



Bias Resistor Transistors

PNP Silicon Surface Mount Transistors With Monolithic Bias Resistor Network

This new series of digital transistors is designed to replace a single device and its external resistor bias network. The BRT (Bias Resistor Transistor) contains a single transistor with a monolithic bias network consisting of two resistors; a series base resistor and a base-emitter resistor. The BRT eliminates these individual components by integrating them into a single device. The use of a BRT can reduce both system cost and board space. The device is housed in the SC-89 package which is designed for low power surface mount applications.

- Simplifies Circuit Design
- Reduces Board Space
- •Reduces Component Count
- The SC-89 Package can be Soldered using Wave or Reflow.
- Available in 8 mm, 7inch/3000 Unit Tape & Reel
- This is Pb-Free Device.

DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Package	Shipping
LDTA123EET1G	6H	SC-89 (Pb-Free)	3000/Tape&Reel

MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	50	Vdc
Collector-Emitter Voltage	V_{CEO}	50	Vdc
Collector Current	Ι _C	100	mAdc

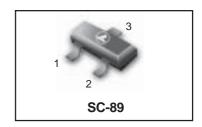
THERMAL CHARACTERISTICS

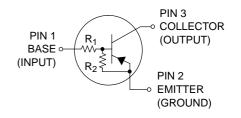
Characteristic	Symbol	Max	Unit
Total Device Dissipation $T_A = 25^{\circ}C$ Derate above $25^{\circ}C$	P _D	200 (Note 1) 300 (Note 2) 1.6 (Note 1) 2.4 (Note 2)	m₩ mW/°C
Thermal Resistance – Junction-to-Ambient	R_{\thetaJA}	400 (Note 2)	°C/W
Junction and Storage Temperature Range	T _{J,} T _{stg}	-55 to +150	°C

1. FR-4 @ Minimum Pad

2. FR-4 @ 1.0 x 1.0 inch Pad

LDTA123EET1





MARKING DIAGRAM



xx = Specific Device Code M = Date Code



0.25

0.2

_

2.9

1.2

_

_

_

2.2

1

Vdc

Vdc

Vdc

kΩ

LDTA123EET1

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

Characteristic	Symbol	Min	Тур	Max	Unit
OFF CHARACTERISTICS					
Collector-Base Cutoff Current (V _{CB} = 50 V, I_E = 0)	I _{CBO}	-	-	100	nAdc
Collector-Emitter Cutoff Current (V _{CE} = 50 V, I_B = 0)	I _{CEO}	-	-	500	nAdc
Emitter-Base Cutoff Current ($V_{EB} = 6.0 \text{ V}, I_C = 0$)	I _{EBO}	-	_	2.3	mAdc
Collector-Base Breakdown Voltage (I _C = 10 μ A, I _E = 0)	V _{(BR)CBO}	50	-	-	Vdc
Collector-Emitter Breakdown Voltage (Note 3) $(I_C = 2.0 \text{ mA}, I_B = 0)$	V _{(BR)CEO}	50	-	-	Vdc
ON CHARACTERISTICS (Note 3)					
DC Current Gain ($V_{CE} = 10 \text{ V}, I_C = 5.0 \text{ mA}$)	h _{FE}	8.0	15	_	

V_{CE(sat)}

VOL

VOH

 R_1

 R_1/R_2

_

_

4.9

1.5

0.8

3. Pulse Test: Pulse Width < 300 $\mu s,$ Duty Cycle < 2.0%

Collector-Emitter Saturation Voltage ($I_C = 10 \text{ mA}, I_B = 5 \text{ mA}$)

 $(V_{CC} = 5.0 \text{ V}, \text{ V}_{B} = 2.5 \text{ V}, \text{ R}_{L} = 1.0 \text{ k}\Omega)$

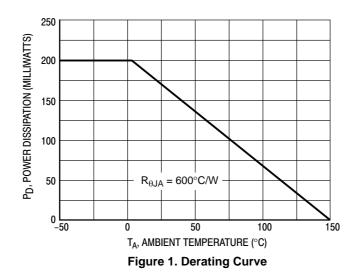
 $(V_{CC} = 5.0 \text{ V}, V_B = 0.5 \text{ V}, R_L = 1.0 \text{ k}\Omega)$

Output Voltage (on)

Output Voltage (off)

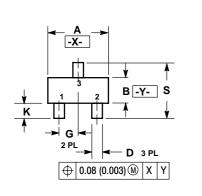
Input Resistor

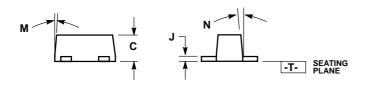
Resistor Ratio





LDTA123EET1

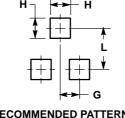




SC-89

- NOTES:
 DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 CONTROLLING DIMENSION: MILLIMETERS
 MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
 463C-01 OBSOLETE, NEW STANDARD 463C-02.

	MILLIMETERS			INCHES			
DIM	MIN	NOM	MAX	MIN	NOM	MAX	
Α	1.50	1.60	1.70	0.059	0.063	0.067	
В	0.75	0.85	0.95	0.030	0.034	0.040	
С	0.60	0.70	0.80	0.024	0.028	0.031	
D	0.23	0.28	0.33	0.009	0.011	0.013	
G	0.50 BSC			0.020 BSC			
Н	0.53 REF			0.021 REF			
J	0.10	0.15	0.20	0.004	0.006	0.008	
K	0.30	0.40	0.50	0.012	0.016	0.020	
L	1.10 REF			0.043 REF			
М			10 °			10 °	
Ν			10 °			10 °	
S	1.50	1.60	1.70	0.059	0.063	0.067	



RECOMMENDED PATTERN OF SOLDER PADS