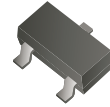


ADTCxxxxE-HF Series (NPN)

RoHS Device
Halogen Free



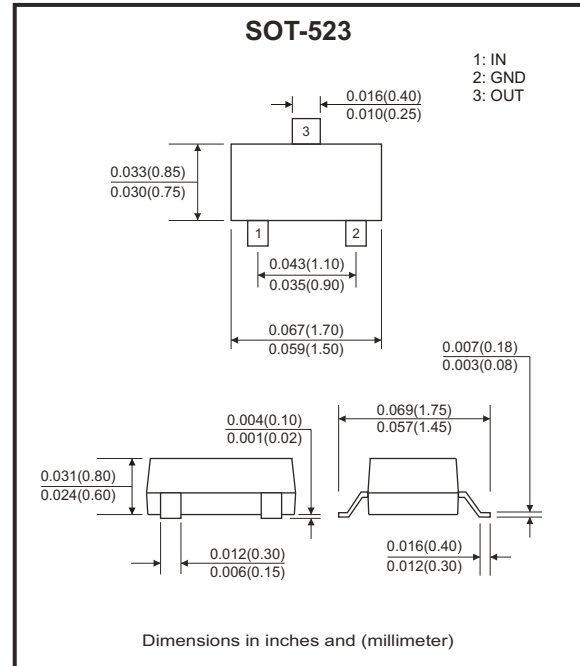
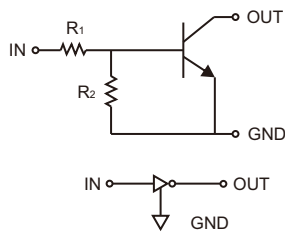
Features

- Epitaxial planar die construction.
- Built-in biasing resistors, $R_1 \neq R_2$.
- AEC-Q101 Qualified.

Mechanical data

- Case: SOT-523, molded plastic.
- Mounting position: Any.

Circuit Diagram



Maximum Ratings (at $T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Units
Supply voltage	V_{CC}	50	V
Input voltage	V_{IN}	-5 to +10 -10 to +30 -6 to +40 -5 to +12 -5 to +12 -7 to +20 -5 to +30 -10 to +40	V
Output current	I_O	100 100 70 100 100 100 100 50	mA
Max. output current	I_C	100	mA
Power dissipation	P_D	150	mW
Thermal resistance, junction to ambient air	$R_{\theta JA}$	833	$^\circ\text{C/W}$
Operating and storage and temperature range	T_j, T_{STG}	-55 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Test conditions	Min	Typ	Max	Units
Input voltage ADTC113ZE-HF ADTC114WE-HF ADTC114YE-HF ADTC123JE-HF ADTC123YE-HF ADTC143XE-HF ADTC143ZE-HF ADTC124XE-HF	$V_{I(off)}$	$V_{CC} = 5V, I_o = 100\mu A$	0.3 0.8 0.3 0.5 0.3 0.3 0.5 0.4			V
Input voltage ADTC113ZE-HF ADTC114WE-HF ADTC114YE-HF ADTC123JE-HF ADTC123YE-HF ADTC143XE-HF ADTC143ZE-HF ADTC124XE-HF	$V_{I(on)}$	$V_o = 0.3V, I_o = 20mA$ $V_o = 0.3V, I_o = 2mA$ $V_o = 0.3V, I_o = 1mA$ $V_o = 0.3V, I_o = 5mA$ $V_o = 0.3V, I_o = 20mA$ $V_o = 0.3V, I_o = 20mA$ $V_o = 0.3V, I_o = 5mA$ $V_o = 0.3V, I_o = 2mA$			3.0 3.0 1.4 1.1 3.0 2.5 1.3 2.5	V
Output voltage ADTC123JE-HF ADTC143ZE-HF ADTC114YE-HF All others	$V_{O(on)}$	$I_o / I_i = 5mA / 0.25mA$ $I_o / I_i = 10mA / 0.5mA$		0.1	0.3	V
Input current ADTC113ZE-HF ADTC114WE-HF ADTC114YE-HF ADTC123JE-HF ADTC123YE-HF ADTC143XE-HF ADTC143ZE-HF ADTC124XE-HF	I_i	$V_i = 5V$			7.2 0.88 0.88 3.6 3.8 1.8 1.8 0.36	mA
Output current	$I_{O(off)}$	$V_{CC} = 50V, V_i = 0V$			0.5	μA
DC current gain ADTC113ZE-HF ADTC114WE-HF ADTC114YE-HF ADTC123JE-HF ADTC123YE-HF ADTC143XE-HF ADTC143ZE-HF ADTC124XE-HF	G_i	$V_o = 5V, I_o = 5mA$ $V_o = 5V, I_o = 10mA$ $V_o = 5V, I_o = 5mA$ $V_o = 5V, I_o = 10mA$ $V_o = 5V, I_o = 10mA$ $V_o = 5V, I_o = 10mA$ $V_o = 5V, I_o = 10mA$ $V_o = 5V, I_o = 10mA$	33 24 68 80 33 30 80 68			
Input resistor ADTC113ZE-HF ADTC114WE-HF ADTC114YE-HF ADTC123JE-HF ADTC123YE-HF ADTC143XE-HF ADTC143ZE-HF ADTC124XE-HF	$R_1(R_2)$		0.7 7 7 1.54 1.54 3.29 3.29 15.4	1(10) 10(4.7) 10(47) 2.2(47) 2.2(10) 4.7(10) 4.7(47) 22(47)	1.3 13 13 2.86 2.86 6.11 6.11 28.6	k Ω
Input resistor (R_1) tolerance	ΔR_1		-30		+30	%
Resistance ratio tolerance	$\Delta R_2/R_1$		-20		+20	
Gain-bandwidth product	f_r	$V_{CE} = 10V, I_E = 5mA, f = 100MHz$		250		MHz

Typical Rating and Characteristic Curves (ADTCxxxxE-HF Series)

Fig.1 - Derating Curve

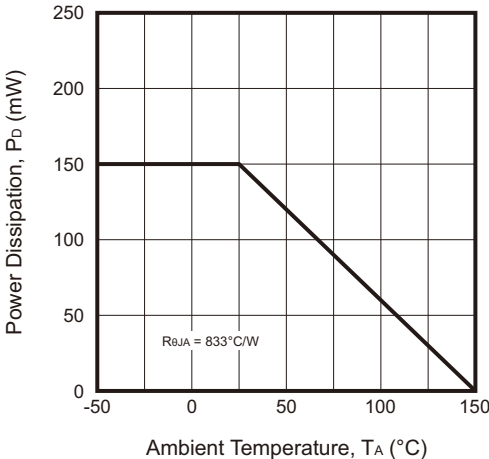


Fig.2 - $V_{CE(SAT)}$ vs. I_C

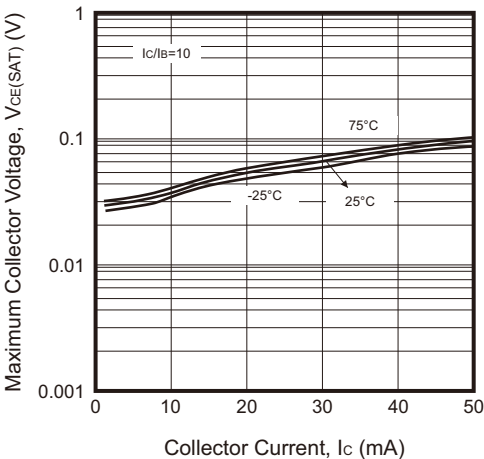


Fig.3 - DC Current Gain

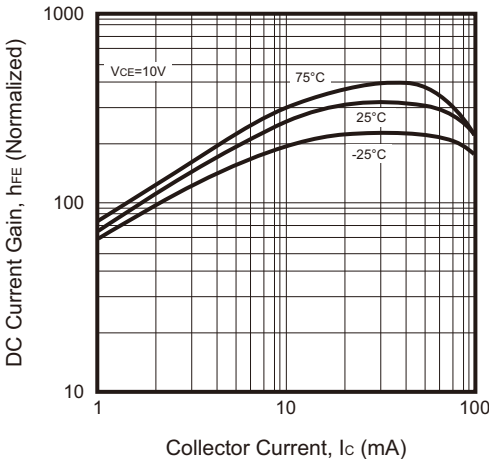


Fig.4 - Output Capacitance

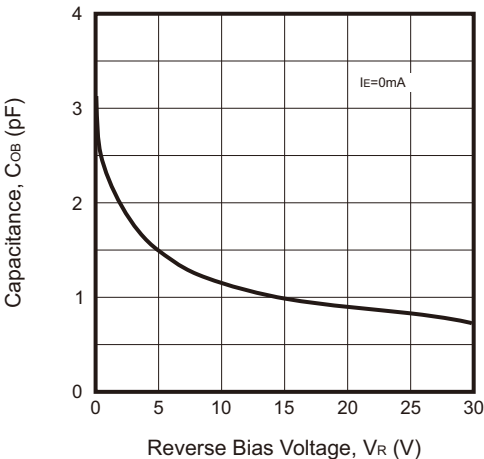


Fig.5 - Collector Current vs. Input Voltage

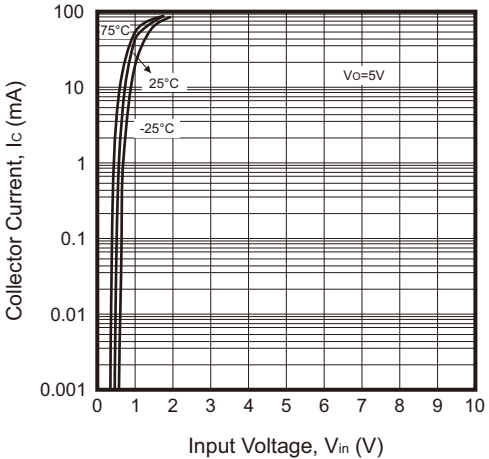
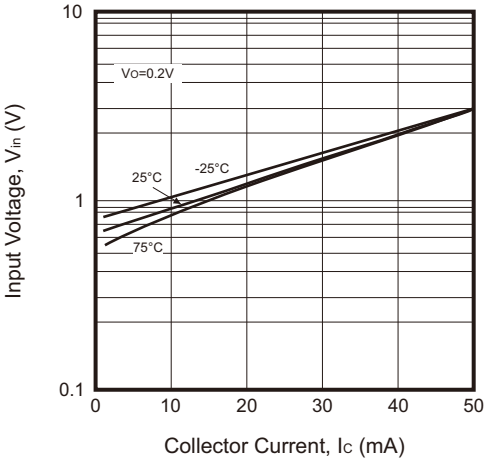
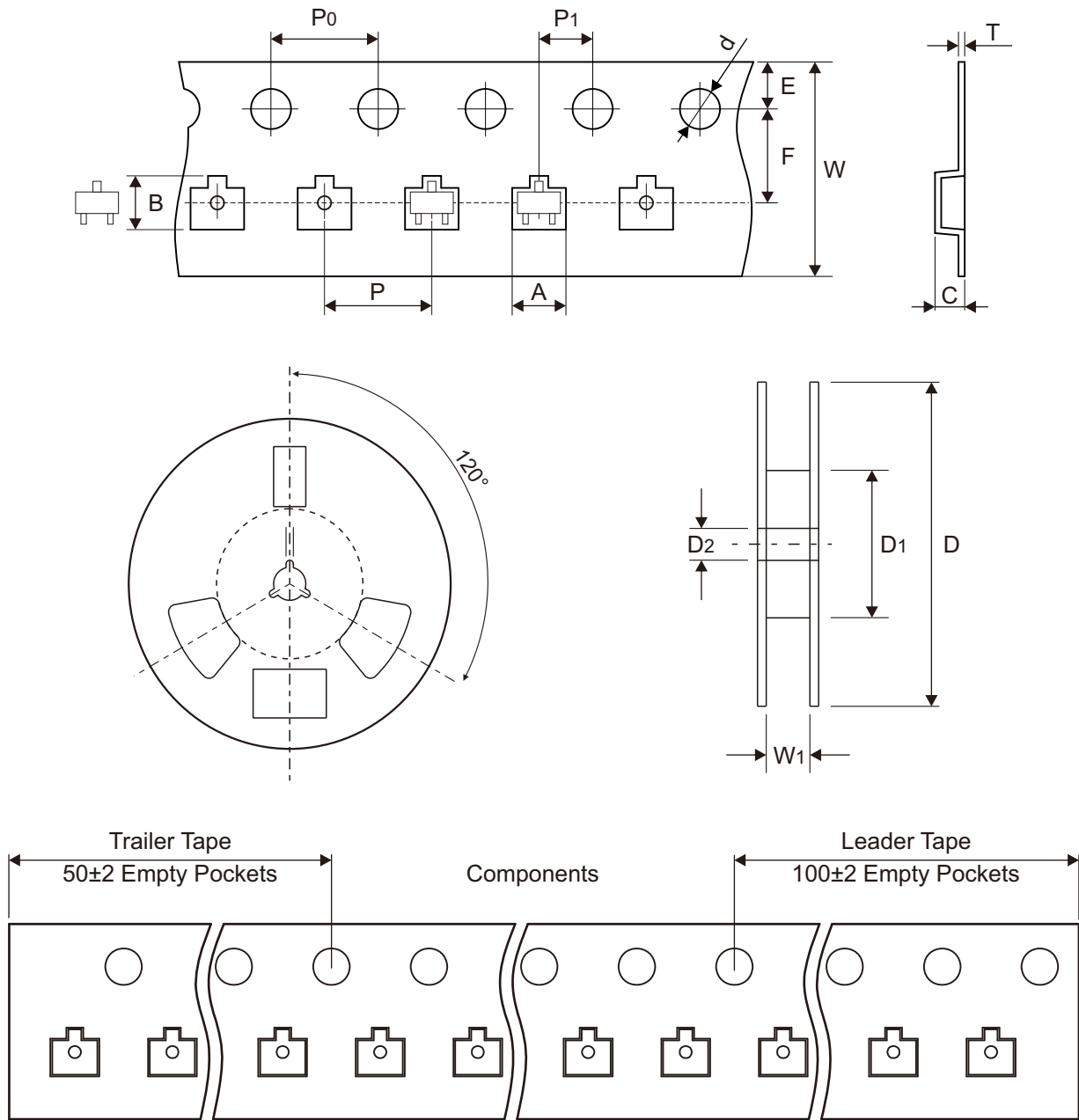


Fig.6 - Input Voltage vs. Collector Current



Reel Taping Specification

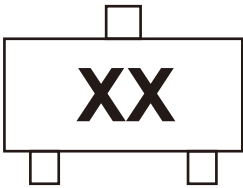


SOT-523	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	1.85 ± 0.05	1.85 ± 0.05	0.875 ± 0.05	1.50 ± 0.10	178.00 ± 1.00	54.00 ± 0.50	13.00 ± 0.50
	(inch)	0.073 ± 0.002	0.073 ± 0.002	0.034 ± 0.002	0.059 ± 0.004	7.008 ± 0.039	2.126 ± 0.020	0.512 ± 0.020

SOT-523	SYMBOL	E	F	P	P0	P1	T	W	W1
	(mm)	1.75 ± 0.10	3.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	0.229 ± 0.02	8.00 + 0.30 - 0.10	9.50 ± 1.00
	(inch)	0.069 ± 0.004	0.138 ± 0.002	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.009 ± 0.001	0.315 + 0.012 - 0.004	0.374 ± 0.039

Marking Code

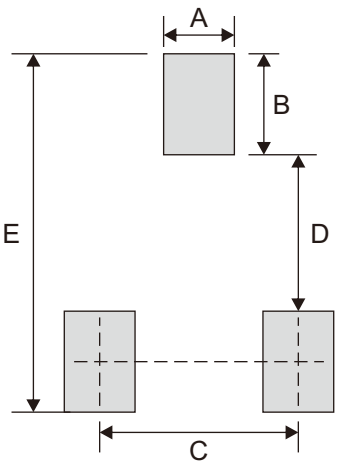
Part Number	Marking Code
ADTC113ZE-HF	E21
ADTC114WE-HF	84
ADTC114YE-HF	64
ADTC123JE-HF	E42
ADTC123YE-HF	62
ADTC143XE-HF	43•
ADTC143ZE-HF	E23
ADTC124XE-HF	N18



xx/xxx = Product type marking code

Suggested P.C.B. PAD Layout

SIZE	SOT-523	
	(mm)	(inch)
A	0.356	0.014
B	0.508	0.020
C	1.00	0.039
D	0.787	0.031
E	1.803	0.071



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOT-523	3,000	7