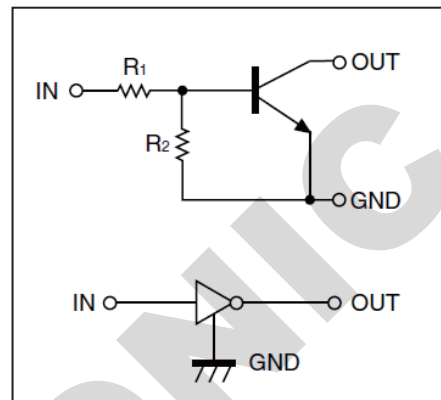


DIGITAL TRANSISTOR (NPN)

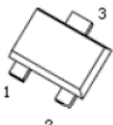
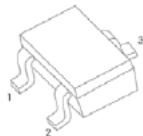
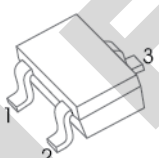
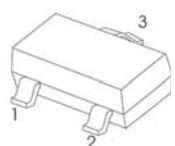
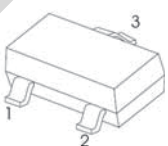
FEATURES

- 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, making device design easy
- Built-in bias resistors R1 and R2 (typ. 4.7kΩ and 10kΩ respectively)

Equivalent Circuit



PIN CONNECTIONS and MARKING

DTC143XM  MARKING: 43	SOT-723 1. IN 2. GND 3. OUT	DTC143XE  MARKING: 43	SOT-523 1. IN 2. GND 3. OUT
DTC143XUA  MARKING: 43	SOT-323 1. IN 2. GND 3. OUT	DTC143XKA  MARKING: 43	SOT-23-3L 1. IN 2. GND 3. OUT
DTC143XCA  MARKING: 43	SOT-23 1. IN 2. GND 3. OUT	DTC143XSA  MARKING: 43	TO-92S 1. GND 2. OUT 3. IN

MAXIMUM RATINGS($T_a=25^{\circ}\text{C}$ unless otherwise noted)

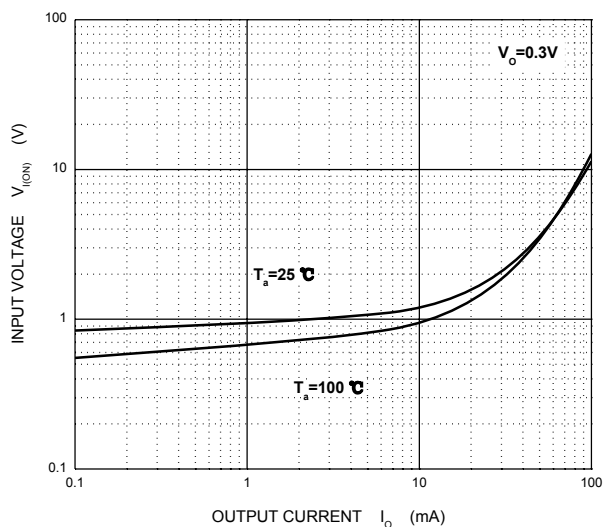
Symbol	Parameter	Limits(DTC143X□)						Unit
		M	E	UA	CA	KA	SA	
V_{CC}	Supply Voltage	50						V
V_{IN}	Input Voltage	-7~+20						V
I_o	Output Current	100						mA
P_D	Power Dissipation	100	150	200	200	200	300	mW
T_j	Junction Temperature	150						$^{\circ}\text{C}$
T_{stg}	Storage Temperature	-55~+150						$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS ($T_a=25^{\circ}\text{C}$ unless otherwise specified)

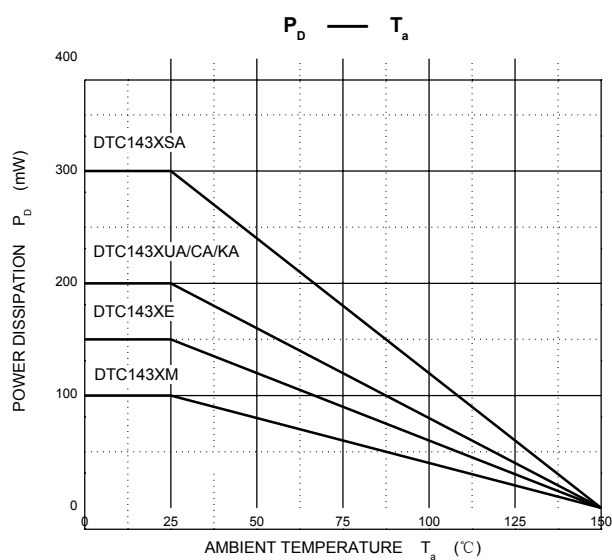
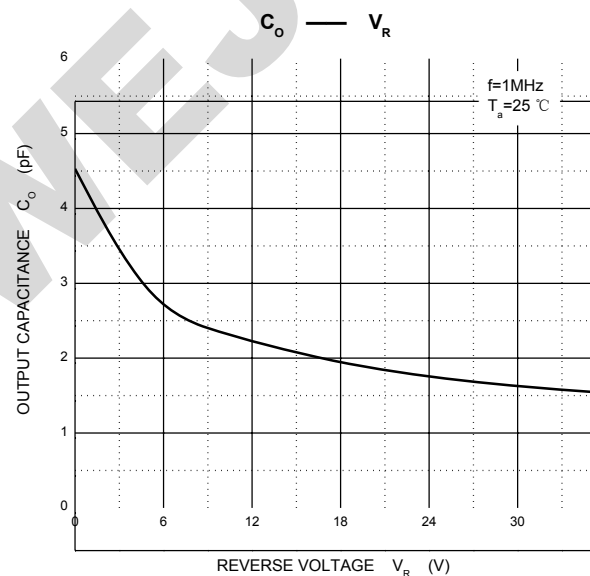
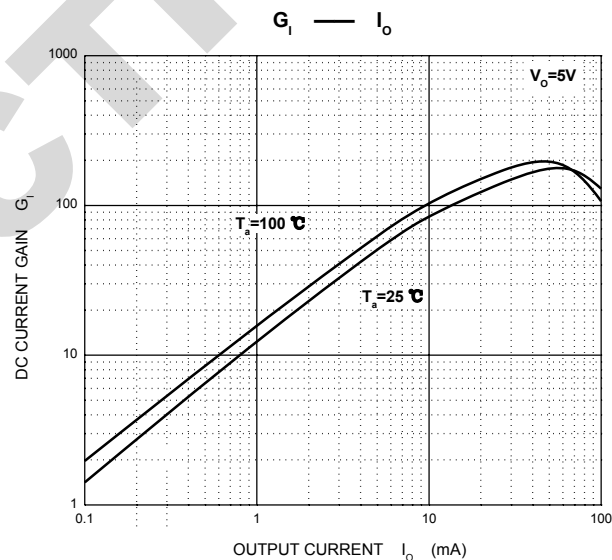
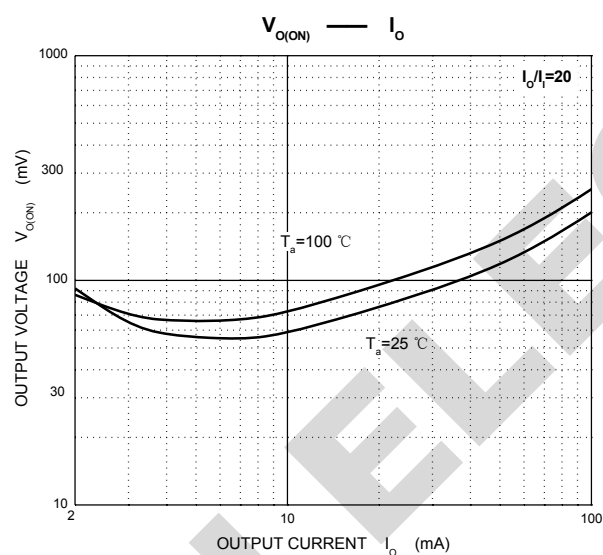
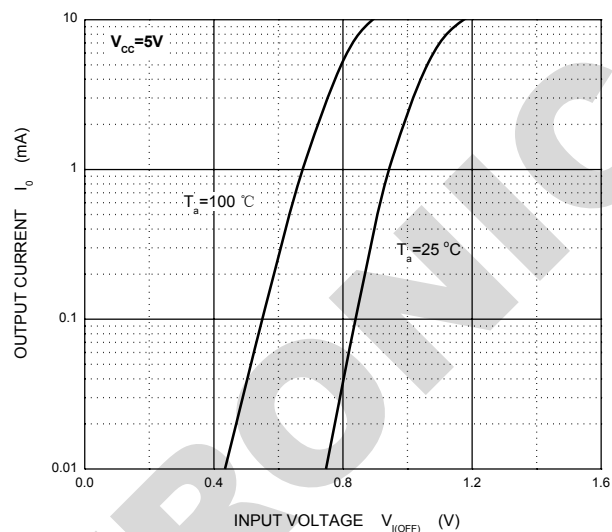
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input voltage	$V_{I(off)}$	$V_{CC}=5V, I_o=100\mu A$	0.3			V
	$V_{I(on)}$	$V_o=0.3V, I_o=20mA$			2.5	V
Output voltage	$V_{O(on)}$	$I_o/I_i=10mA, 0.5mA$		0.1	0.3	V
DC current gain	G_I	$V_o=5V, I_o=10mA$	50			
Input resistance	R_1		3.29	4.7	6.11	k Ω
Resistance ratio	R_2/R_1		1.7	2.1	2.6	k Ω
Transition frequency	f_T	$V_o=10V, I_o=5mA, f=100MHz$		250		MHz
Collector capacitance	C_c	$V_{CB}=10V; I_E=I_e=0A; f=1MHz$			3	PF
Collector-base cut-off current	I_{CBO}	$V_{CB}=50V; I_E=0A$			100	nA
Collector-emitter cut-off current	I_{CEO}	$V_{CE}=30V; I_B=0A$			1	μA
		$V_{CE}=30V; I_B=0A; T_j=150^{\circ}\text{C}$			50	μA
Emitter-base cut-off current	I_{EBO}	$V_{EB}=5V; I_C=0A$			600	μA
Collector-emitter saturation voltage	V_{CEsat}	$I_C=10mA; I_B=0.5mA$			200	mV
Input current	I_i	$V_i=5V$			1.8	mA
Output current	$I_{O(off)}$	$V_{CC}=50V, V_i=0$			0.5	μA
Thermal Resistance, Junction-to-Ambient(Note 1)	$R_{\theta JA}$	600				$^{\circ}\text{C/W}$

Typical Characteristics

ON Characteristics

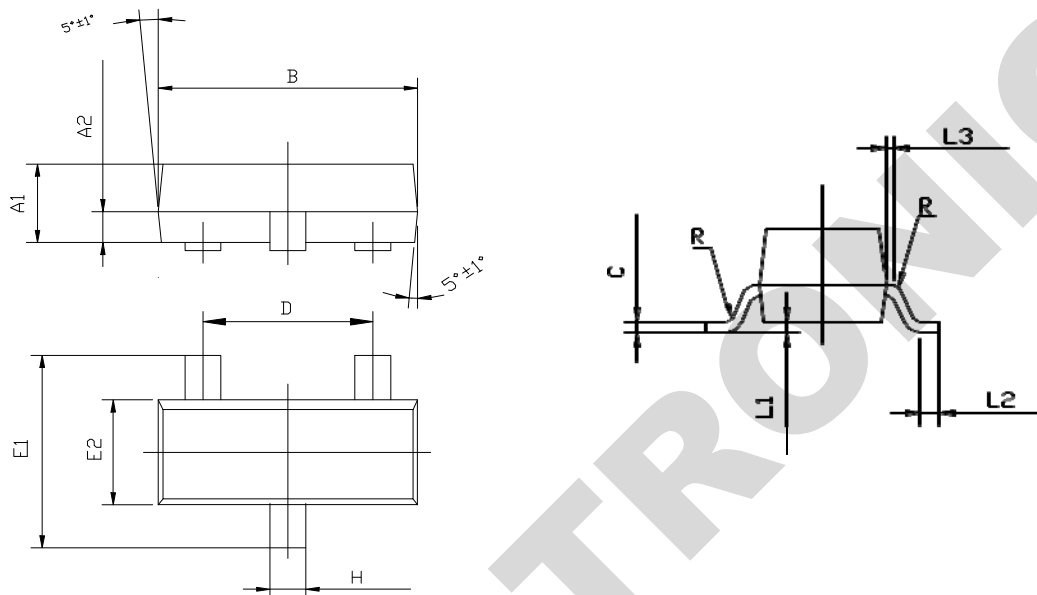


OFF Characteristics

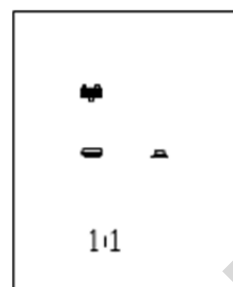
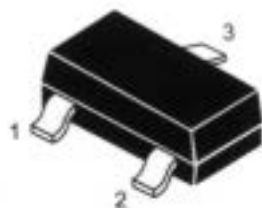


外型尺寸及内部结构图

OUTSIDE DEMENSION AND INTERNAL CONFIGURATION (SOT-23)

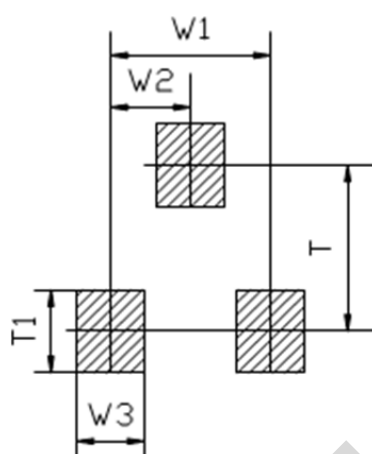


Symbol	Dimensions in Millimeters			内部结构 STYLS	管脚PIN		
	Min	Nominal	Max		1 脚	2脚	3 脚
A1	0.900	0.970	1.000	6	基极 BASE	发射极 EMITTER	集电极 COLLCTOR
A2	0.350	0.380	0.410				
B	2.800	2.900	3.000	8	阳极 ANODE	不连接 NO- CONNECTION	阴极 CATHODE
C	0.085	0.100	0.150				
D	1.800	1.900	2.000	9	阳极 ANODE	阳极 ANODE	阴极 CATHODE
E1	2.200	2.400	2.600				
E2	1.200	1.300	1.400	11	阳极 ANODE	阴极 CATHODE	阳极-阴极 ANODE-CATHODE
H	0.300	0.400	0.500				
L1	0.000		0.100	12	阴极 CATHODE	阴极 CATHODE	阳极 ANODE
L2	0.200						
L3	0.030	0.080	0.130	18	不连接 NO- CONNECTION	阴极 CATHODE	阳极 ANODE
R	0.080TYP						
				19	阴极	阳极	阴极-阳极



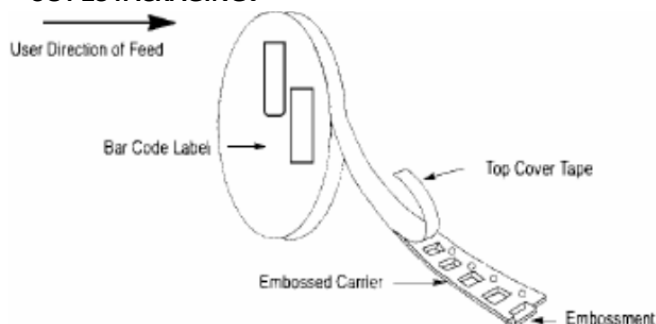
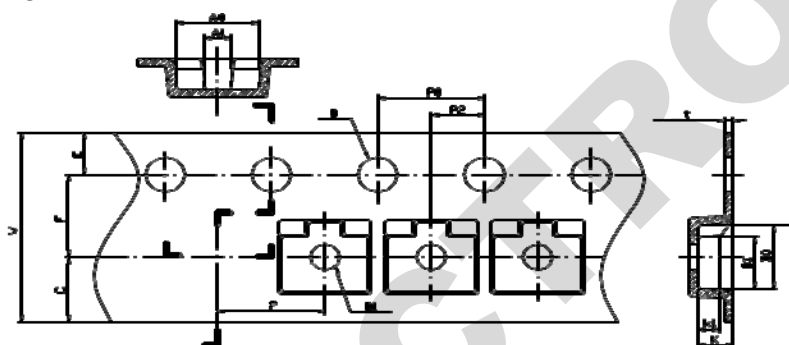
OUTSIDE

Scale 1:1 on letter size paper



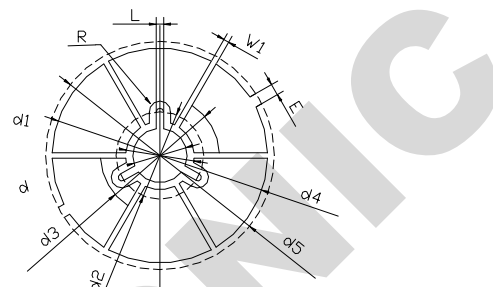
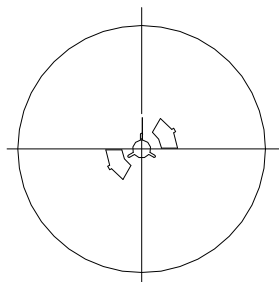
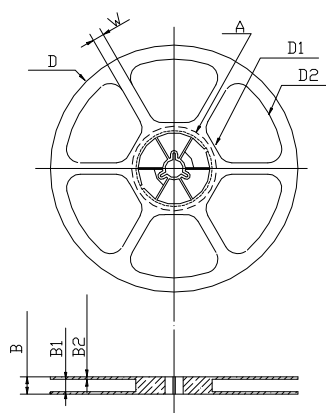
FOOTPRINTS FOR SOLDERING

Symbol	Dimensions in Millimeters	Dimensions in Inches
	Nominal	Nominal
W1	1.900	0.0748
W2	0.950	0.0374
W3	0.800	0.0315
T	2.000	0.0787
T1	1.000	0.0394

SOT-23 TAPE AND REEL DATA**SOT-23 PACKAGING:****SOT-23 EMBOSSED CARRIER TAPE:**

Symbol	Dimensions in Millimeters			Dimensions in Inches		
	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum
A0	3.050	3.150	3.250	0.1201	0.1240	0.1280
A1	0.900	1.000	1.100	0.0354	0.0394	0.0433
B0	2.669	2.769	2.869	0.1051	0.1090	0.1130
B1	2.100	2.200	2.300	0.0827	0.0866	0.0906
C	2.750TYP			0.1083TYP		
D	1.500	1.500	1.600	0.0591	0.0591	0.0630
D1	0.900	1.000	1.100	0.0354	0.0394	0.0433
E	1.650	1.750	1.850	0.0650	0.0689	0.0728
F	3.450	3.500	3.550	0.1358	0.1378	0.1398
K	1.119	1.219	1.319	0.0441	0.0480	0.0519
K1	0.850TYP			0.03346TYP		
P	3.900	4.000	4.100	0.1535	0.1575	0.1614
P0	3.900	4.000	4.100	0.1535	0.1575	0.1614
P010	39.800	40.000	40.200	1.5669	1.5748	1.5827
P2	1.950	2.000	2.050	0.0768	0.0787	0.0807
t	0.216	0.229	0.242	0.0085	0.0090	0.0095
W	7.900	8.000	8.300	0.3110	0.3150	0.3268

SOT-23 REEL DATA



Symbol	Dimensions in Millimeters			Dimensions in Inches		
	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum
B	-	-	12.500	-	-	0.4921
B1	8.900	9.000	9.100	0.3504	0.3543	0.3583
B2	1.700	1.750	1.800	0.0669	0.0689	0.0709
D	Φ177.000	Φ178.000	Φ179.000	Φ6.9685	Φ7.0079	Φ7.0472
D1	Φ67.600TYP			Φ2.6614TYP		
D2	Φ157.600TYP			Φ6.2047 TYP		
d	Φ12.800	Φ13.000	Φ13.200	Φ0.5039	Φ0.5118	Φ0.5197
d1	Φ16.40 TYP			Φ0.6457 TYP		
d2	Φ21.000 TYP			Φ0.8268 TYP		
d3	Φ25.200 TYP			Φ0.99221TYP		
d4	Φ50.600	Φ51.600	Φ52.600	Φ1.9921	Φ2.0315	Φ2.0709
d5	Φ53.800	Φ54.800	Φ55.800	Φ2.1181	Φ2.1575	Φ2.1969
E	2.800 TYP			0.1102TYP		
L	1.750 TYP			0.0689 TYP		
R	2.575 TYP			0.1014 TYP		
W	15.000 TYP			0.5906 TYP		
W1	1.300 TYP			0.0512 TYP		