



电子元器件系列(中国.厦门) China.Xiamen
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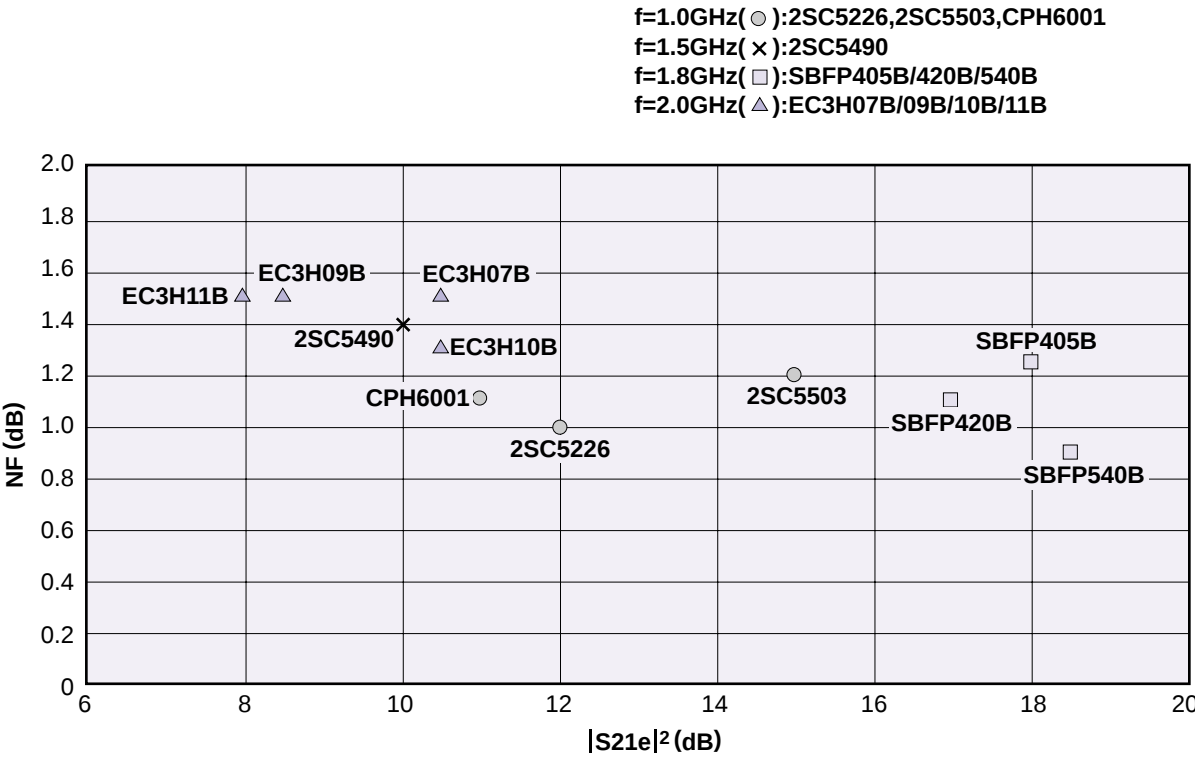
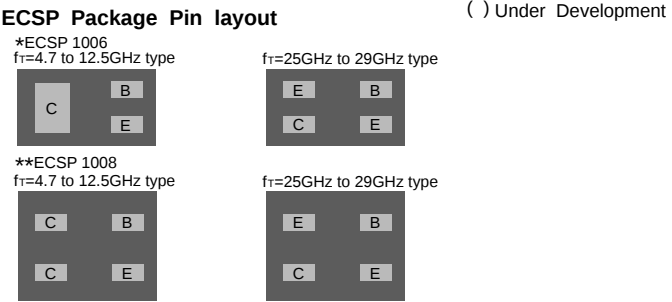
Telephone:0086-592-5713956 Fax:5201617

Ultrahigh Frequency Si Transistor Series

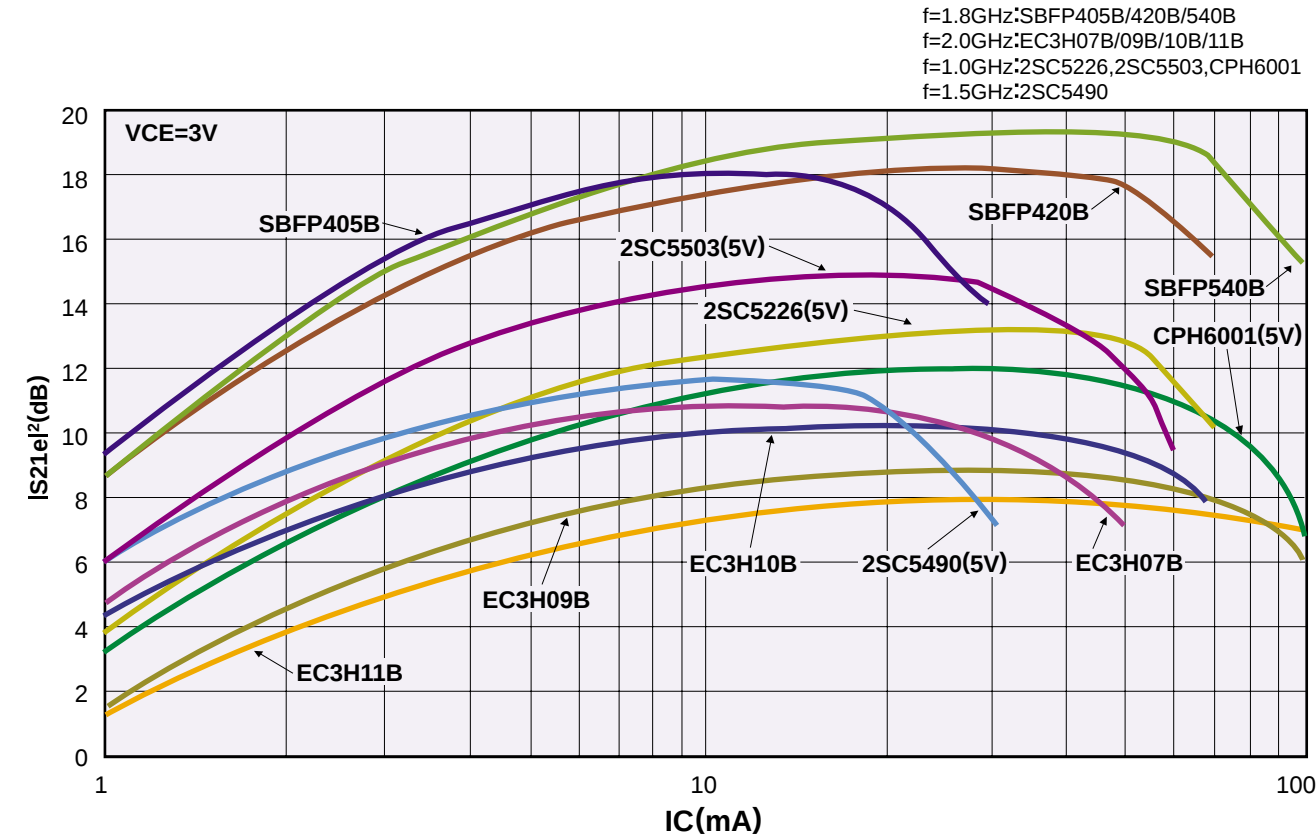
NF Map

fT [GHz]	IC [mA]	ECSP (1006)	ECSP (1008)	SSFP (1408)	SMCP (1608)	MCP (2012)	MCP4 (2012)	CP (2915)	CP4 (2915)	MCPH3 (2016)	CPH6 (2916)	PCP (4525)
3.5	300									(MCH3002)	(CH6002)	2SC5551
4.7	50 to150	EC3H01B	(EC4H01C)	2SC5536	TS4162					(MCH3003)	(CH6003)	2SC5347
5.0	15			2SC5537		2SC4853		2SC4854				
5.2	100			2SC5538	2SC5374	2SC5375	2SC5501					
7.0	70	EC3H02B	EC3H02C	2SC5488	2SC5231	2SC5226	2SC5502	2SC5227	2SC5228			2SC5229
7.5	100	EC3H03B	(EC4H03C)	2SC5539	(TG6016S)					(MCH3001)	CPH6001	2SC5415
8.0	100	EC3H04B	EC3H04C	TG6026SSFP	(TG6026S)		2SC5503			(MCH3004)	(CPH6004)	
9.0	50	EC3H05B	(EC4H05C)	2SC5489	2SC4931	2SC4867		2SC4868	2SC4869			
10.0	20			2SC5540	(TS4138S)	2SC4871						
10.5	80	EC3H11B		2SC5783	2SC5847		2SC5504					
11.0	30	EC3H06B	(EC4H06C)	2SC5490	2SC5277	2SC5245		2SC5275	2SC5276			
11.2	70	EC3H09B		2SC5781	2SC5665							
12.0	20	EC3H08B		2SC5648	2SC5647							
12.5	30	EC3H07B	EC4H07C	2SC5646	2SC5645							
	40	EC3H10B		2SC5782	2SC5666							

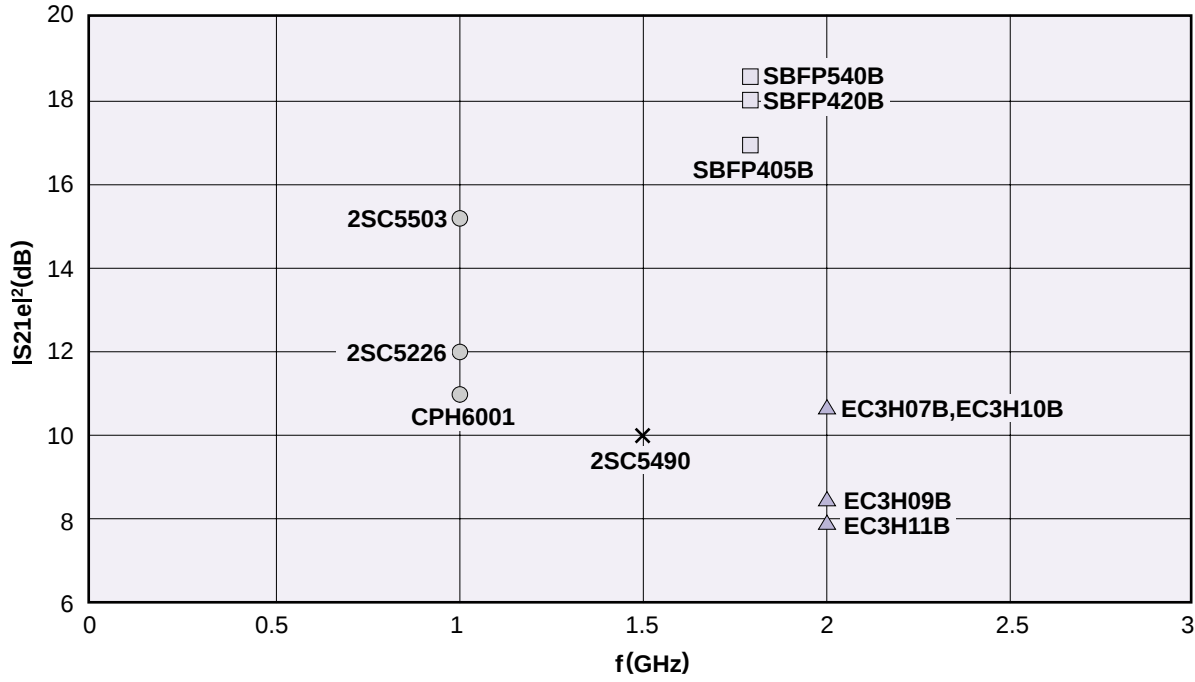
fT [GHz]	IC [mA]	ECSP* (1006)	ECSP** (1008)	MCPH4 (2016)
24.0	100			SBFP450M
25.0	12	SBFP405B	SBFP405D	SBFP405M
	35	SBFP420B	SBFP420D	SBFP420M
29.0	80	SBFP540B	SBFP540D	SBFP540M



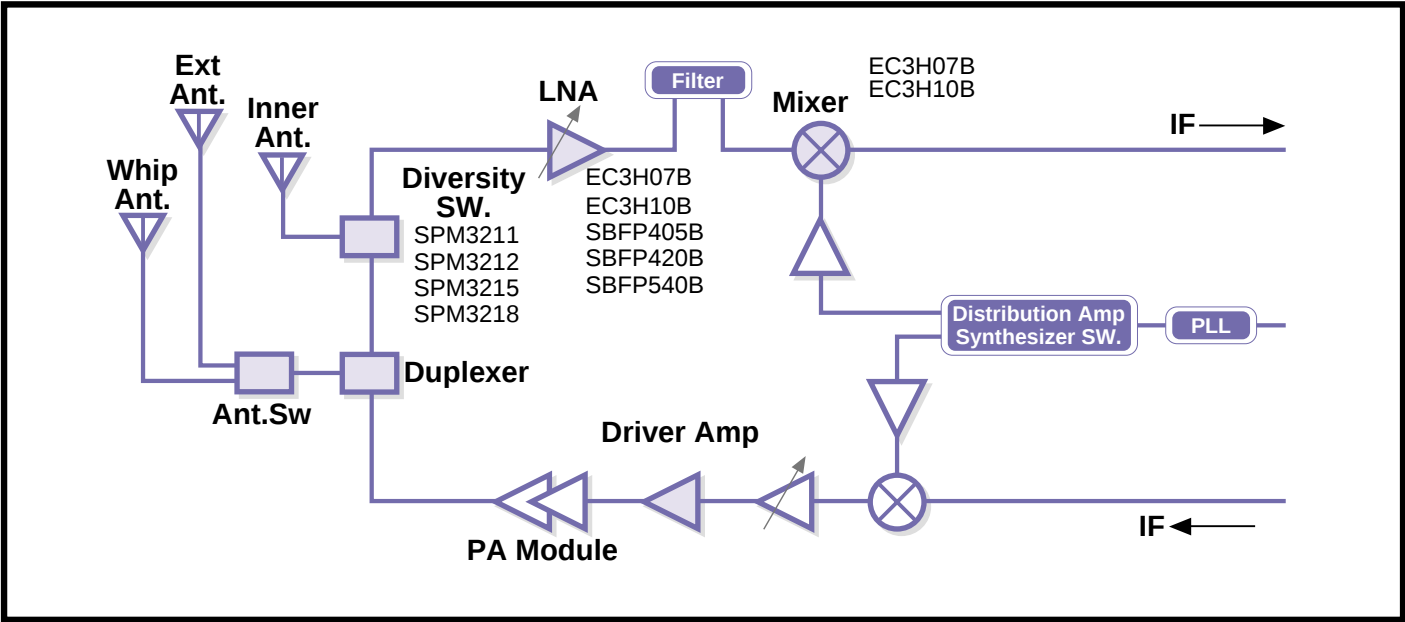
|S21e|^2-IC



|S21e|^2MAP



System Block Diagram



Bipolar Transistors ():Conditions

Type No.	Package	fT (GHz)	S21e ² (dB)	NF (dB)
EC3H07B	ECSP1006-3	12.5	10.5(2GHz)	1.5(2GHz)
EC3H10B				1.3(2GHz)
SBFP405B	ECSP1006-4	25	18(1.8GHz)	1.25(1.8GHz)
SBFP420B			17(1.8GHz)	1.1(1.8GHz)
SBFP540B		29	18.5(1.8GHz)	0.9(1.8GHz)

RF Switch MMICs

Type No.	Package	Circuit	I _{so} (dB)			I _L (dB)			Pin1dB (dBm)	note
			1.0GHz	2.0GHz	2.5GHz/5.0GHz	1.0GHz	2.0GHz	2.5GHz/5.0GHz		
SPM3211	MCPH6	SPDT	22	18	16	0.45	0.5	0.55	28	High ESD Switch
SPM3212										
SPM3215										
SPM3218	ECSP1208-6		22	18	16	0.55	0.6	0.65	28	Ultrasmall
SPM3501	MCPH6		-	-	*15	-	-	*1	25(@5GHz)	5GHz-Band Switch

I_L:Insertion Loss, I_{so}:Isolation

◆Power Supply Block

Also available for Wireless LAN, Digital Cellular Phone, Analogue Cellular Phone and PHS.

MOSFETs

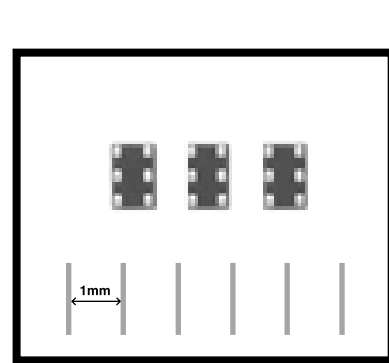
Type No.	Package	Channel	V _{DSS} (V)	I _D (A)	R _{DS(on)} (m%)			
					V _{GS} =4.5V typ/max	V _{GS} =4V typ/max	V _{GS} =2.5V typ/max	V _{GS} =1.8V typ/max
MCH6307	MCPH6	Pch	12	5	35/46	-	47/66	68 / 98
MCH6305			20	4	50/65		72 / 98	-
ECH8603	ECH8				37/54		58 / 87	
FTD1011	TSSOP8	Dual Pch	30	3	-	50 / 65	68 / 96	
3LP01SS	SSFP	Pch		0.1		8% / 10.4%	11% / 15.4%	
3LN01SS		Nch		0.15		2.9% / 3.7%	3.7% / 5.2%	
MCH6613	MCPH6			Pch		0.35	2.9% / 3.7%	
MCH6614		0.2				8% / 10.4%	11% / 15.4%	
		Nch		0.35		2.9% / 3.7%	3.7% / 5.2%	
MCH6615		Pch		0.4		2.4% / 3.1%	3.5% / 4.9%	
		Nch		0.65		0.9% / 1.2%	1.2% / 1.7%	
		Pch	0.4	2.4% / 3.1%	3.5% / 4.9%			

Ultralow Saturation Voltage Transistors

Type No.	Package	Structure	VCBO (V)	VCEO (V)	IC (A)	ICP (A)	VCE (V)	IC (A)	hFE	IC (A)	IB (mA)	VCE(sat) typ/max (mV)		
CPH3106	CPH3	PNP	15	12	3	5	2	0.5	200 to560	1.5	30	110/165		
CPH3114				15	1.5	3		0.1		0.75	15	120/180		
CPH3206		NPN			3	5		0.5		1.5	30	100/150		
CPH3214					MCPH6	PNP		15		1.5	3	0.1	0.75	15
MCH6101	NPN	110/180												
MCH6201		130/200												
CPH3109	CPH3	PNP		30		30		3		5	0.5	200 to560	1.5	30
CPH3115					1.5			3		0.1	0.75		15	250/375
CPH3122			NPN		40		3	5	0.5	1.5	75		120/180	
CPH3209		1.5		3			0.1	0.75	15	150/225				
CPH3215		3		5			0.5	1.5	75	120/180				
CPH3222		MCPH6	PNP	30	1.5		3		0.1		0.75		15	250/375
MCH6102	NPN													40
MCH6202			150/225											

Best Suitable for Bluetooth Level 1

Ultrasmall Switch IC **SPM3211,SPM3212,SPM3218** for Broad Band Use



ECSP1208-6



We have developed an Ultrasmall Switch IC SPM3211,SPM3212,SPM3218 that has excellent characteristics over broad band from 1GHz to 2.45GHz ISM Band.

Application

¥ Bluetooth Level 1 (100m)

¥ Wireless LAN (11b, 11g, 11a)

¥ PCS Split-Band Switch,PDC,PHS,CDMA,TDMA,GSM,DECT,LNB for DBS

Features

¥ Ultrasmall

¥ Low Insertion Loss

¥ Broad band from 1GHz to ISM Band

¥ Single control switch (SPM3215)

¥ High ESD

¥ 4.9GHz to 6GHz band (SPM3501)

New SPDT Switch ICs

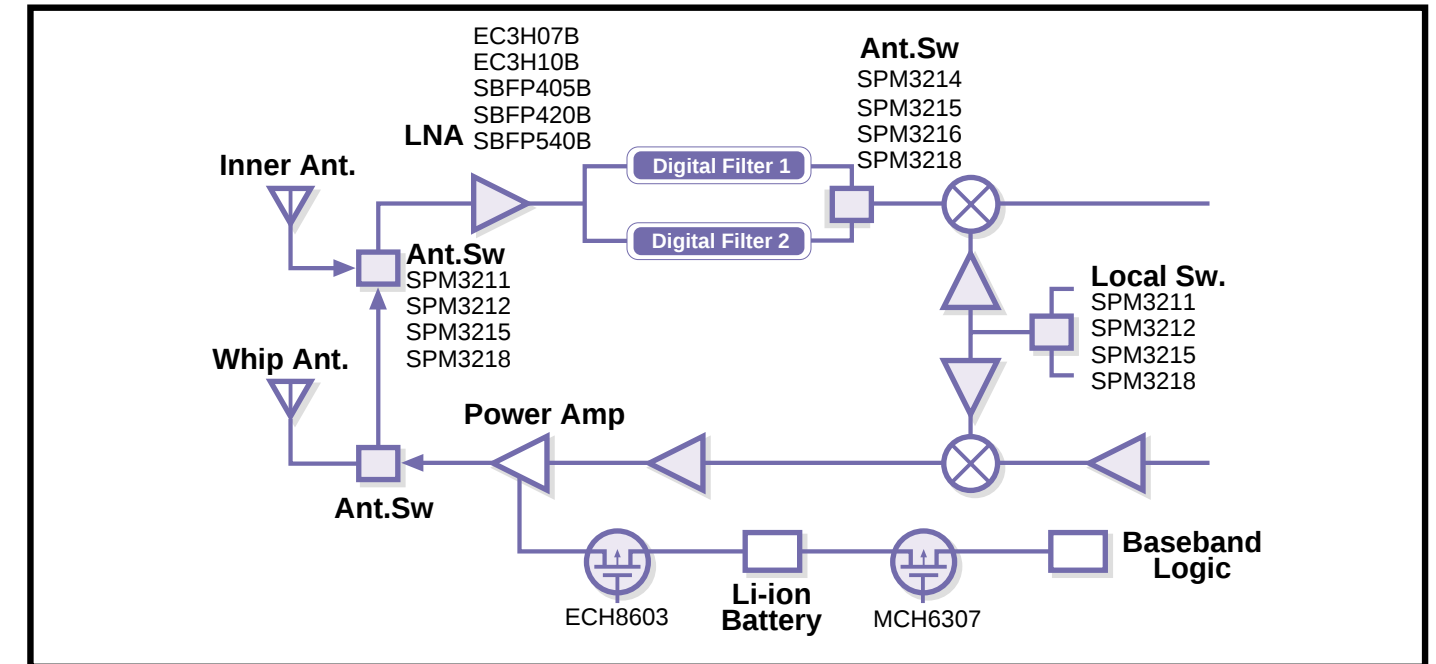
Type No.	Package	Circuit	I _{so} (dB)			I _L (dB)			Pin1dB (dBm)	note
			1.0GHz	2.0GHz	2.5GHz/ *5.0GHz	1.0GHz	2.0GHz	2.5GHz/ *5.0GHz		
SPM3211	MCPH6	SPDT	22	18	16	0.45	0.5	0.55	28	High ESD Switch
SPM3212										
SPM3215			22/24	15/17	13/15	0.6/0.7	0.7/0.9	0.9/1.1	26/28	Single Control Switch
SPM3218	ECSP1208-6		22	18	16	0.55	0.6	0.65	28	Ultrasmall
SPM3501	MCPH6		-	-	*15	-	-	*1	25(@5GHz)	5GHz-Band Switch

I_L:Insertion Loss, Iso:Isolation

◆Power Supply Block

Reffer to page4

System Block Diagram



Bipolar Transistors ():Conditions

Type No.	Package	f _r (GHz)	S _{21e} ² (dB)	NF (dB)
EC3H07B	ECSP1006-3	12.5	10.5(2GHz)	1.5(2GHz)
EC3H10B				1.3(2GHz)
SBFP405B	ECSP1006-4	25	18(1.8GHz)	1.25(1.8GHz)
SBFP420B			17(1.8GHz)	1.1(1.8GHz)
SBFP540B		29	18.5(1.8GHz)	0.9(1.8GHz)

RF Switch MMICs

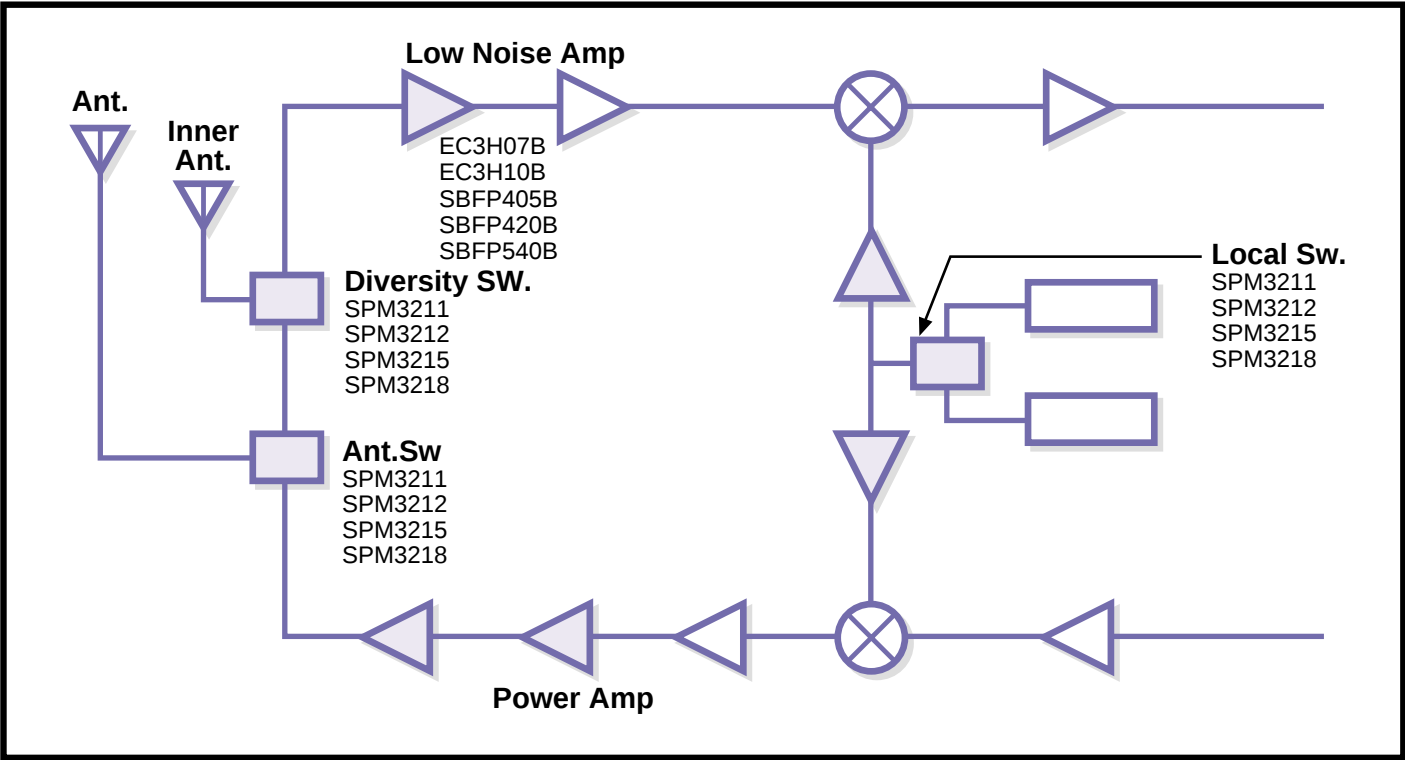
Type No.	Package	Circuit	I _{so} (dB)			I _L (dB)			Pin1dB (dBm)	note
			1.0GHz	2.0GHz	2.5GHz/ *5.0GHz	1.0GHz	2.0GHz	2.5GHz/ *5.0GHz		
SPM3211	MCPH6	SPDT	22	18	16	0.45	0.5	0.55	28	High ESD Switch
SPM3212										
SPM3215			22/24	15/17	13/15	0.6/0.7	0.7/0.9	0.9/1.1	26/28	Single Control Switch
SPM3218	ECSP1208-6		22	18	16	0.55	0.6	0.65	28	Ultrasmall
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I_L:Insertion Loss, Iso:Isolation

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Reffer to page4

System Block Diagram



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EC3H07B	ECSP1006-3	12.5	10.5(2GHz)	1.5(2GHz)
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SBFP420B			17(1.8GHz)	1.1(1.8GHz)
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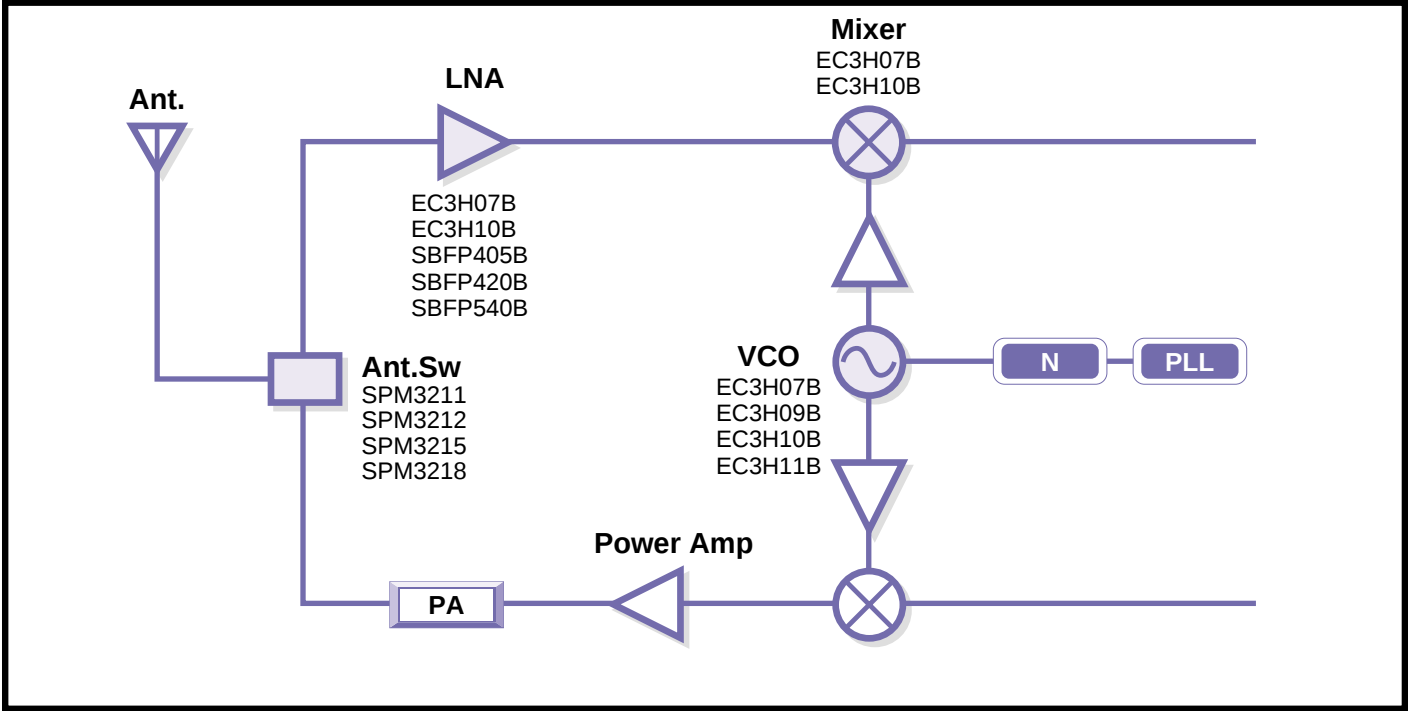
RF Switch MMICs

Type No.	Package	Circuit	I _{so} (dB)			I _L (dB)			Pin1dB (dBm)	note
			1.0GHz	2.0GHz	2.5GHz/5.0GHz	1.0GHz	2.0GHz	2.5GHz/5.0GHz		
SPM3211	MCPH6	SPDT	22	18	16	0.45	0.5	0.55	28	High ESD Switch
SPM3212										
SPM3215			22/24	15/17	13/15	0.6/0.7	0.7/0.9	0.9/1.1	26/28	Single Control Switch
SPM3218	ECSP1208-6		22	18	16	0.55	0.6	0.65	28	Ultrasmall
SPM3501	MCPH6		-	-	*15	-	-	*1	25(@5GHz)	5GHz-Band Switch

◆Power Supply Block
Reffer to page 4

I_L:Insertion Loss, Iso:Isolation

System Block Diagram



Bipolar Transistors ():Conditions

Type No.	Package	f _r (GHz)	S21e ² (dB)	NF (dB)
EC3H07B	ECSP1006-3	12.5	10.5(2GHz)	1.5(2GHz)
EC3H09B		11.2	8.5(2GHz)	
EC3H10B		12.5	10.5(2GHz)	1.3(2GHz)
EC3H11B		10.5	8.0(2GHz)	1.5(2GHz)
SBFP405B	ECSP1006-4	25	18(1.8GHz)	1.25(1.8GHz)
SBFP420B			17(1.8GHz)	1.1(1.8GHz)
SBFP540B		29	18.5(1.8GHz)	0.9(1.8GHz)

RF Switch MMICs

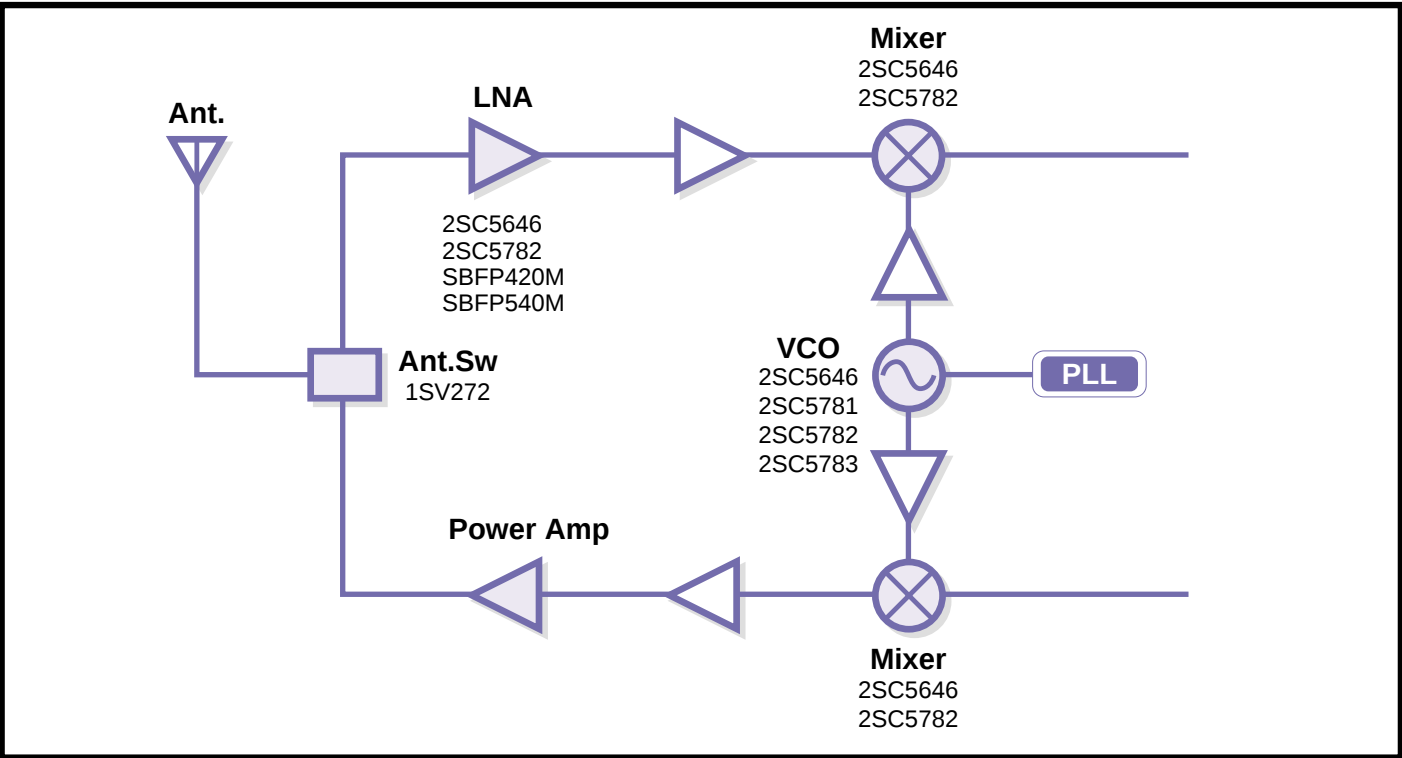
Type No.	Package	Circuit	I _{so} (dB)			I _L (dB)			Pin1dB (dBm)	note
			1.0GHz	2.0GHz	2.5GHz/5.0GHz	1.0GHz	2.0GHz	2.5GHz/5.0GHz		
SPM3211	MCPH6	SPDT	22	18	16	0.45	0.5	0.55	28	High ESD Switch
SPM3212										
SPM3215			22/24	15/17	13/15	0.6/0.7	0.7/0.9	0.9/1.1	26/28	Single Control Switch
SPM3218	ECSP1208-6		22	18	16	0.55	0.6	0.65	28	Ultrasmall
SPM3501	MCPH6		-	-	*15	-	-	*1	25(@5GHz)	5GHz-Band Switch

◆Power Supply Block
Reffer to page 4

I_L:Insertion Loss, Iso:Isolation

Cordless Phone

System Block Diagram



Bipolar Transistors ():Conditions

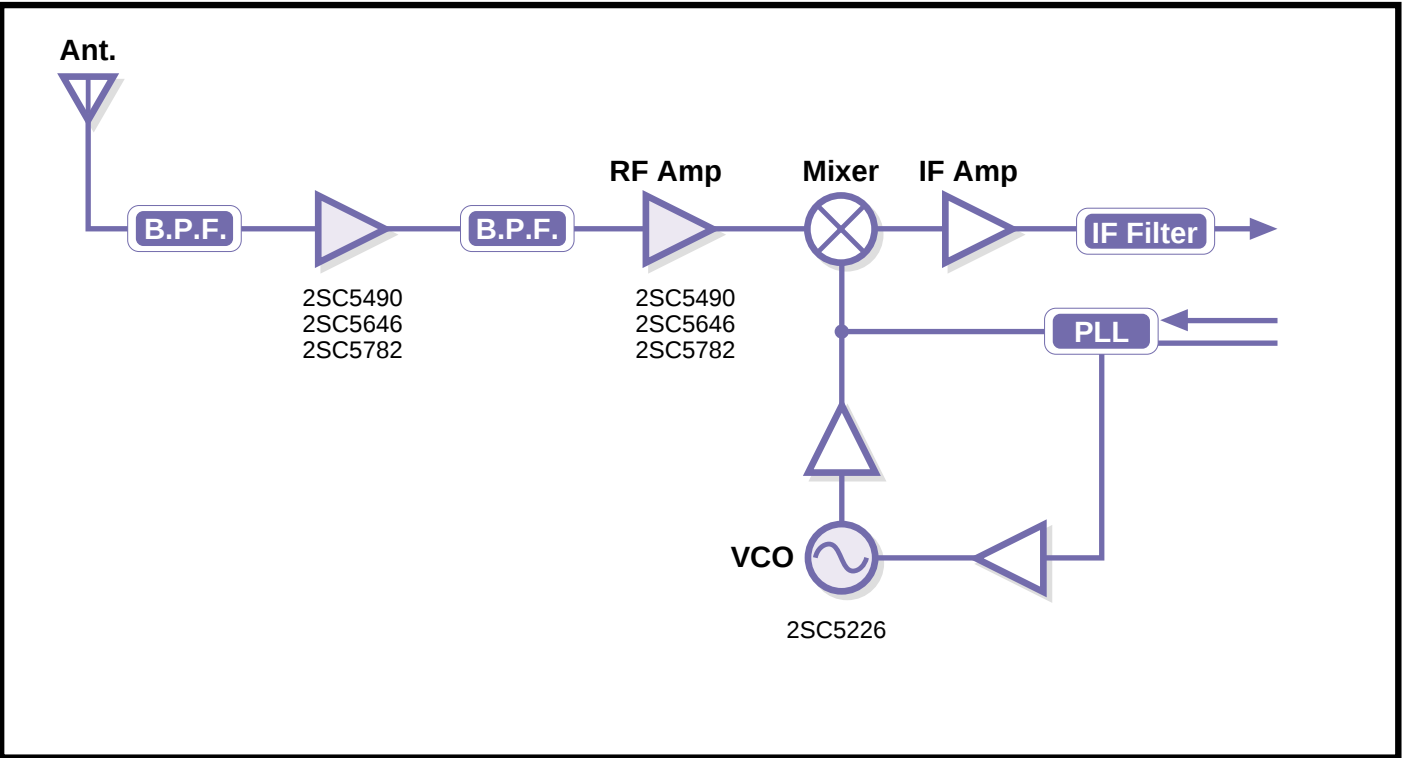
Type No.	Package	f _r (GHz)	S _{21e} ² (dB)	NF (dB)
2SC5646	SSFP	12.5	10.5(2GHz)	1.5(2GHz)
2SC5781		11.2	8.5(2GHz)	
2SC5782		12.5	10.5(2GHz)	
2SC5783		10.5	8.0(2GHz)	
SBFP420M	MCPH4	25	17(1.8GHz)	1.1(1.8GHz)
SBFP540M		29	18.5(1.8GHz)	0.9(1.8GHz)

PIN Diode

Type No.		V _R (V)	I _F (mA)	C (pF)	r _s (‰)
1SV272	CP	50	100	0.6	0.5

GPS

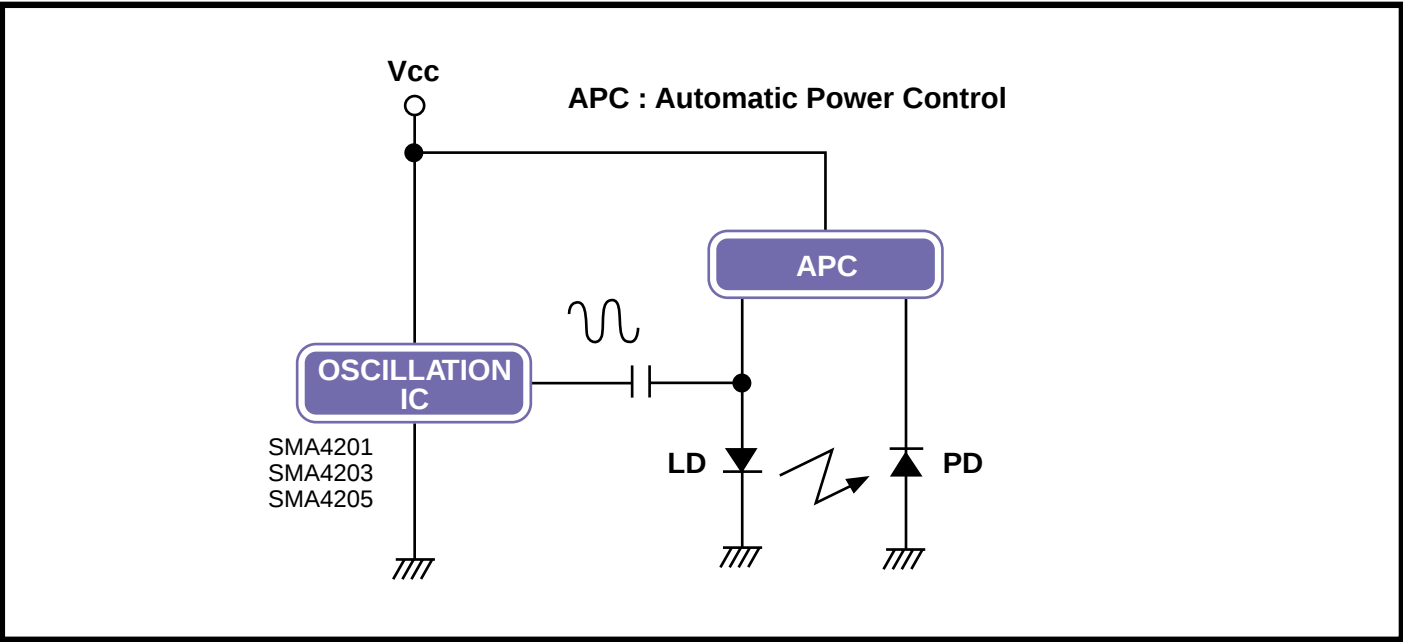
System Block Diagram



Bipolar Transistors ():Conditions

Type No.	Package	f _r (GHz)	S _{21e} ² (dB)	NF (dB)
2SC5226	MCP	7	12(1GHz)	1.0(1GHz)
2SC5490	SSFP	11	10(1.5GHz)	1.4(1.5GHz)
2SC5646		12.5	10.5(2GHz)	1.5(2GHz)
2SC5782				1.3(2GHz)

System Block Diagram

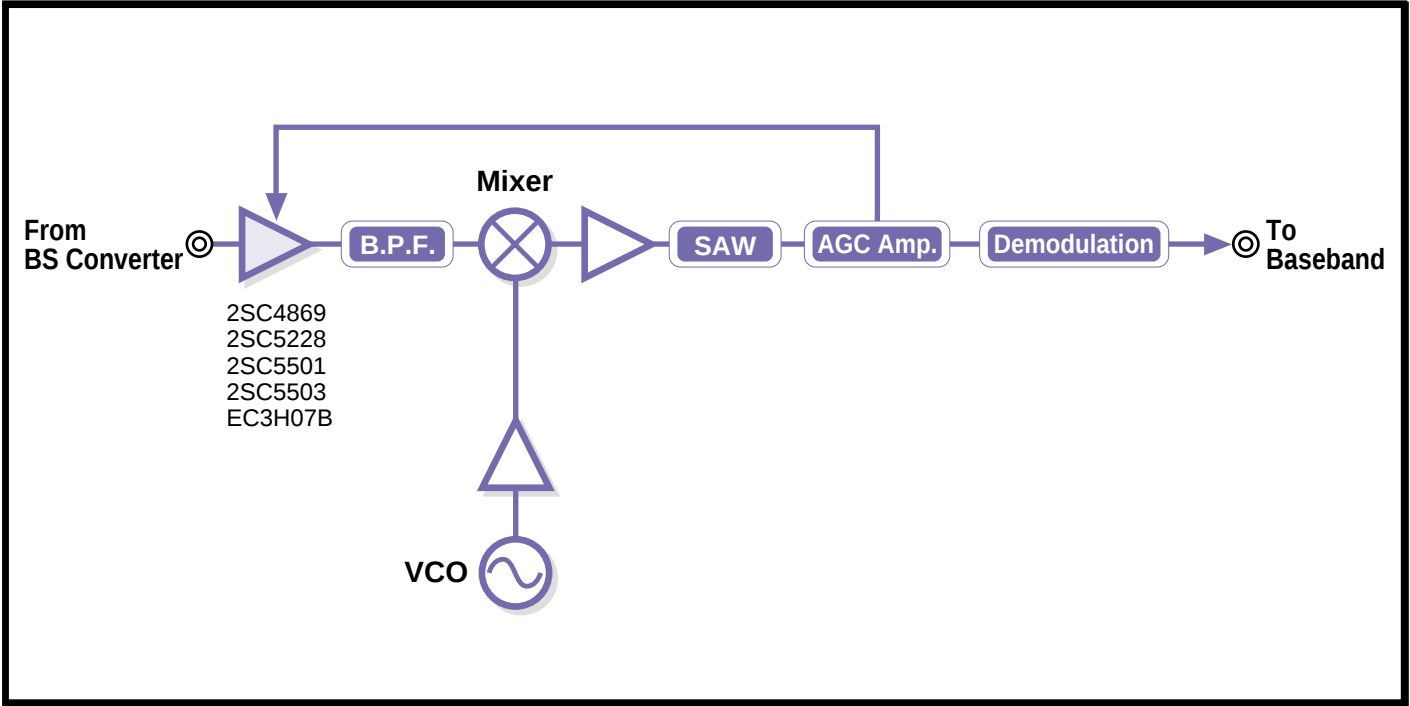


Oscillation ICs for Optical Pickups

fosc=400MHz

Type No.	Package	VCC (V)	ICC (mA)	Posc (dBm)
SMA4201	MCP6	3	11	—1.0
SMA4203		5	42	7.0
SMA4205			34	6.4

System Block Diagram

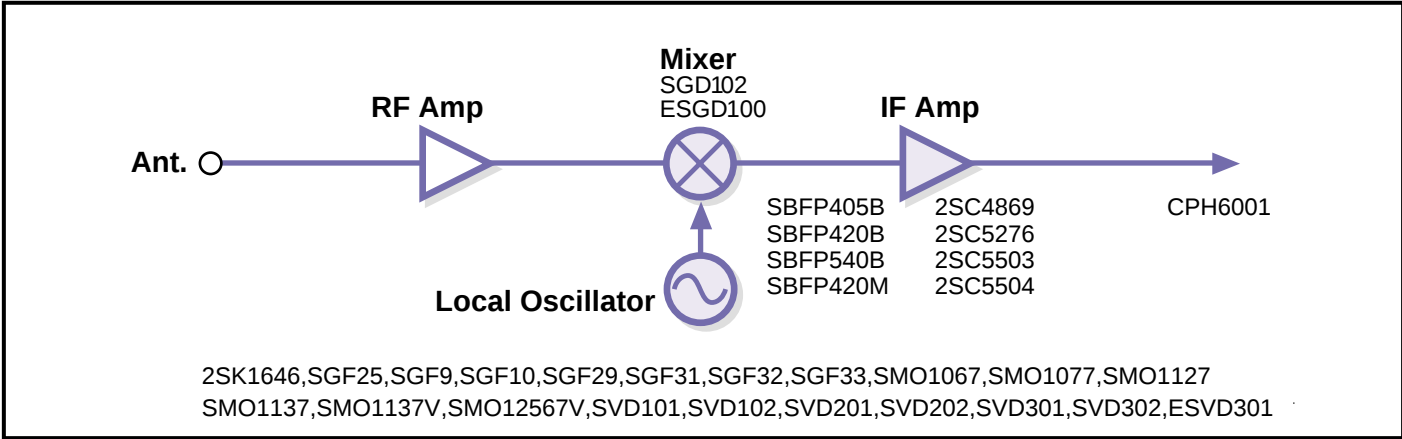


Bipolar Transistors ():Conditions

Type No.	Package	f _T (GHz)	S _{21e} ² (dB)	NF (dB)
2SC4869	CP4	9	15(1GHz)	1.2(1GHz)
2SC5228		7	13.5(1GHz)	1.0(1GHz)
2SC5501	MCP4	9	13(1GHz)	1.2(1GHz)
2SC5503		9	15(1GHz)	1.2(1GHz)
EC3H07B	ECSP 1006-3	12.5	10.5(2.0GHz)	1.5(2.0GHz)

BS/CS,VSAT(Low Noise Block)

System Block Diagram



GaAs FETs

Type No.	Package	Electric Characteristics	Conditions
SGF29	CP4	PN=-70dBc/Hz(@1kHz),P(osc)=10(dBm)	11GHz 4.5V,35mA
SGF31		PN=-60dBc/Hz(@1kHz),P(osc)=10(dBm)	
SGF32	MCPH4	PN=-64dBc/Hz(@1kHz),P(osc)=10(dBm)	
SGF33		PN=-57dBc/Hz(@1kHz),P(osc)=10(dBm)	

Type No.	Package	Specifications	Conditions
2SK1646	CP4	NFmin=2.5dB,Ga=5.0dB	12GHz 3V,10mA
SGF25		NFmin=2.5dB,Ga=5.5dB	
SGF9	Cross mold	NFmin=2.5dB,Ga=5.0dB	
SGF10		NFmin=2.5dB,Ga=5.5dB	

GaAs Schottky Barrier Diodes

Type No.	Package	Specifications	Conditions
SGD102	CP3R	Ct=0.3pF	0V,1MHz
ESGD100	ECSP1006	Ct=0.22pF	

GaAs Varactors Diodes

Type No.	Package	Specifications
SVD101	CERC-2	Ct0V=1.3pF,Cj0V/Cj25V=8
SVD102		Ct0V=7pF,Cj0V/Cj25V=8
SVD201		Ct0V=1.9pF,Cj0V/Cj25V=14
SVD202		Ct0V=11pF,Cj0V/Cj25V=14
SVD301		Ct0V=2.6pF,Cj0V/Cj25V=20
SVD302		Ct0V=15pF,Cj0V/Cj25V=20
ESVD301	ECSP1608	Ct0V=2.6pF,Cj0V/Cj25V=20

GaAs Local Oscillator Modules

Type No.	Condition	Frequency	Modulation	Remarks
SMO1067/N	Vd=5V	10.678GHz	—	Smallest size, Low phase noise
SMO1077/N		10.750GHz		
SMO1127/N		11.200GHz		
SNO1137/N		11.300GHz		
SMO1327		13.200GHz		
SMO0705V	Vd=5V,Vc=1 to 6V	7.000GHz to 7.25GHz	70to130MHz/V	High modulation sensitivity
SMO1137V/VN	Vd=5V,Vc=0 to 8V	11.300GHz	1.7MHz/V	Smallest size, Low phase noise
SMO12567V	Vd=5V,Vc=0.5 to 9.5V	12.560GHz	15MHz/V	

Bipolar Transistors

Type No.	Package	f _T (GHz)	S _{21e} ² (dB)	NF (dB)
SBFP405B	ECSP1006-4	25	18(1.8GHz)	1.25(1.8GHz)
SBFP420B			17(1.8GHz)	11(1.8GHz)
SBFP540B		29	18.5(1.8GHz)	0.9(1.8GHz)
SBFP420M	MCPH4	25	17(1.8GHz)	11(1.8GHz)
CPH6001	CPH6	6.7	11(1GHz)	11(1GHz)
2SC4869	CP4	9	15(1GHz)	1.2(1.5GHz)
2SC5276		11	11(1.5GHz)	1.4(1.5GHz)
2SC5503	MCP4	9	15(1GHz)	1.2(1GHz)
2SC5504		11	11(1.5GHz)	1.4(1.5GHz)

CATV Converter/VCR Tuner

●CATV Converter

Bipolar Transistors

Type No.	Main Use	Package	VCEO max (V)	IC max (mA)	f _T typ (GHz)	S _{21e} ² typ (dB)	NF typ (dB)
CHP3004	2'nd IF Amp.	CHP3	6	100	8.5	11.5(1GHz)	1.7(1GHz)

●VCR Tuner

Bipolar Transistors

Type No.	Main Use	Package	f _T typ (GHz)	R _{on} typ (Ω)	C _{ob} typ (pF)	S _{21e} ² typ (dB)	NF typ (dB)
15GN01M	RF Switch	MCP	1.5	2.0	1.1(10V)	—	—
15GN03M	IF/RF Amp	MCP	1.5	—	0.9(10V)	13.0(0.4GHz)	2.5(1GHz)
55GN01M	IF/RF Amp	MCP	5.5	—	1.0(10V)	10.0(1.0GHz)	1.9(1GHz)