

DTC143EE

List

List.....	1
Package outline.....	2
Features.....	2
Applications.....	2
Mechanical data.....	2
Maximum ratings	2
Electrical characteristics.....	2
Rating and characteristic curves.....	3
Pinning information.....	4
Marking code.....	4
Suggested solder pad layout.....	4
Packing information.....	5
Reel packing.....	6
Suggested thermal profiles for soldering processes.....	6

DTC143EE

NPN Silicon Epitaxial Planar Digital Transistor

Features

- Built-in bias resistors enable the configuration of an inverter circuit Without connecting external input resistors(see equivalent circuit).
- The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of almost completely eliminating parasitic effects.
- Only the on/off conditions need to be set for operation, marking device design easy.
- We declare that the material of product compliance with RoHS requirements.
- Suffix "-H" indicates Halogen free parts, ex. DTC143EE-H.

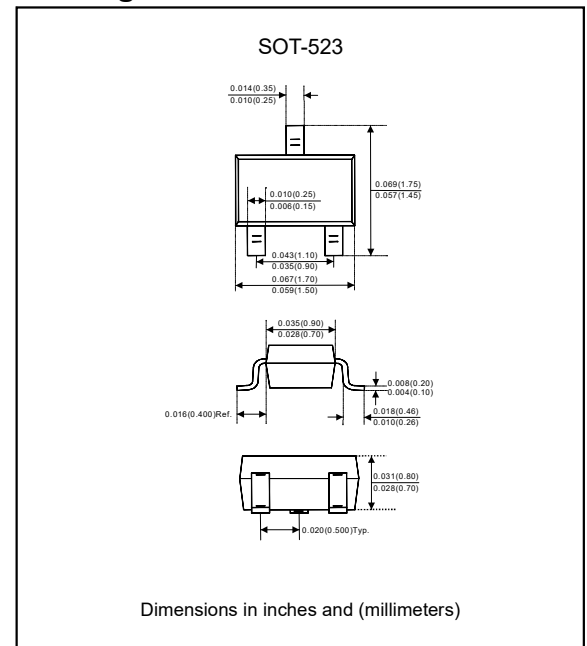
Applications

- Inverter, Interface, Driver

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-523
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any

Package outline



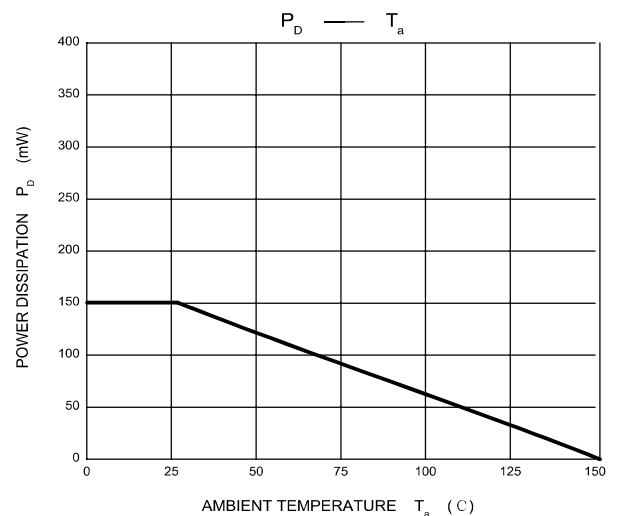
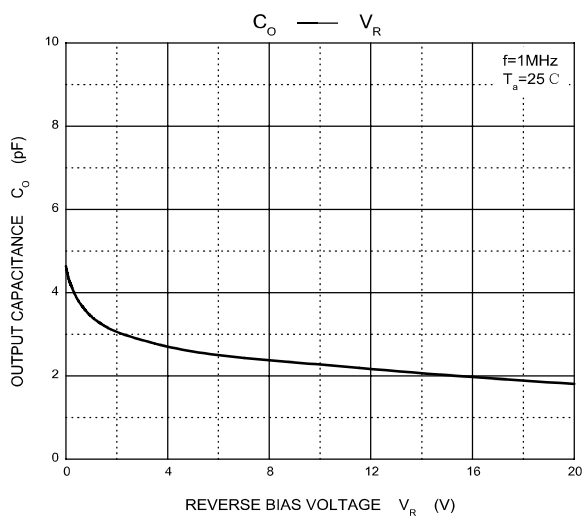
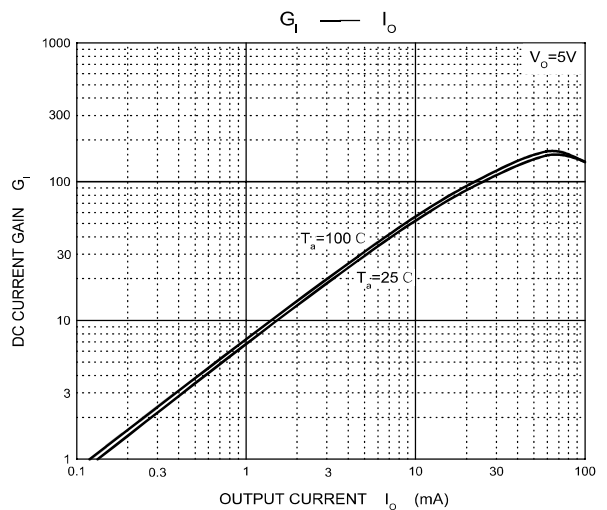
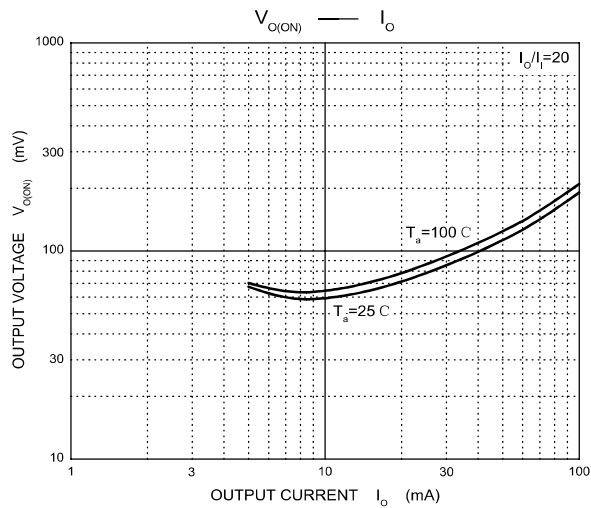
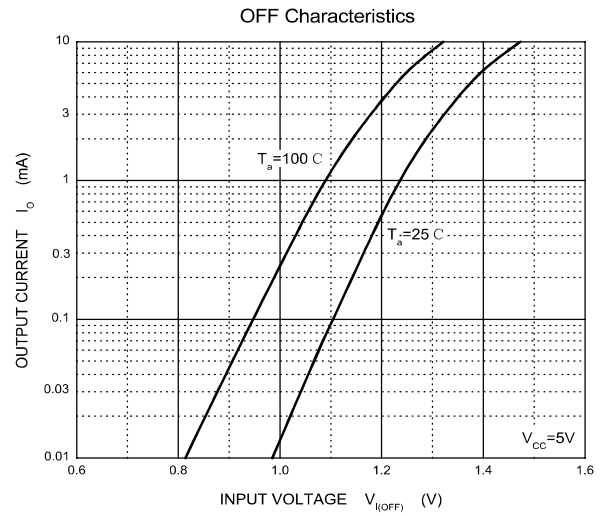
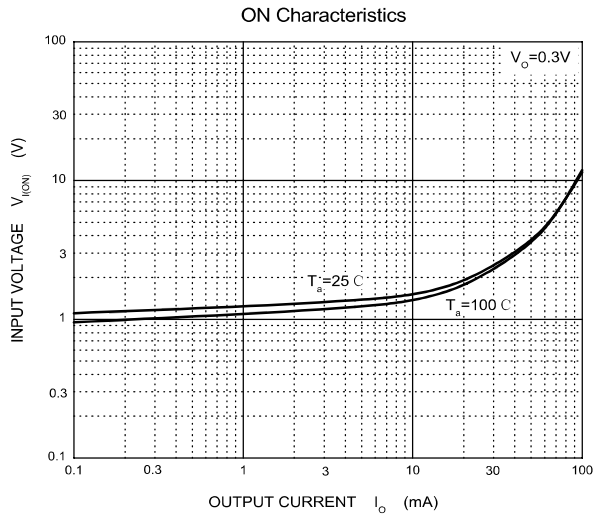
Maximum ratings (At $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector to emitter voltage	V_{CC}	50	V
Input voltage	V_{IN}	-10 to +30	V
Output current	I_O	100	mA
Power dissipation	P_D	150	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)

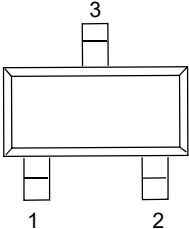
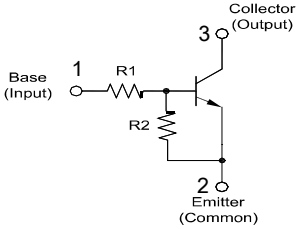
Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Input voltage	$V_{CE}=5V, I_O=100\mu A$	$V_{I(off)}$	0.5			V
	$V_O=0.3V, I_O=20mA$	$V_{I(on)}$			3	V
Output voltage	$I_O / I_i=10mA/0.5mA$	$V_{O(on)}$			0.3	V
Input current	$V_I=5V$	I_i			1.8	mA
Output current	$V_{CC}=50V, V_I=0V$	$I_{O(off)}$			0.5	μA
DC current gain	$V_O=5V, I_O=10mA$	h_{FE}	20			
Transition frequency	$V_{CE}=10V, I_O=5mA, f=100MHz$	f_T		250		MHz
Input resistance		R_i	3.29	4.7	6.11	K Ω
Resistance ratio		R_2 / R_1	0.8	1	1.2	

Rating and characteristic curves (DTC143EE)



DTC143EE

Pinning information

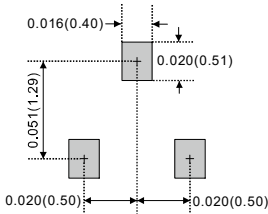
Pin	Simplified outline	Symbol
Pin1 BASE Pin2 EMITTER Pin3 COLLECTOR		

Marking and resistor values

Type number	Marking code
DTC143EE	23

Suggested solder pad layout

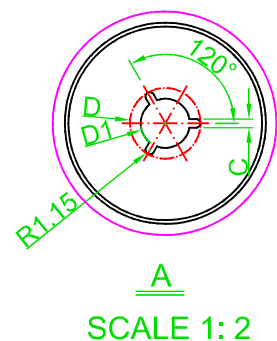
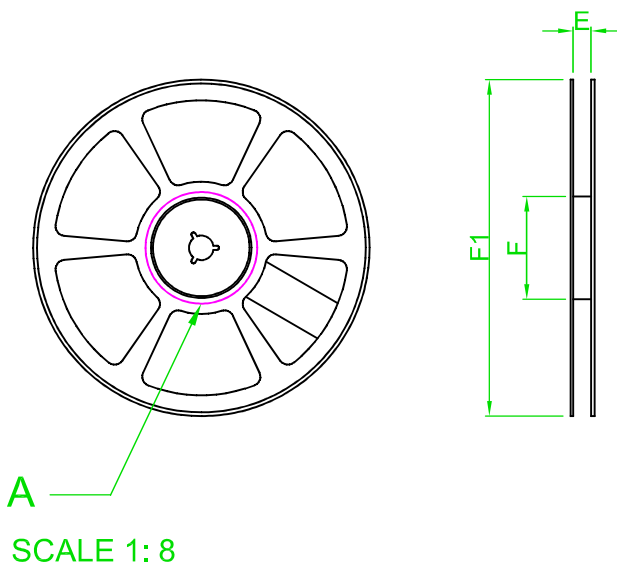
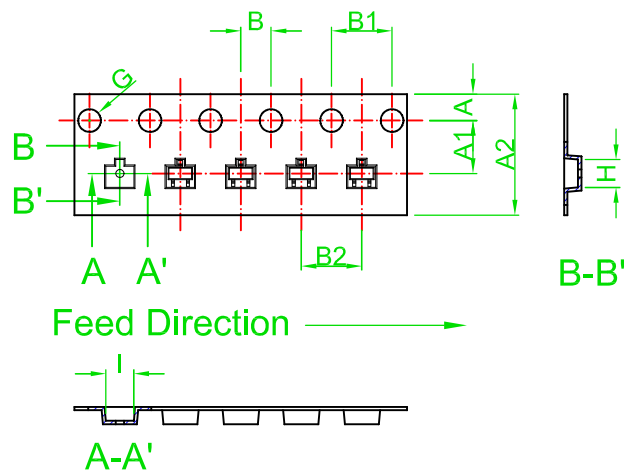
SOT-523



Dimensions in inches and (millimeters)

DTC143EE

Packing information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.65	1.85	0.065	0.073
A1	3.45	3.55	0.136	0.140
A2	7.90	8.20	0.311	0.323
B	1.95	2.05	0.077	0.081
B1	3.90	4.10	0.154	0.161
B2	3.90	4.10	0.154	0.161
C	1.50	3.00	0.059	0.118
D	21.00	22.00	0.827	0.866
D1	12.50	13.50	0.492	0.531
E	8.50	9.50	0.335	0.374
F	53.90	54.90	2.122	2.161
F1	177.00	179.00	6.969	7.047
G	1.50	1.60	0.059	0.063
H	1.80	1.90	0.071	0.075
I	1.80	1.90	0.071	0.075

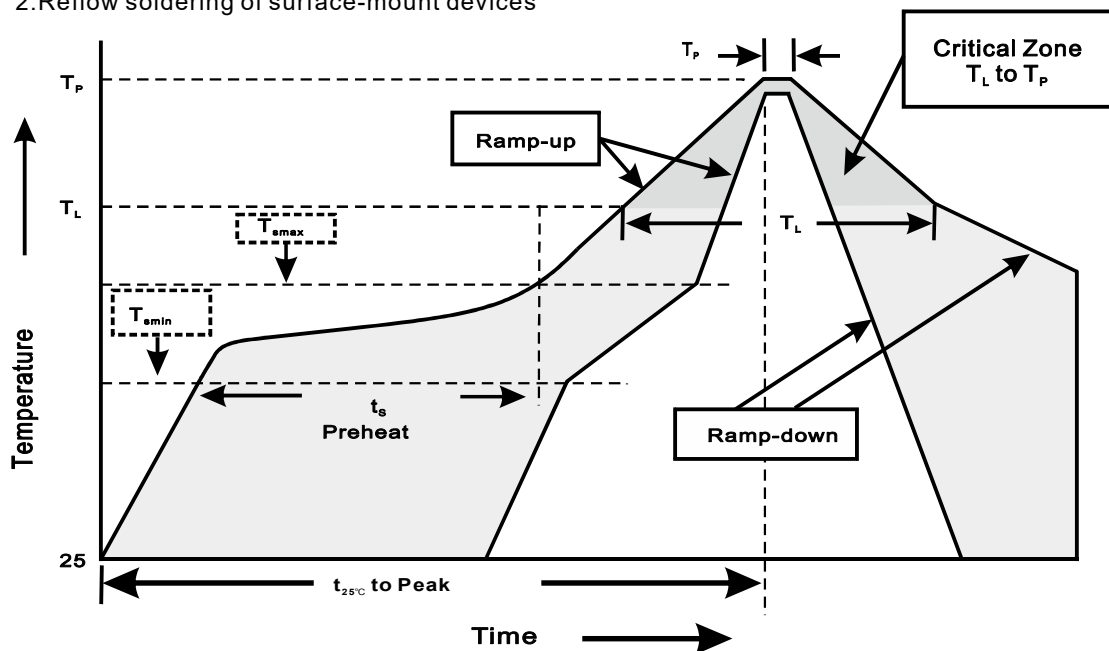
DTC143EE

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-523	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(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°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