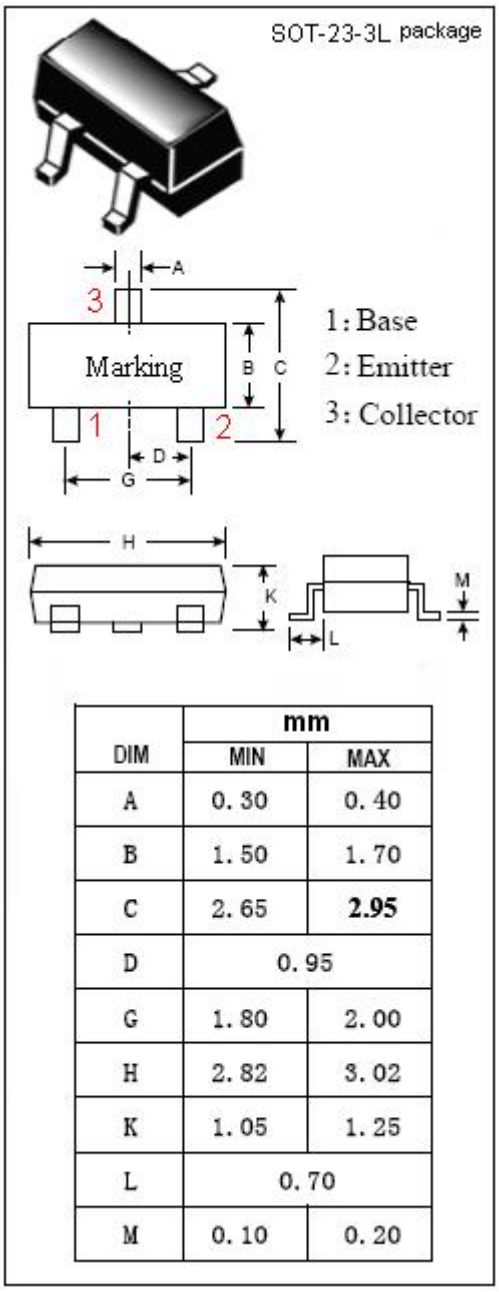
isc Silicon NPN RF Transistor 2SC3583

DESCRIPTION

- Low Noise and High Gain
  NF = 1.2 dB TYP., G_a = 11 dB TYP.
  @V_{CE} = 8 V, I_C = 7 mA, f = 1.0 GHz
- High Power Gain
  MAG = 15dB TYP.
  @V_{CE} = 8V, I_C = 20 mA, f = 1.0 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.



DIM	mm MIN	mm MAX
A	0.30	0.40
B	1.50	1.70
C	2.65	2.95
D	0.95	
G	1.80	2.00
H	2.82	3.02
K	1.05	1.25
L	0.70	
M	0.10	0.20

ABSOLUTE MAXIMUM RATINGS(T_a=25℃)

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℃	200	mW
T_J	Junction Temperature	150	℃
T_{stg}	Storage Temperature Range	-65~150	℃

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ELECTRICAL CHARACTERISTICS

T_C=25℃ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
I_{CBO}	Collector Cutoff Current	V_{CB}= 10V; I_E= 0			1.0	μA
I_{EBO}	Emitter Cutoff Current	V_{EB}= 1V; I_C= 0			1.0	μA
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

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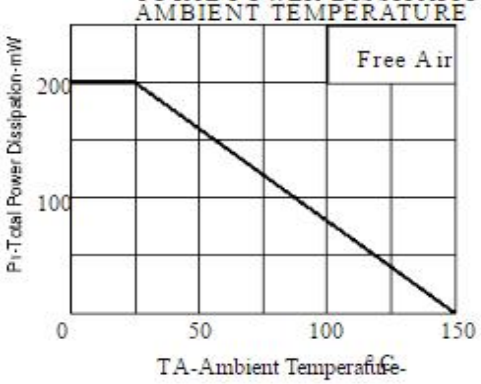
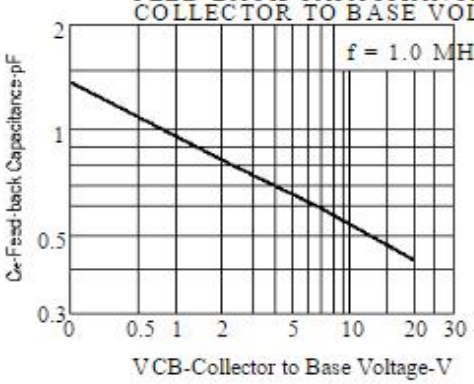
TYPICAL CHARACTERISTICS (TA=25℃)

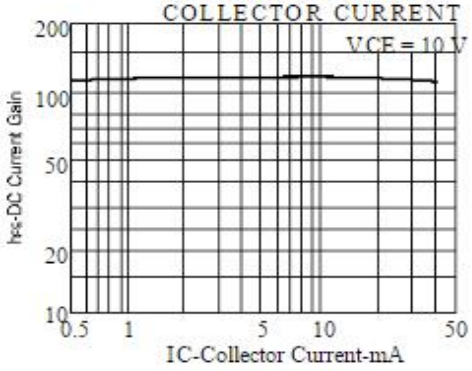
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



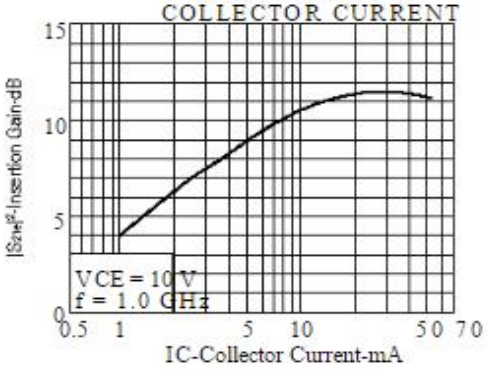
FEED-BACK CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE



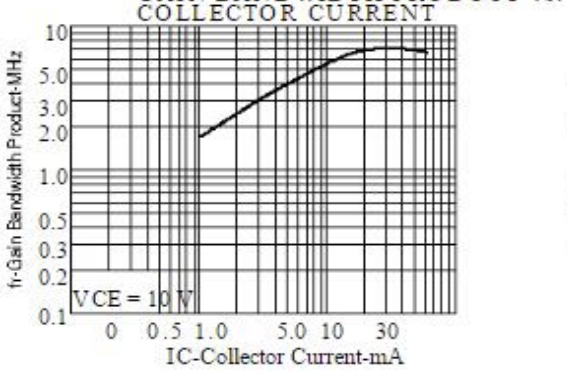
DC CURRENT GAIN vs. COLLECTOR CURRENT



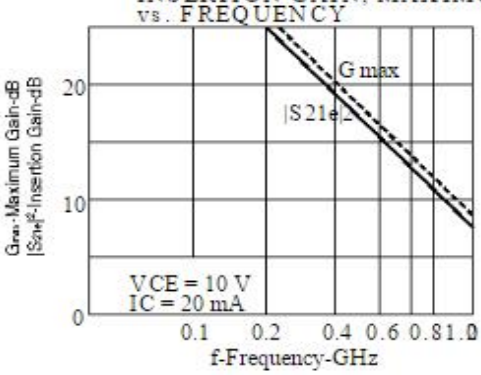
INSERTION GAIN vs. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT vs. COLLECTOR CURRENT



INSERTION GAIN, MAXIMUM GAIN vs. FREQUENCY



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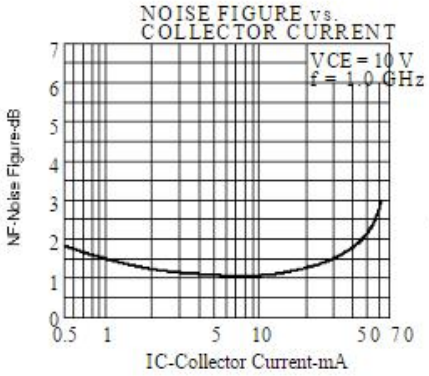

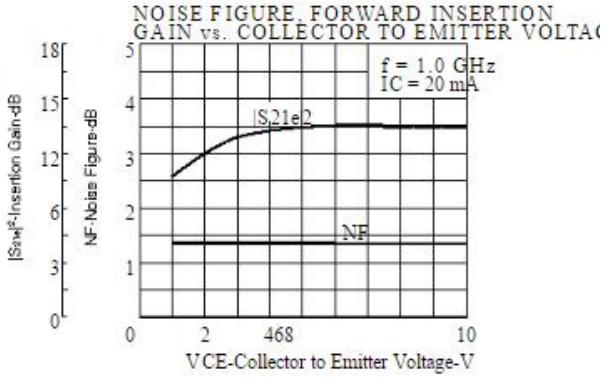

S-PARAMETER

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

f (MHz)	S11	∠S11	S21	∠S21	S12	∠S12	S22	∠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)	S11	∠S11	S21	∠S21	S12	∠S12	S22	∠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