

INCHANGE Semiconductor

ISC RF Product Specification

isc Silicon NPN RF Transistor

2SC4260

DESCRIPTION

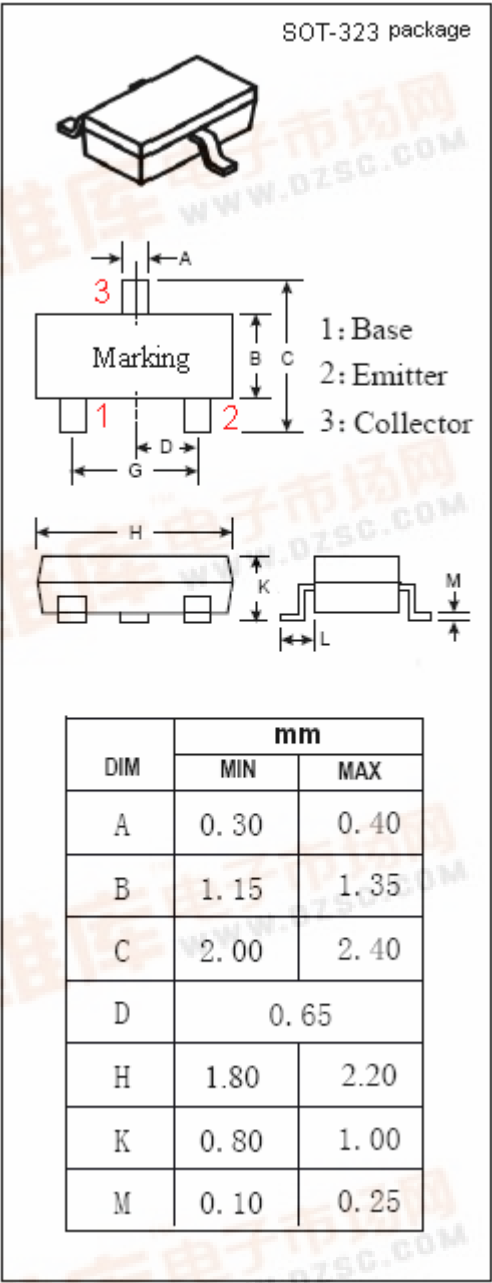
- Low Noise
- High Gain

APPLICATIONS

- Designed for use in UHF frequency converter , wide band amplifier.

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

SYMBOL	PARAMETER	VALUE	UNIT
V_{CBO}	Collector-Base Voltage	25	V
V_{CEO}	Collector-Emitter Voltage	13	V
V_{EBO}	Emitter-Base Voltage	3.0	V
I_C	Collector Current-Continuous	50	mA
P_C	Collector Power Dissipation @ $T_c=25^{\circ}\text{C}$	0.1	W
T_J	Junction Temperature	150	$^{\circ}\text{C}$
T_{stg}	Storage Temperature Range	-55~150	$^{\circ}\text{C}$



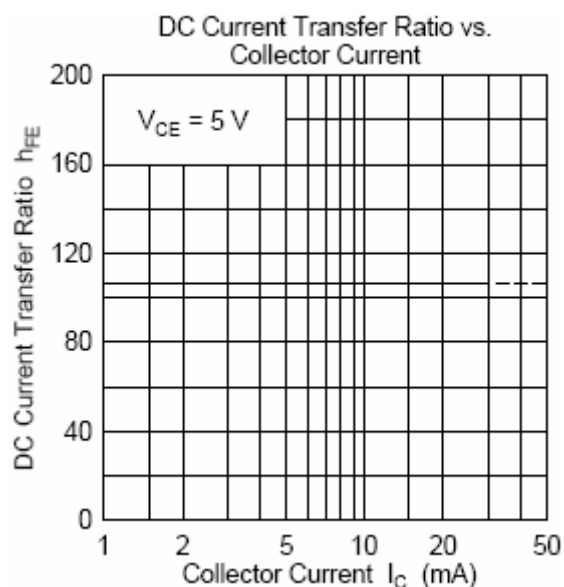
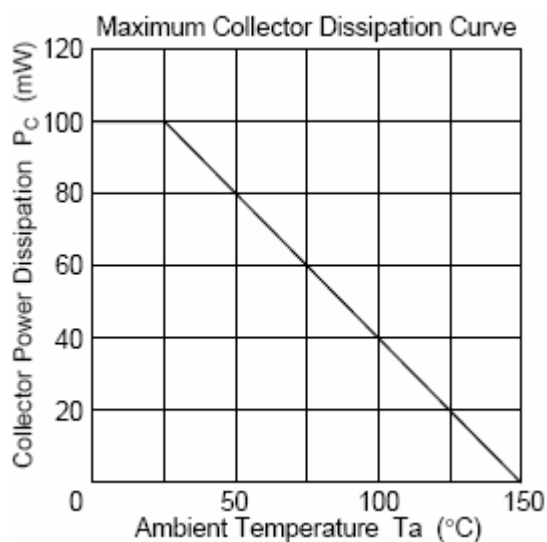
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ELECTRICAL CHARACTERISTICS

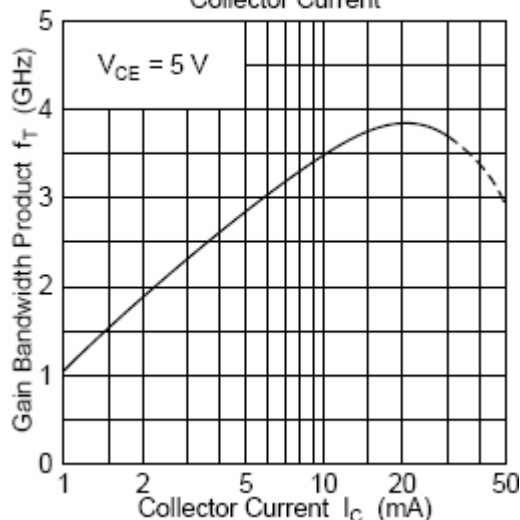
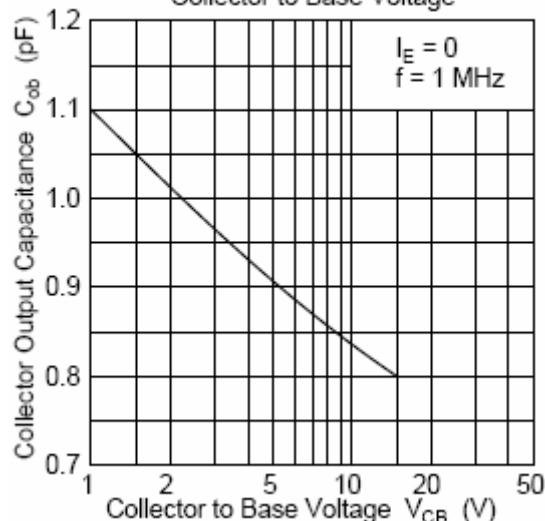
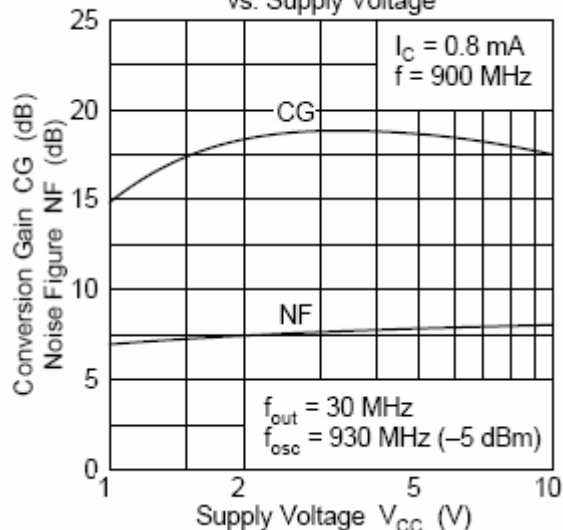
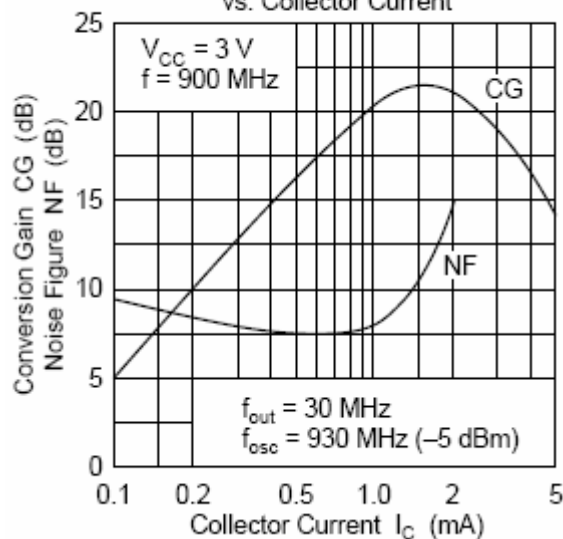
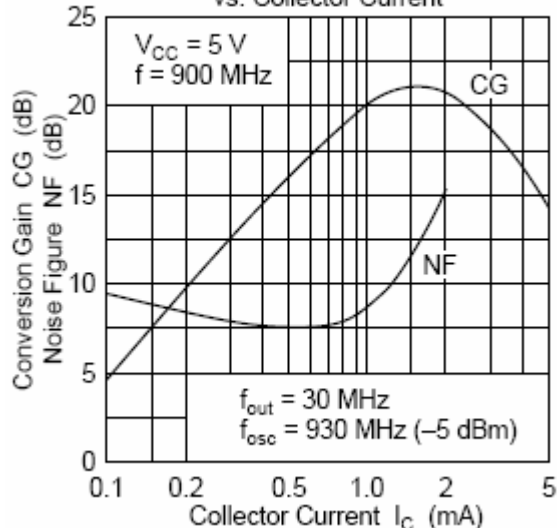
 $T_C=25^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 10\text{ }\mu\text{A}$; $I_E = 0$	25			V
I_{CBO}	Collector Cutoff Current	$V_{CB} = 15\text{V}$; $I_E = 0$			0.1	μA
I_{CEO}	Collector Cutoff Current	$V_{CE} = 13\text{V}$; $R_{BE} = \infty$			10	μA
I_{EBO}	Emitter Cutoff Current	$V_{EB} = 3\text{V}$; $I_C = 0$			0.3	μA
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 20\text{mA}$; $I_B = 4\text{mA}$			0.3	V
h_{FE}	DC Current Gain	$I_C = 5\text{mA}$; $V_{CE} = 5\text{V}$	50		180	
f_T	Current-Gain—Bandwidth Product	$I_C = 5\text{mA}$; $V_{CE} = 5\text{V}$	3.0	3.8		GHz
C_{OB}	Output Capacitance	$I_E = 0$; $V_{CB} = 10\text{V}$; $f = 1.0\text{MHz}$		0.85	1.3	pF
CG	Conversion Gain	$I_C = 0.8\text{mA}$; $V_{CC} = 5\text{V}$; $f = 900\text{MHz}$ $f_{OSC} = 930\text{MHz}$ (-5dBm), $f_{out} = 30\text{MHz}$		19		dB
NF	Noise Figure	$I_C = 0.8\text{mA}$; $V_{CC} = 5\text{V}$; $f = 900\text{MHz}$ $f_{OSC} = 930\text{MHz}$ (-5dBm), $f_{out} = 30\text{MHz}$		8		dB



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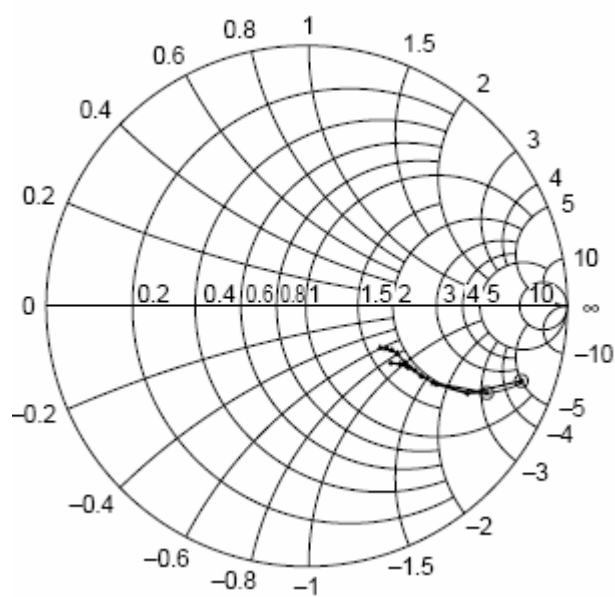
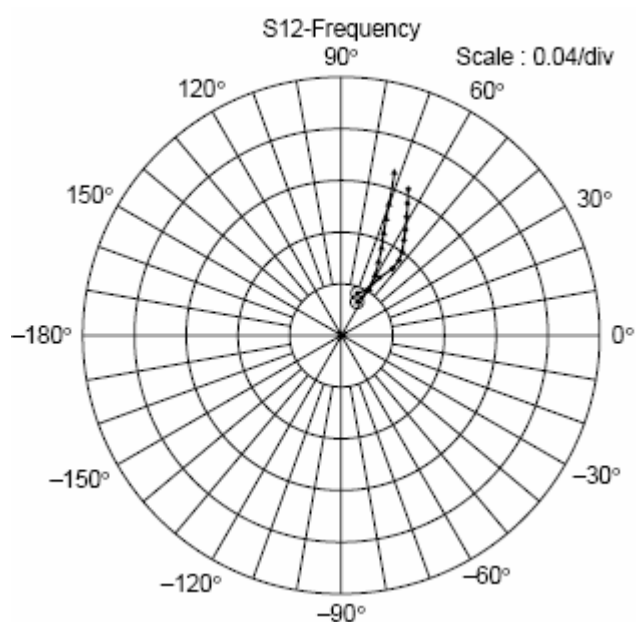
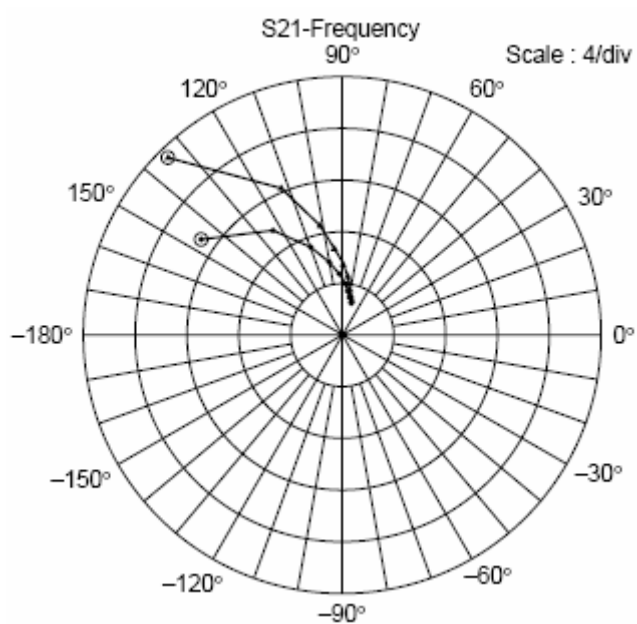
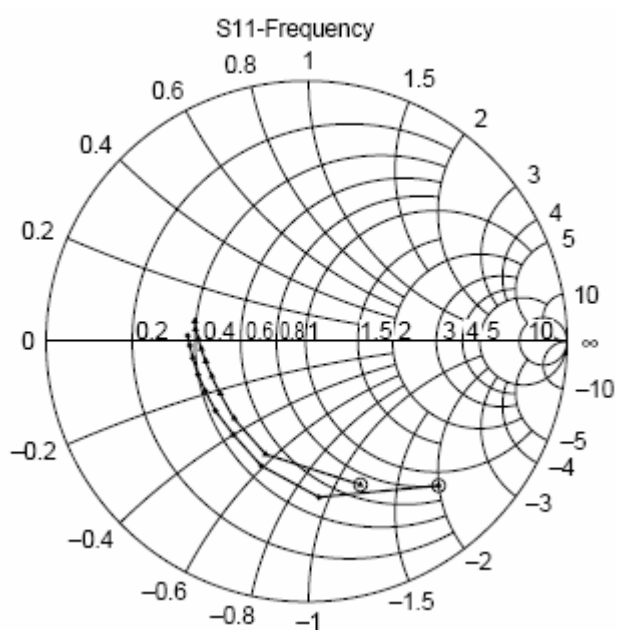
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Gain Bandwidth Product vs.
Collector CurrentCollector Output Capacitance vs.
Collector to Base VoltageConversion Gain, Noise Figure
vs. Supply VoltageConversion Gain, Noise Figure
vs. Collector CurrentConversion Gain, Noise Figure
vs. Collector Current

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S-PARAMETERS (Emitter Common)

Test Condition $V_{CE} = 5V$, 100MHz to 1000MHz (100 MHz Step), $Z_O = 50 \Omega$ $I_C = 5 \text{ mA}$ $I_C = 10 \text{ mA}$ 

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S-PARAMETERS (Emitter Common) $V_{CE} = 5\text{ V}$, $I_C = 5\text{ mA}$, $Z_0 = 50\ \Omega$

Freque.	S_{11}		S_{21}		S_{12}		S_{22}	
MHz	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.
100	0.744	-48.4	13.142	145.9	0.034	67.5	0.876	-19.1
200	0.599	-85.5	9.669	123.5	0.053	55.9	0.702	-28.2
300	0.506	-110.7	7.201	109.5	0.064	52.6	0.586	-30.9
400	0.457	-128.9	5.696	100.6	0.072	52.7	0.520	-31.2
500	0.440	-143.5	4.687	93.9	0.079	54.3	0.480	-31.2
600	0.430	-155.1	3.977	88.1	0.087	57.1	0.452	-31.5
700	0.437	-163.2	3.453	83.5	0.095	59.4	0.432	-31.7
800	0.441	-170.9	3.070	79.1	0.104	61.3	0.417	-32.4
900	0.452	-177.1	2.746	75.4	0.113	63.6	0.402	-33.4
1000	0.462	177.5	2.508	71.9	0.122	65.6	0.390	-34.5

 $V_{CE} = 5\text{ V}$, $I_C = 10\text{ mA}$, $Z_0 = 50\ \Omega$

Freque.	S_{11}		S_{21}		S_{12}		S_{22}	
MHz	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.
100	0.585	-69.3	19.233	134.4	0.028	63.8	0.768	-25.6
200	0.460	-110.1	12.238	112.6	0.041	58.1	0.564	-31.4
300	0.408	-133.9	8.571	101.3	0.052	60.0	0.468	-30.5
400	0.390	-149.7	6.608	94.5	0.062	62.9	0.420	-29.1
500	0.390	-160.7	5.348	88.7	0.073	65.3	0.394	-28.1
600	0.391	-169.8	4.503	84.4	0.084	67.7	0.375	-27.8
700	0.404	-176.7	3.884	80.3	0.095	69.1	0.361	-27.7
800	0.411	178.0	3.446	76.8	0.107	70.3	0.350	-28.2
900	0.426	173.1	3.069	73.4	0.119	71.5	0.339	-29.0
1000	0.436	169.8	2.803	70.7	0.131	72.2	0.330	-29.7

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Y-PARAMETERS (Emitter Common)

 $V_{CE} = 5\text{ V}$, $I_C = 5\text{ mA}$

Freque.	S_{11}		S_{21}		S_{12}		S_{22}	
MHz	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.
100	2.663	5.357	161.804	-34.193	-0.002	-0.425	0.055	0.627
200	5.558	10.174	147.899	-63.499	-0.012	-0.880	0.025	1.270
300	9.651	13.450	125.634	-87.205	-0.041	-1.354	0.026	2.024
400	14.160	15.066	102.261	-102.289	-0.093	-1.820	0.044	2.772
500	18.753	15.624	80.041	-110.827	-0.150	-2.309	0.048	3.510
600	23.019	14.727	57.826	-114.923	-0.214	-2.798	0.124	4.301
700	26.444	13.908	40.437	-113.783	-0.263	-3.305	0.211	4.964
800	29.378	12.040	24.049	-111.316	-0.379	-3.822	0.268	5.828
900	31.931	9.960	10.602	-106.726	-0.466	-4.371	0.407	6.578
1000	33.671	7.667	-0.922	-101.485	-0.586	-4.913	0.524	7.381

 $V_{CE} = 5\text{ V}$, $I_C = 10\text{ mA}$

Freque.	S_{11}		S_{21}		S_{12}		S_{22}	
MHz	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.	MAG.	ANG.
100	5.212	6.660	273.909	-97.915	-0.002	-0.430	0.029	0.527
200	10.124	10.767	208.225	-154.453	-0.015	-0.876	0.011	1.307
300	15.094	11.730	141.558	-172.198	-0.044	-1.347	0.047	2.035
400	18.933	10.991	93.174	-169.490	-0.089	-1.817	0.064	2.735
500	21.811	10.074	58.181	-158.809	-0.133	-2.299	0.096	3.501
600	23.927	8.389	32.829	-146.284	-0.195	-2.785	0.173	4.226
700	25.848	7.170	15.188	-134.592	-0.276	-3.302	0.224	5.010
800	26.851	5.955	2.733	-123.322	-0.353	-3.808	0.282	5.760
900	28.097	4.633	-7.642	-113.209	-0.443	-4.375	0.394	6.551
1000	28.686	3.829	-13.979	-104.651	-0.523	-4.908	0.466	7.215