Digital transistors (built-in resistor)

DTC143TE / DTC143TUA / DTC143TKA DTC143TSA

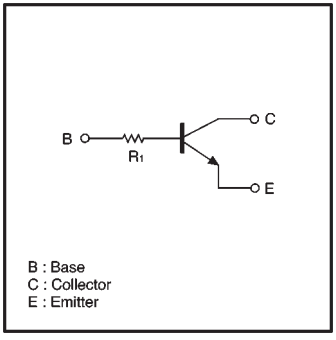
●Features

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.

●Structure

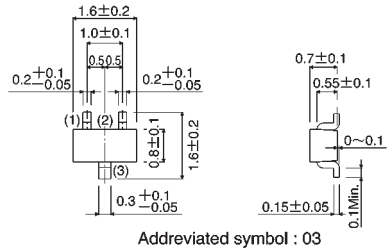
PNP digital transistor
(Built-in resistor type)

●Equivalent circuit



●External dimensions (Units: mm)

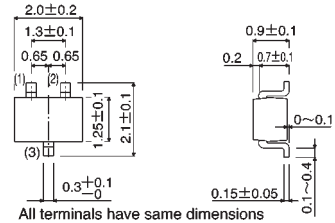
DTC143TE



ROHM : EMT3
Addreviated symbol : 03

(1) Emitter
(2) Base
(3) Collector

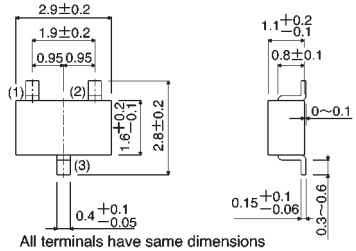
DTC143TUA



ROHM : UMT3
EIAJ : SC-70
All terminals have same dimensions
Addreviated symbol : 03

(1) Emitter
(2) Base
(3) Collector

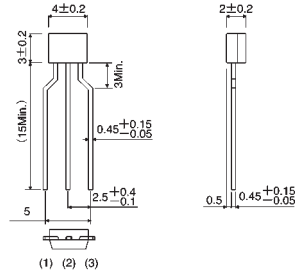
DTC143TKA



ROHM : SMT3
EIAJ : SC-59
All terminals have same dimensions
Addreviated symbol : 03

(1) Emitter
(2) Base
(3) Collector

DTC143TSA



ROHM : SPT
EIAJ : SC-72

(1) Emitter
(2) Collector
(3) Base

(96-331-C143T)

●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits (DTC143T□)				Unit
		E	UA	KA	SA	
Collector-base voltage	V_{CBO}	50				V
Collector-emitter voltage	V_{CEO}	50				V
Emitter-base voltage	V_{EBO}	5				V
Collector current	I_C	100				mA
Collector power dissipation	P_C	150	200		300	mW
Junction temperature	Tj	150				℃
Storage temperature	Tstg	−55～+150				℃

●Electrical characteristics (Ta = 25°C)

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

✻ Transition frequency of mounted transistor

●Packaging specifications

Part No.	Package	EMT3	UMT3	SMT3	SPT
	Packaging type	Taping	Taping	Taping	Taping
	Code	TL	T106	T146	TP
	Basic ordering unit (pieces)	3000	3000	3000	5000
DTC143TE		○	−	−	−
DTC143TUA		−	○	−	−
DTC143TKA		−	−	○	−
DTC143TSA		−	−	−	○

●Electrical characteristic curves

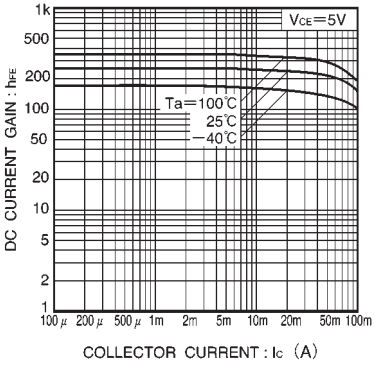


Fig.1 DC current gain vs. collector current

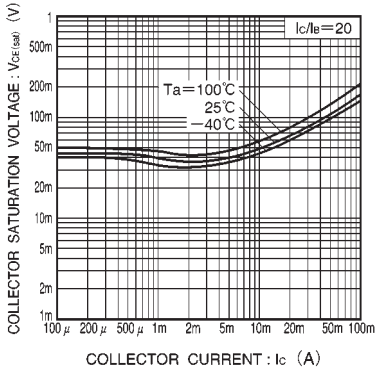


Fig.2 Collector-emitter saturation voltage vs. collector current