

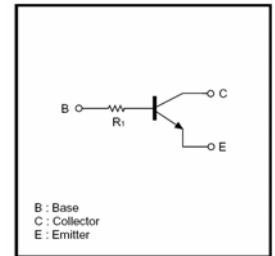


Digital transistors (built-in resistors)

DTC143TE/DTC143TUA /DTC143TKA /DTC143TSA/ DTC143TCA

DIGITAL TRANSISTOR (NPN)

●Equivalent circuit



FEATURES

1. Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors(see equivalent circuit).
2. 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.
3. Only the on/off conditions need to be set for operation, making device design easy.

PIN CONNENCTIONS AND MARKING

<p>DTC143TE</p> <p>(1) Base (2) Emitter (3) Collector</p> <p>SOT-523 Abbreviated symbol: 03</p>	<p>DTC143TUA</p> <p>(1) Base (2) Emitter (3) Collector</p> <p>SOT-323 Abbreviated symbol: 03</p>
<p>DTC143TKA</p> <p>(1) Base (2) Emitter (3) Collector</p> <p>SOT-23-3L Abbreviated symbol: 03</p>	<p>DTC143TCA</p> <p>(1) Base (2) Emitter (3) Collector</p> <p>SOT-23 Abbreviated symbol: 03</p>
<p>DTC143TSA</p> <p>(1) Emitter (2) Collector (3) Base</p> <p>TO-92S</p>	

Absolute maximum ratings(Ta=25°C)

Parameter	Symbol	Limits (DTC143T□)					Unit
		E	UA	CA	KA	SA	
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
Collector Power dissipation	P_C	150	200			300	mW
Junction temperature	T_j	150					°C
Storage temperature	T_{stg}	-55~150					°C

Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ	Max.	Unit	Conditions
Collector-base breakdown voltage	$V_{(BR)CBO}$	50			V	$I_C=50\mu A$
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	50			V	$I_C=1mA$
Emitter-base breakdown voltage	$V_{(BR)EBO}$	5			V	$I_E=50\mu A$
Collector cut-off current	I_{CBO}			0.5	μA	$V_{CB}=50V$
Emitter cut-off current	I_{EBO}			0.5	μA	$V_{EB}=4V$
Collector-emitter saturation voltage	$V_{CE(sat)}$			0.3	V	$I_C=5mA, I_B=0.25mA$
DC current transfer ratio	h_{FE}	100		600		$V_{CE}=5V, I_C=1mA$
Input resistance	R_1	3.29	4.7	6.11	K Ω	
Transition frequency	f_T		250		MHz	$V_O=10V, I_O=5mA, f=100MHz$

Typical Characteristics

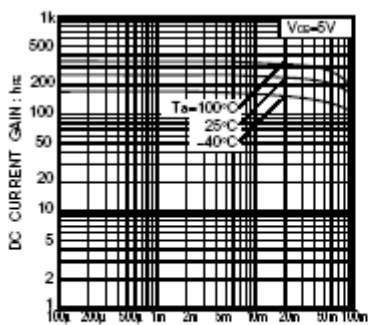


Fig.1 DC current gain vs. collector current

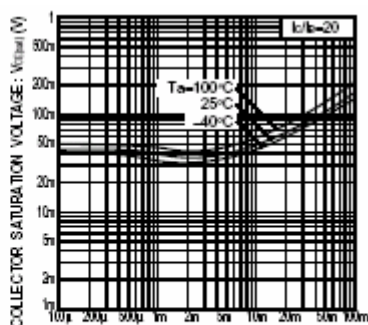


Fig.2 Collector-emitter saturation voltage vs. collector current