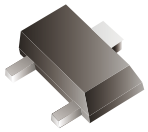
Digital Transistor

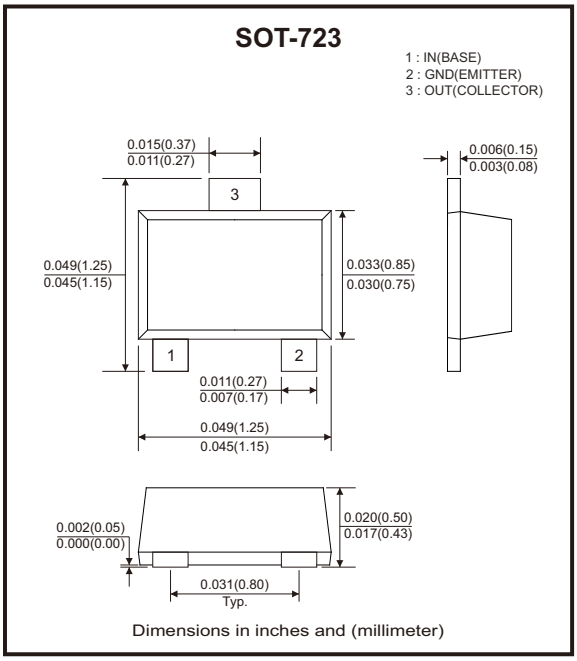
ADTC143TM-HF (NPN)

RoHS Device
Halogen Free



Features

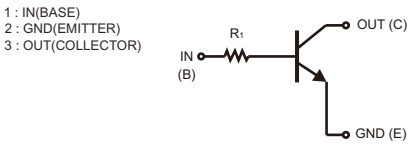
- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
- The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input.
  They also have the advantage of almost completely eliminating parasitic effects.
- Only the on/off conditions need to be set for operation, making device design easier.
- AEC-Q101 Qualified.



Mechanical data

- Case: SOT-723, molded plastic.
- Terminals: Solderable per MIL-STD-750, method 2026.
- Mounting position: Any.

Circuit Diagram



Maximum Ratings (at T_J=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
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
Power dissipation	P_D	100	mW
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (at T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C = 50μA, I_E = 0A	50			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C = 1mA, I_B = 0A	50			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E = 50μA, I_C = 0A	5			V
Collector cut-off current	I_{CBO}	V_{CB} = 50V, I_E = 0A			0.5	μA
Emitter cut-off current	I_{EBO}	V_{EB} = 4V, I_C = 0A			0.5	μA
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = 5mA, I_B = 0.25mA			0.3	V
DC current gain	h_{FE}	V_{CE} = 5V, I_C = 1mA	100		600	
Input Resistor	R_1		3.29	4.7	6.11	kΩ
Resistance ratio	R_2/R_1		8	10	12	
Transition frequency	f_T	V_{CE} = 10V, I_E = 5mA, f = 100MHz		250		MHz

Typical Rating and Characteristic Curves (ADTC143TM-HF)

Fig.1 - Static Characteristic

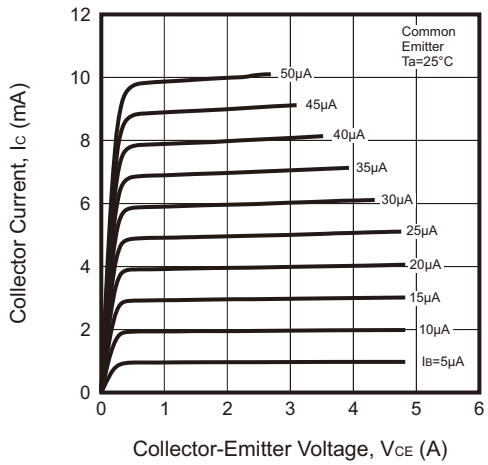
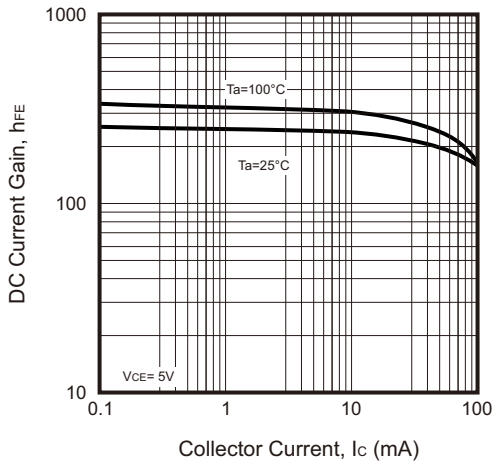


Fig.2 - h_{FE} — I_C



Typical Rating and Characteristic Curves (ADTC143TM-HF)

Fig.3 - V_{BEsat} — I_C

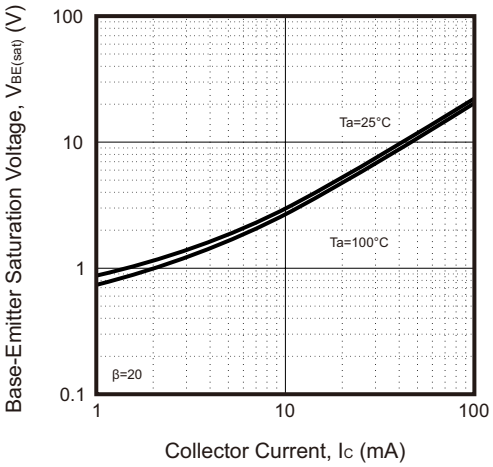


Fig.4 - V_{CEsat} — I_C

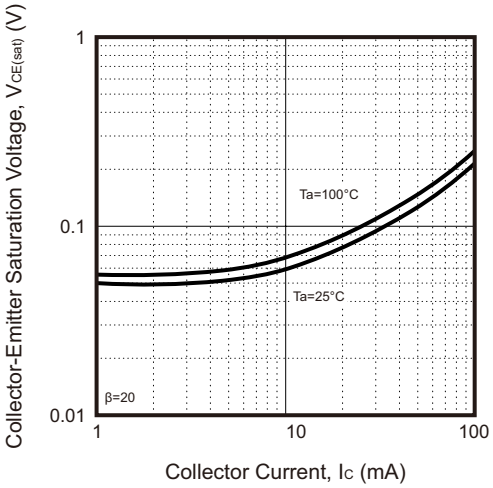


Fig.5 - I_C — V_{BE}

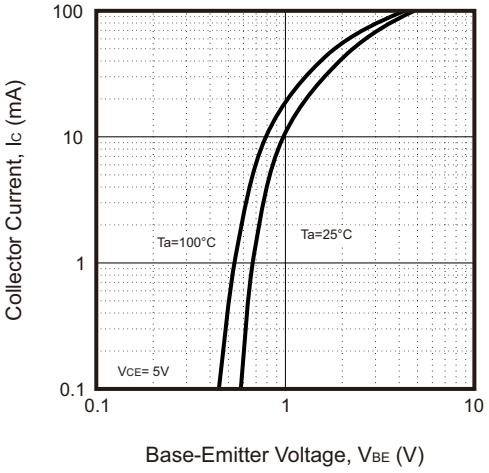


Fig.6 - C_{ob}/C_{ib} — V_{CB}/V_{EB}

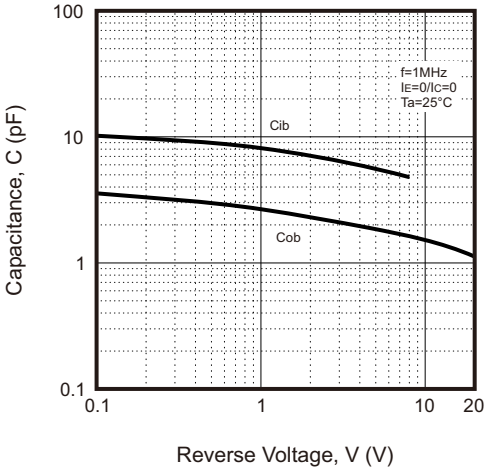
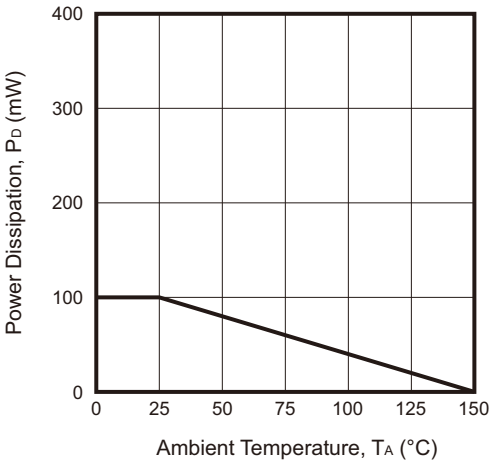
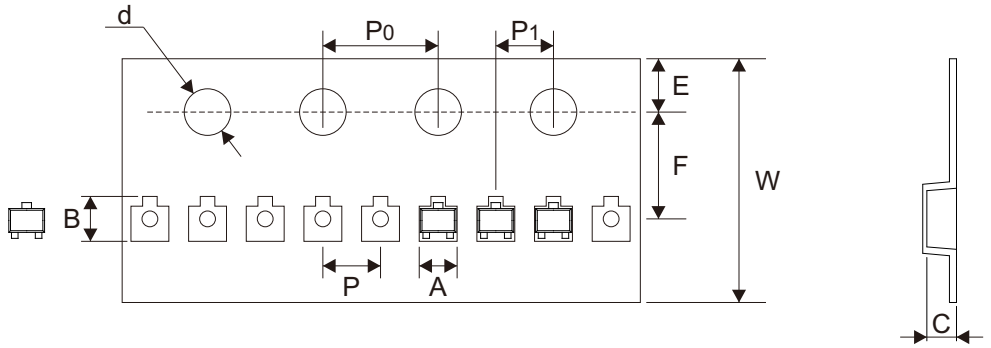
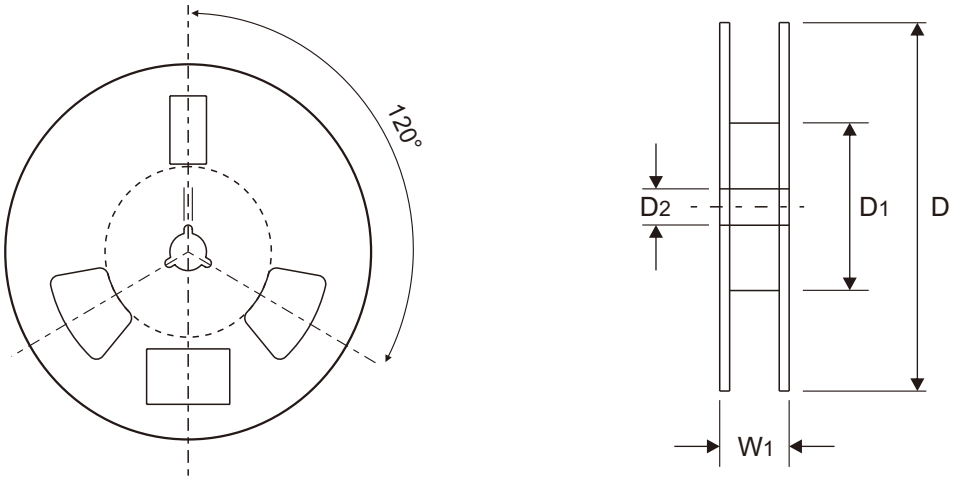


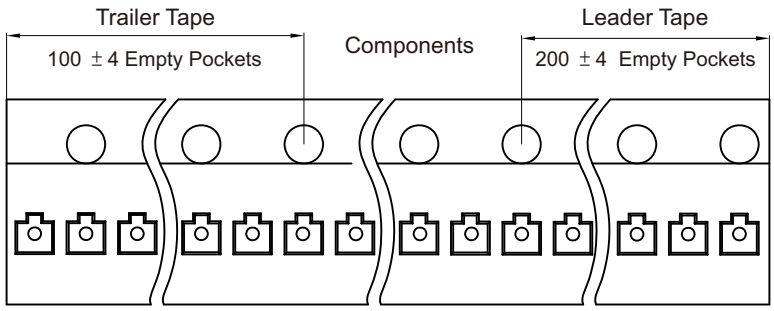
Fig.7 - P_D — T_A



Reel Taping Specification





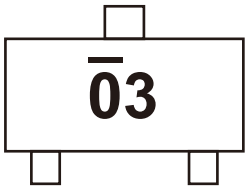


	SYMBOL	A	B	C	d	D	D1	D2
SOT-723	(mm)	1.33 ± 0.05	1.45 ± 0.05	0.61 ± 0.05	1.50 + 0.01 − 0.00	178.00 ± 0.10	54.40 ± 0.40	13.00 ± 0.20
	(inch)	0.052 ± 0.002	0.057 ± 0.002	0.024 ± 0.002	0.059 + 0.0004 − 0.0000	7.008 ± 0.004	2.142 ± 0.016	0.512 ± 0.008

	SYMBOL	E	F	P	P0	P1	W	W1
SOT-723	(mm)	1.75 ± 0.05	3.50 ± 0.05	2.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	8.00 + 0.30 − 0.10	12.30 ± 1.00
	(inch)	0.069 ± 0.002	0.138 ± 0.002	0.079 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.315 + 0.012 − 0.004	0.484 ± 0.039

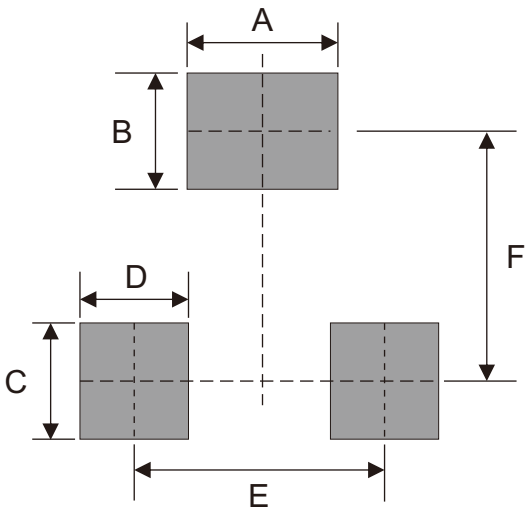
Marking Code

Part Number	Marking Code
ADTC143TM-HF	03



Suggested P.C.B. PAD Layout

SIZE	SOT-723	
	(mm)	(inch)
A	0.42	0.017
B	0.30	0.012
C	0.30	0.012
D	0.32	0.013
E	0.80	0.031
F	1.00	0.039



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOT-723	8,000	7