DTC123JE

List

DTC123JE

NPN Silicon Epitaxial Planar Digital Transistor

Features

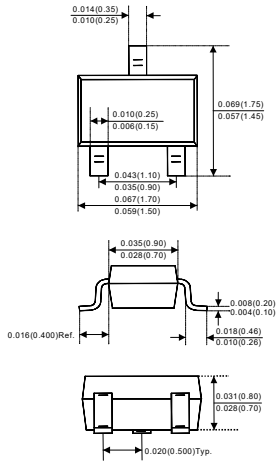
- Built-in bias resistors enable the configuration of an inverter circuit Without connecting external input resistors(see equivalent circuit).
- The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of almost completely eliminating parasitic effects.
- Only the on/off conditions need to be set for operation, marking device design easy.
- 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. DTC123JE-H.

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

SOT-523



Dimensions in inches and (millimeters)

Maximum ratings (AT T_a=25°C unless otherwise noted)

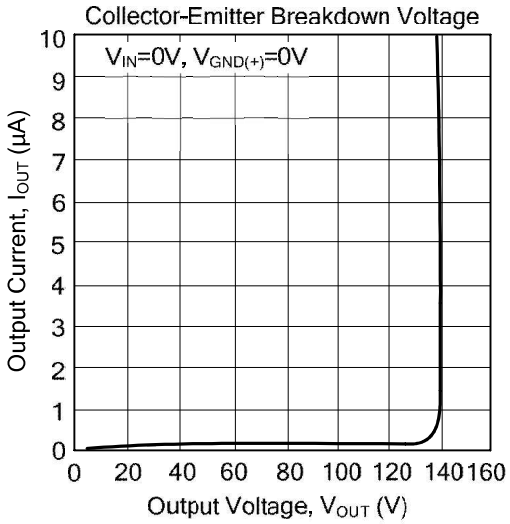
Parameter	Symbol	Value	Unit
Collector to emitter voltage	V_{CEO}	50	V
Input voltage	V_I	5 to +12	V
Collector current	I_O	100	mA
Peak collector current	$I_{C(MAX)}$	100	mA
Power dissipation	P_D	150	mW
Junction temperature	T_j	150	℃
Storage temperature range	T_{stg}	-55 to +150	℃

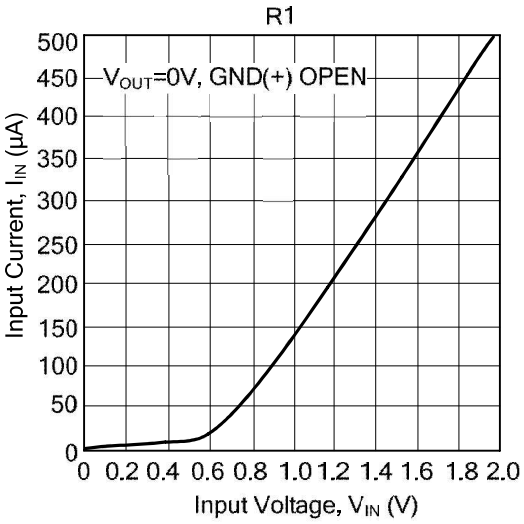
Electrical characteristics (AT T_a=25°C unless otherwise noted)

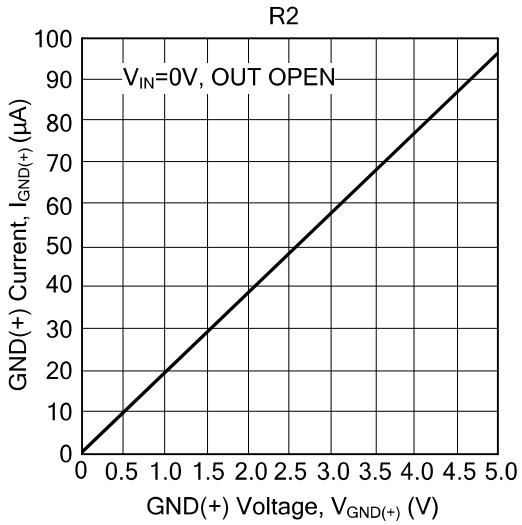
Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Input voltage	V_{CC}=5V, I_C=100μA	$V_{I(OFF)}$			0.5	V
	V_O=0.3V, I_O=5mA	$V_{I(ON)}$	1.1			V
Output voltage	I_O/I_I=5mA/0.25mA	$V_{O(ON)}$		0.1	0.3	V
Input current	V_I=5V	I_I			3.6	mA
Output current	V_{CC}=50V, V_I=0V	$I_{O(OFF)}$			0.5	μA
DC current gain	V_O=5V, I_O=10mA	h_{FE}	80			
Transition frequency	V_{CE}=10V, I_O=5mA, f=100MHz	f_T		250		MHZ
Input resistance		R_1	1.54	2.2	2.86	KΩ
Resistance ratio		R_2 / R_1	17	21	26	

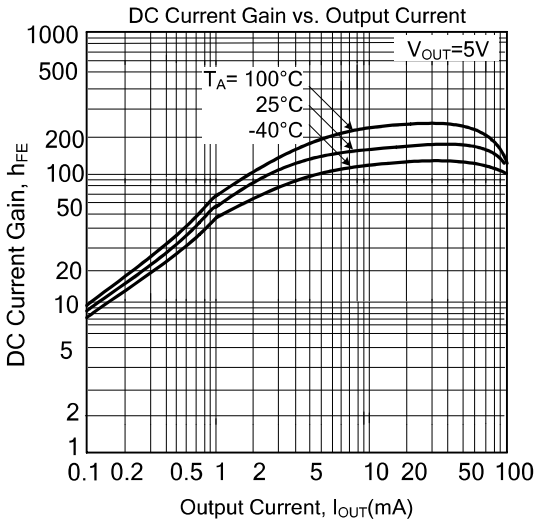
Note : 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.
Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. Transition frequency of the device.

Rating and characteristic curves (DTC123JE)



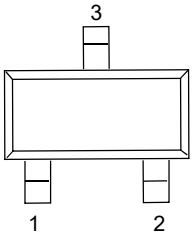
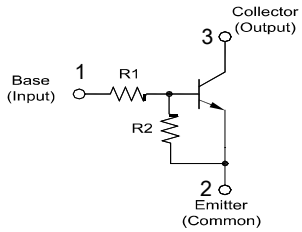




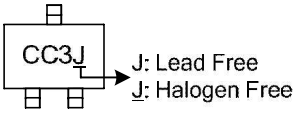


DTC123JE

Pinning information

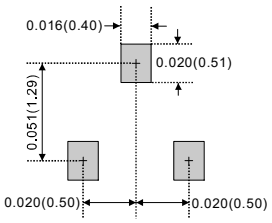
Pin	Simplified outline	Symbol
Pin1 Base Pin2 Emitter Pin3 Collector		

Marking and resistor values



Suggested solder pad layout

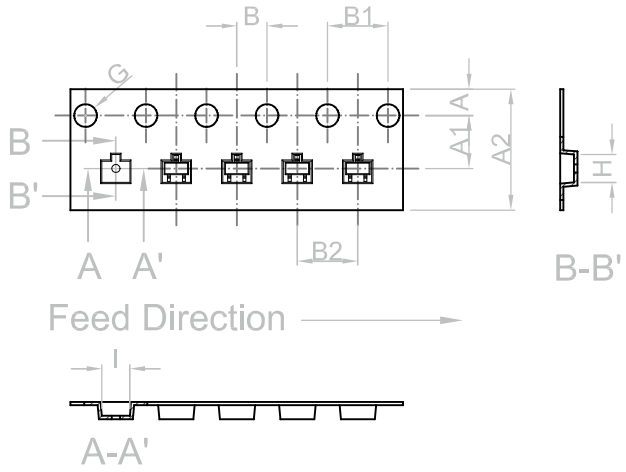
SOT-523

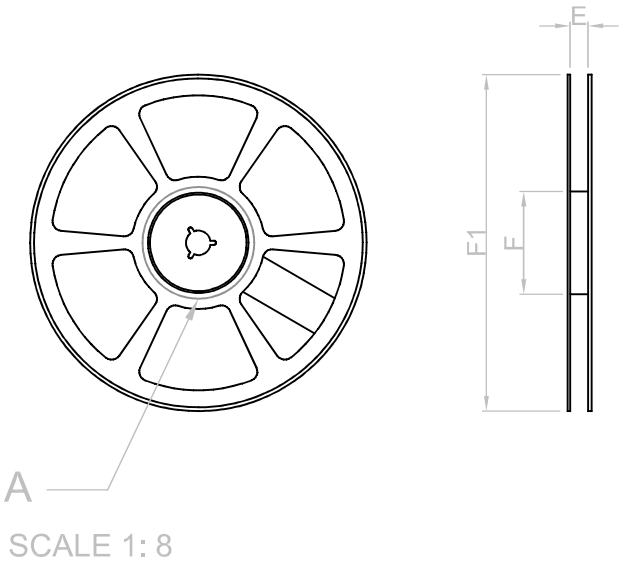


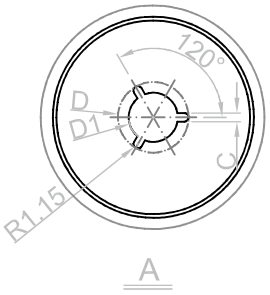
Dimensions in inches and (millimeters)

DTC123JE

Packing information







Symbol	Dimensions In Millmeters		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

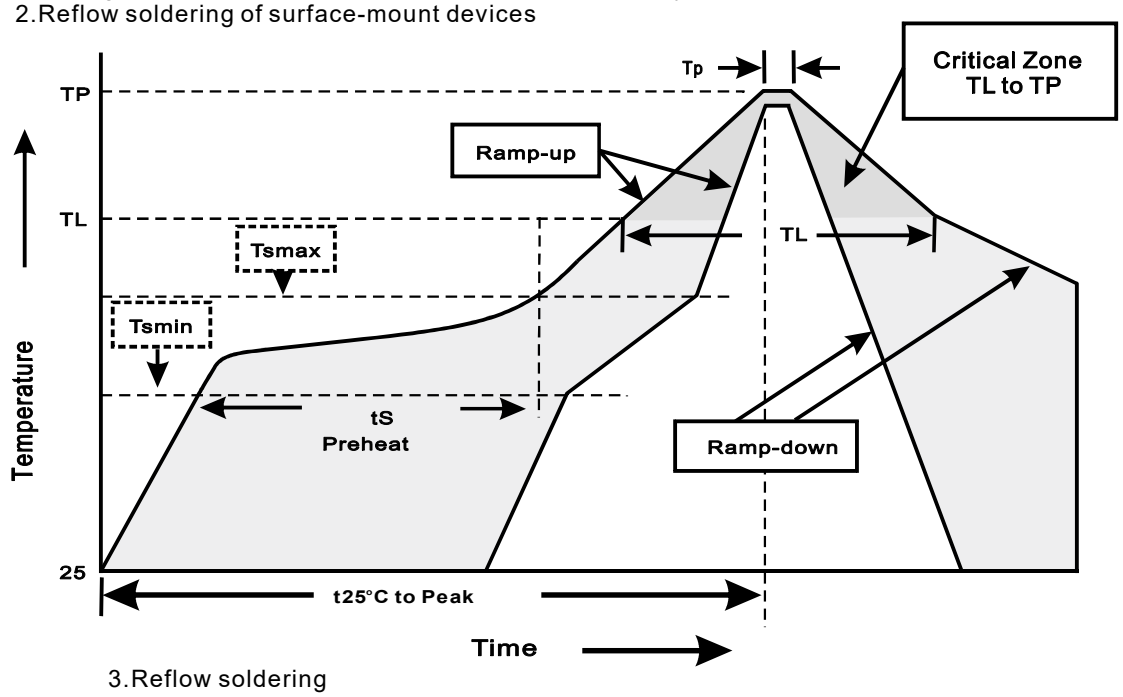
DTC123JE

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(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