

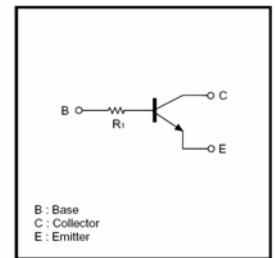


## Digital transistors (built-in resistors)

### DTC143TE/DTC143TUA /DTC143TKA /DTC143TSA/ DTC143TCA

DIGITAL TRANSISTOR (NPN)

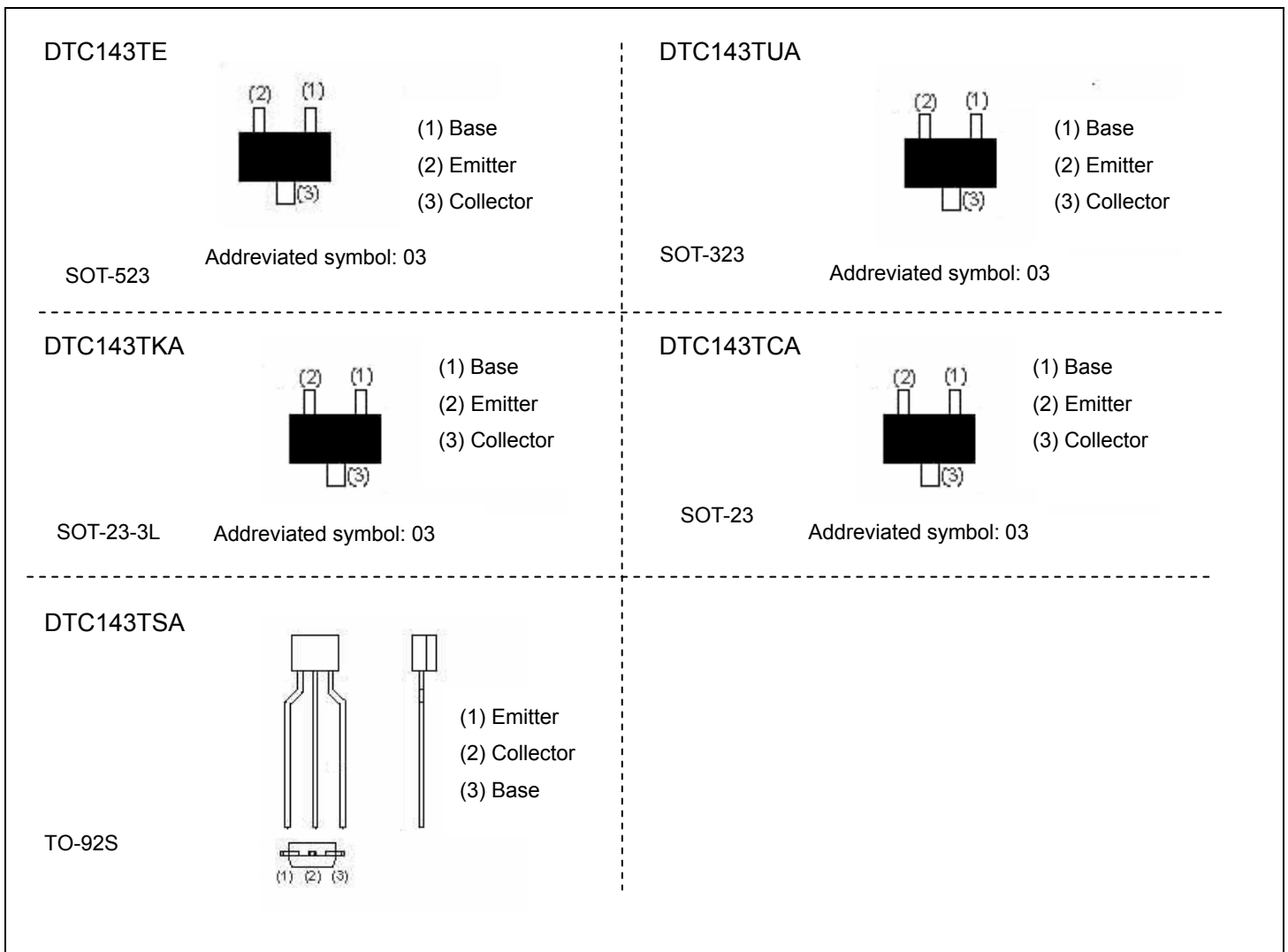
●Equivalent circuit



#### 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



### 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	$\mu A$	$V_{CB}=50V$
Emitter cut-off current	$I_{EBO}$			0.5	$\mu A$	$V_{EB}=4V$
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 $\Omega$	
Transition frequency	$f_T$		250		MHz	$V_O=10V, I_O=5mA, f=100MHz$

### Typical Characteristics

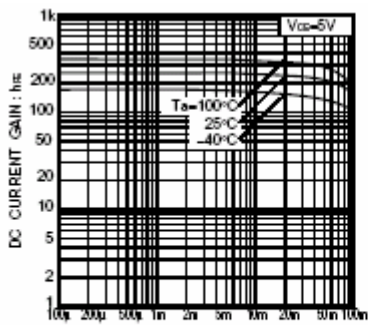


Fig.1 DC current gain vs. collector current

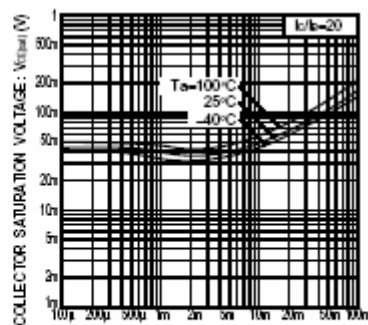


Fig.2 Collector-emitter saturation voltage vs. collector current