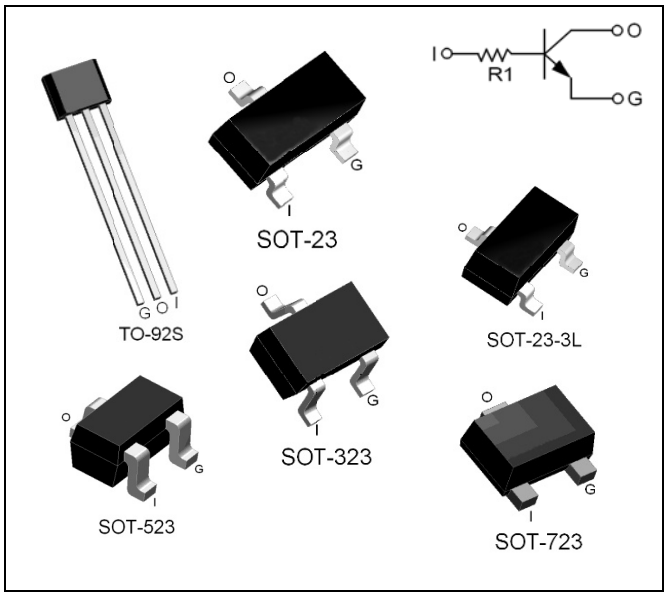
DIGITAL TRANSISTORS NPN Silicon with Built-in Resistors



FEATURES

- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see the 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 the device design easy.

MECHANICAL DATA

- Available in SOT-523, SOT-323, SOT-23, SOT-23-3L , SOT-723 and TO-92S Package
- Solderability：MIL-STD-202, Method 208
- Full RoHS Compliance

ORDERING INFORMATION

PART NUMBER	PACKAGE	SHIPPING	MARKING CODE
DTC143T□-5T3R	SOT-523	Tape Reel	03
DTC143T□-3T3R	SOT-323	Tape Reel	
DTC143T□-T3R	SOT-23	Tape Reel	
DTC143T□-T3LR	SOT-23-3L	Tape Reel	
DTC143T□-7T3R	SOT-723	Tape Reel	
DTC143T□-T92SB	TO-92S	Tape Box	DTC143T LS yww

Notes:

1. □: none is for Lead Free package;
   "G" is for Halogen Free package.
2. Marking Code: yww: y: Year code; ww: Week code.

THERMAL DATA

PARAMETER		SYMBOL	VALUES	UNIT
Thermal Resistance, Junction-to-Ambient	SOT-723	$R_{\theta JA}$	1250	°C/W
	SOT-523		833	
	SOT-323		625	
	SOT-23		625	
	SOT-23-3L		625	
	TO-92S		417	

Notes:

3. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. Measured with device mounted on 1 in^2 FR-4 board with 2 oz copper.

ABSOLUTE MAXIMUM RATINGS

T_A = 25°C, unless otherwise specified. (Note 4)

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Base Voltage		$V_{(BR)CBO}$	50	V
Collector-Emitter Voltage		$V_{(BR)CEO}$	50	V
Emitter-Base Voltage		$V_{(BR)EBO}$	5	V
Collector Current		I_C	100	mA
Power Dissipation	SOT-723	P_D	100	mW
	SOT-523		150	
	SOT-323		200	
	SOT-23		200	
	SOT-23-3L		200	
	TO-92S		300	
Maximum Junction Temperature		T_J	150	°C
Storage Temperature Range		T_{stg}	- 55 ~ +150	°C

Notes:

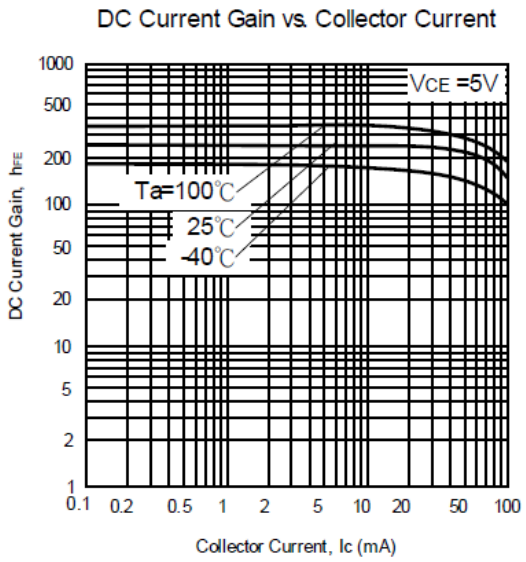
4. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

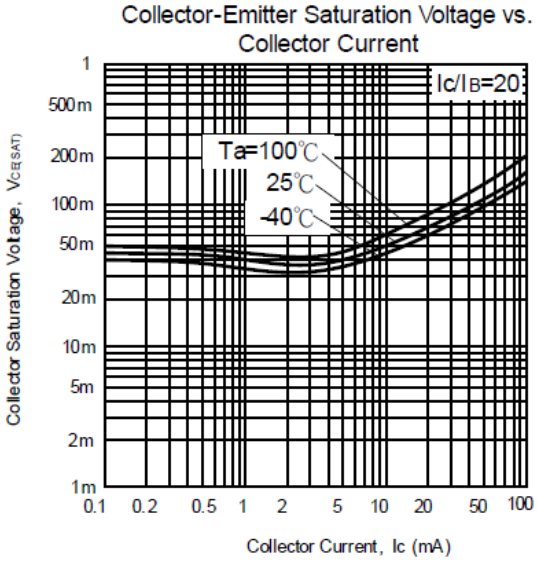
ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise noted.

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown	$V_{(BR)CBO}$	I_C = 50 μA	50			V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 1mA	50			V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 50 μA	5			V
Collector Cut-off Current	I_{CBO}	V_{CB} = 50V			0.5	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 4V			0.5	μA
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 5mA, I_B = 0.25mA			0.3	V
DC Current Transfer Ratio	h_{FE}	V_{CE} = 5V, I_C = 1mA	100		600	
Input Resistance	R1		3.29	4.7	6.11	KΩ
Transition Frequency	f_T	V_O = 10V, I_O = 5mA, f = 100MHz		250		MHz

TYPICAL PERFORMANCE CHARACTERISTICS

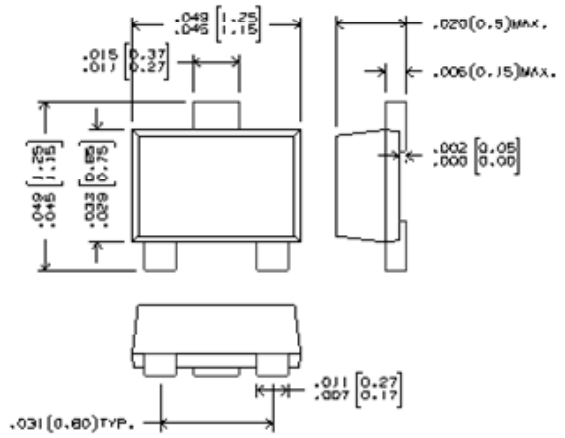




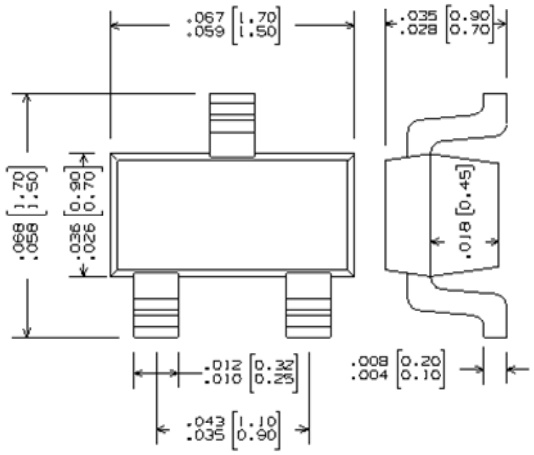
PHYSICAL DIMENSION

Unit：Inch (Millimeter)

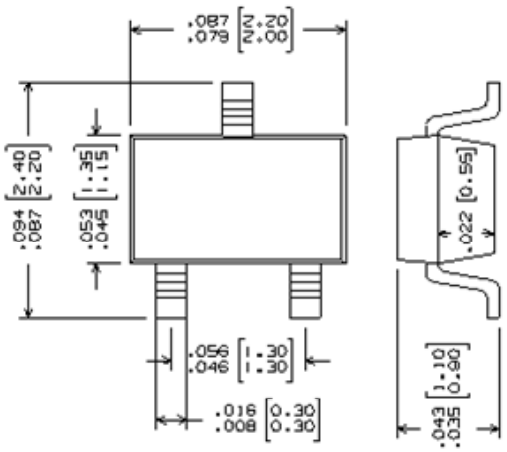
SOT-723



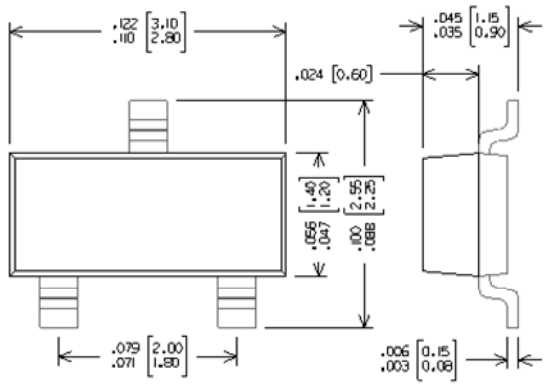
SOT-523



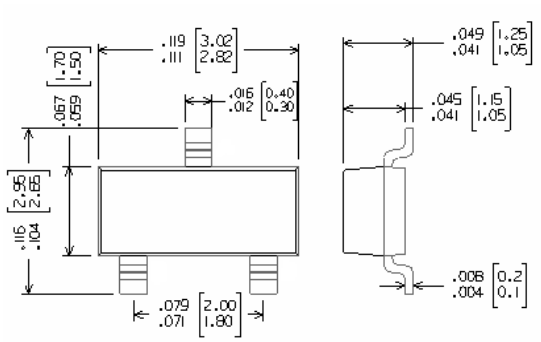
SOT-323



SOT-23



SOT-23-3L



TO-92S