

DTC143ZUA

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DTC143ZUA

NPN Silicon Epitaxial Planar Digital Transistor

Features

- With built-in bias resistors.
- Simplify circuit design.
- Reduce a quantity of parts and manufacturing process.
- We declare that the material of product compliance with RoHS requirements.
- Suffix "-H" indicates Halogen free parts, ex. DTC143ZUA-H.

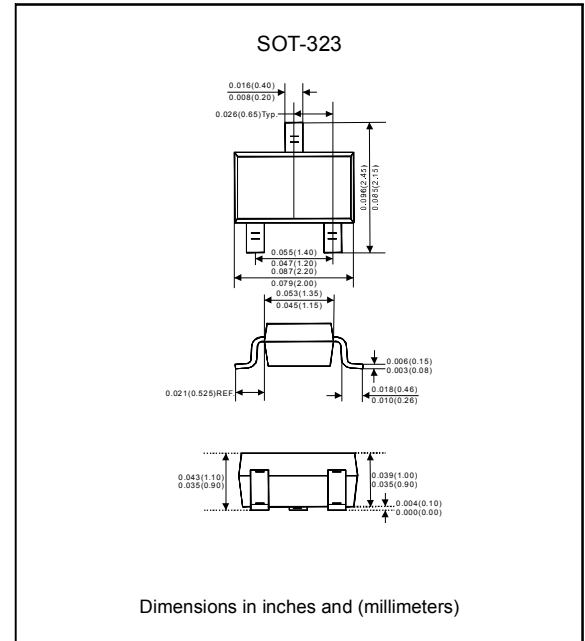
Applications

- 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



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

Parameter	Symbol	Value	Unit
Collector to emitter voltage	V_{CEO}	50	V
Input voltage	V_i	-5 to +30	V
Collector current	I_C	100	mA
Power dissipation	P_{tot}	200	mW
Junction temperature	T_j	150	$^{\circ}\text{C}$
Storage temperature range	T_{stg}	-55 to +150	$^{\circ}\text{C}$

Electrical characteristics (AT $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
DC current gain	$V_{CE}=5\text{V}, I_C=10\text{mA}$	h_{FE}	80			
Collector base cutoff current	$V_{CB}=50\text{V}$	I_{CBO}			0.5	μA
Emitter base cutoff current	$V_{EB}=5\text{V}$	I_{EBO}			1.8	V
Collector emitter saturation voltage	$I_C=5\text{mA}, I_B=0.25\text{mA}$	$V_{CE(sat)}$			0.3	V
Input on voltage	$V_{CE}=0.3\text{V}, I_C=5\text{mA}$	$V_{I(on)}$			1.3	V
Input off voltage	$V_{CE}=5\text{V}, I_C=100\mu\text{A}$	$V_{I(off)}$	0.5			V
Transition frequency	$V_{CE}=10\text{V}, -I_{EC}=5\text{mA}, f=100\text{MHZ}$	f_T		250		MHZ
Input resistance		R_1	3.29	4.7	6.11	K Ω
Resistance ratio		R_2 / R_1	8	10	12	

Rating and characteristic curves (DTC143ZUA)

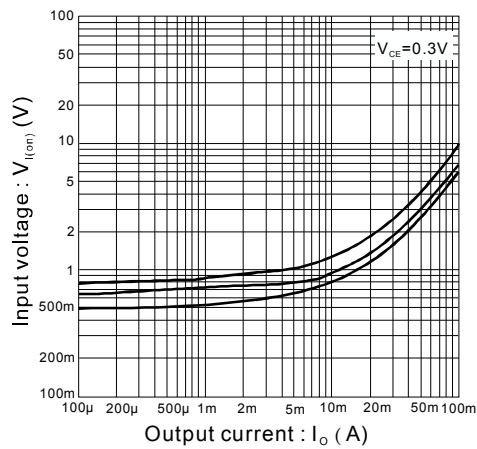


Fig.1 Input voltage vs. output current (ON characteristics)

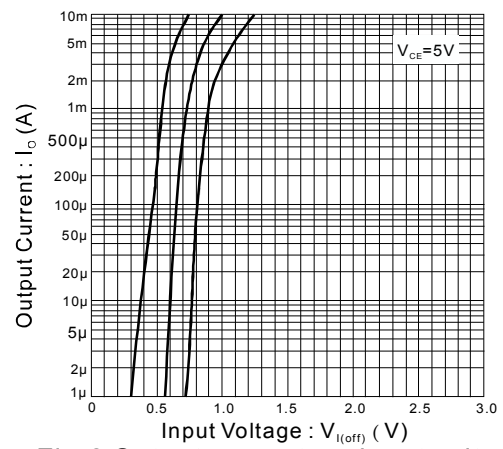


Fig.2 Output current vs. input voltage (OFF characteristics)

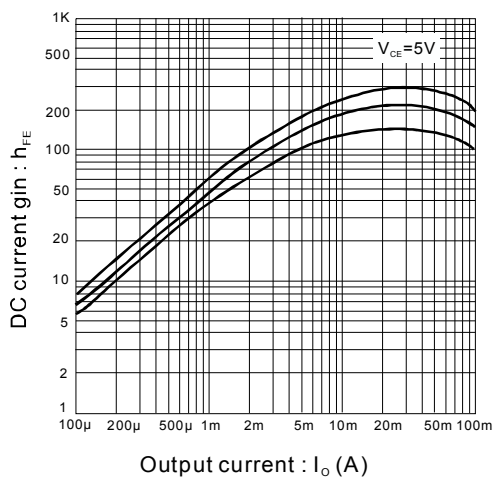


Fig.3 DC current gain vs. output current

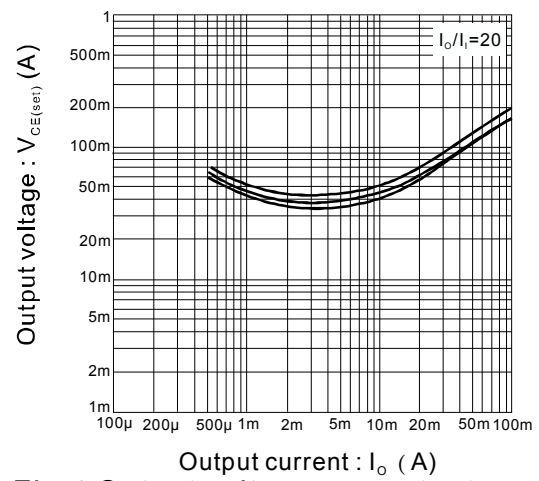
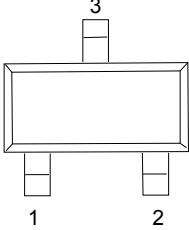
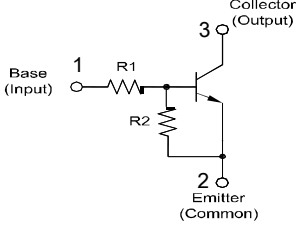


Fig.4 Output voltage vs. output current

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Pinning information

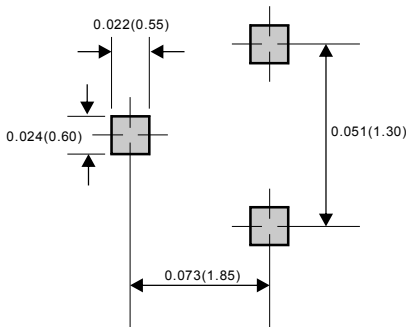
Pin	Simplified outline	Symbol
Pin1 BASE Pin2 EMITTER Pin3 COLLECTOR		

Marking and resistor values

Type number	Marking code
DTC143ZUA	E23

Suggested solder pad layout

SOT-323

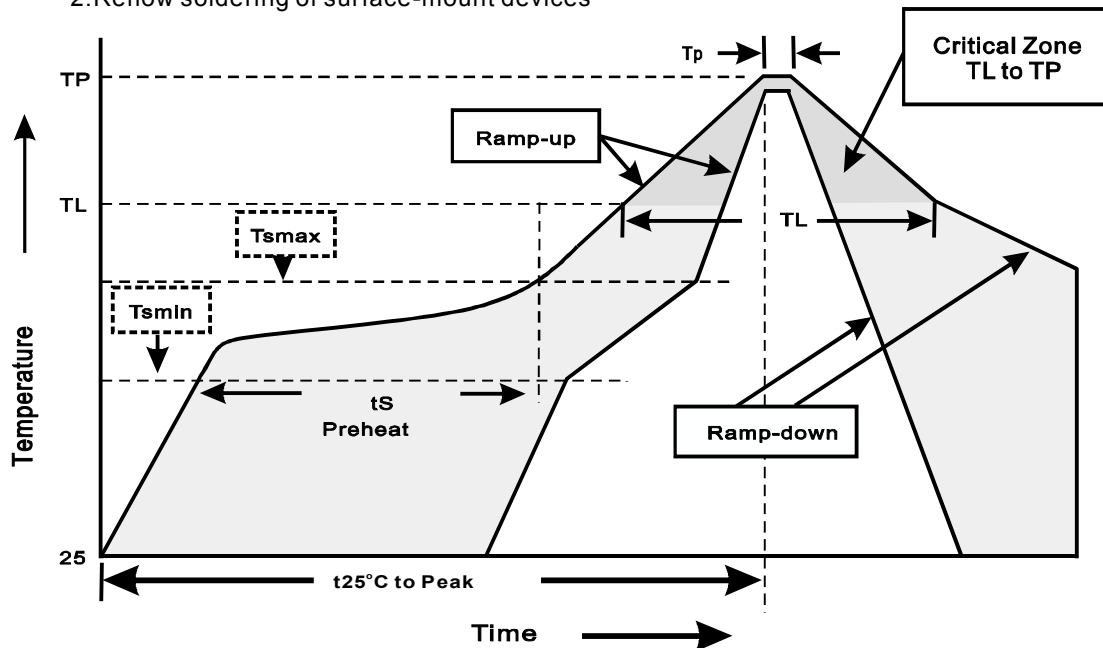


Dimensions in inches and (millimeters)

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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)	$<3^{\circ}\text{C}/\text{sec}$
Preheat -Temperature Min(T_{smin}) -Temperature Max(T_{smax}) -Time(min to max)(t_s)	150°C 200°C 60~120sec
T_{smax} to T_L -Ramp-upRate	$<3^{\circ}\text{C}/\text{sec}$
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	$<6^{\circ}\text{C}/\text{sec}$
Time 25°C to Peak Temperature	$<6\text{minutes}$