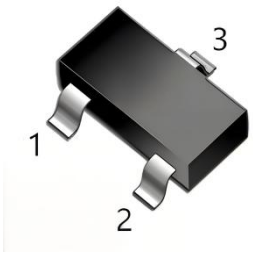
TRANSISTOR (NPN)

Parameter	Value	Unit
V_{CEO}	12	V
I_C	100	mA

1. BASE
2. EMITTER
3. COLLECTOR



SOT-23

Features

- Low Noise and High Gain
- High Power Gain

Applications

- low noise amplifier at VHF, UHF and CATV band applications.

Absolute Maximum Ratings (Ta=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	20	V
V_{CEO}	Collector-Emitter Voltage	12	V
V_{EBO}	Emitter-Base Voltage	3	V
I_C	Collector Current -Continuous	100	mA
P_C	Collector Power Dissipation	200	mW
$R_{\Theta JA}$	Thermal Resistance From Junction To Ambient	625	°C/W
T_J, T_{STG}	Operation Junction and Storage Temperature Range	-55 to +150	°C

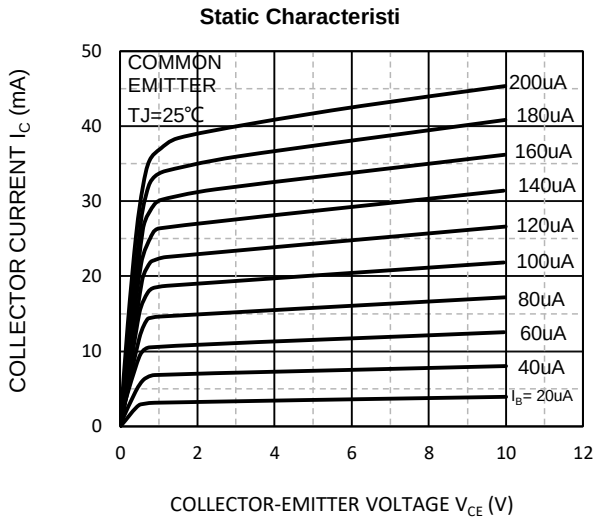
Electrical Characteristics(Ta=25°C unless otherwise noted)

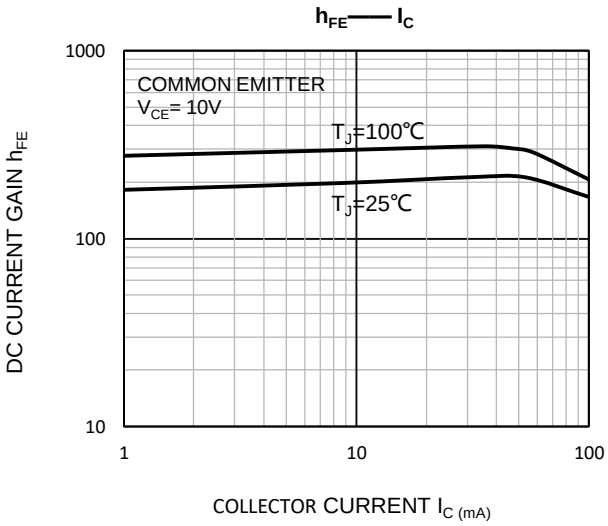
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	V_{CBO}	I_C=100μA, I_E=0	20	--	--	V
Collector-emitter breakdown voltage	V_{CEO}	I_C=1mA, I_B=0	12	--	--	V
Emitter-base breakdown voltage	V_{EBO}	I_E=100μA, I_C=0	3	--	--	V
Collector cut-off current	I_{CBO}	V_{CB}=10V, I_E=0	--	--	1	μA
Emitter cut-off current	I_{EBO}	V_{EB}=1V, I_C=0	--	--	1	μA
DC Current Gain	h_{FE}	V_{CE}=10V, I_C=20mA	50	--	250	
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=50mA, I_B=5mA	--	--	0.3	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C=50mA, I_B=5mA	--	--	1.15	V
Transition frequency	f_T	V_{CE}=10V, I_C=20mA	--	7	--	GHz
Feed-Back Capacitance	C_{ob}	V_{CB}=10V,I_E=0mA f=1MHz	--	0.8	1	pF
Noise Figure	NF	V_{CE}=10V, I_C=7mA, f =1GHz	--	1.65	2	dB

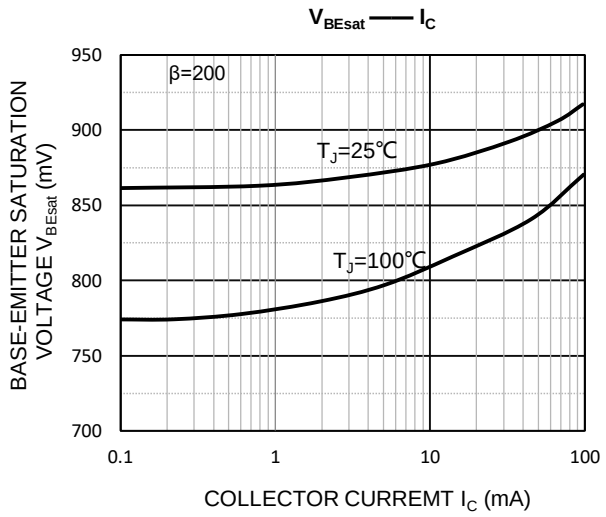
Classification of h_{FE}

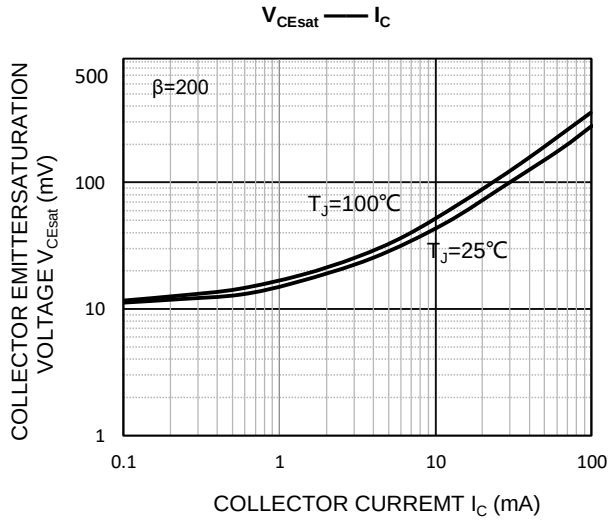
Rank	Q	R	S
Range	50-100	80-160	125-250
Marking	R23	R24	R25

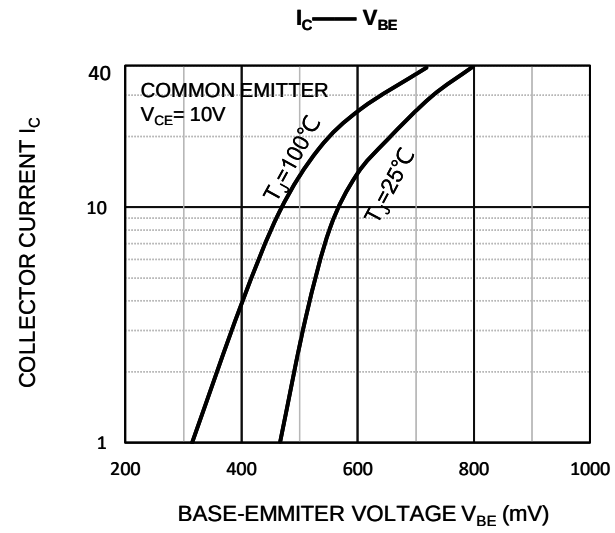
Typical Characteristics

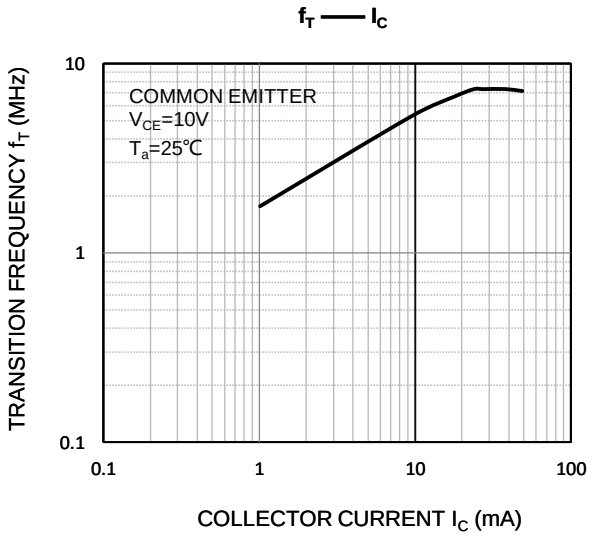


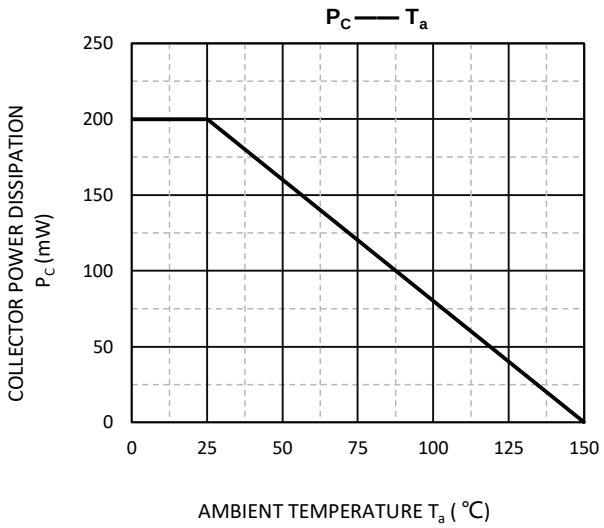






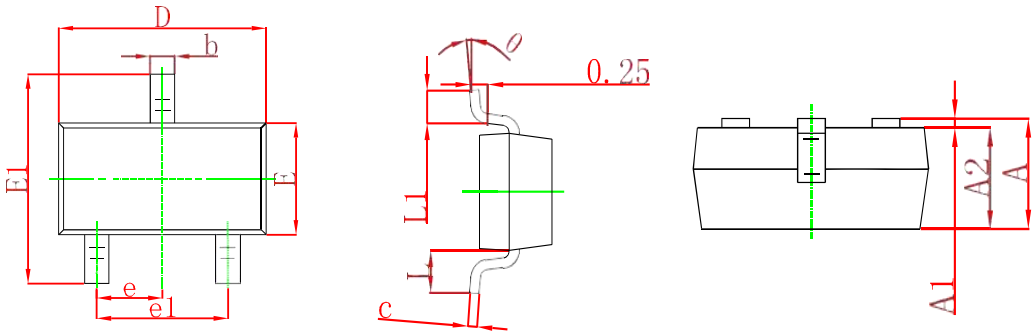

I_C—— V_{BE}
COMMON EMITTER
V_{CE}= 10V
T_J=100℃
T_J=25℃
COLLECTOR CURRENT I_C
40
10
1
200
400
600
800
1000
BASE-EMMITER VOLTAGE V_{BE} (mV)


f_T —— I_C
COMMON EMITTER
V_{CE}=10V
T_a=25℃
TRANSITION FREQUENCY f_T (MHz)
10
1
0.1
0.1
1
10
100
COLLECTOR CURRENT I_C (mA)


P_C —— T_a
COLLECTOR POWER DISSIPATION
P_C (mW)
250
200
150
100
50
0
0
25
50
75
100
125
150
AMBIENT TEMPERATURE T_a (℃)

Package Outline Dimensions

SOT-23



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°

***Important Usage Information and Disclaimer**

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