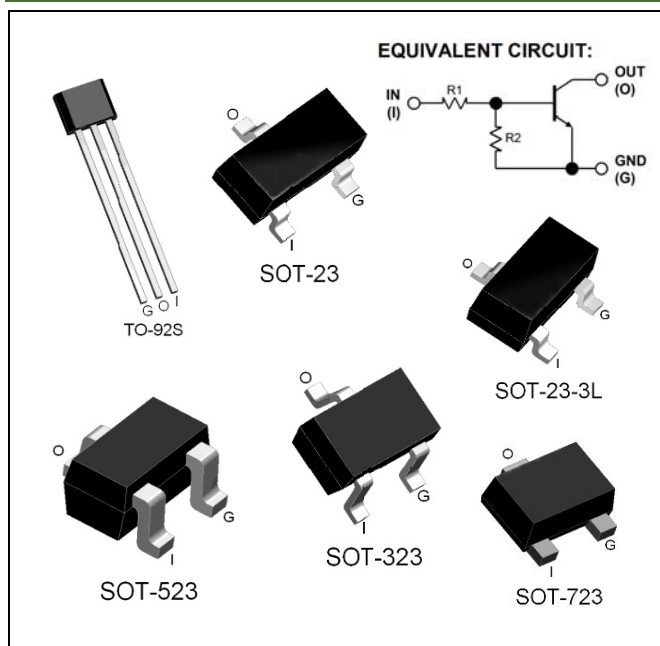


DIGITAL TRANSISTORS NPN Silicon with Built-in Resistors



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

ORDERING INFORMATION

PART NUMBER	PACKAGE	SHIPPING	MARKING CODE
DTC143Z□-7T3R	SOT-723	Tape Reel	E23
DTC143Z□-5T3R	SOT-523	Tape Reel	
DTC143Z□-3T3R	SOT-323	Tape Reel	
DTC143Z□-T3R	SOT-23	Tape Reel	
DTC143Z□-T3LR	SOT-23-3L	Tape Reel	
DTC143Z□-T92SB	TO-92S	Tape Box	DTC143Z 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	833	°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 in² FR-4 board with 2 oz copper.

ABSOLUTE MAXIMUM RATINGS

$T_A = 25^\circ\text{C}$, unless otherwise specified. (Note 4)

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage		V_{CC}	50	V
Input Voltage		V_{IN}	-5 ~ +30	V
Output Current		I_O	100	mA
		$I_{C(MAX)}$	100	
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	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	- 55 ~ +150	$^\circ\text{C}$

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

$T_A = 25^\circ\text{C}$, unless otherwise noted.

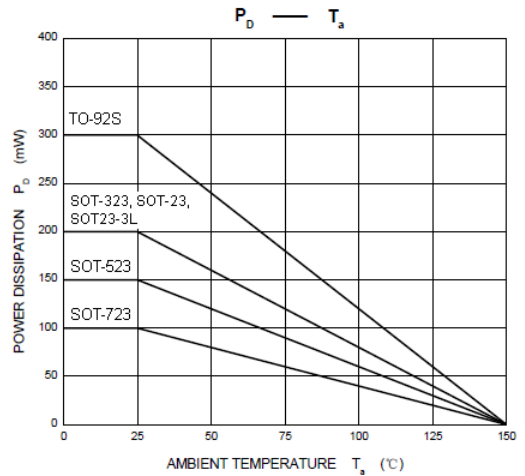
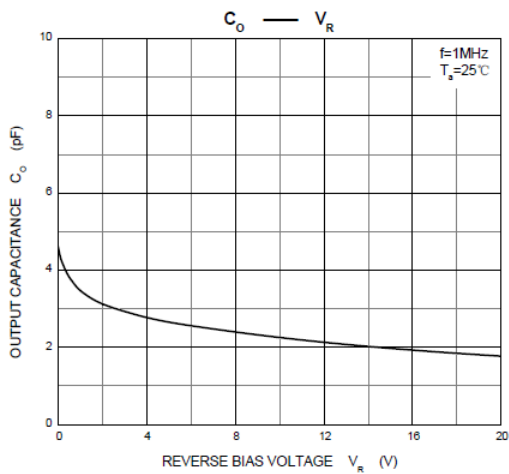
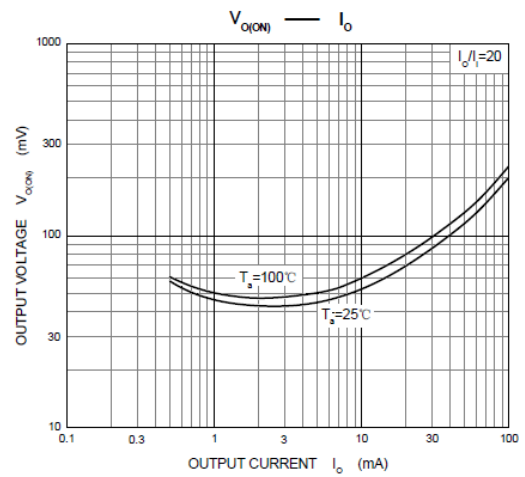
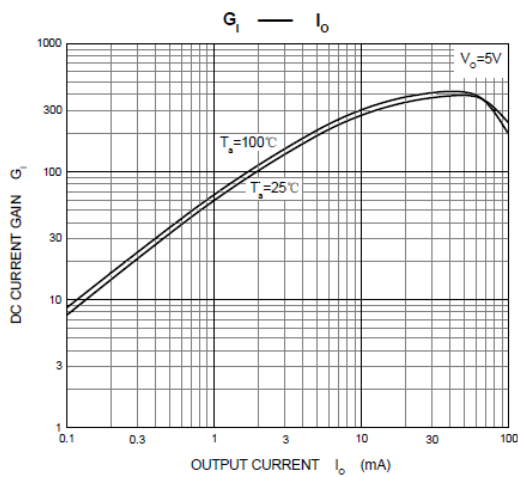
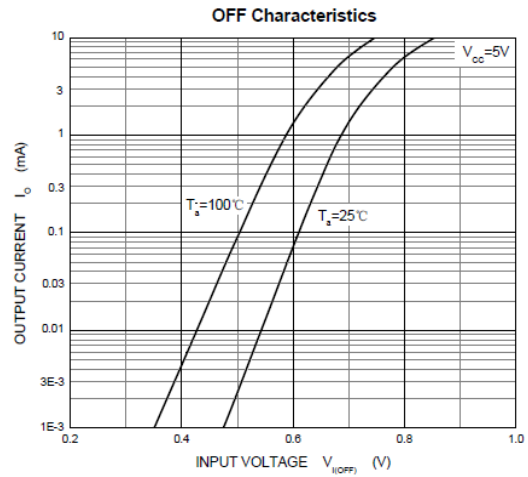
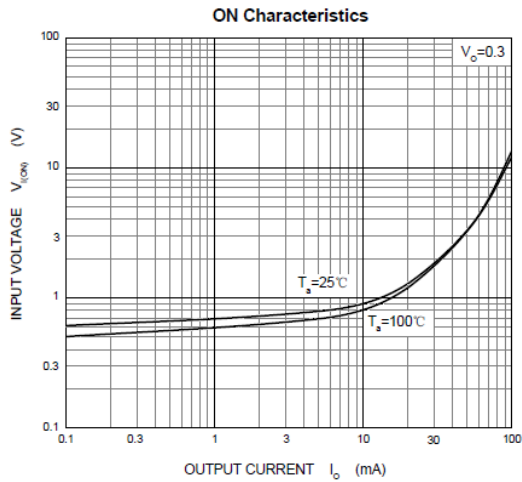
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage	$V_{I(off)}$	$V_{CC} = 5V, I_O = 100\mu\text{A}$	0.5			V
	$V_{I(on)}$	$V_O = 0.3V, I_O = 5\text{mA}$			1.3	
Output Voltage	$V_{O(on)}$	$I_O/I_I = 5\text{mA}/0.25\text{mA}$		0.1	0.3	V
Input Current	I_I	$V_I = 5V$			1.8	mA
Output Current	$I_{O(off)}$	$V_{CC} = 50V, V_I = 0V$			0.5	μA
DC Current Gain	G_I	$V_O = 5V, I_O = 10\text{mA}$	80			-
Input Resistance	R1		3.29	4.7	6.11	k Ω
Resistance Ratio	R2/R1		8	10	12	-
Transition Frequency (Note 4)	f_T	$V_{CE} = 10V, I_E = 5\text{mA}, f = 100\text{MHz}$		250		MHz

Notes:

5. Characteristics of built-in transistor.

TYPICAL PERFORMANCE CHARACTERISTICS

All figures are measured at $T_A = 25^\circ\text{C}$, unless otherwise noted.



PHYSICAL DIMENSION

Unit : Inch (Millimeter)

