	
(I_C = 10 mAdc, V_{CE} = 10 Vdc)	Both Types		40	—	
	LMBTA42		40	—	
(I_C = 30 mAdc, V_{CE} = 10 Vdc)	LMBTA43		40	—	
Collector–Emitter Saturation Voltage		$V_{CE(sat)}$			Vdc
(I_C = 20 mAdc, I_B = 2.0 mAdc)	LMBTA42		—	0.5	
	LMBTA43		—	0.5	
Base–Emitter Saturation Voltage					
(I_C = 20 mAdc, I_B= 2.0 mAdc)		$V_{BE(sat)}$	—	0.9	Vdc
SMALL–SIGNAL CHARACTERISTICS					
Current –Gain–Bandwidth Product					
(V_{CE} = 20 Vdc, I_C = 10mA, f = 100 MHz)		f_T	50	—	MHz
Collector – Base Capacitance		C_{cb}			pF
(V_{CB}= 20 Vdc, I_E = 0, f = 1.0 MHz)	LMBTA42		—	3.0	
	LMBTA43		—	4.0	

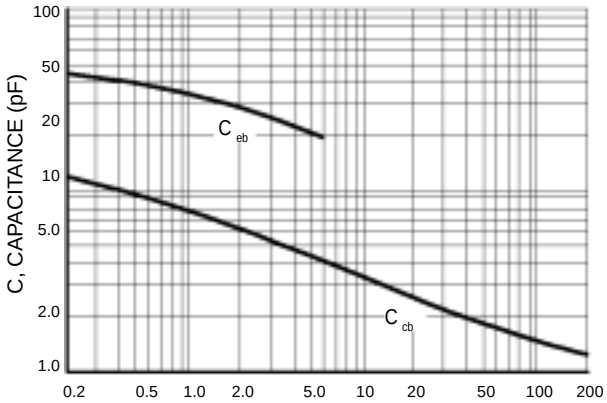
3. Pulse Test: Pulse Width ≤300 μs, Duty Cycle ≤2.0%.

LMBTA42LT1G LMBTA43LT1G



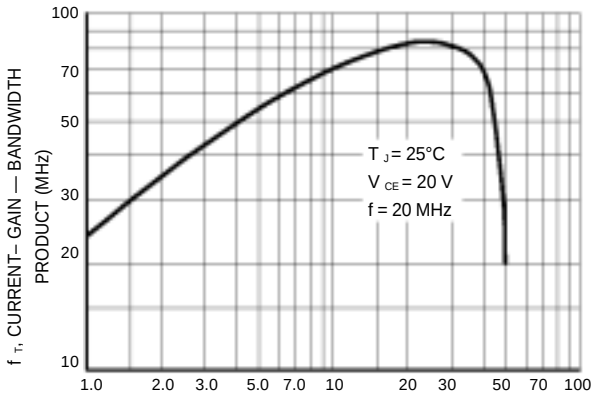
I C , COLLECTOR CURRENT (mA)

Figure 8. DC Current Gain



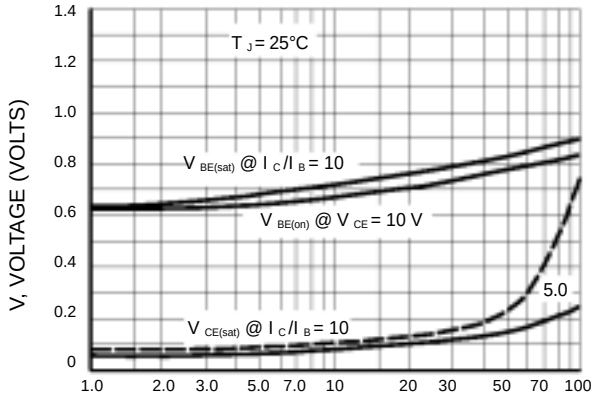
V R, REVERSE VOLTAGE (VOLTS)

Figure 2. Capacitance



I C , COLLECTOR CURRENT (mA)

Figure 3. Current–Gain — Bandwidth Product



I C , COLLECTOR CURRENT (mA)

Figure 4. “On” Voltages

LMBTA42LT1G LMBTA43LT1G

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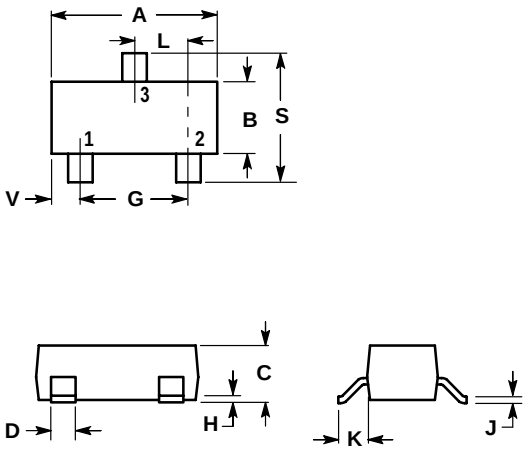

NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

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