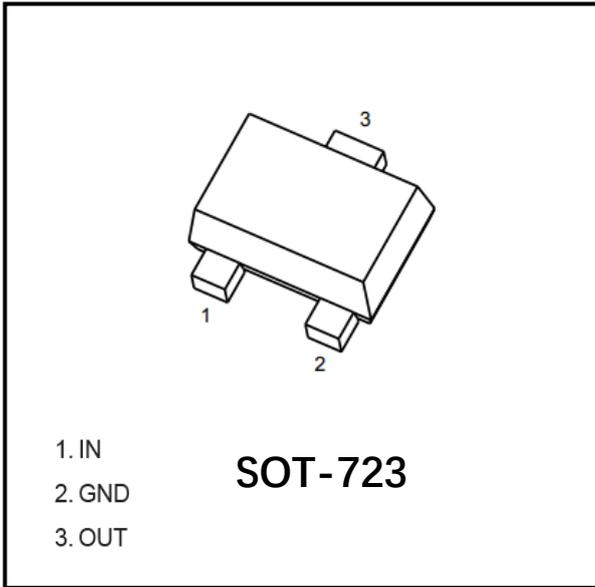


## Digital Transistors (Built-in Resistors)



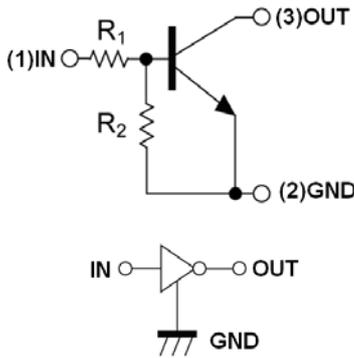
### Features

- Epoxy meets UL-94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors
- Surface mount package ideally Suited for Automatic Insertion
- NPN

### Mechanical Data

- **Package:** SOT-723
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Marking:** 22

### ■Equivalent circuit



### ■Maximum Ratings (Ta=25°C Unless otherwise specified)

ITEM	SYMBOL	UNIT	CONDITIONS	VALUE
Supply Voltage	$V_{CC}$	V		50
Input Voltage	$V_{IN}$	V		-10 to +12
Output Current	$I_o$	mA		100
Power Dissipation	$P_D$	mW		100
Junction Temperature	$T_J$	°C		150
Storage Temperature	$T_{STG}$	°C		-55 to +150



# DTC123EM

RoHS  
COMPLIANT

## ■ Electrical Characteristics (Ta=25°C unless otherwise specified)

ITEM	SYMBOL	UNIT	CONDITIONS	MIN	TYP	MAX
Input voltage	$V_{I(off)}$	V	VCC=5V, Ic=100uA	0.5		
	$V_{I(on)}$	V	V0=0.3V, Ic=20mA			3
Output voltage	$V_{O(on)}$	V	I <sub>o</sub> / I <sub>i</sub> =10mA/0.5mA			0.3
Input current	I <sub>i</sub>	mA	V <sub>i</sub> =5V			3.8
Output current	I <sub>O(off)</sub>	uA	VCC=50V, V <sub>i</sub> =0			0.1
DC current gain	G <sub>1</sub>		V <sub>o</sub> =5V, I <sub>o</sub> =10mA	20		
Input resistance	R <sub>1</sub>	kΩ		1.54	2.2	2.86
Resistance ratio	R <sub>2</sub> /R <sub>1</sub>			0.8	1	1.2
Transition frequency	f <sub>T</sub>	MHz	VCE=10V, IE=-5mA, f=100MHz		250	

## ■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
DTC123EM	F2	Approximate 0.0013	8000	80000	320000	7" reel



## ■ Characteristics (Typical)

Fig. 1 - DC Current Gain Characteristics

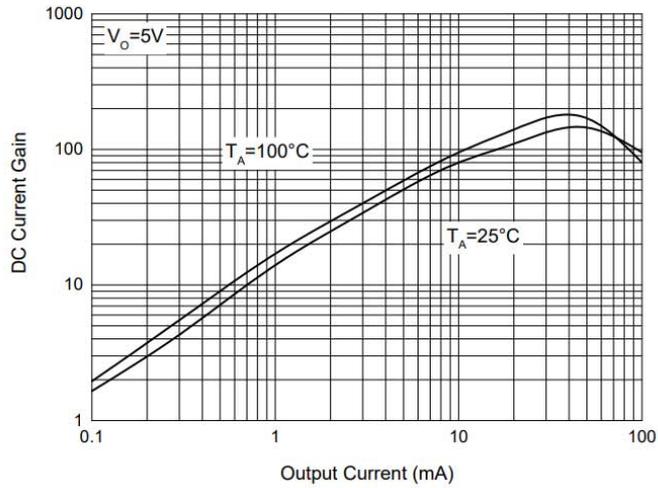


Fig. 2 - Input Voltage (on) Characteristics

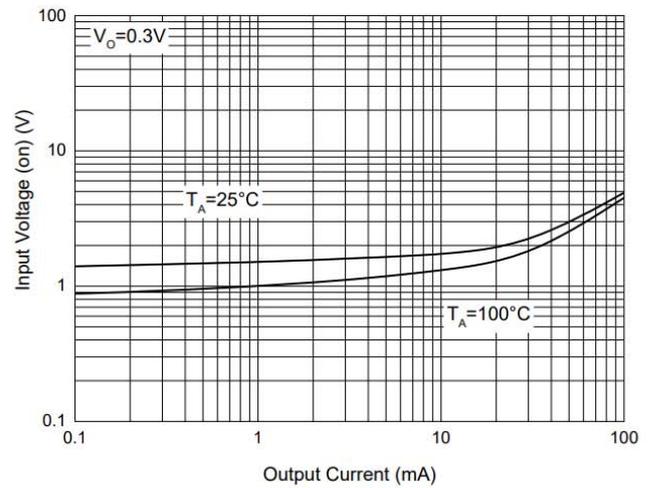


Fig. 3 - Input Voltage (off) Characteristics

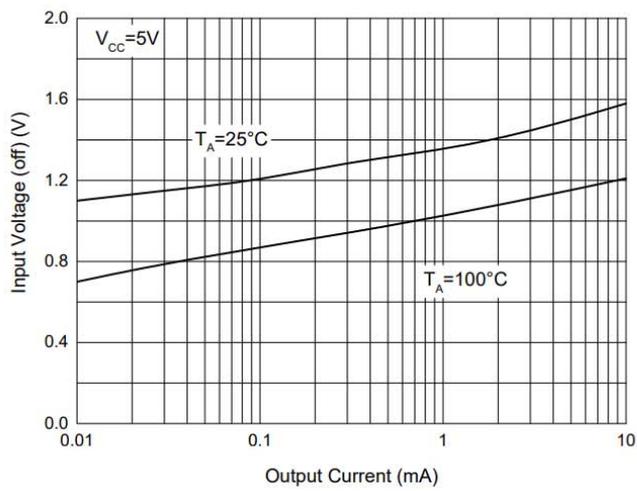
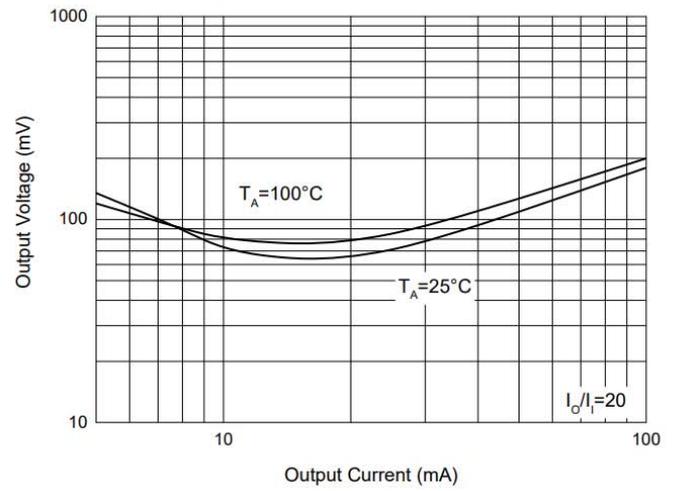
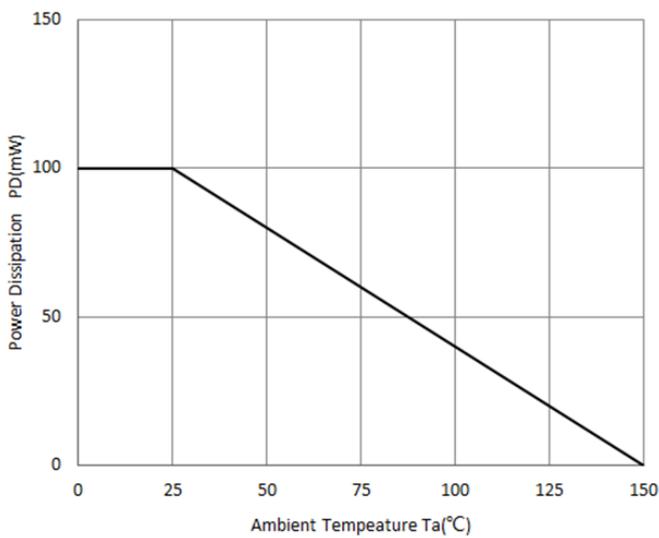


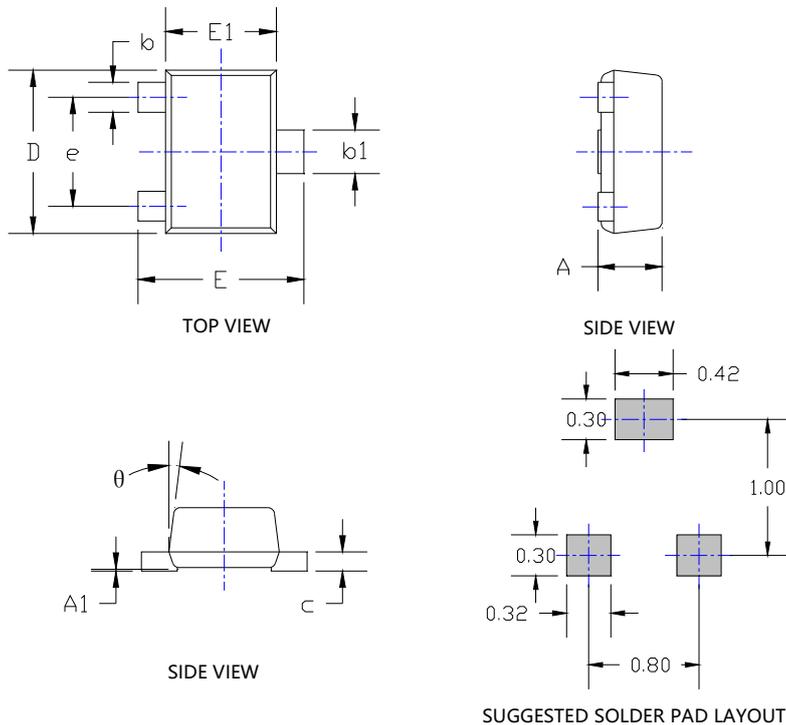
Fig. 4 - Output Voltage Characteristics



Power Derating Curve



## ■SOT-723 Package Outline Dimensions



SYMBOL	DIMENSIONS			
	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.017	0.022	0.430	0.550
A1	0.000	0.002	0.000	0.050
b	0.007	0.011	0.170	0.270
b1	0.011	0.015	0.270	0.370
c	0.003	0.008	0.080	0.200
D	0.045	0.049	1.150	1.250
E	0.045	0.049	1.150	1.250
E1	0.030	0.033	0.750	0.850
e	0.031TYP.		0.800TYP.	
$\theta$	7°REF.		7°REF.	

NOTE:  
 1. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.  
 2. TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.  
 3. THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.

### Note:

- All dimensions are in millimeters (mm) unless otherwise specified.  
[所有尺寸均以毫米为单位, 除非另有说明]
- General tolerances:  $\pm 0.10$ mm unless otherwise specified.  
[通用公差为 $\pm 0.10$ mm, 除非另有说明]
- Dimensions and tolerances per ASME Y14.5M-2018.  
[尺寸和公差遵循 ASME Y14.5M-2018 标准]
- All dimensions shown are exclusive of burrs and gate residues. Burrs and gate vestiges shall not exceed 0.15 mm in maximum.  
[所有尺寸均不包括毛刺和浇口残留。毛刺与浇口残留的尺寸最大不得超过 0.15mm]
- Dimension b does not include dambar protrusion of max 0.100 mm per side.  
[尺寸b不包括单边最大0.100 mm的中筋凸出部分]
- Dimensions D and E1 are the overall extreme outer dimensions of the mold compound. These dimensions exclude mold flash, lead flash, protrusions and burrs but include the maximum allowable mold mismatch.  
[D和E1是塑封体的外部极限尺寸, 不包括包封溢料、内引线溢料、凸出部分以及胶体毛刺, 但是包含了包封错位的最大尺寸]
- Formed leads shall be planar with respect to one another within a maximum of 0.076 mm relative to the seating plane.  
[成型的管脚应为同一平面, 共面性最大为0.1mm]
- ★It is the key size.  
[★ 标记为关键尺寸]



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