

isc Silicon NPN RF Transistor
2SC3583
DESCRIPTION

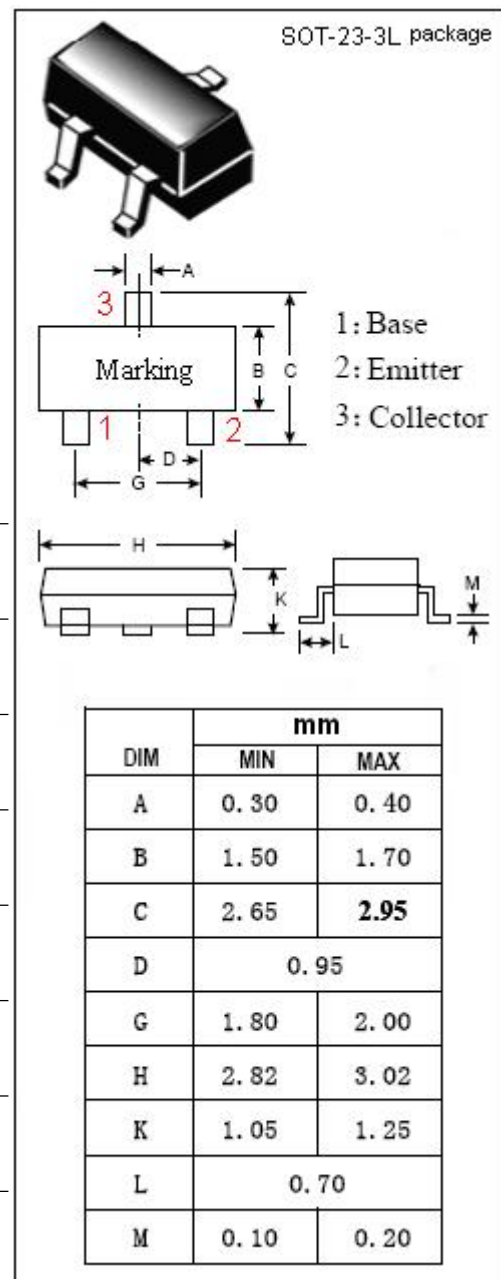
- Low Noise and High Gain
 $NF = 1.2 \text{ dB TYP.}, G_a = 11 \text{ dB TYP.}$
 $@V_{CE} = 8 \text{ V}, I_c = 7 \text{ mA}, f = 1.0 \text{ GHz}$
- High Power Gain
 $MAG = 15\text{dB TYP.}$
 $@V_{CE} = 8\text{V}, I_c = 20 \text{ mA}, f = 1.0 \text{ GHz}$
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

APPLICATIONS

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

ABSOLUTE MAXIMUM RATINGS($T_a=25^\circ\text{C}$)

SYMBOL	PARAMETER	VALUE	UNIT
V_{CBO}	Collector-Base Voltage	20	V
V_{CEO}	Collector-Emitter Voltage	10	V
V_{EBO}	Emitter-Base Voltage	1.5	V
I_c	Collector Current-Continuous	65	mA
P_c	Collector Power Dissipation @ $T_c=25^\circ\text{C}$	200	mW
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{stg}	Storage Temperature Range	-65~150	$^\circ\text{C}$



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ELECTRICAL CHARACTERISTICS

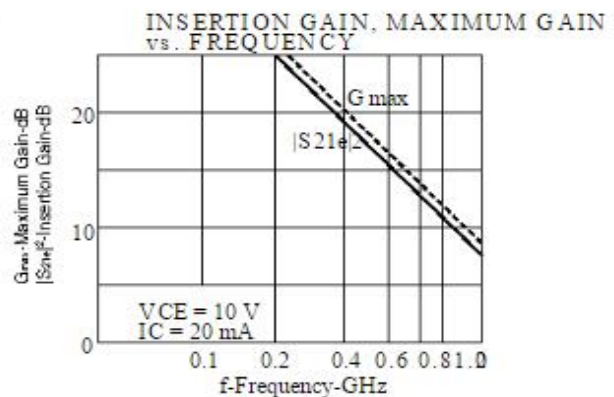
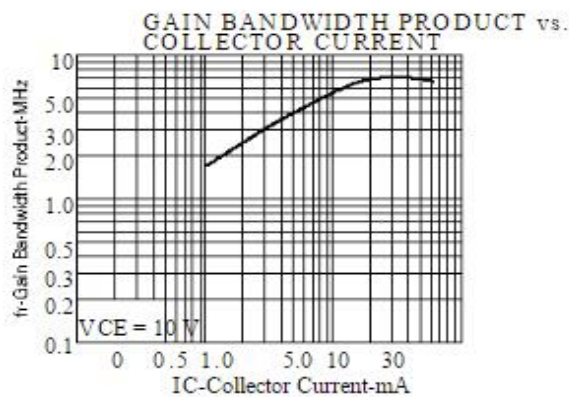
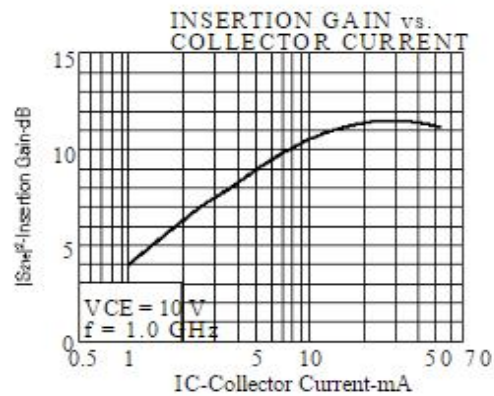
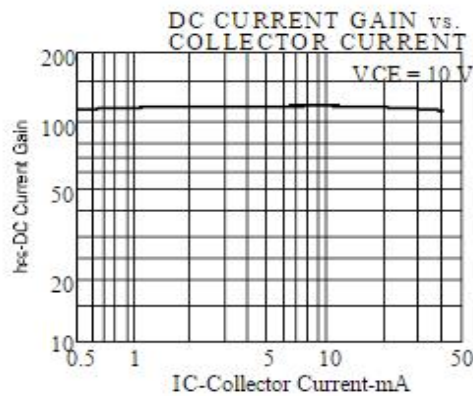
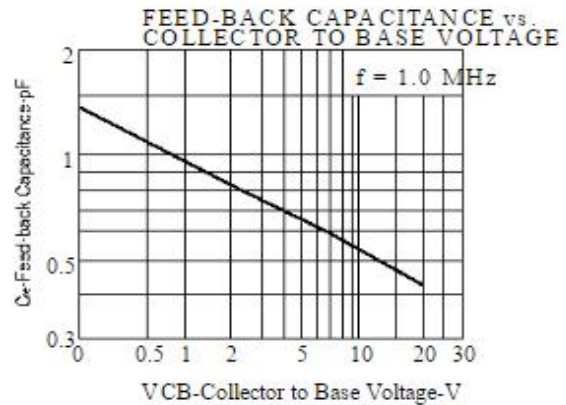
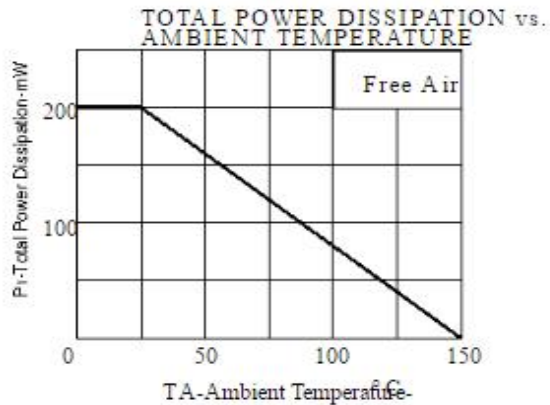
 T_c=25°C unless otherwise specified

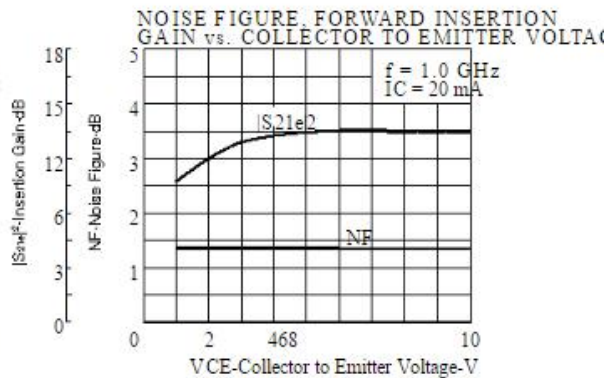
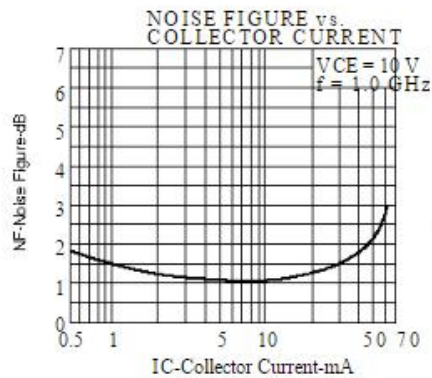
SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
I _{CB0}	Collector Cutoff Current	V _{CB} = 10V; I _E = 0			1.0	μ A
I _{EB0}	Emitter Cutoff Current	V _{EB} = 1V; I _C = 0			1.0	μ A
h _{FE}	DC Current Gain	I _C = 20mA ; V _{CE} = 10V	50		250	
f _T	Current-Gain—Bandwidth Product	I _C = 20mA ; V _{CE} = 8V		9		GHz
C _{re}	Feed-Back Capacitance	I _E = 0 ; V _{CB} = 10V;f= 1.0MHz		0.35	0.9	pF
S _{21e} ²	Insertion Power Gain	I _C = 20mA ; V _{CE} = 8V;f= 1.0GHz	11	13		dB
MAG	Maximum Available Gain	I _C = 20mA ; V _{CE} = 8V;f= 1.0GHz		15		dB
NF	Noise Figure	I _C = 7mA ; V _{CE} = 8V;f= 1.0GHz		1.2	2.5	dB

◆ h_{FE} Classification

Class	Q	R	S
Marking	R23	R24	R25
h _{FE}	50-100	80-160	125-250

TYPICAL CHARACTERISTICS (TA=25)



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S-PARAMETER

VCE = 10 V, IC = 5 mA, ZO = 60

f (MHz)	rS11	∠S11	rS21	∠S21	rS12	∠S12	rS22	∠S22
200	0.651	∠69.3	10.616	129.3	0.051	59.2	0.735	∠28.1
400	0.467	∠113.3	6.856	104.4	0.071	54.4	0.550	∠34.1
600	0.391	∠139.3	4.852	90.9	0.086	56.0	0.468	∠33.9
800	0.360	∠159.2	3.802	81.2	0.101	59.1	0.426	∠33.6
1000	0.360	∠176.9	3.098	72.9	0.118	61.0	0.397	∠35.7
1200	0.361	172.7	2.646	67.3	0.137	63.5	0.373	∠38.3
1400	0.381	160.3	2.298	59.3	0.157	63.3	0.360	∠43.0
1600	0.398	152.2	2.071	55.2	0.180	64.1	0.337	∠45.9
1800	0.423	143.3	1.836	49.0	0.203	63.7	0.320	∠52.3
2000	0.445	137.6	1.689	46.2	0.220	64.7	0.302	∠52.2

VCE = 10 V, IC = 5 mA, ZO = 60

f (MHz)	rS11	∠S11	rS21	∠S21	rS12	∠S12	rS22	∠S22
200	0.339	∠107.0	16.516	108.7	0.035	66.1	0.459	∠36.6
400	0.258	∠147.3	8.928	92.1	0.060	71.0	0.343	∠32.9
600	0.243	∠167.7	6.022	83.0	0.085	71.9	0.305	∠29.9
800	0.242	177.0	4.633	76.2	0.109	72.2	0.284	∠29.4
1000	0.260	164.5	3.744	69.9	0.136	70.4	0.266	∠31.7
1200	0.269	157.6	3.193	65.7	0.160	69.9	0.246	∠35.0
1400	0.294	148.7	2.750	58.8	0.187	66.7	0.233	∠40.4
1600	0.314	143.1	2.479	55.5	0.212	65.2	0.208	∠43.6
1800	0.343	136.5	2.185	50.1	0.238	62.4	0.190	∠50.5
2000	0.367	131.4	2.016	47.8	0.254	61.6	0.173	∠48.3

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