DTA123ECA-Q1

List

DTA123ECA-Q1

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

Features

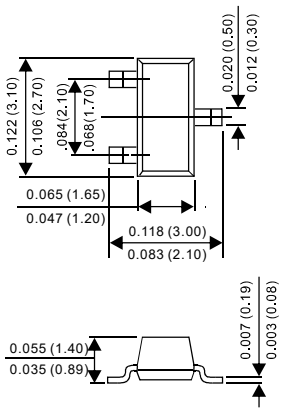
- Built-in bias resistors that implies easy ON/OFF applications.
- The bias resistors are thin-flim resistors with complete isolation to allow positive input.
- Qualified to AEC-Q101 standards for high reliability.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen free parts, ex. DTA123ECA-Q1-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

SOT-23



Dimensions in inches and (millimeters)

Maximum ratings (At T_A=25°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	°C
Storage temperature range	T_{STG}	-55 to +150	°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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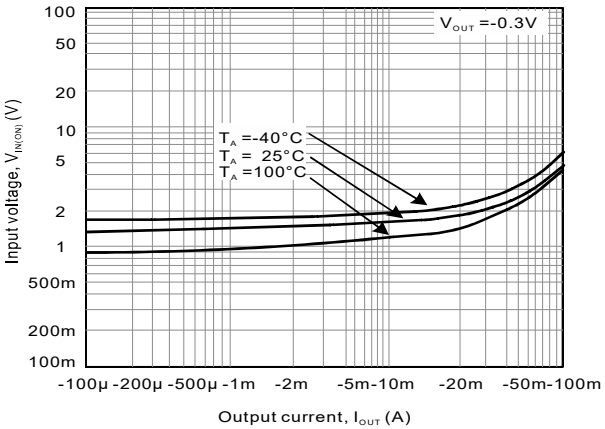
Electrical characteristics (At T_A=25°C unless otherwise noted)

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_1	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

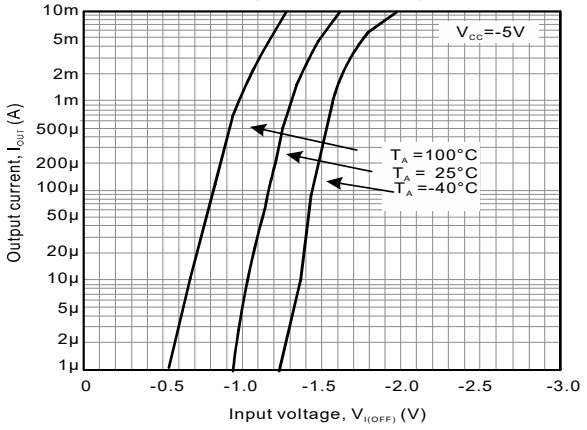
Note: 1.Transition frequency of the device.

Rating and characteristic curves

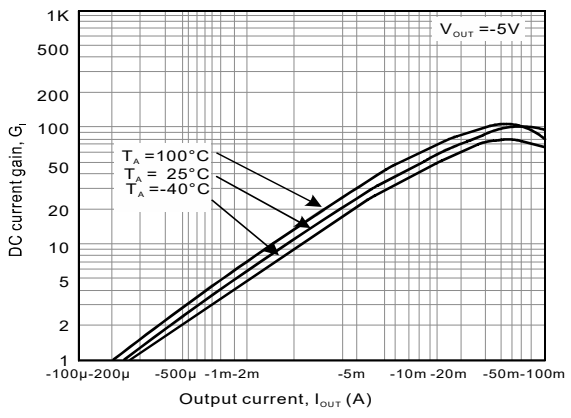
Input voltage vs. Output current
(On characteristics)



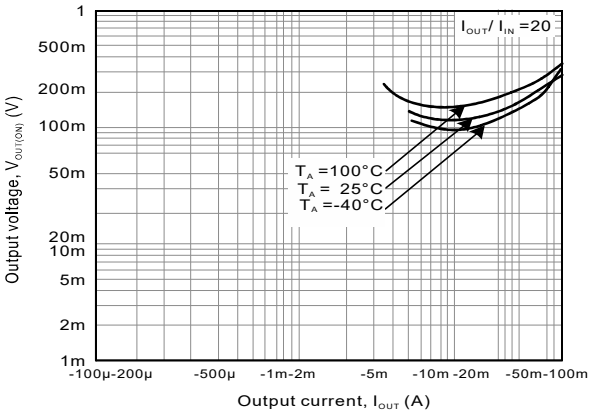
Output current vs. Input voltage
(Off characteristics)



DC current gain vs. Output current



Output voltage vs. Output current



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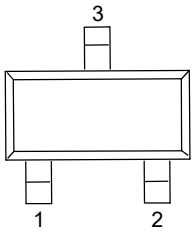
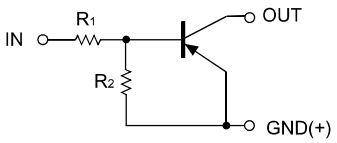
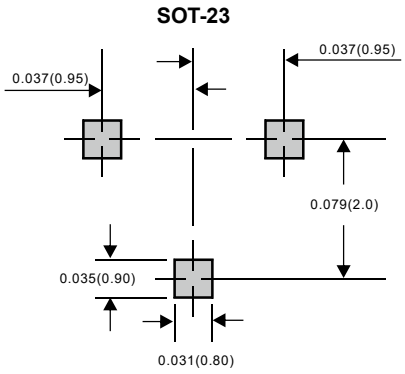
Pinning information

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

Marking

Type number	Marking code
DTA123ECA-Q1	AC3

Suggested solder pad layout



Dimensions in inches and (millimeters)

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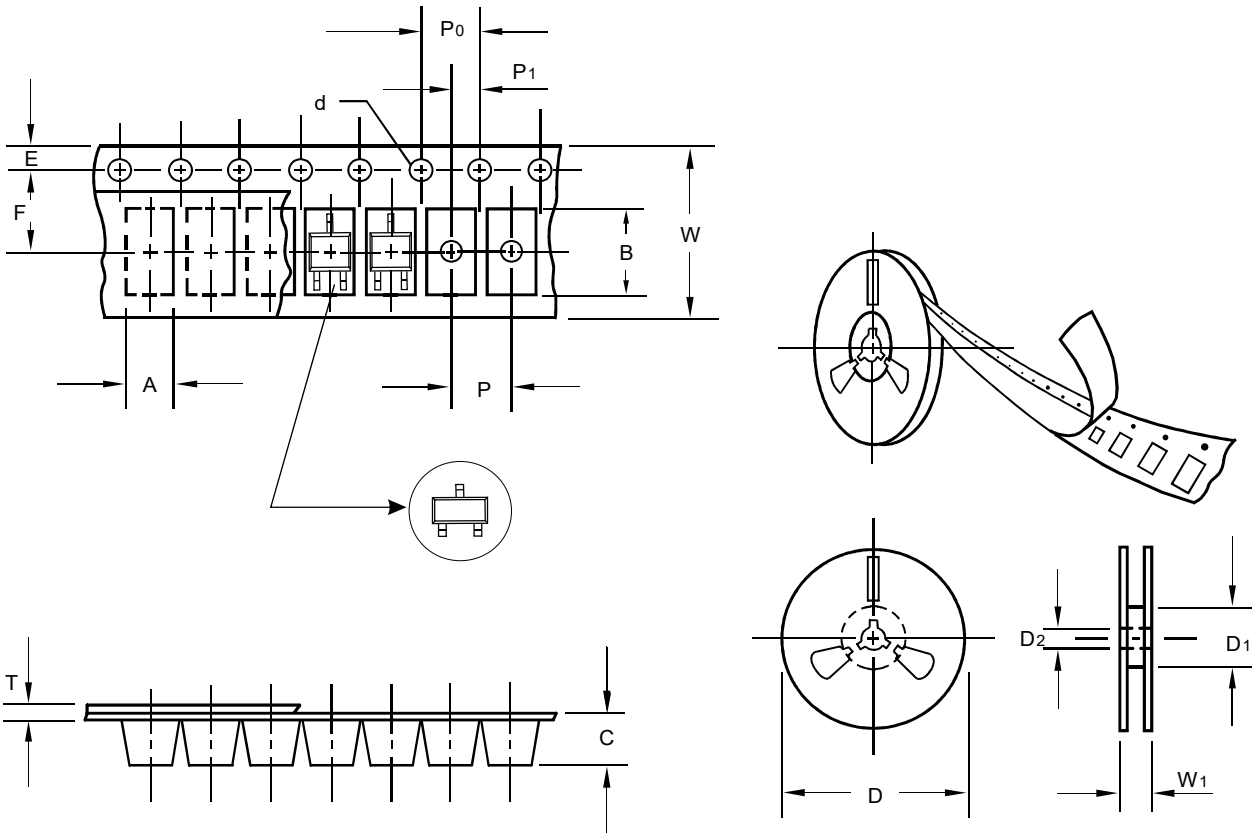
Packing information



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 accor dance with EIA standar RS-481-A and specifications listed above.

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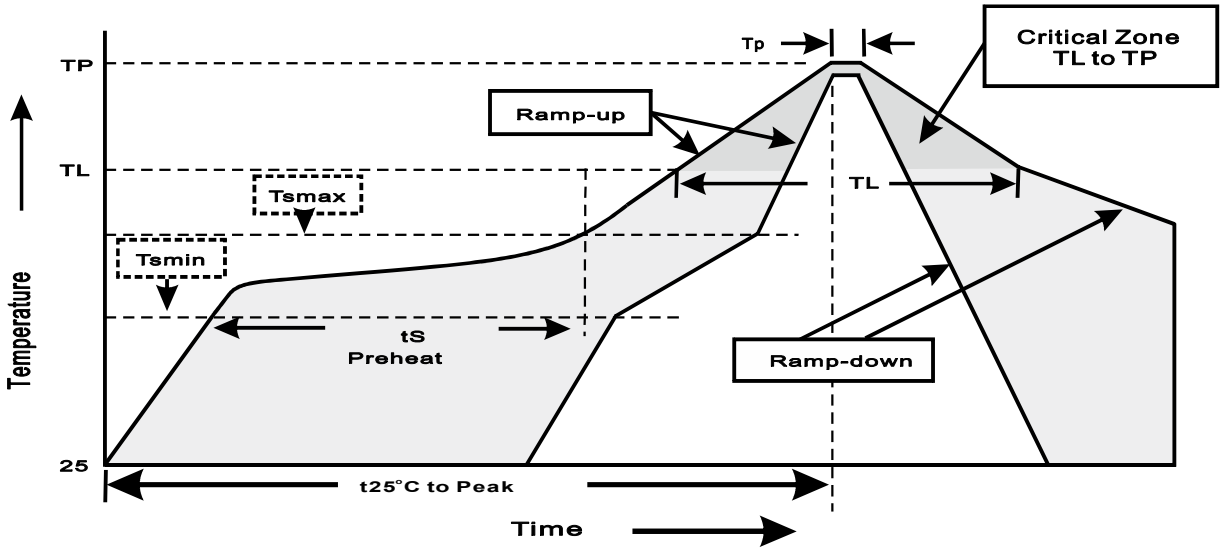
Reel packing

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(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	 150°C 200°C 60~120sec
Tsmax 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_P)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes