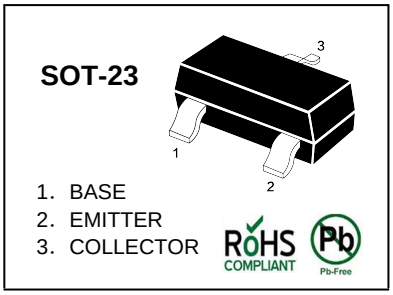
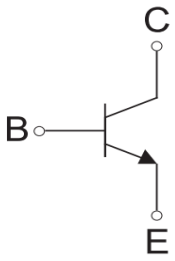
NPN General Purpose Amplifier

For low noise, high gain, general purpose amplifier applications at collector currents from 1μA to 50mA.



Equivalent Circuit



Absolute Maximum Ratings (T_a = 25 C)

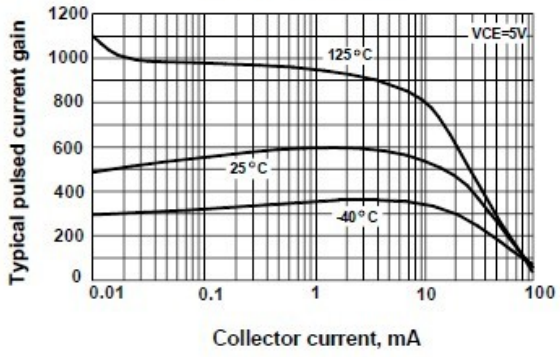
Parameter	Symbol	Value	Unit
Collector Emitter Voltage	V_{CEO}	25	V
Collector Base Voltage	V_{CBO}	30	V
Emitter Base Voltage	V_{EBO}	4.5	V
Collector Current - Continuous	I_C	100	mA
Total Device Dissipation Derate above 25°C	P_{tot}	200 2.8	mW mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	357	°C/W
Operating and Storage Junction Temperature Range	T_J,T_S	-55 to +150	°C

Characteristics at T_{amb}=25 °C

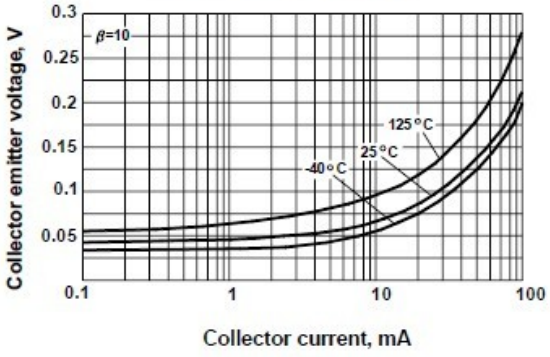
Parameter	Symbol	Min.	Max.	Unit
DC Current Gain				
at V_{CE}=5V, I_C=100μA	h_{FE}	400	1200	-
at V_{CE}=5V, I_C=1mA	h_{FE}	450	-	-
at V_{CE}=5V, I_C=10mA	h_{FE}	400	-	-
Small Signal Current Gain				
at V_{CE}=5V, I_C=1mA, f=1KHz	h_{fe}	450	1800	-
Collector Base Breakdown Voltage				
at I_C=100μA	$V_{(BR)CBO}$	30	-	V
Collector Emitter Breakdown Voltage				
at I_C=1mA	$V_{(BR)CEO}$	25	-	V
Collector Emitter Saturation Voltage				
at I_C=10mA, I_B=1mA	V_{CEsat}	-	0.5	V
Base Emitter On Voltage				
at I_C=10mA, V_{CE}=5V	V_{BEon}	-	0.8	V
Collector Cutoff Current				
at V_{CB}=15V	I_{CBO}	-	50	nA
Emitter Cutoff Current				
at V_{EB}=3V	I_{EBO}	-	50	nA
at V_{EB}=4.5V	I_{EBO}	-	100	nA
Gain Bandwidth Product				
at V_{CE}=5V, I_C=500μA, f=20MHz	f_T	50	-	MHz
Collector Base Capacitance				
at V_{CB}=5V, f = 100KHz	C_{cb}	-	4	pF
Emitter Base Capacitance				
at V_{BE}=0.5V, f = 100KHz	C_{eb}	-	10	pF
Noise Figure				
at V_{CE}=5V, I_C=100μA, Rs=10KΩ, f = 10Hz to 15.7KHz	NF	-	2	dB

Typical Characteristics

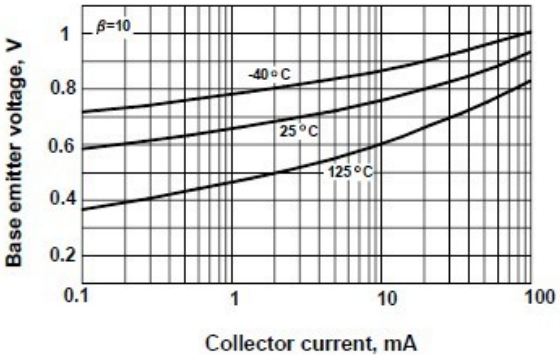
Typical pulsed current gain vs. collector current



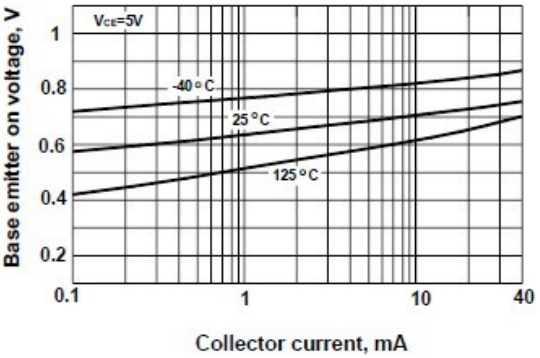
Collector emitter saturation voltage vs.collector current



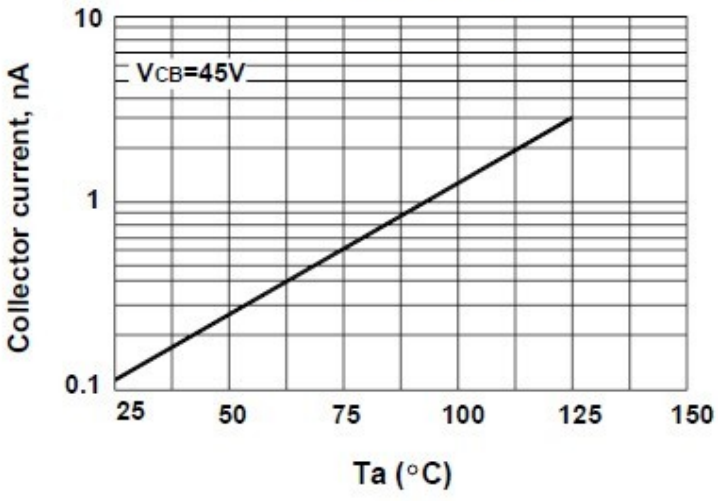
Base emitter saturation voltage vs.collector current



Base emitter on voltage vs.collector current

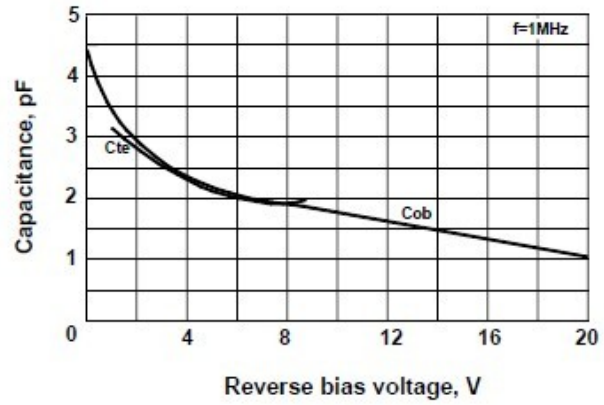


Collector cutoff current vs. ambient temperature

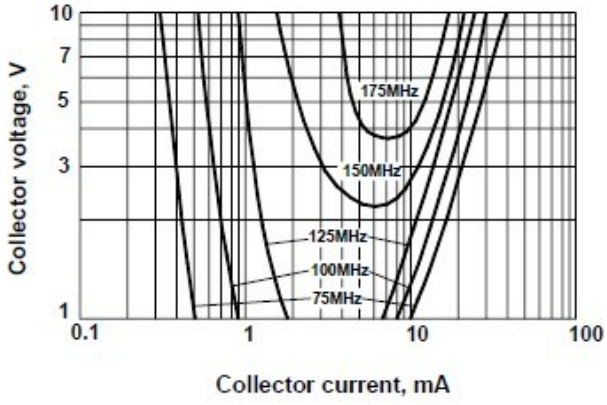


Typical Characteristics

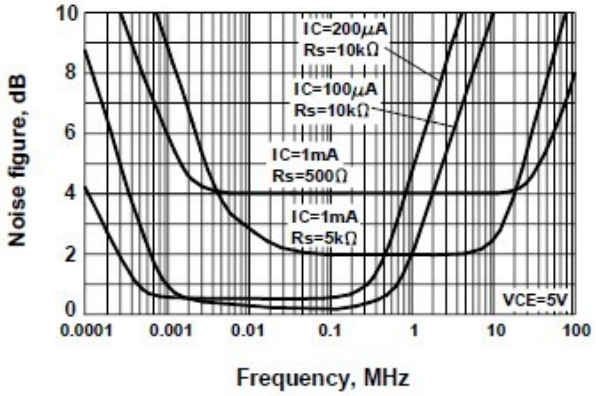
Input and output capacitance vs. reverse bias voltage



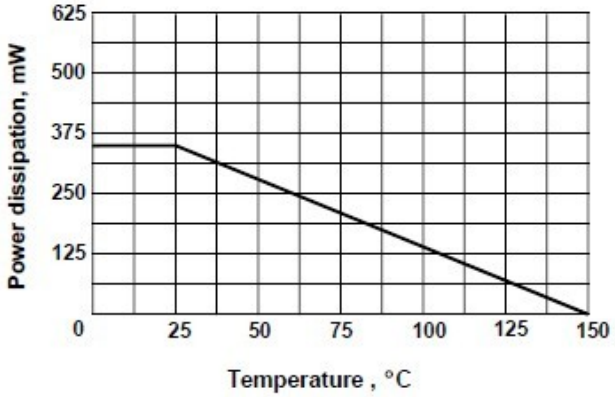
Contours of constant gain bandwidth product



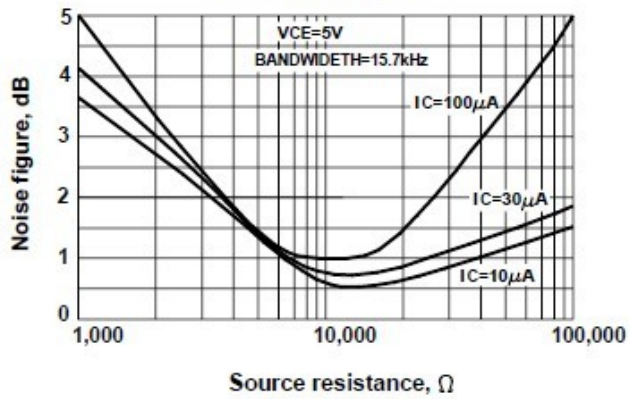
Noise figure vs. frequency



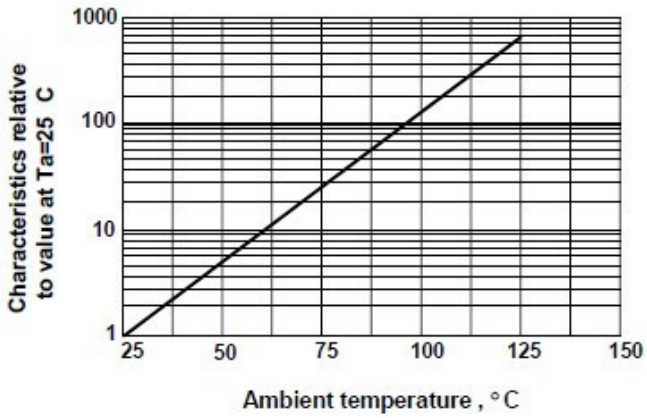
Power dissipation vs. ambient temperature



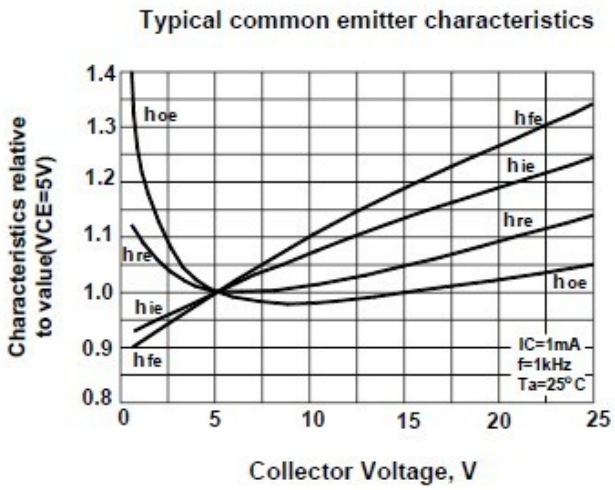
Wideband noise frequency vs. source resistance

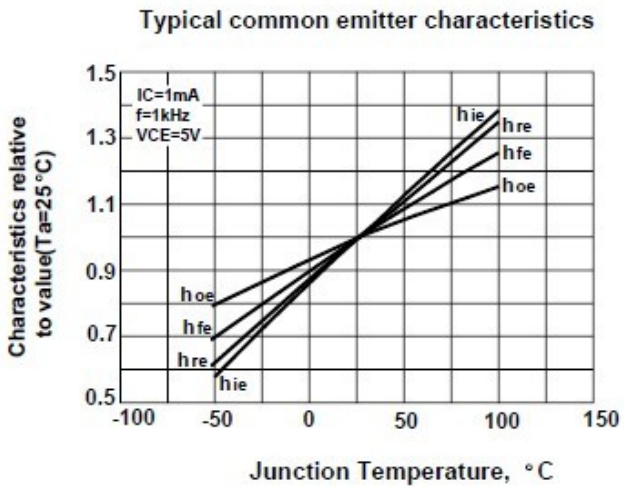


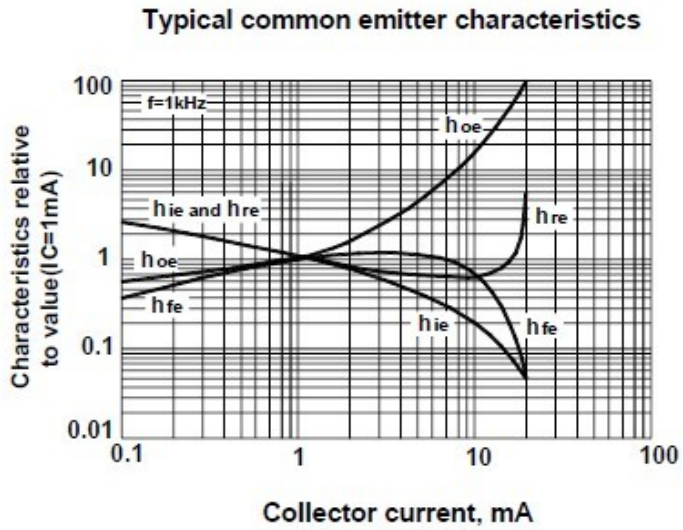
Normalized collector cutoff current vs. ambient temperature



Typical Characteristics

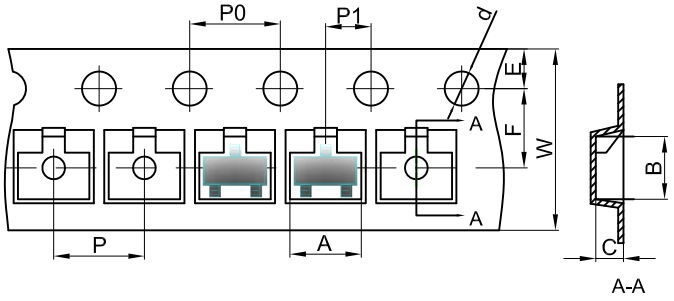






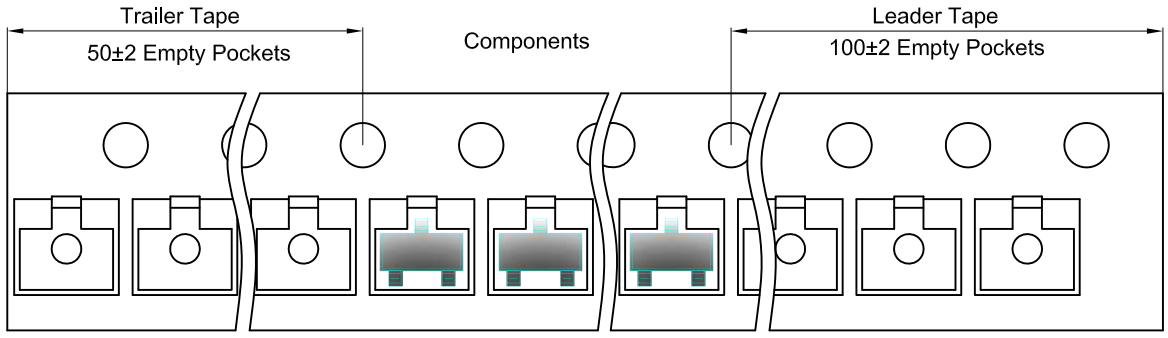
SOT-23 Tape and Reel

SOT-23 Embossed Carrier Tape

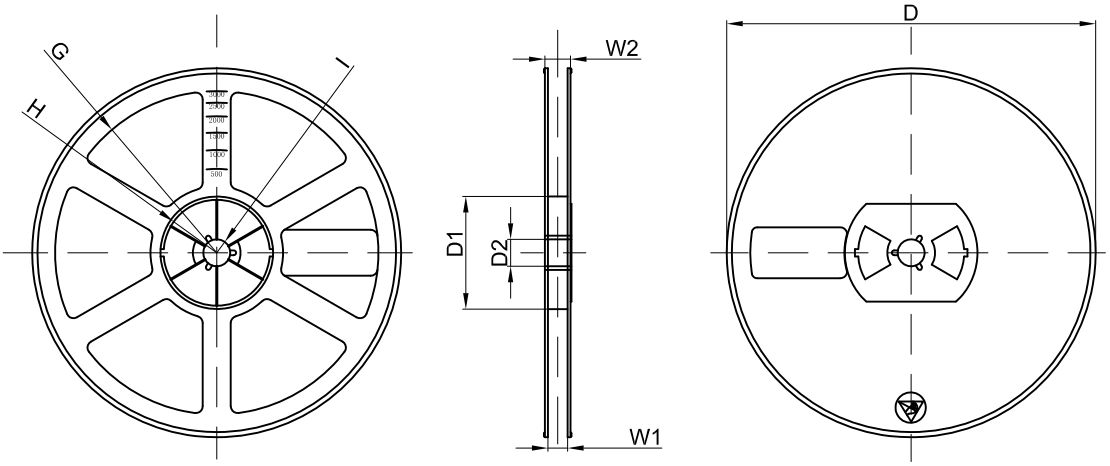


Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 Tape Leader and Trailer

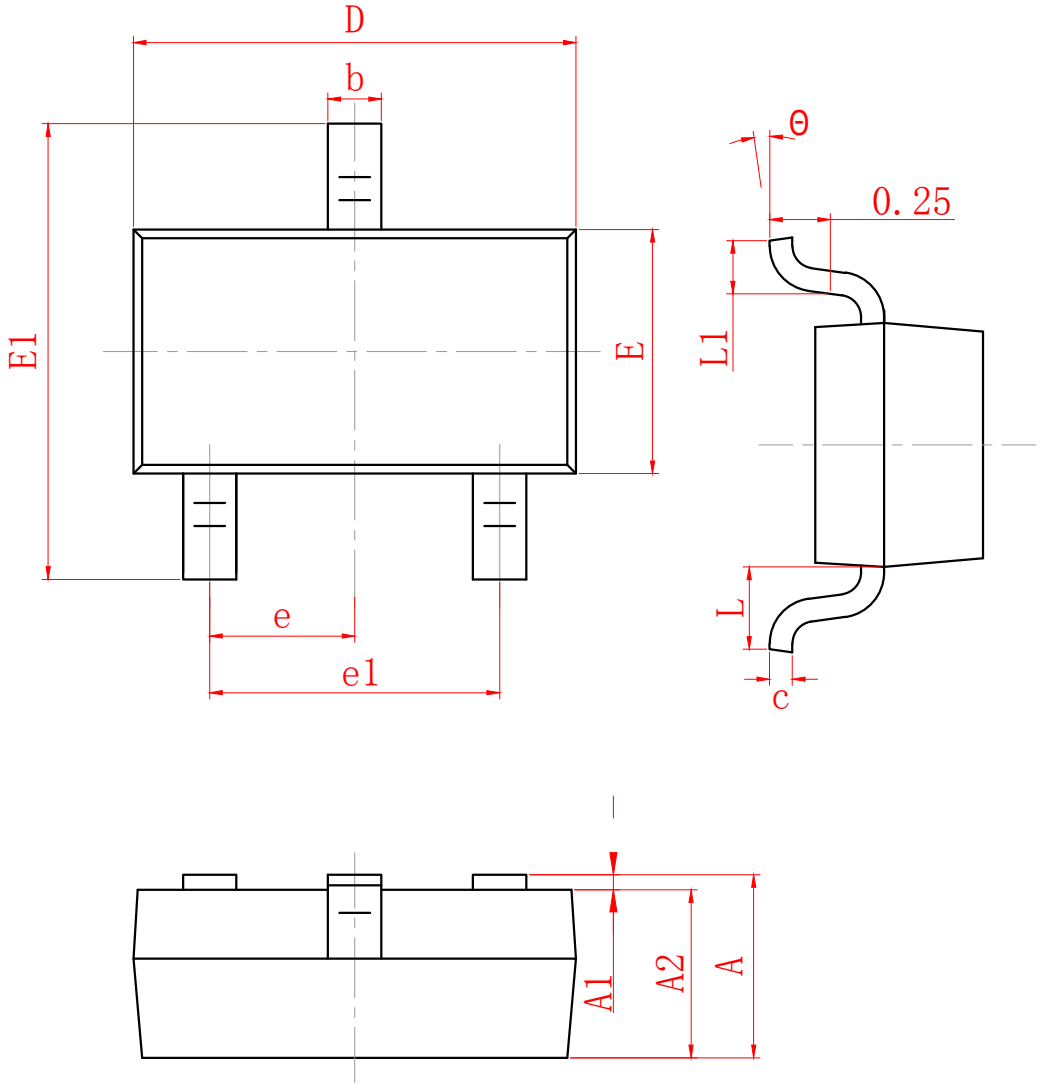


SOT-23 Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	45,000 pcs	203×203×195	180,000 pcs	438×438×220	



SYMBOL	MILLIMETER	
	MIN	MAX
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950 TYP	
e1	1.800	2.000
L	0.550 REF	
L1	0.300	0.500
θ	0°	8°

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