

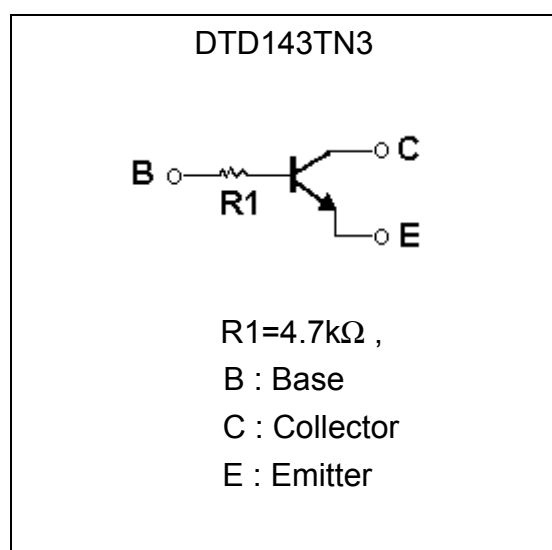
NPN Digital Transistors (Built-in Resistors)

DTD143TN3

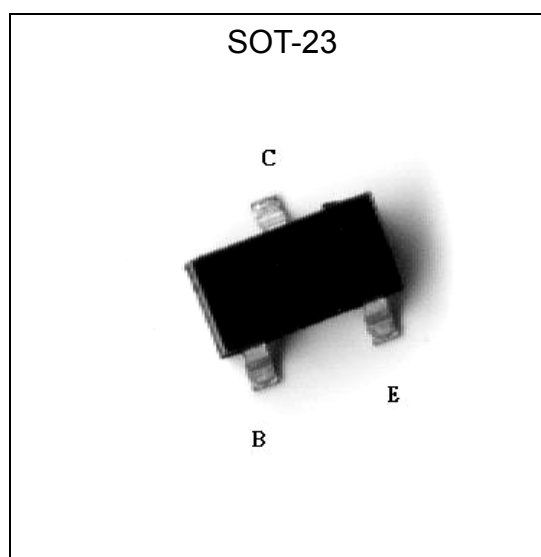
Features

- 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.
- Complements the DTB143TN3
- Pb-free package

Equivalent Circuit



Outline



Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V _{CBO}	50	V
Collector-Emitter Voltage	V _{CEO}	40	V
Emitter-Base Voltage	V _{EBO}	5	V
Collector Current	I _C	600	mA
Power Dissipation	P _d	200	mW
Junction Temperature	T _j	150	°C
Storage Temperature	T _{stg}	-55 ~ +150	°C

**Characteristics** (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Collector-Base Breakdown Voltage	V _{CB0}	50	-	-	V	I _C =50μA
Collector-Emitter Breakdown Voltage	V _{CEO}	40	-	-	V	I _C =1mA
Emitter-Base Breakdown Voltage	V _{EB0}	5	-	-	V	I _E =50μA
Collector-Base Cutoff Current	I _{CB0}	-	-	0.5	μA	V _{CB} =50V
Emitter-Base Cutoff Current	I _{EB0}	-	-	0.5	μA	V _{EB} =4V
Collector-Emitter Saturation Voltage	V _{CE(sat)}	-	40	60	mV	I _C =50mA, I _B =2.5mA
DC Current Gain	h _{FE}	100	-	600	-	V _{CE} =5V, I _C =50mA
Input Resistance	R _i	3.29	4.7	6.11	kΩ	-
Transition Frequency	f _T	-	200	-	MHz	V _{CE} =10V, I _C =50mA, f=100MHz *

* Transition frequency of the device

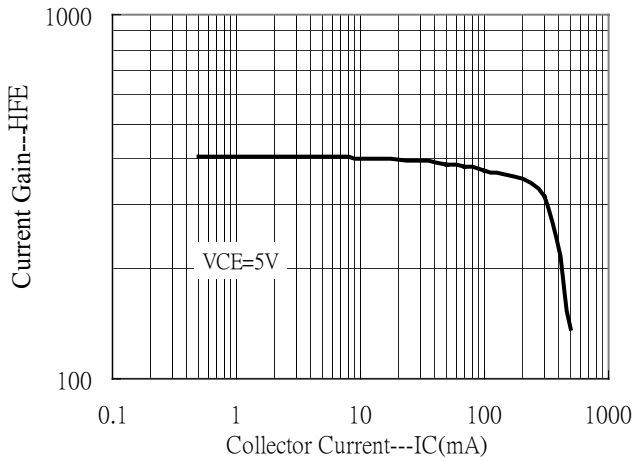
Ordering Information

Device	Package	Shipping	Marking
DTD143TN3	SOT-23 (Pb-free)	3000 pcs / Tape & Reel	F03

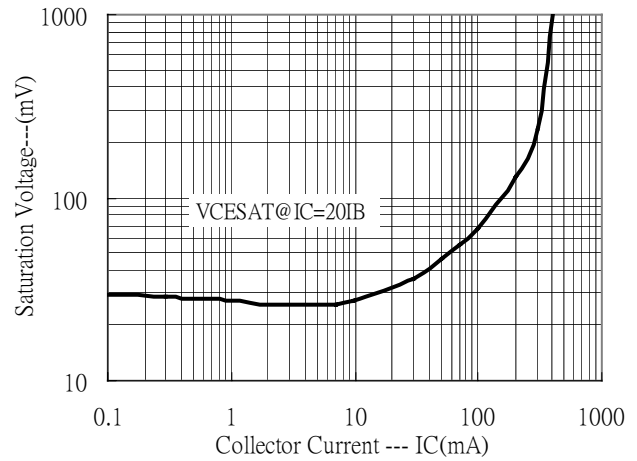


Characteristic Curves

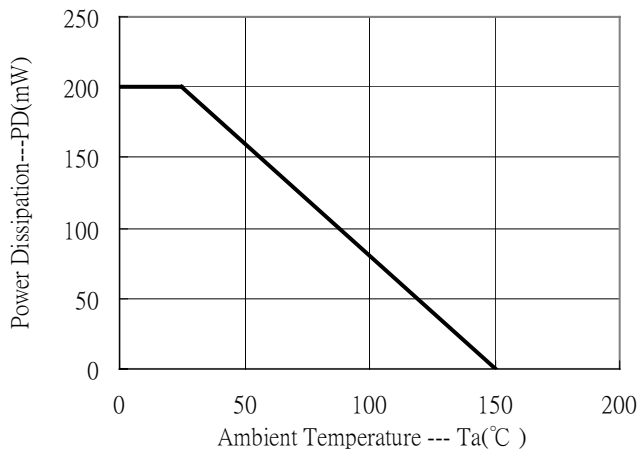
Current Gain vs Collector Current



Saturation Voltage vs Collector Current



Power Derating Curve





Product Designation

DT **X** **X** **X** **X** **X** **XX**
(1) (2) (3) (4) (5) (6) (7)

(1) Indicates that transistor is digital

(2) Indicates polarity

A, B PNP

C, D NPN

(3) Indicates device specification

(4) Indicates the basis of the R_1 resistance value

1 . . . 1.0

2 . . . 2.2

3 . . . 3.3

4 . . . 4.7

6 . . . 6.8

(5) Indicates power-of-ten of R_1 value

3 . . . 10^3

4 . . . 10^4

The value of R_1 is indicates by combining (4) and (5)

24 . . . $2.2 \times 10^4 = 22k\Omega$

43 . . . $4.7 \times 10^3 = 22k\Omega$

(6) Indicates resistance ratio R_1/R_2

E . . . $R_1/R_2=1/1$

X . . . $R_1/R_2=2/1$

Y . . . $R_1/R_2=5/1$

Z . . . $R_1/R_2=10/1$

J . . . $R_1/R_2=20/1$

W . . . $R_1/R_2=1/2$

U . . . $R_1/R_2=1/5$

V . . . $R_1/R_2=1/10$

T . . . R_1 only

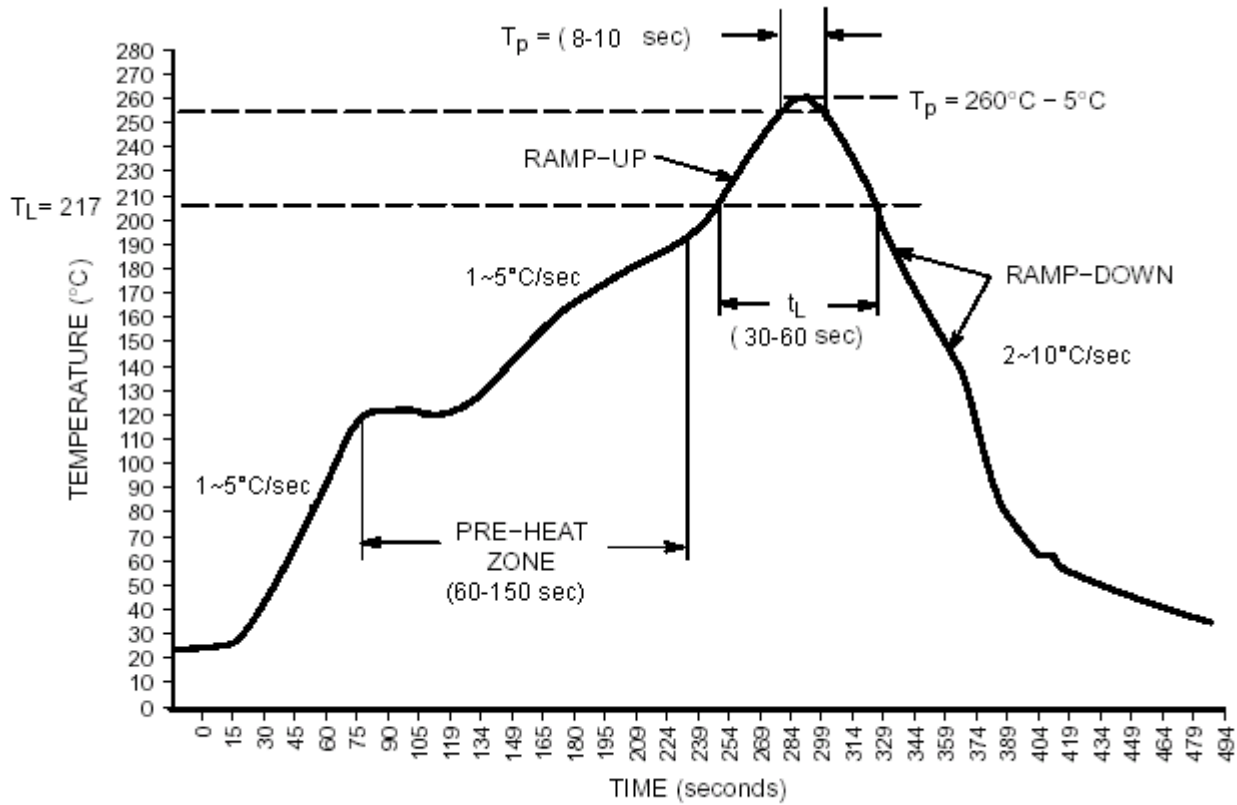
G . . . T_2 only

(7) Indicates package shape

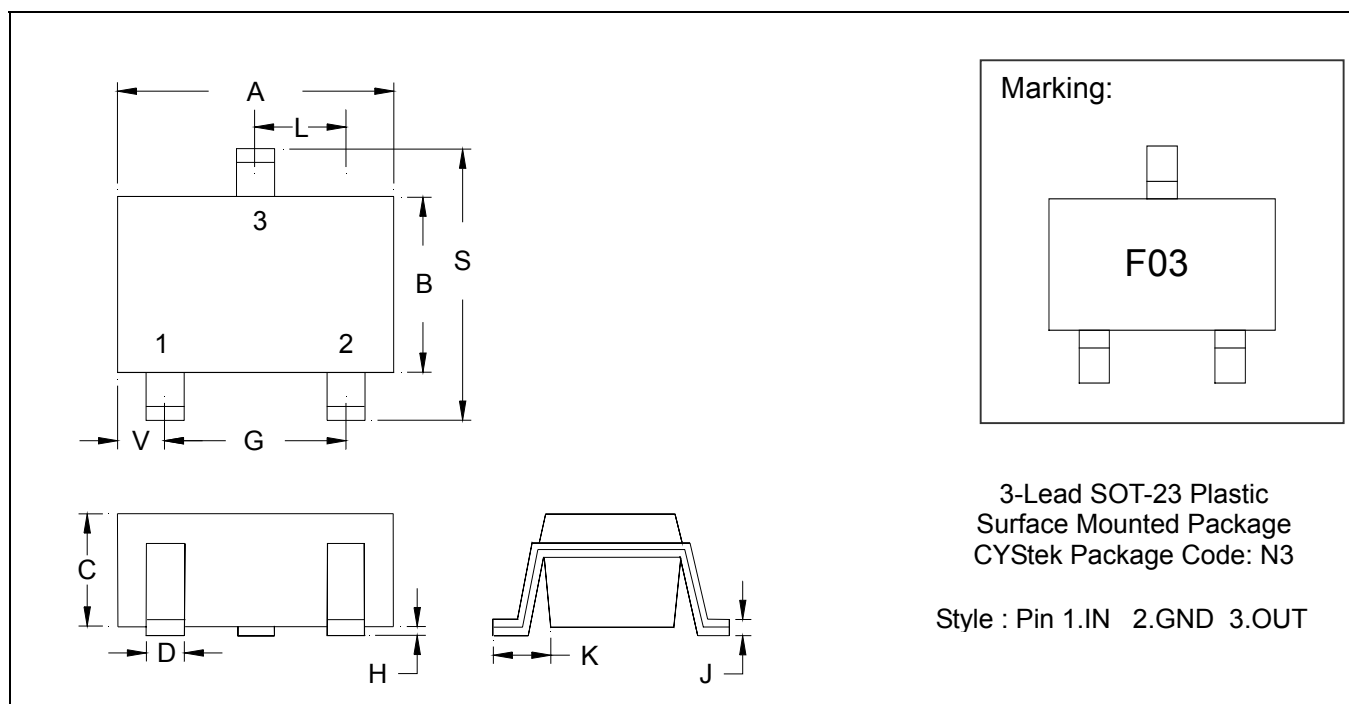
N3 . . . SOT-23

A3 . . . TO-92

Recommended IR reflow profile



SOT-23 Dimension



*:Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1102	0.1204	2.80	3.04	J	0.0034	0.0070	0.085	0.177
B	0.0472	0.0630	1.20	1.60	K	0.0128	0.0266	0.32	0.67
C	0.0335	0.0512	0.89	1.30	L	0.0335	0.0453	0.85	1.15
D	0.0118	0.0197	0.30	0.50	S	0.0830	0.1083	2.10	2.75
G	0.0669	0.0910	1.70	2.30	V	0.0098	0.0256	0.25	0.65
H	0.0005	0.0040	0.013	0.10					

Notes : 1.Controlling dimension : millimeters.

2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.

3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material :

- Lead : 42 Alloy ; solder plating
- Mold Compound : Epoxy resin family, flammability solid burning class:UL94V-0

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