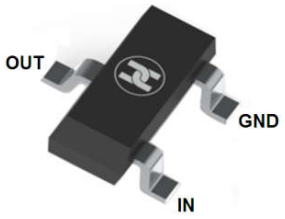
NPN SLICON TRANSISTORS (BUILT-IN RESISTORS,R1=10kΩ,R2= 47kΩ)

FEATURES

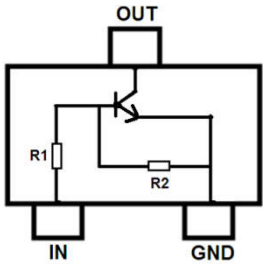
- Simplifies circuit design
- Reduces board space and component count

MECHANICAL DATA

- Case: SOT-23
- Case material: Molded plastic. UL flammability
- Classification rating: 94V-0
- Weight: 0.008 grams (approximate)



SOT-23



Equivalent circuit

Marking:: A8D

MAXIMUM RATINGS (T_A = 25°C unless otherwise specified)

Parameter		Symbol	Value	Unit
Collector-emitter voltage		V_{CEO}	50	Vdc
Collector-base voltage		V_{CBO}	50	Vdc
Collector current-continuous		I_C	100	mAdc
Input forward voltage		$V_{IN(fwd)}$	40	Vdc
Input reverse voltage		$V_{IN(rev)}$	6	Vdc
Total device dissipation FR-5 board (note 1)	T = 25℃	P_D	246	mW
	Derate above T=25℃		1.6	mW/℃
Thermal resistance, junction to ambient (note 1)		$R_{\theta JA}$	625	℃/W
Junction and storage temperature		T_J,T_{STG}	-65 to +150	°C

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

Parameter	Symbol	Min	Typ.	Max	Unit	Conditions
Collector−base cutoff current	I_{CBO}			100	nAdc	V_{CB} = 50 V, I_E = 0
Collector−emitter cutoff current	I_{CEO}			500	nAdc	V_{CE} = 50 V, I_B = 0
Emitter−base cutoff current	I_{EBO}			0.2	nAdc	V_{EB} = 6.0 V, I_C = 0
Collector−base breakdown voltage	$V_{(BR)CBO}$	50			Vdc	I_C=10μA, I_E = 0
Collector−emitter breakdown voltage (note 2)	$V_{(BR)CEO}$	50			Vdc	I_C =2.0mA, I_B = 0
DC current gain (note 2)	h_{FE}	80	140			I_C=5.0mA,V_{CE}=10V
Collector ┐emitter saturation voltage (note 2)	$V_{CE(sat)}$			0.25	Vdc	I_C=10mA, I_B= 0.3 mA
Input voltage (off)	$V_{i(off)}$		0.5	0.7	Vdc	V_{CE}=5.0V,I_C=100μA
Input voltage (on)	$V_{i(on)}$	1.4	0.8		Vdc	V_{CE}=0.3V,I_C=1.0mA
Output voltage (on)	V_{OL}			0.2	Vdc	V_{CC}=5.0V,V_B=2.5V, R_L=1.0kΩ
Output voltage (off)	V_{OH}	4.9			Vdc	V_{CC}=5.0V,V_B=0.5V, R_L=1.0kΩ
Input resistor	R1	7.0	10	13	kΩ	
Resistor Ratio	R1/R2	0.17	0.21	0.25		

Note: 1.FR-4 @ minimum pad; 2.Pulse Test: Pulse Width < 300 ms, Duty Cycle < 2.0%

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TYPICAL CHARACTERISTICS

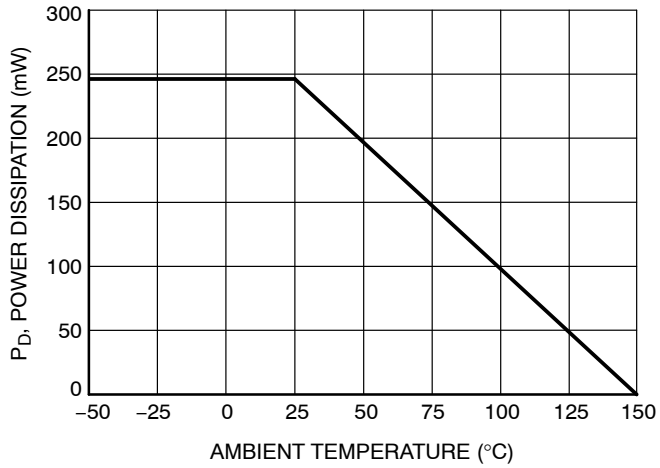


Figure 1. Derating Curve

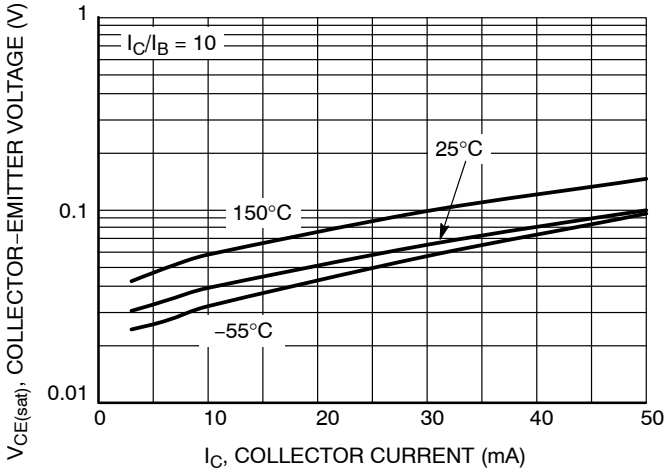


Figure 2. $V_{CE(sat)}$ vs. I_C

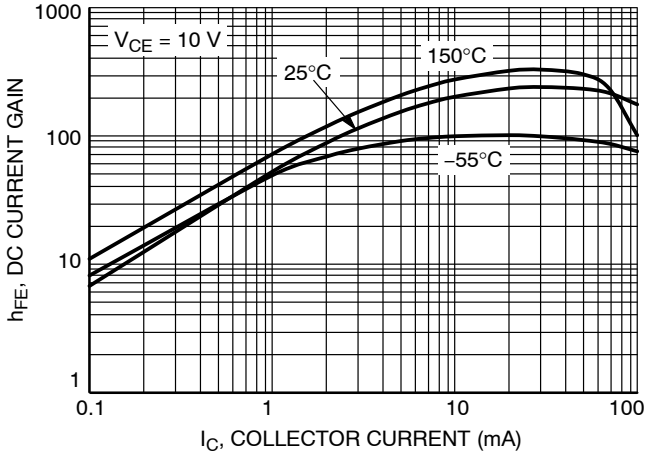


Figure 3. DC Current Gain

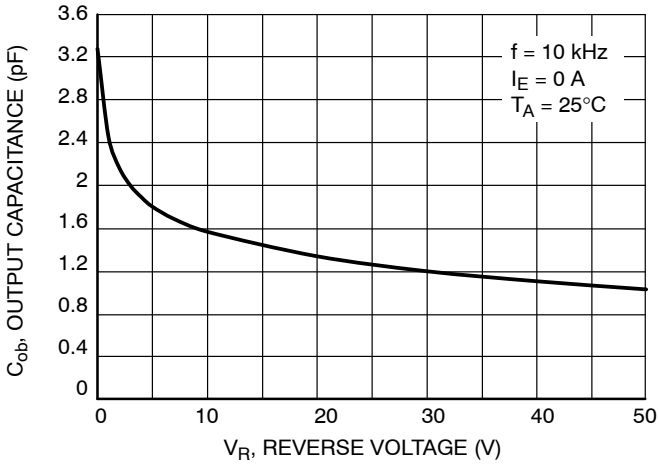


Figure 4. Output Capacitance

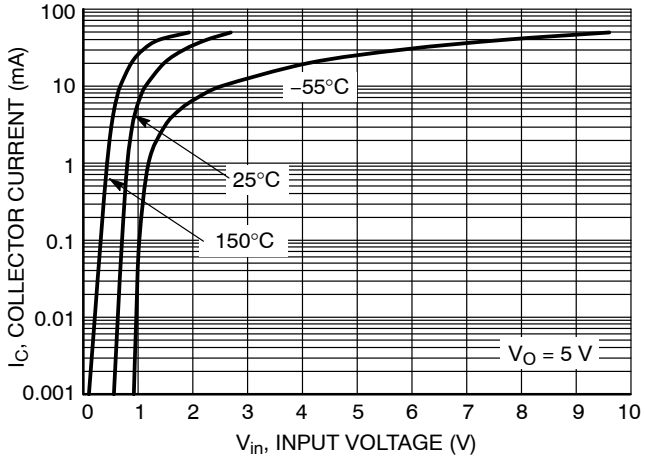


Figure 5. Output Current vs. Input Voltage

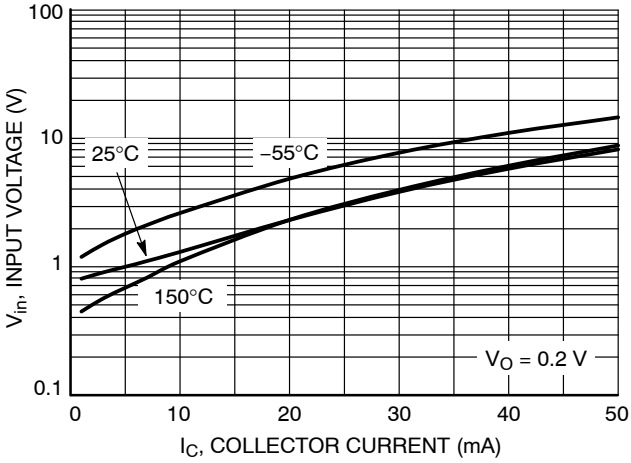


Figure 6. Input Voltage vs. Output Current

NPN SLICON TRANSISTORS (BUILT-IN RESISTORS,R1=10kΩ,R2= 47kΩ)

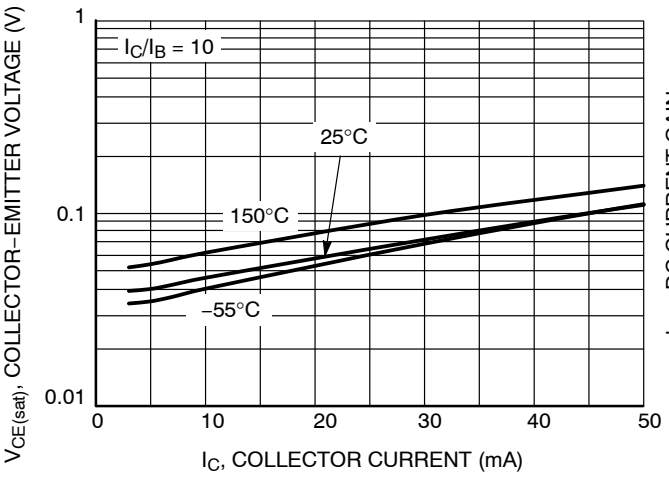


Figure 7. $V_{CE(sat)}$ vs. I_C

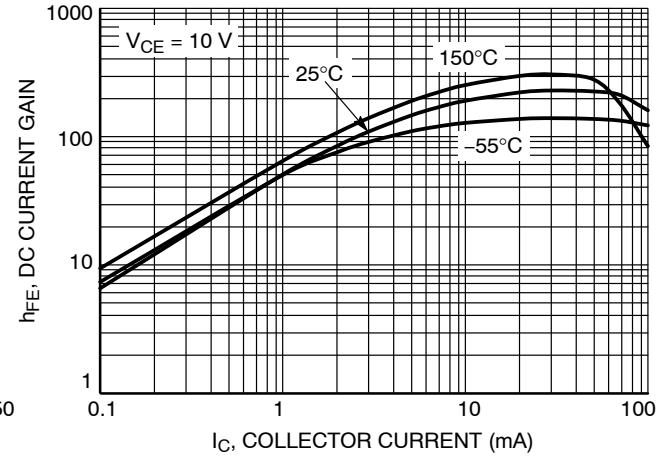


Figure 8. DC Current Gain

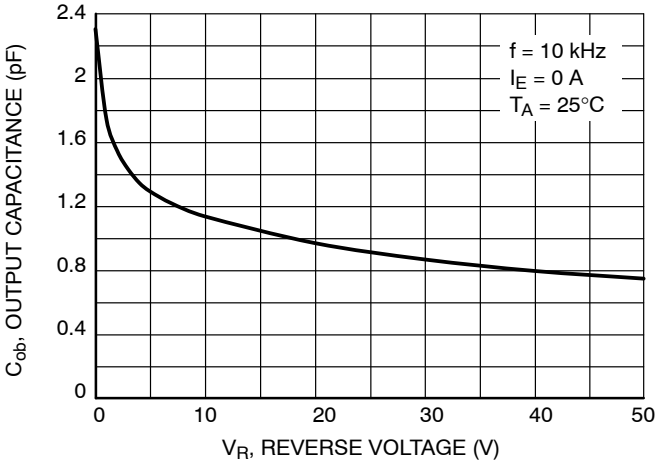


Figure 9. Output Capacitance

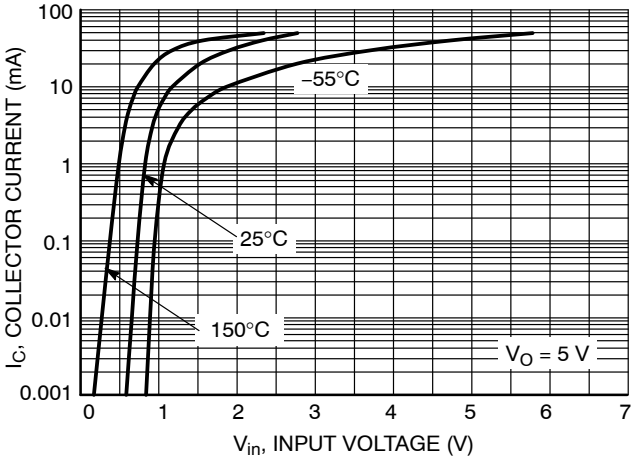


Figure 10. Output Current vs. Input Voltage

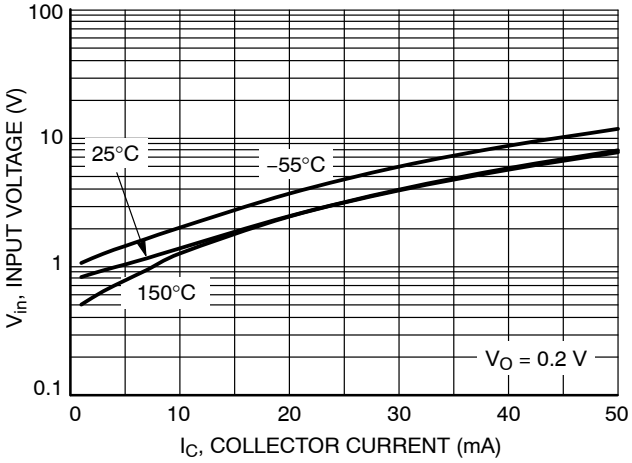
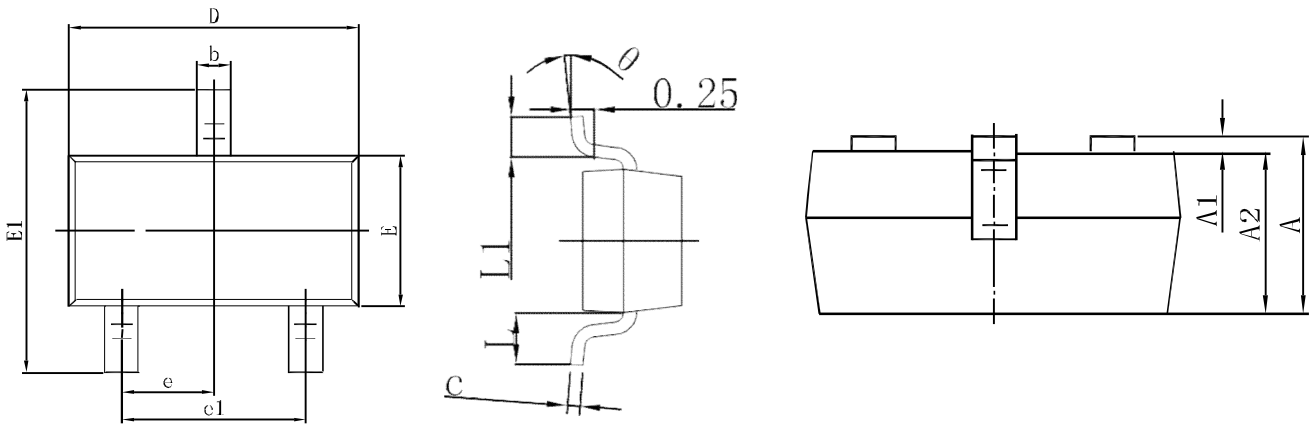


Figure 11. Input Voltage vs. Output Current

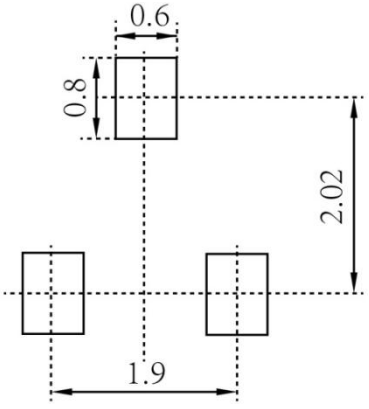
NPN SLICON TRANSISTORS (BUILT-IN RESISTORS,R1=10kΩ,R2= 47kΩ)

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

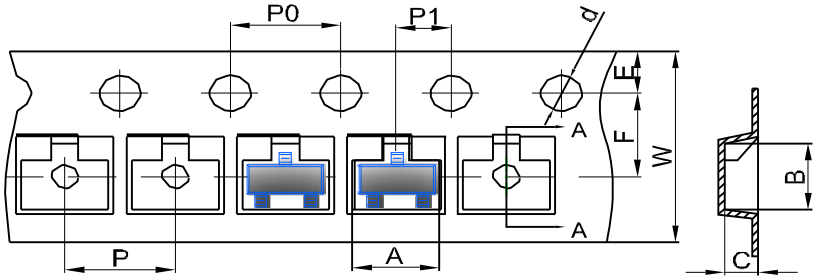
2.General tolerance: ±0.05mm

3.The pad layout is for reference purposes only

NPN SLICON TRANSISTORS (BUILT-IN RESISTORS,R1=10kΩ,R2= 47kΩ)

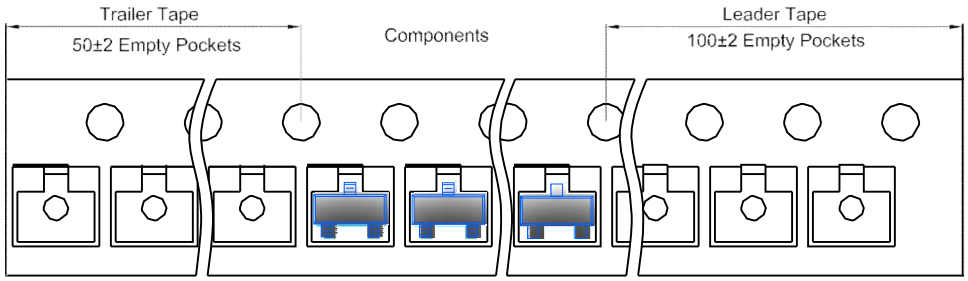
SOT-23 TAPE AND REEL

SOT-23 Embossed Carrier Tape

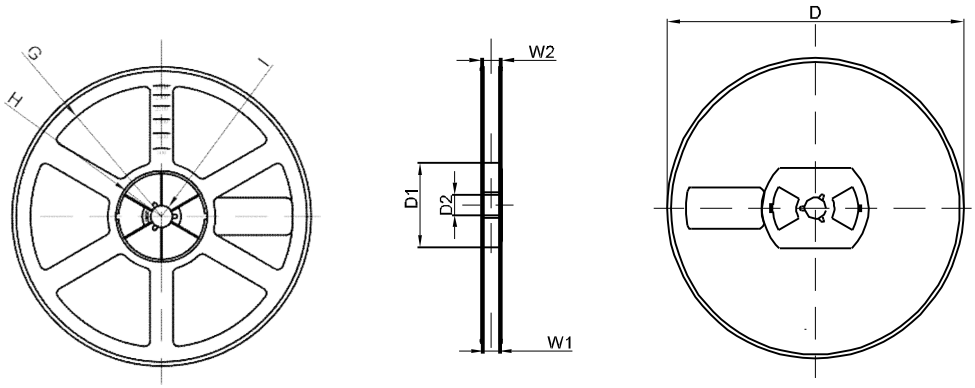


	DIMENSIONS ARE IN MILLIMETER									
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

SOT-23 Tape Leader and Trailer



SOT-23 Reel



	DIMENSIONS ARE IN MILLIMETER							
REEL OPTION	D	D1	D2	G	H	I	W1	W2
7” DIA	Ø178	54.40	13.00	R78	R25.60	R6.50	9.50	12.30
TOLERANCE	±2	±1	±1	±1	±1	±1	±1	±1