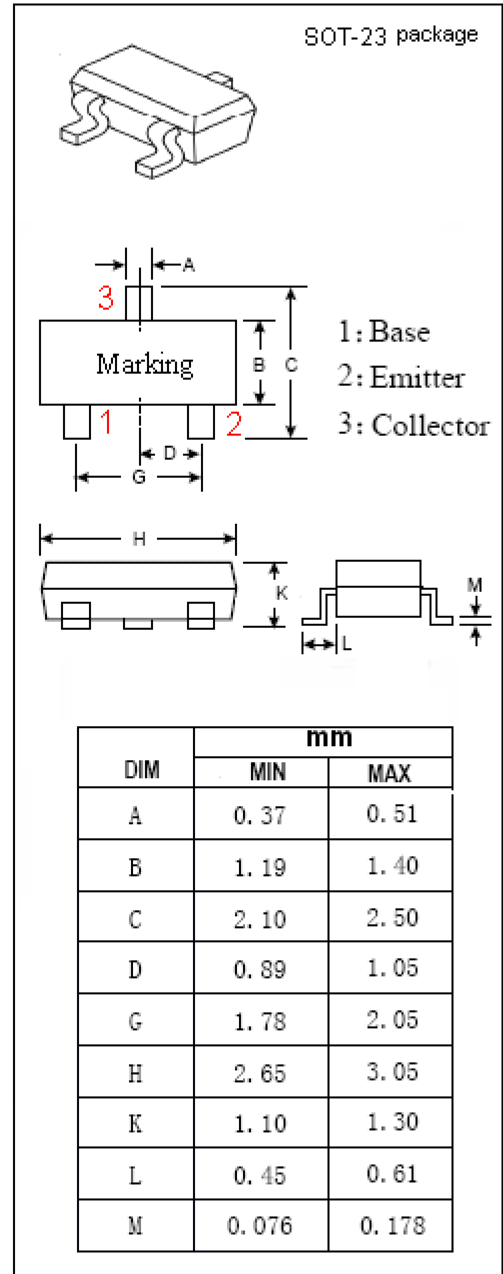
isc Silicon NPN RF Transistor　　MMBR911L

DESCRIPTION

- High Gain
  G_{NF} = 17 dB TYP. @ I_C= 10 mA, f = 500 MHz
- Low Noise Figure
  NF= 1.7dB TYP. @ f= 500 MHz
- High Current-Gain Bandwidth Product
  f_T = 6.0 GHz TYP. @ I_C= 30 mA

APPLICATIONS

- Designed for low noise, wide dynamic range front-end amplifiers and low-noise VCO'S.



DIM	mm	
	MIN	MAX
A	0. 37	0. 51
B	1. 19	1. 40
C	2. 10	2. 50
D	0. 89	1. 05
G	1. 78	2. 05
H	2. 65	3. 05
K	1. 10	1. 30
L	0. 45	0. 61
M	0. 076	0. 178

ABSOLUTE MAXIMUM RATINGS(T_a=25℃)

SYMBOL	PARAMETER	VALUE	UNIT
V_{CBO}	Collector-Base Voltage	20	V
V_{CEO}	Collector-Emitter Voltage	12	V
V_{EBO}	Emitter-Base Voltage	2	V
I_C	Collector Current-Continuous	60	mA
P_C	Collector Power Dissipation @T_C= 75℃	0.333	W
T_J	Junction Temperature	150	℃
T_{stg}	Storage Temperature Range	-55~150	℃

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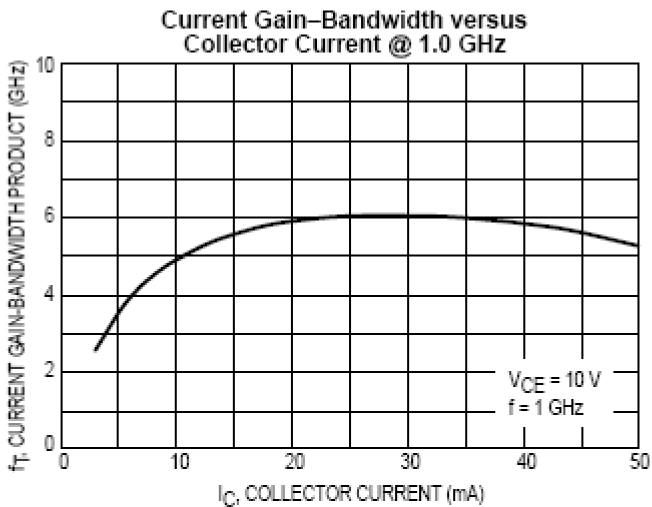
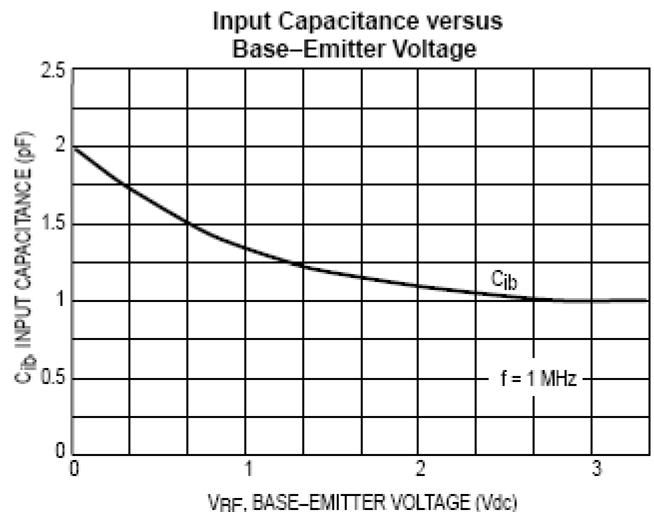
ELECTRICAL CHARACTERISTICS

T_C=25℃ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	I_C= 1mA ; I_B= 0	12			V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C= 0.1mA ; I_E= 0	20			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E= 0.1mA ; I_C= 0	2			V
I_{CBO}	Collector Cutoff Current	V_{CB}= 15V; I_E= 0			0.05	μA
h_{FE}	DC Current Gain	I_C= 30mA ; V_{CE}= 10V	30		200	
C_{OB}	Output Capacitance	I_E= 0 ; V_{CB}= 10V; f= 1MHz			1.0	pF
f_T	Current-Gain—Bandwidth Product	I_C= 30mA ; V_{CE}= 10V; f= 1GHz		6.0		GHz
G_{NF}	Gain@ Noise Figure	I_C= 10mA ; V_{CE}= 10V; f= 0.5GHz		17		dB
G_{NF}	Gain@ Noise Figure	I_C= 10mA ; V_{CE}= 10V; f= 1GHz		11		dB
NF	Noise Figure	I_C= 10mA ; V_{CE}= 10V; f= 0.5GHz		2.0		dB
NF	Noise Figure	I_C= 10mA ; V_{CE}= 10V; f= 1GHz		2.9		dB





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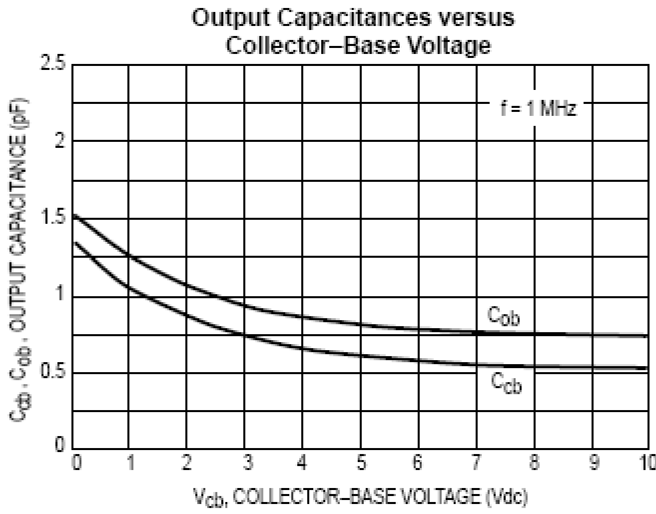

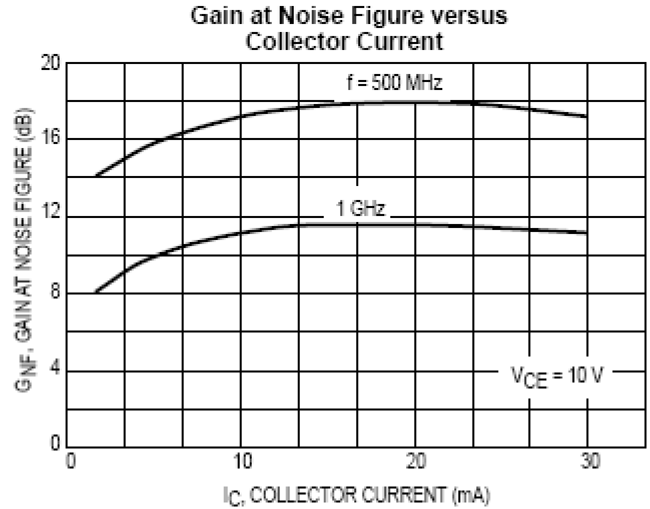

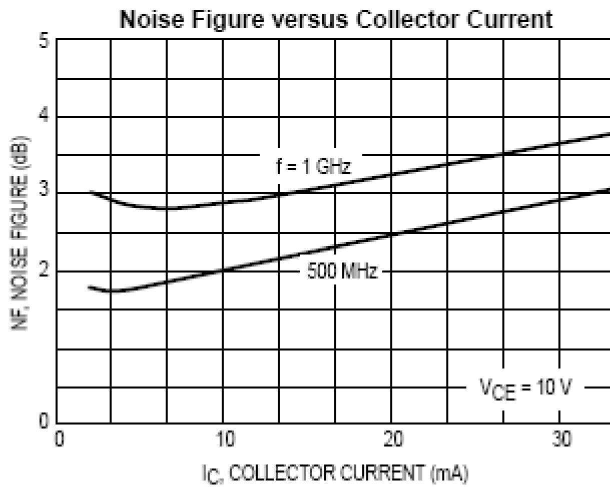

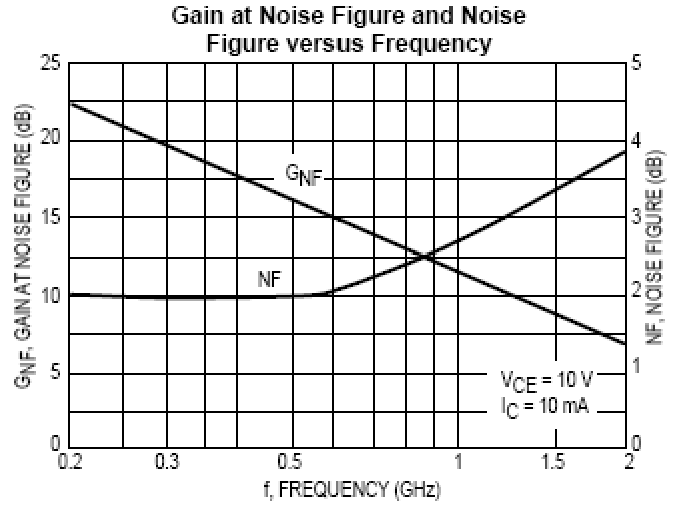

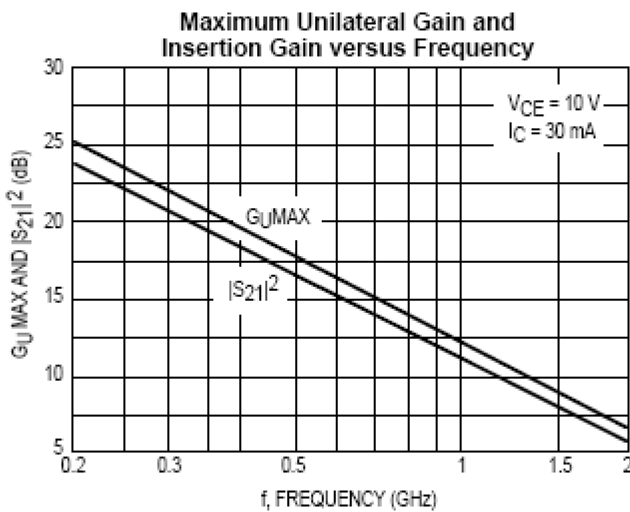

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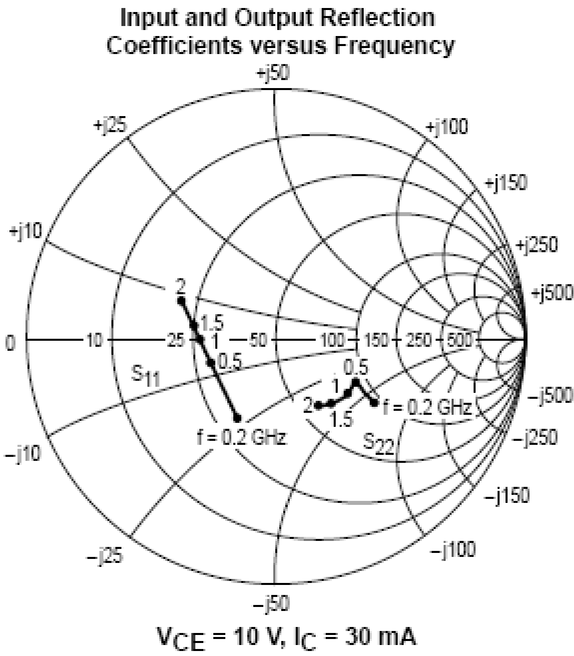

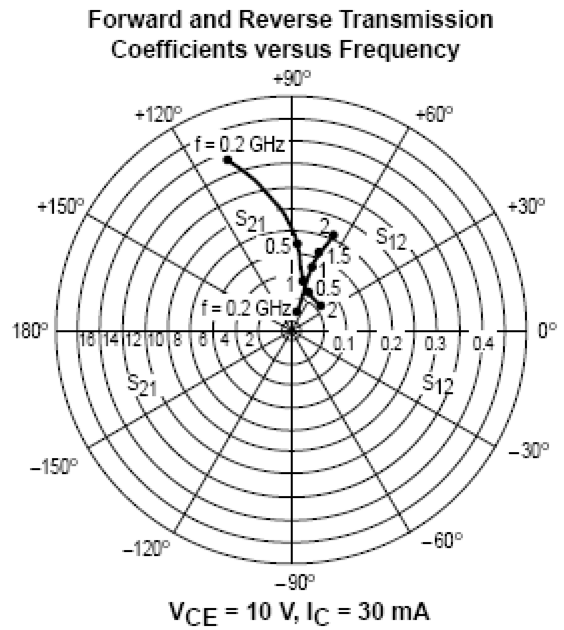

S-PARAMETER

V_{CE} = 10 V, I_C = 2 mA

f (MHz)	$\|S_{11}\|$	∠S_{11}	$\|S_{21}\|$	∠S_{21}	$\|S_{12}\|$	∠S_{12}	$\|S_{22}\|$	∠S_{22}
200	0.82	–45	4.14	145	0.06	66	0.88	–16
500	0.60	–96	3.23	112	0.09	49	0.71	–27
1000	0.47	–149	2.16	85	0.11	49	0.62	–34
1500	0.46	–179	1.59	71	0.13	55	0.58	–43
2000	0.47	162	1.35	57	0.16	62	0.56	–51

V_{CE} = 10 V, I_C = 5 mA

f (MHz)	$\|S_{11}\|$	∠S_{11}	$\|S_{21}\|$	∠S_{21}	$\|S_{12}\|$	∠S_{12}	$\|S_{22}\|$	∠S_{22}
200	0.66	–63	8.63	134	0.05	64	0.75	–25
500	0.43	–117	5.29	100	0.07	58	0.55	–31
1000	0.37	–163	3.05	82	0.11	63	0.48	–36
1500	0.38	176	2.17	70	0.15	65	0.45	–44
2000	0.40	160	1.81	57	0.19	65	0.43	–51

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V_{CE} = 10 V, I_C = 10 mA

f (MHz)	$\vert S_{11}\vert$	$\angle S_{11}$	$\vert S_{21}\vert$	$\angle S_{21}$	$\vert S_{12}\vert$	$\angle S_{12}$	$\vert S_{22}\vert$	$\angle S_{22}$
200	0.49	–83	12.70	124	0.04	65	0.62	–30
500	0.33	–134	6.42	94	0.07	66	0.44	–32
1000	0.32	–171	3.53	80	0.12	70	0.41	–36
1500	0.35	173	2.46	69	0.16	69	0.38	–45
2000	0.37	159	2.04	58	0.20	66	0.35	–52

V_{CE} = 10 V, I_C = 20 mA

f (MHz)	$\vert S_{11}\vert$	$\angle S_{11}$	$\vert S_{21}\vert$	$\angle S_{21}$	$\vert S_{12}\vert$	$\angle S_{12}$	$\vert S_{22}\vert$	$\angle S_{22}$
200	0.36	–103	15.25	114	0.03	69	0.52	–32
500	0.28	–149	6.95	90	0.06	72	0.39	–30
1000	0.29	–176	3.73	78	0.12	73	0.37	–35
1500	0.33	172	2.60	68	0.17	71	0.34	–43
2000	0.36	158	2.14	58	0.21	67	0.32	–52

V_{CE} = 10 V, I_C = 30 mA

f (MHz)	$\vert S_{11}\vert$	$\angle S_{11}$	$\vert S_{21}\vert$	$\angle S_{21}$	$\vert S_{12}\vert$	$\angle S_{12}$	$\vert S_{22}\vert$	$\angle S_{22}$
200	0.32	–114	15.64	109	0.03	71	0.48	–29
500	0.27	–156	6.92	88	0.06	73	0.38	–27
1000	0.29	–178	3.71	78	0.12	74	0.37	–33
1500	0.34	170	2.58	68	0.16	72	0.34	–44
2000	0.37	156	2.13	57	0.21	68	0.32	–51