DTC144EUA

List

DTC144EUA

NPN Silicon Epitaxial Planar Digital Transistor

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.
- We declare that the material of product compliance with RoHS requirements.
- Suffix "-H" indicates Halogen free parts, ex. DTC144EUA-H.

Applications

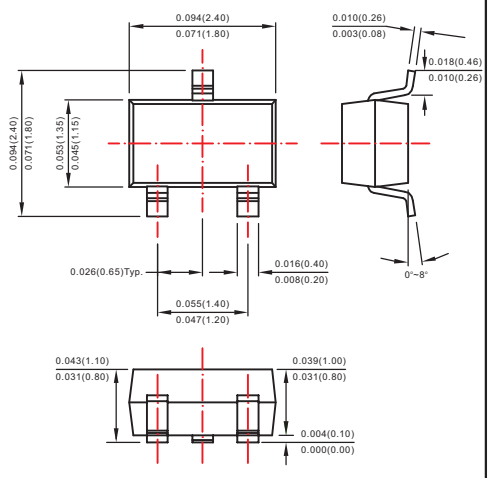
- Inverter, Interface, Driver

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-323
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any

Package outline

SOT-323



Dimensions in inches and (millimeters)

Maximum ratings (At T_A=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector to emitter voltage	V_{CC}	50	V
Input voltage	V_{IN}	-10 to +40	V
Output current	I_{OUT}	30	mA
Peak collector current	$I_{OUT(MAX)}$	100	mA
Power dissipation	P_D	200	mW
Junction temperature	T_j	150	℃
Storage temperature range	T_{stg}	-55 to +150	℃

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

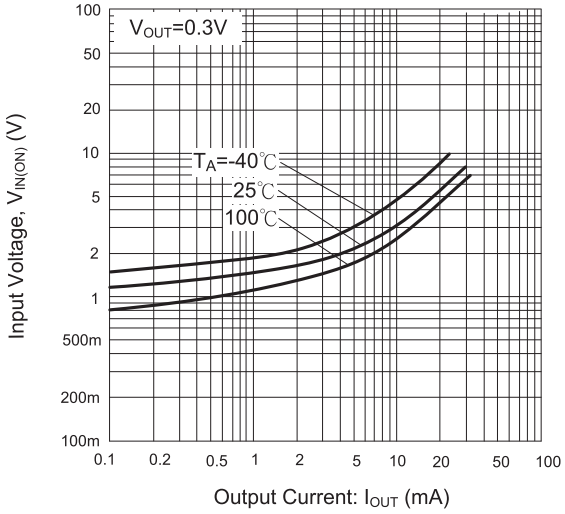
Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Input voltage	V_{CC}=5V, I_{OUT}=100μA	$V_{IN(OFF)}$			0.5	V
	V_{OUT}=0.3V, I_{OUT}=2mA	$V_{IN(ON)}$	3			V
Output voltage	I_{OUT} / I_{IN}=10mA/0.5mA	$V_{OUT(ON)}$		0.1	0.3	V
Input current	V_{IN}=5V	I_{IN}			0.18	mA
Output current	V_{CC}=50V, V_{IN}=0V	$I_{OUT(OFF)}$			0.5	μA
DC current gain	V_{OUT}=5V, I_{OUT}=5mA	h_{FE}	68			
Transition frequency	V_{CE}=10V, I_E=5mA, f=100MHz	f_T		250		MHz
Input resistance		R_1	32.9	47	61.1	KΩ
Resistance ratio		R_2 / R_1	0.8	1	1.2	

Note :

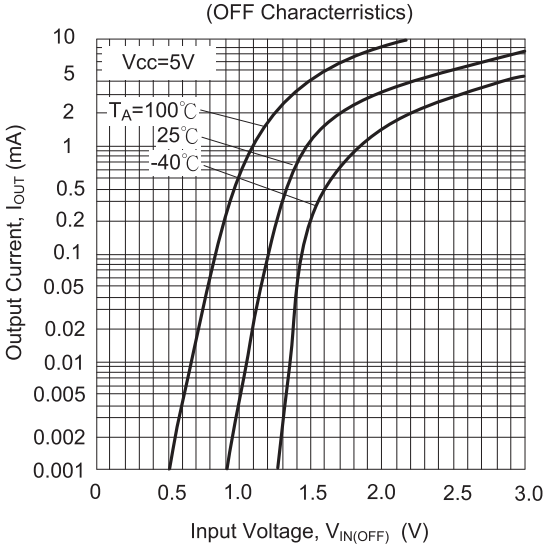
1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. Transition frequency of the device.

Rating and characteristic curves (DTC144EUA)

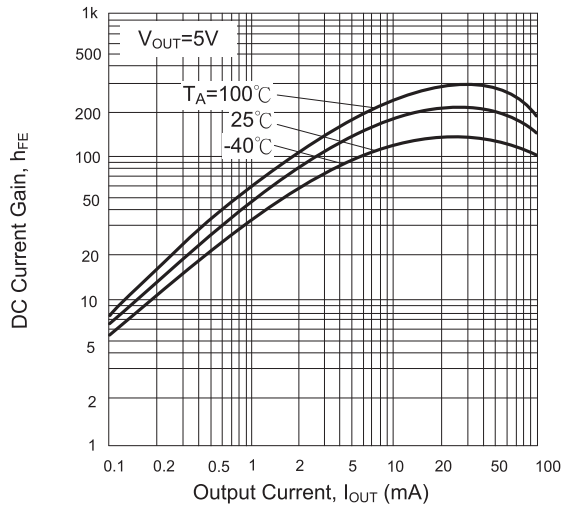
Input Voltage vs. Output Current
(ON Characterristics)



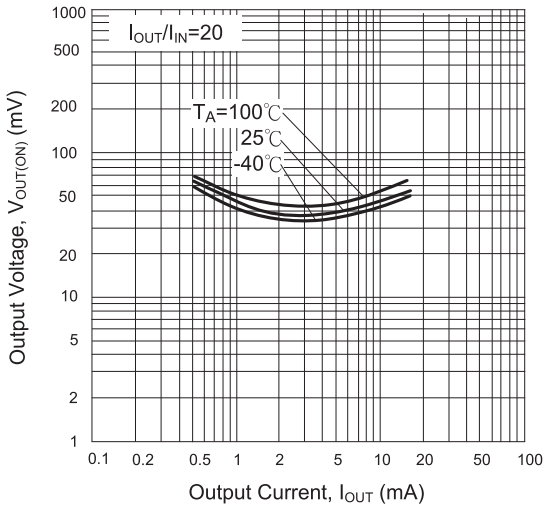
Output Current vs. Input Voltage
(OFF Characterristics)



DC Current Gain vs. Output Current



Output Voltage vs. Output Current



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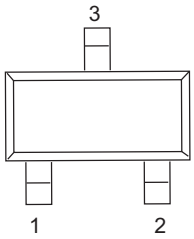
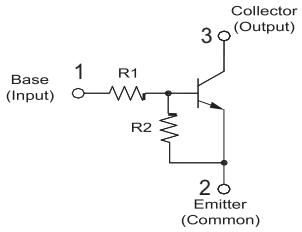
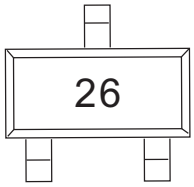
Pinning information

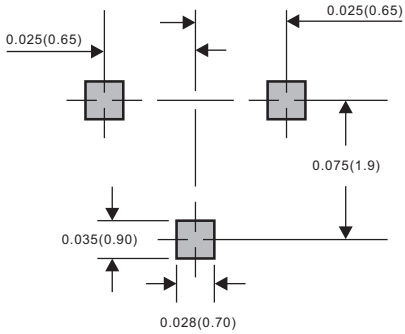
Pin	Simplified outline	Symbol
Pin 1 Base Pin 2 Emitter Pin 3 Collector		

Marking

Type number	Marking code
DTC144EUA	

Suggested solder pad layout

SOT-323



Dimensions in inches and (millimeters)

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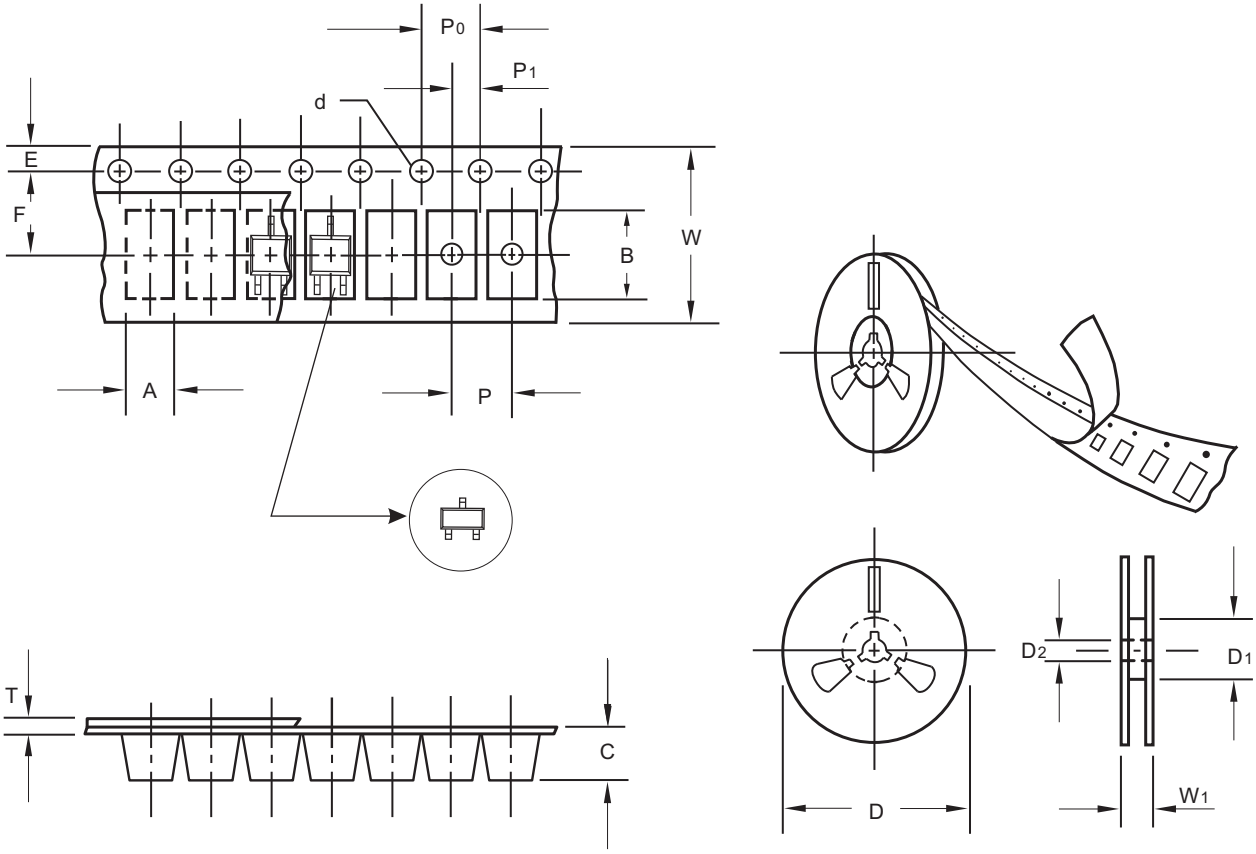
Packing information



unit:mm

Item	Symbol	Tolerance	SOT-323
Carrier width	A	0.1	2.30
Carrier length	B	0.1	2.55
Carrier depth	C	0.1	1.20
Sprocket hole	d	0.1	1.55
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	12.30

Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

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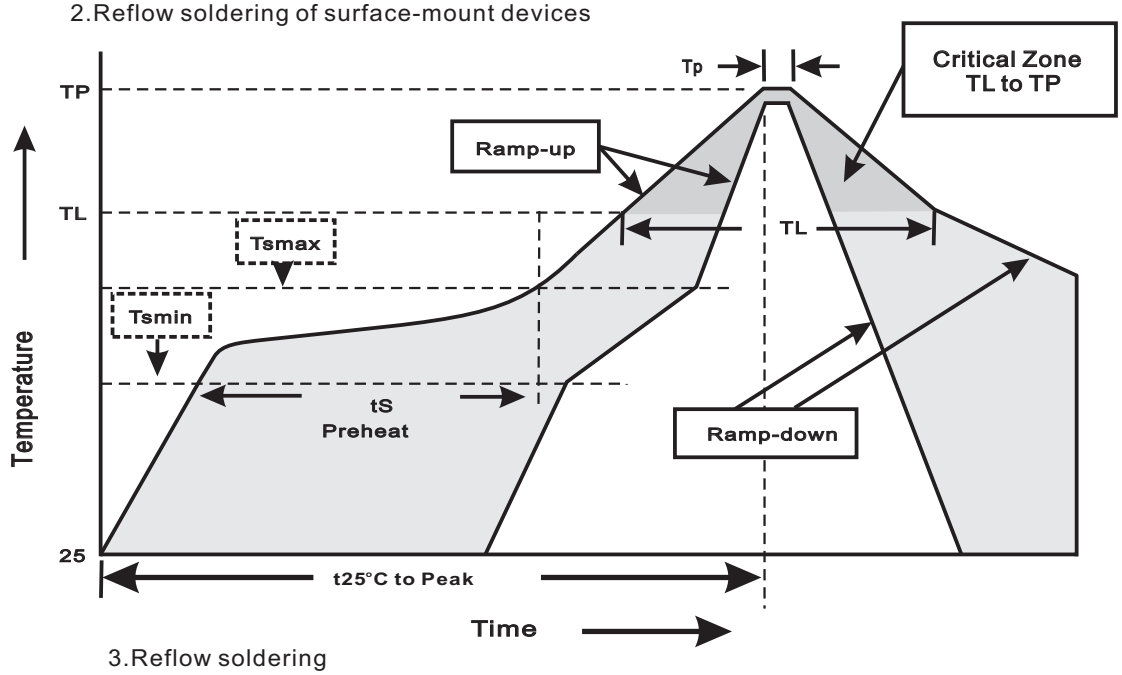
Reel packing

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)	APPROX. GROSS WEIGHT (kg)
SOT-323	7"	3,000	4.0	30,000	183*183*123	178	382*262*387	240,000	9.5

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