

DTA123ECA

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DTA123ECA

-100mA -50V Digital Transistors (Built-in Resistors) PNP Silicon

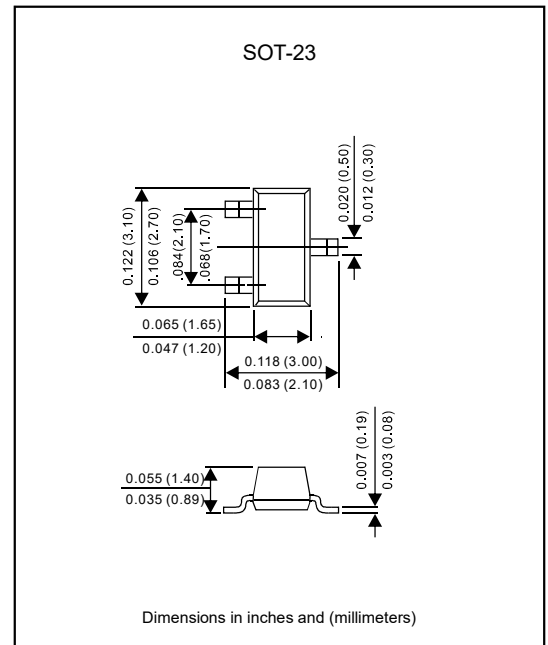
Features

- Built-in bias resistors that implies easy ON/OFF applications.
- The bias resistors are thin-film resistors with complete isolation to allow positive input.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen free parts, ex. DTA123ECA-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, SOT-23.
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026.
- Mounting Position : Any.

Package outline



Maximum ratings (At $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Supply voltage	$-V_{CC}$	50	V
Input voltage	V_{IN}	-12 to +10	V
Output current	$-I_{OUT}$	100	mA
Collector current	$-I_C$	100	mA
Power dissipation	P_D	200	mW
Operating junction temperature	T_J	+150	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^\circ\text{C}$

Note: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

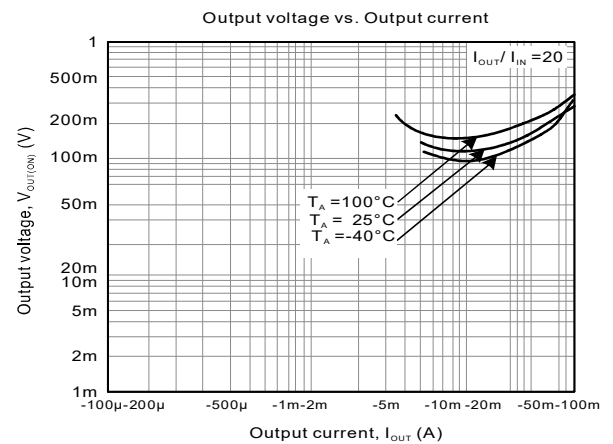
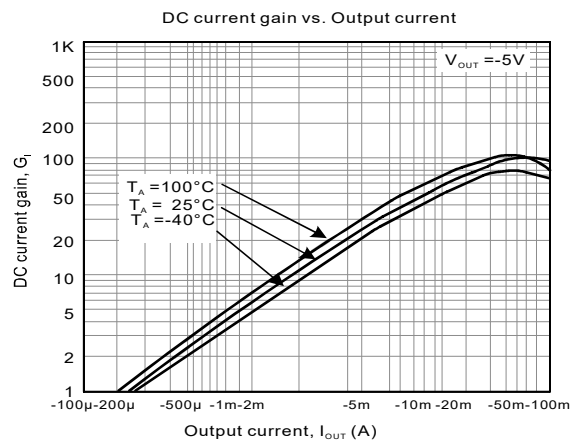
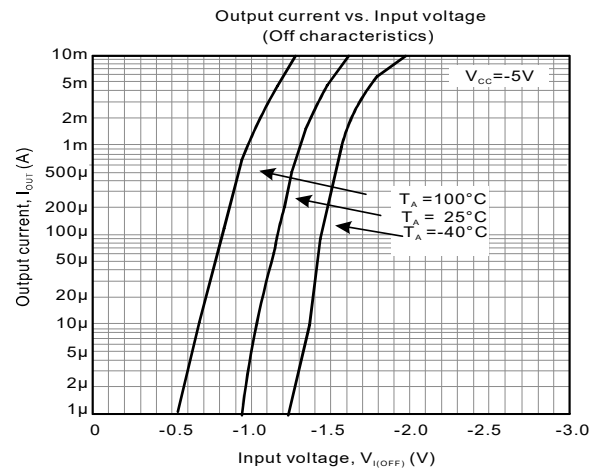
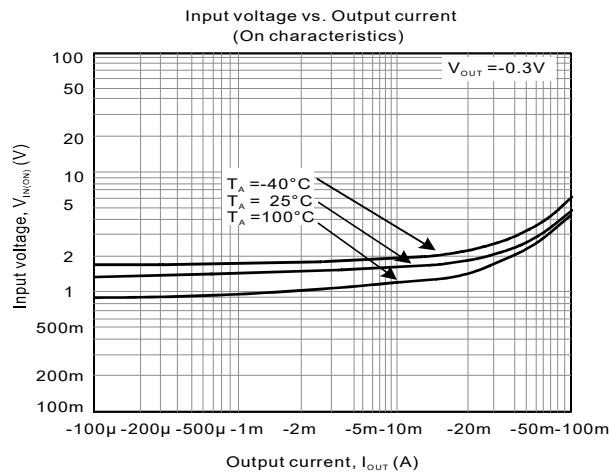
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Electrical characteristics (At T_A=25°C unless otherwise noted)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Input voltage	-V _{CC} =5V, -I _{OUT} =100μA	-V _{IN(OFF)}			0.5	V
Input voltage	-V _{OUT} =0.3V, -I _{OUT} =20mA	-V _{IN(ON)}	3			
Output voltage	I _{OUT} /-I _{IN} =10mA / 0.5mA	-V _{OUT(ON)}		0.1	0.3	V
Input current	-V _{IN} =5V	-I _{IN}			3.8	mA
Output current	-V _{CC} =50V, V _{IN} =0V	-I _{OUT(OFF)}			0.5	μA
DC current gain	-V _{OUT} =5V, -I _{OUT} =20mA	G _I	20			
Input resistance		R _I	1.54	2.2	2.86	kΩ
Resistance ratio		R ₂ /R ₁	0.8	1	1.2	
Gain-bandwidth product	-V _{CE} =10V, -I _E =5mA, f=100MHz (Note 1)	f _T		250		MHz

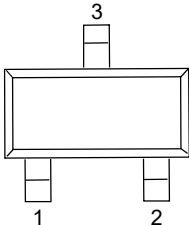
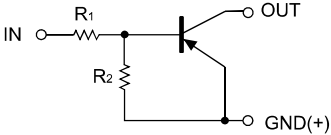
Note: 1. Transition frequency of the device.

Rating and characteristic curves



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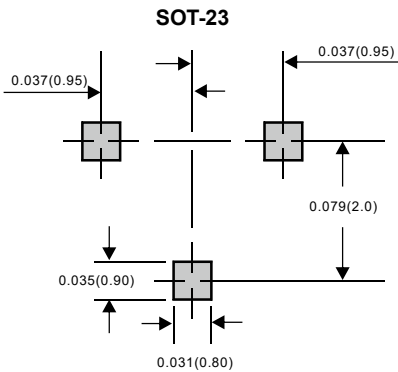
Pinning information

Pin	Simplified outline	Symbol
Pin 1 IN Pin 2 GND Pin 3 OUT		

Marking

Type number	Marking code
DTA123ECA	AC3

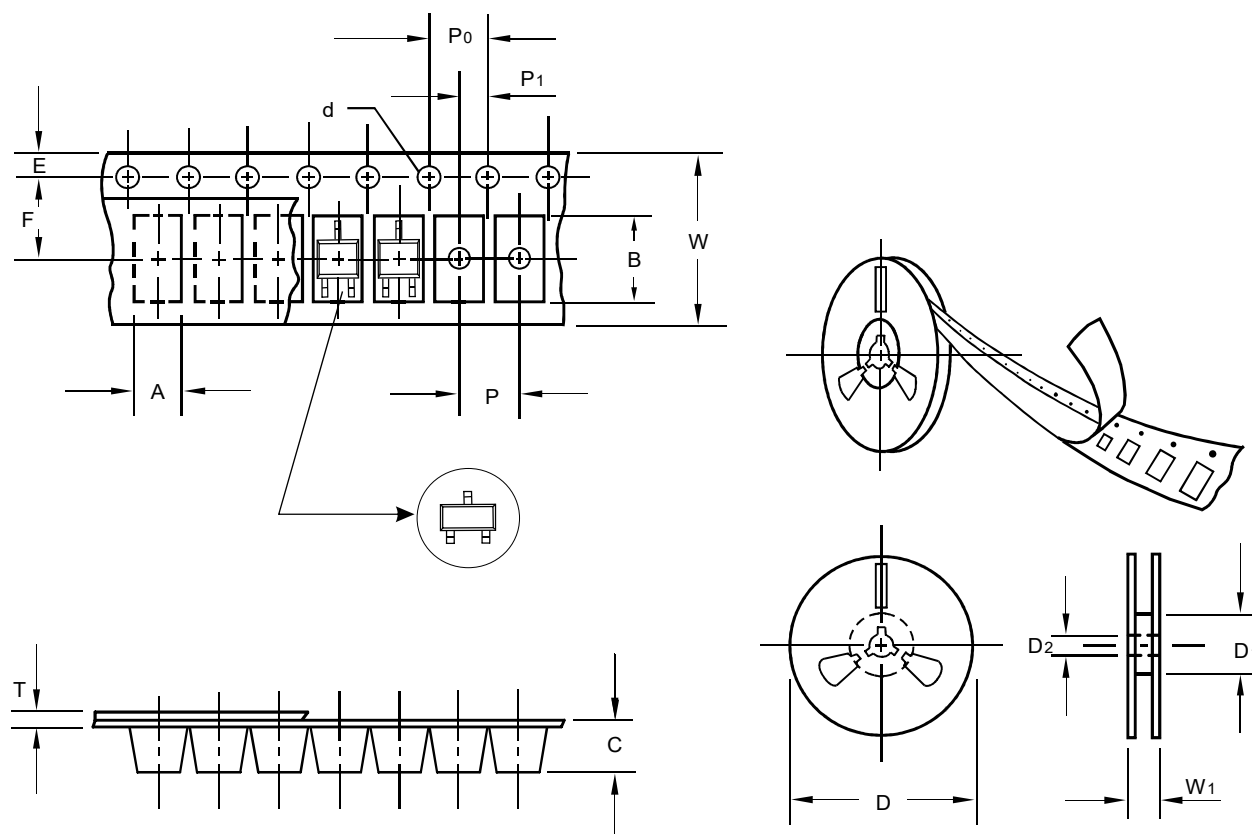
Suggested solder pad layout



Dimensions in inches and (millimeters)

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Packing information



unit:mm

Item	Symbol	Tolerance	SOT-23
Carrier width	A	0.3	3.30
Carrier length	B	0.3	3.20
Carrier depth	C	0.3	1.50
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D ₁	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D ₁	min	54.40
Feed hole diameter	D ₂	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P ₀	0.1	4.00
Embossment center	P ₁	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W ₁	1.0	12.0

Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

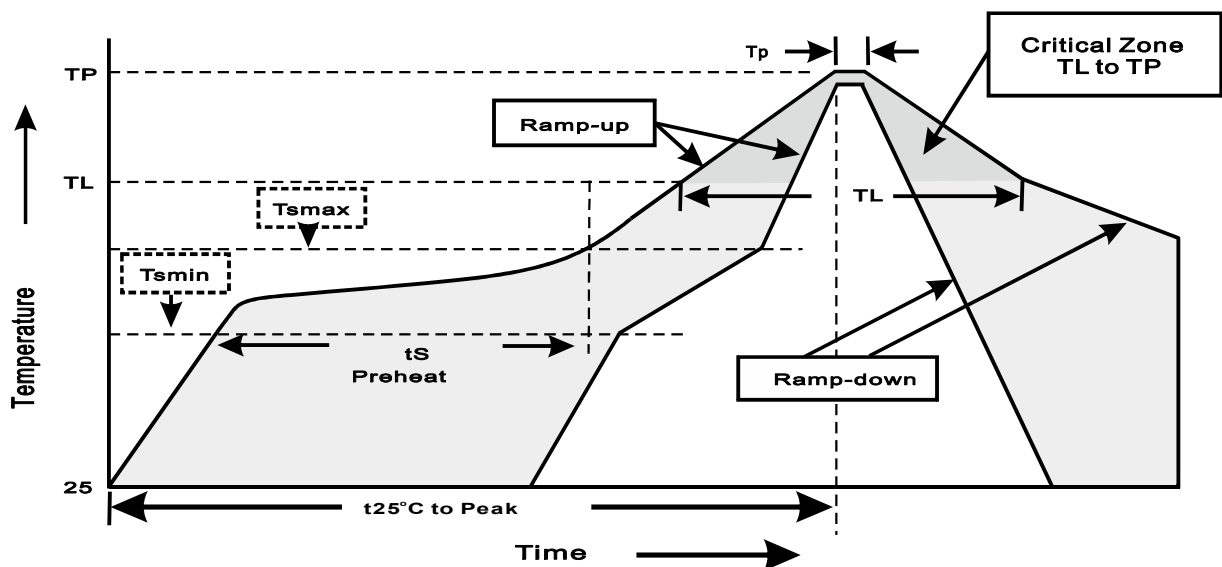
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Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)
SOT-23	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000

Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T _L to T _P)	<3°C/sec
Preheat - Temperature Min(T _{smín}) - Temperature Max(T _{smáx}) - Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smáx} to T _L - Ramp-upRate	<3°C/sec
Time maintained above: - Temperature(T _L) - Time(t _L)	217°C 60~260sec
Peak Temperature(T _P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t _r)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes