MMBTA42LT1, MMBTA43LT1

SYC SEMICONDUCTORES Y COMPONENTES

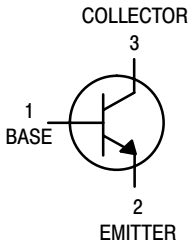
MMBTA42LT1 is a Preferred Device

High Voltage Transistors

NPN Silicon

Features

- Pb−Free Package May be Available. The G−Suffix Denotes a Pb−Free Lead Finish



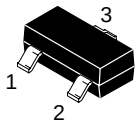
MAXIMUM RATINGS

Rating	Symbol	MMBTA42	MMBTA43	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

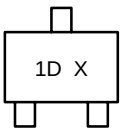
Characteristic	Symbol	Max	Unit
Total Device Dissipation FR−5 Board (Note 1) T_A = 25°C Derate above 25°C	P_D	225 1.8	mW mW/°C
Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$	556	°C/W
Total Device Dissipation Alumina Substrate (Note 2) T_A = 25°C Derate above 25°C	P_D	300 2.4	mW mW/°C
Thermal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

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.

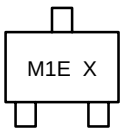


SOT−23 (TO−236)
CASE 318
STYLE 6

MARKING DIAGRAMS



MMBTA42LT1



MMBTA43LT1

1D, M1E = Specific Device Code
X = Date Code

Preferred devices are recommended choices for future use and best overall value.

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

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector−Emitter Breakdown Voltage (Note 3)		$V_{(BR)CEO}$			Vdc
(I_C = 1.0 mAdc, I_B = 0)	MMBTA42		300	−	
	MMBTA43		200	−	
Collector−Base Breakdown Voltage		$V_{(BR)CBO}$			Vdc
(I_C = 100 μAdc, I_E = 0)	MMBTA42		300	−	
	MMBTA43		200	−	
Emitter−Base Breakdown Voltage		$V_{(BR)EBO}$	6.0	−	Vdc
(I_E = 100 μAdc, I_C = 0)					
Collector Cutoff Current		I_{CBO}			μAdc
(V_{CB} = 200 Vdc, I_E = 0)	MMBTA42		−	0.1	
(V_{CB} = 160 Vdc, I_E = 0)	MMBTA43		−	0.1	
Emitter Cutoff Current		I_{EBO}			μAdc
(V_{EB} = 6.0 Vdc, I_C = 0)	MMBTA42		−	0.1	
(V_{EB} = 4.0 Vdc, I_C = 0)	MMBTA43		−	0.1	
ON CHARACTERISTICS (Note 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	−	
(I_C = 30 mAdc, V_{CE} = 10 Vdc)	MMBTA42		40	−	
	MMBTA43		40	−	
Collector−Emitter Saturation Voltage		$V_{CE(sat)}$			Vdc
(I_C = 20 mAdc, I_B = 2.0 mAdc)	MMBTA42		−	0.5	
	MMBTA43		−	0.5	
Base−Emitter Saturation Voltage		$V_{BE(sat)}$	−	0.9	Vdc
(I_C = 20 mAdc, I_B = 2.0 mAdc)					
SMALL−SIGNAL CHARACTERISTICS					
Current−Gain − Bandwidth Product		f_T	50	−	MHz
(I_C = 10 mAdc, V_{CE} = 20 Vdc, f = 100 MHz)					
Collector−Base Capacitance		C_{cb}			pF
(V_{CB} = 20 Vdc, I_E = 0, f = 1.0 MHz)	MMBTA42		−	3.0	
	MMBTA43		−	4.0	

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

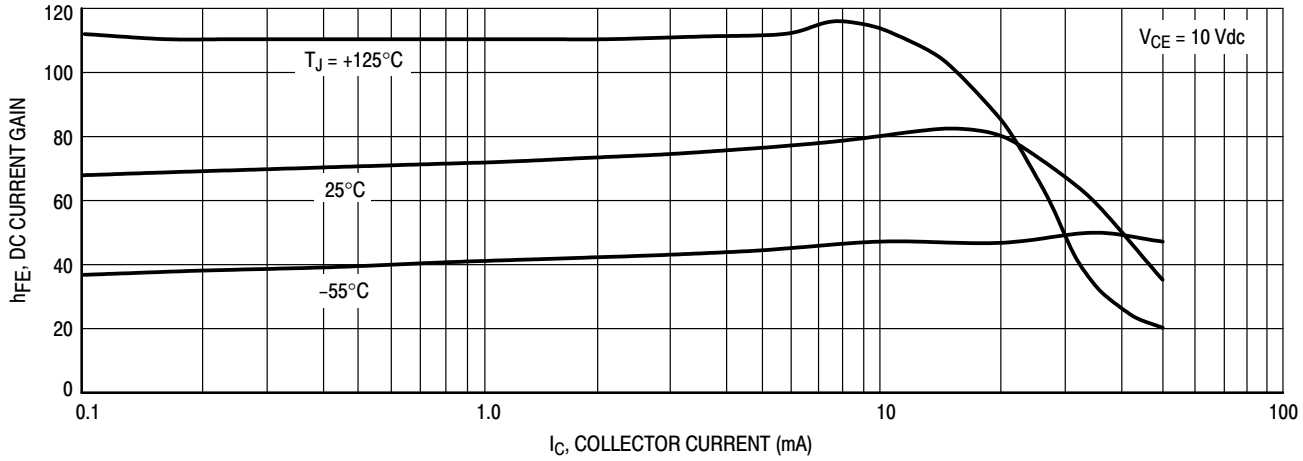


Figure 1. DC Current Gain

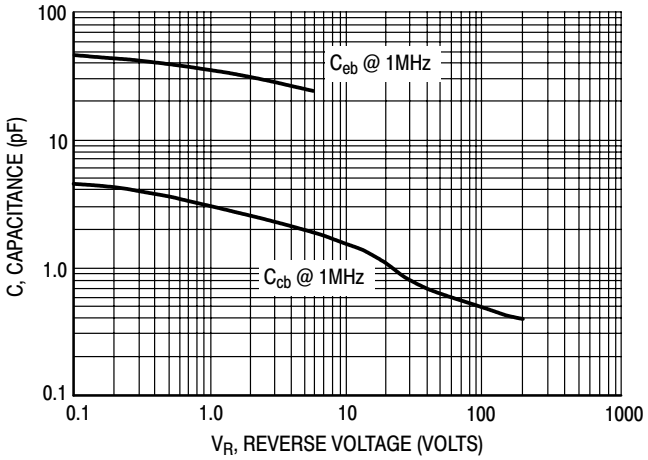


Figure 2. Capacitance

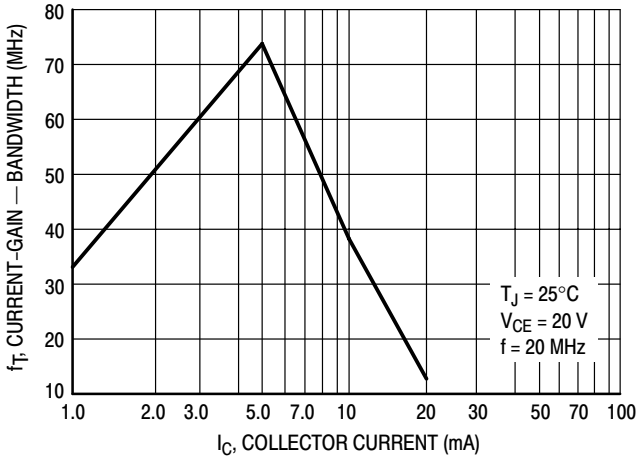
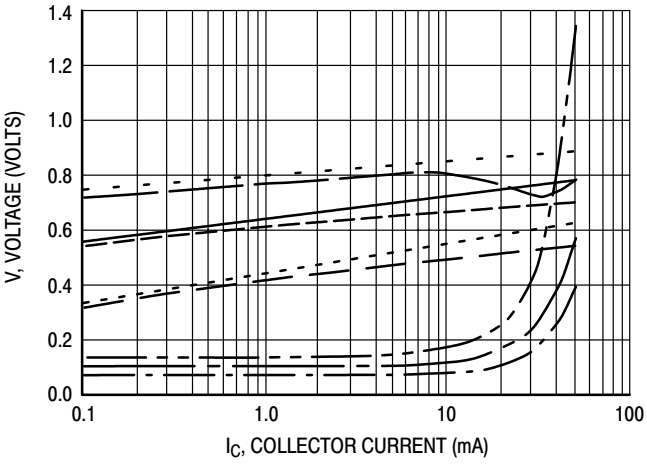


Figure 3. Current−Gain − Bandwidth



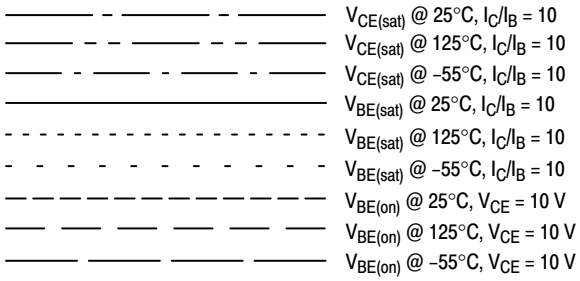
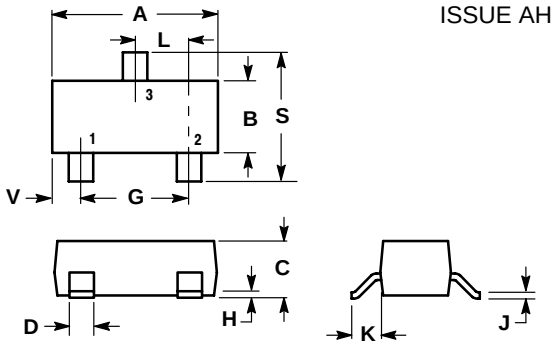


Figure 4. “ON” Voltages

PACKAGE DIMENSIONS

SOT−23 (TO−236)
CASE 318−08
ISSUE AH



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. 318−03 AND −07 OBSOLETE, NEW STANDARD 318−08.

	INCHES		MILLIMETERS	
DIM	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

STYLE 6:
PIN 1. BASE
2. EMITTER
3. COLLECTOR

SOLDERING FOOTPRINT*

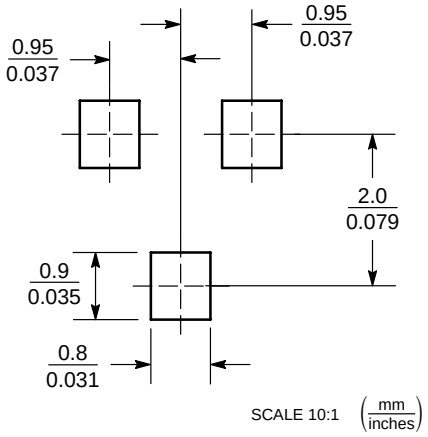


Figure 5. SOT−23