

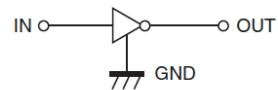
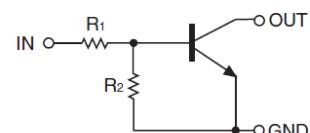


## Features

- Simplifies Circuit Design.
- Reduces Board Space and Component Count.
- 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



**SOT-23**



## Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
HDT143ZCAT116	SOT-23	A8K	3000

## Maxmim Ratings (Ta=25 °C unless otherwise noted)

Symbol	Parameter	Limits	Unit
V <sub>CBO</sub>	Collector-Base Voltage	50	V
V <sub>CEO</sub>	Collector-Emitter Voltage	50	V
I <sub>C</sub>	Collector Current	100	mA
P <sub>D</sub>	Total Power Dissipation Ta=25 °C	200	mW
T <sub>J</sub> , T <sub>stg</sub>	Operation Junction and Storage Temperature Range	-55~+150	°C

## Electrcal Charcteristics (Ta=25 °C unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-Base Cutoff Current	I <sub>CBO</sub>	V <sub>CB</sub> = 50 V, I <sub>E</sub> = 0			100	nA
Collector-Emitter Cutoff Current	I <sub>CEO</sub>	V <sub>CB</sub> = 50 V, I <sub>B</sub> = 0			500	nA
Emitter-Base Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> = 6.0 V, I <sub>C</sub> = 0			180	nA
Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> = 10 μA, I <sub>E</sub> = 0	50			V
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> = 2mA, I <sub>B</sub> = 0	50			V
DC Current Gain	h <sub>FE</sub>	V <sub>CE</sub> = 10 V, I <sub>C</sub> = 5.0 mA	80	200		
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> = 10mA, I <sub>B</sub> = 0			0.25	V
Output Voltage (on)	V <sub>OL</sub>	V <sub>CC</sub> = 5.0 V, V <sub>B</sub> = 2.5 V, R <sub>L</sub> = 1.0 kΩ			0.2	V
Output Voltage (off)	V <sub>OH</sub>	V <sub>CC</sub> = 5.0 V, V <sub>B</sub> = 0.05 V, R <sub>L</sub> = 1.0 kΩ	4.9			V
Input Resistor	R <sub>1</sub>		3.3	4.7	6.1	V
Resistor	R <sub>1/R<sub>2</sub></sub>		0.055	0.1	0.185	V



## Typical Characteristics

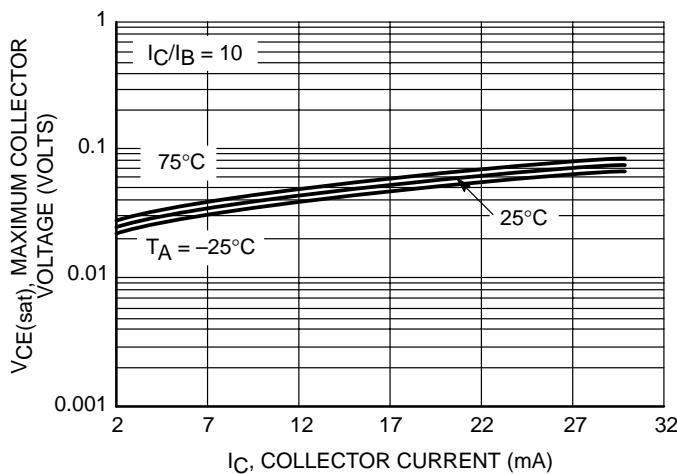


Figure 1.  $V_{CE(sat)}$  vs.  $I_C$

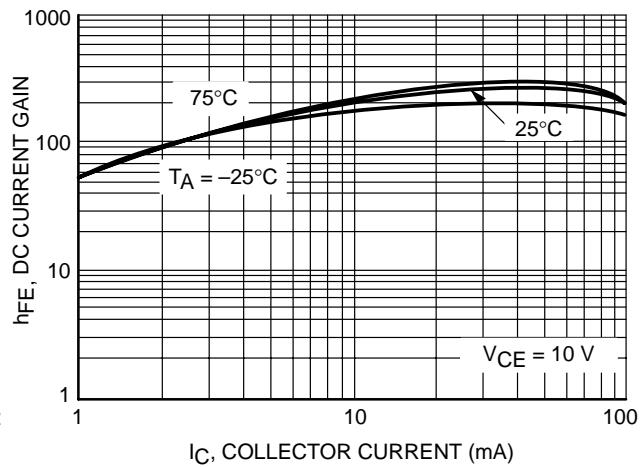


Figure 2. DC Current Gain

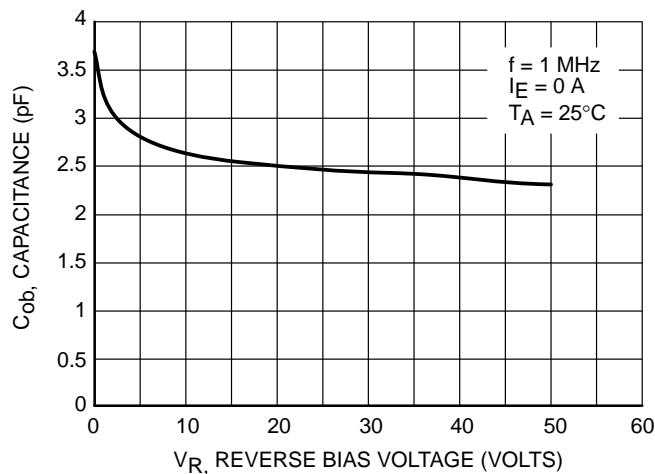


Figure 3. Output Capacitance

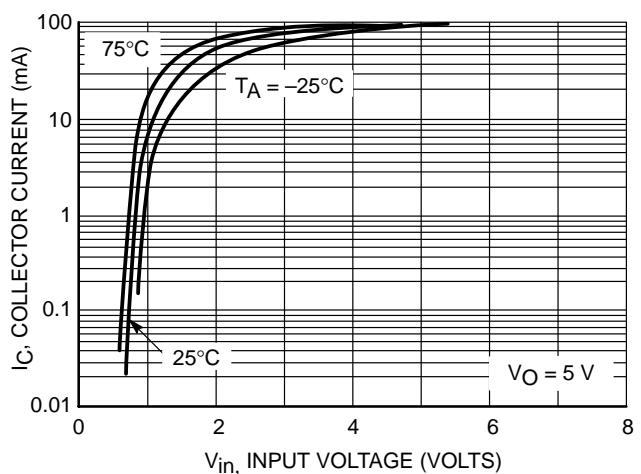


Figure 4. Output Current vs. Input Voltage

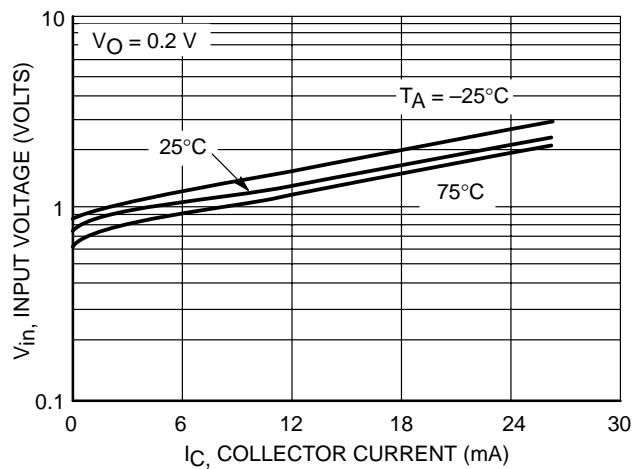
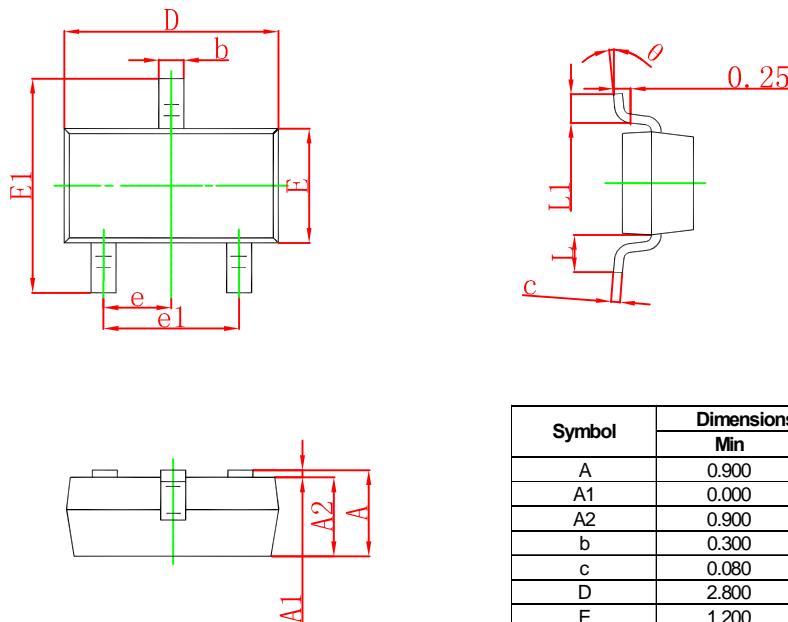


Figure 5. Input Voltage vs. Output Current

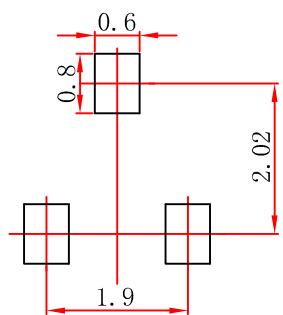


### SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

### SOT-23 Suggested Pad Layout



Note:  
1. Controlling dimension: in millimeters.  
2. General tolerance:  $\pm 0.05$ mm.  
3. The pad layout is for reference purposes only.



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