



## RF Products



Type Number	Description	Frequency Range	Gain (dB)	Slope (dB)	FL	S11/S22	CTB	XMOD	CSO	@Ch	@Vo (dBmV)	F @fmax	Itot (mA)
<b>Reverse Hybrids</b>													
BGS67A	65 MHz, 25.5 dB gain Reverse Amplifier, 12 V	5 - 65	25 - 26	-0.1 - 0.6	± 0.2	20/20	-64	-54	-	4	50	3.5	85
BGY68	75 MHz, 30 dB gain Reverse Amplifier	5 - 75	29.2 - 30.8	-0.2 - 0.5	± 0.2	20/20	-68	-60	-	4	50	3.5	135
BGY66B	120 MHz, 25 dB gain Reverse Amplifier	5 - 120	24.5 - 25.5	-0.2 - 0.5	± 0.2	20/20	-66	-54	-	14	48	5	135
BGY67	200 MHz, 22 dB gain Reverse Amplifier	5 - 200	21.5 - 22.5	-0.2 - 0.5	± 0.2	20/20	-67	-60	-	22	50	5.5	230
BGY67A	200 MHz, 24 dB gain Reverse Amplifier	5 - 200	23.5 - 24.5	-0.2 - 0.5	± 0.2	20/20	-67	-59	-	22	50	5.5	230
<b>40 - 550 MHz Push-Pulls</b>													
BGY585A	550 MHz, 18.2 dB gain Push-Pull	40 - 550	17.7 - 18.7	0.5 - 2	± 0.2	20/20	-59	-62	-59	77	44	8	240
BGY587	550 MHz, 22 dB gain Push-Pull	40 - 550	21.5 - 22.5	0.2 - 1.5	± 0.2	20/20	-57	-58	-54	77	44	7	240
BGY587B	550 MHz, 27 dB gain Push-Pull	40 - 550	26.2 - 27.8	0.5 - 2.5	± 0.4	20/20	-57	-60	-57	77	44	6.5	340
BGY588N	550 MHz, 34.5 dB gain Push-Pull	40 - 550	33.5 - 35.5	0.5 - 1.5	± 0.4	20/20	-57	-59	-62	77	44	6	340
<b>40 - 550 MHz Power Doubler</b>													
BGD502	550 MHz, 18.5 dB gain Power Doubler	40 - 550	18 - 19	0.2 - 2.2	± 0.3	20/20	-65	-68	-62	77	44	8	435
<b>40 - 600 MHz Push-Pulls</b>													
BGY685A	600 MHz, 18.2 dB gain Push-Pull	40 - 600	17.7 - 18.7	0.5 - 2.2	± 0.2	20/20	-55	-60	-56	85	44	8.5	240
BGY687	600 MHz, 21.5 dB gain Push-Pull	40 - 600	21 - 22	0.8 - 2.2	± 0.2	20/20	-54	-54	-52	85	44	6.5	240
<b>40 - 750 MHz Push-Pulls</b>													
BGY785A	750 MHz, 18.5 dB gain Push-Pull	40 - 750	18 - 19	0 - 2	± 0.3	20/20	-53	-56	-53	110	44	7	240
BGY787	750 MHz, 21.5 dB gain Push-Pull	40 - 750	21 - 22	0 - 1.5	± 0.5	20/20	-53	-52	-53	110	44	6.5	240
BGE787B	750 MHz, 29 dB gain Push-Pull	40 - 750	28.5 - 29.5	0.2 - 2.2	± 0.5	20/20	-50	-54	-56	110	44	7	320
BGE788	750 MHz, 34 dB gain Push-Pull	40 - 750	33.5 - 34.5	0.5 - 2.5	± 0.5	20/20	-49	-51	-52	110	44	7	320
<b>40 - 750 MHz Power Doublers</b>													
BGD702	750 MHz, 18.5 dB gain Power Doubler	40 - 750	18 - 19	0.2 - 2	± 0.5	20/20	-58	-62	-58	110	44	8.5	435
BGD702N	750 MHz, 18.5 dB gain Power Doubler	40 - 750	18 - 19	0.2 - 2	± 0.25	20/20	-58	-62	-58	110	44	8.5	435
BGD712	750 MHz, 18.5 dB gain Power Doubler	40 - 750	18.2 - 18.8	0.5 - 1.5	± 0.35	23/23	-62	-63	-63	112	44	7	410
BGD704	750 MHz, 20 dB gain Power Doubler	40 - 750	19.5 - 20.5	0 - 2	± 0.5	20/20	-57	-61	-56	110	44	8.5	435
BGD714	750 MHz, 20.3 dB gain Power Doubler	40 - 750	20 - 20.6	0.5 - 1.5	± 0.35	23/23	-61	-62	-62	112	44	7	410

types in ***bold red italic underlined*** represent products in development

Type Number	Description	Frequency Range	Gain (dB)	Slope (dB)	FL	S11/S22	CTB	XMOD	CSO	@Ch	@Vo (dBmV)	F @fmax	Itot (mA)
<b>40 - 860 MHz Push-Pulls</b>													
BGY883	870 MHz, 15 dB gain Push-Pull	40 - 870	14.5 - 15.5	0 - 2	± 0.3	20/20	-61	-61	-61	49	44	8.5	235
BGE885	870 MHz, 17 dB gain Push-Pull	40 - 870	16.5 - 17.5	0.2 - 1.2	± 0.5	14/14	-	-	-	129	59	8	240
BGX885N	870 MHz, 17 dB gain Push-Pull	40 - 870	16.5 - 17.5	0.2 - 1.4	± 0.3	20/20	-	-	-	129	59	8	240
BGY885A	870 MHz, 18.5 dB gain Push-Pull	40 - 870	18 - 19	0 - 2	± 0.3	20/20	-61	-61	-61	49	44	8	240
BGY887	870 MHz, 21.5 dB gain Push-Pull	40 - 870	21 - 22	0.2 - 2	± 0.3	20/20	-55	-61	-57	129	40	6.5	235
CGY887	870 MHz, 21.5 dB gain Push-Pull	40 - 870	21.2 - 21.8	0.6 - 1.4	± 0.5	20/21	-59	-56	-57	132	40	5.5	240
CGY887A	870 MHz, 25.5 dB gain Push-Pull	40 - 870	25.2 - 25.8	0.5 - 1.4	± 0.5	20/21	-62	-56	-59	129	40	5	240
CGY887B	870 MHz, 27.5 dB gain Push-Pull	40 - 870	27.2 - 27.8	0.5 - 1.5	± 0.5	24/23	-57.5	-51	-58	132	44	5	310
BGY887B	870 MHz, 29 dB gain Push-Pull	40 - 870	28.5 - 29.5	0.5 - 2.5	± 0.5	20/20	-60	-60	-60	49	44	6.5	340
BGY888	870 MHz, 34 dB gain Push-Pull	40 - 870	33.5 - 34.5	0.5 - 2.5	± 0.5	20/20	-60	-59	-55	49	44	7	340
<b>40 - 860 MHz Power Doublers</b>													
BGD885	870 MHz, 17 dB gain Power Doubler	40 - 870	16.5 - 17.5	0.2 - 1.6	± 0.5	20/20	-	-	-	129	59	8	450
BGD802	870 MHz, 18.5 dB gain Power Doubler	40 - 870	18 - 19	0.2 - 2	± 0.5	20/20	-54	-59	-56	129	44	9	410
BGD812	870 MHz, 18.5 dB gain Power Doubler	40 - 870	18.2 - 18.8	0.4 - 1.4	± 0.5	23/23	-58	-62	-60	132	44	7.5	410
BGD902	870 MHz, 18.5 dB gain Power Doubler	40 - 870	18.2 - 18.8	0.4 - 1.4	± 0.3	21/25	-58	-62	-58	129	44	8	435
CGD923	870 MHz, 19.5 dB gain Power Doubler	40 - 870	19.25 - 19.75	0 - 1	± 0.6	20/20	-56	-57	-54	132	48	5.5	475
BGD804	870 MHz, 20 dB gain Power Doubler	40 - 870	19.5 - 20.5	0.2 - 2	± 0.5	20/20	-53	-61	-54	129	44	7.5	410
BGD814	870 MHz, 20 dB gain Power Doubler	40 - 870	19.7 - 20.3	0.4 - 1.4	± 0.5	22/25	-57.5	-62	-59	132	44	7.5	410
BGD904	870 MHz, 20 dB gain Power Doubler	40 - 870	19.7 - 20.3	0.4 - 1.4	± 0.3	21/25	-57.5	-61	-58	129	44	7.5	435
CGD914	870 MHz, 20 dB gain Power Doubler	40 - 870	19.75 - 20.25	0.2 - 1.5	± 0.45	20/21	-59.5	-64	-50	132	44	4	375
BGD906	870 MHz, 21.5 dB gain Power Doubler	40 - 870	21.2 - 21.8	0.5 - 1.5	± 0.35	22/22	-57	-60	-54	129	44	7.5	435
<b>40 - 1000 MHz Push-Pulls/Power Doublers</b>													
BGY1085A	1000 MHz, 18.5 dB gain Push-Pull	40 - 1000	18 - 19	0 - 2	± 0.3	20/20	-53	-54	-56	150	44	7.5	240
<b><i>CGD1042</i></b>	1000 MHz, 21 dB gain Power Doubler	40 - 1000	20.5 - 22.5	0 - 1	± 0.3	20/23	-74	-64	-69	79	58.1	4.6	485
<b><i>UGD10420</i></b>	1000 MHz, 22 dB gain MMIC Power Doubler	40 - 1000	21.25 - 21.75	0 - 0	± 0.2	18/18	-74	-64	-69	79	58.1	4.5	485
<b><i>CGD1044</i></b>	1000 MHz, 24 dB gain Power Doubler	40 - 1000	23.5 - 25.5	0 - 1	± 0.3	20/23	-74	-64	-69	79	58.1	4.6	485

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Type Number	Description	Frequency Range	Gain (dB)	Slope (dB)	FL	S11/S22	CTB	XMOD	CSO	@Ch	@Vo (dBmV)	F @fmax	Itot (mA)
<b>40 - 1000 MHz Push-Pulls/Power Doublers</b>													
BGY1085A	1000 MHz, 18.5 dB gain Push-Pull	40 - 1000	18 - 19	0 - 2	± 0.3	20/20	-53	-54	-56	150	44	7.5	240
<b><i>CGD1042</i></b>	1000 MHz, 21 dB gain Power Doubler	40 - 1000	20.5 - 22.5	0 - 1	± 0.3	20/23	-74	-64	-69	79	58.1	4.6	485
<b><i>UGD10420</i></b>	1000 MHz, 22 dB gain MMIC Power Doubler	40 - 1000	21.25 - 21.75	0 - 0	± 0.2	18/18	-74	-64	-69	79	58.1	4.5	485
<b><i>CGD1044</i></b>	1000 MHz, 24 dB gain Power Doubler	40 - 1000	23.5 - 25.5	0 - 1	± 0.3	20/23	-74	-64	-69	79	58.1	4.6	485

**Notes:**

This table is for reference only; it contains some calculated values that are not guaranteed. For full data please refer to the latest datasheet. Some parts may still be in development. For availability please check the Philips Sales office.

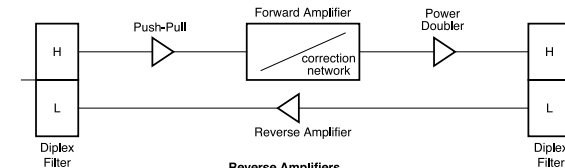
**Description (also see datahandbook):**

Frequency Range Minimum and maximum frequency in MHz at which data are characterized  
 @Ch/@Vo The number of channels and the output voltage at which CTB, XM, CSO and d2 are characterized  
 @fm Measurement frequency  
 F> Noise Figure in dB or Noise in pA/Sqrt(Hz)  
 FL Flatness

**870 MHz Systems**

**Push Pulls**  
 BGY883A - 15 dB gain  
 BGE885 - 17 dB gain  
 BGY885N - 17 dB gain  
 BGY885A - 18.5 dB gain  
 BGY885B - 20 dB gain  
 BGY887 - 21.5 dB gain  
 CGY887 - 21.5 dB gain  
 CGY887A - 22.5 dB gain  
 CGY887B - 27.5 dB gain  
 BGY887B - 29 dB gain  
 BGY888 - 34 dB gain  
 BGY1085<sup>1</sup> - 18.5 dB gain

**Power Doublers**  
 BGD855 - 17 dB gain  
 BGD802 - 18.5 dB gain  
 BGD812 - 18.5 dB gain  
 BGD902 - 18.5 dB gain  
 BGD902L - 18.5 dB gain  
 CGD923 - 19.5 dB gain  
 BGD804 - 20 dB gain  
 BGD814 - 20 dB gain  
 BGD904 - 20 dB gain  
 BGD904L - 20 dB gain  
 CGD914 - 20 dB gain  
 BGD816L - 21.5 dB gain  
 BGD906 - 21.5 dB gain



**Reverse Amplifiers**  
 BGS67A - 65 MHz/25.5 dB  
 BGY68 - 75 MHz/30 dB  
 BGY66B - 120 MHz/25 dB  
 BGY67 - 200 MHz/22 dB  
 BGY67A - 200 MHz/24 dB  
 BGR269 - 200 MHz/35 dB

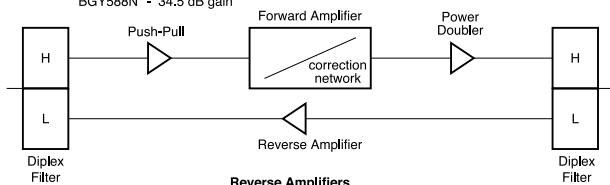
<sup>1)</sup> for 1 GHz application

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**550 MHz Systems**

**Push Pulls**  
 BGY585A - 18.2 dB gain  
 BGY587 - 22 dB gain  
 BGY587B - 27 dB gain  
 BGY588N - 34.5 dB gain

**Power Doublers**  
 BGD502 - 18.5 dB gain



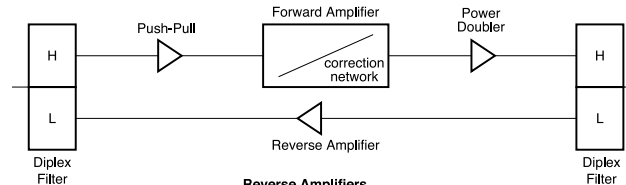
**Reverse Amplifiers**  
 BGS67A - 65 MHz/25.5 dB  
 BGY68 - 75 MHz/30 dB  
 BGY66B - 120 MHz/25 dB  
 BGY67 - 200 MHz/22 dB  
 BGY67A - 200 MHz/24 dB  
 BGR269 - 200 MHz/35 dB

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**750 MHz Systems**

**Push Pulls**  
 BGY785A - 18.5 dB gain  
 BGY787 - 21.5 dB gain  
 BGY787B - 29 dB gain  
 BGE788 - 34 dB gain

**Power Doublers**  
 BGD702 - 18.5 dB gain  
 BGD702N - 18.5 dB gain  
 BGD712 - 18.5 dB gain  
 BGD704 - 20 dB gain  
 BGD714 - 20.3 dB gain



**Reverse Amplifiers**  
 BGS67A - 65 MHz/25.5 dB  
 BGY68 - 75 MHz/30 dB  
 BGY66B - 120 MHz/25 dB  
 BGY67 - 200 MHz/22 dB  
 BGY67A - 200 MHz/24 dB  
 BGR269 - 200 MHz/35 dB

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Why choose Philips Semiconductors?

...CATV RF Hybrid Amplifiers

- \* Excellent quality
- \* Unsurpassed reliability record
- \* Consistently best-in-class rating by customers
- \* Excellent delivery performance
- \* Excellent service levels
- \* Customized types

types in **bold red** represent new products

Type Number	Description	Frequency Range	Rmin (V/W)	Slope (dB)	FL (dB)	S22 (dB)		d3	d2	@fm (MHz)	@Pi (mW)	F @fmax	Conn.	Itot (mA)
<b>5 - 300 MHz Optical Reverse Receiver</b>														
BGO387	300 MHz Reverse Optical Receiver	5 - 300	800	0 - 2	± 0.3	16		-80	-70	54.25	1	7.5	--	190
<b>40 - 750 MHz Forward Path Receiver</b>														
BGO747	750 MHz Optical Receiver	40 - 750	800	0 - 2	1	11		-75	-63	746.5	1	7	--	205
BGO747/FC0	750 MHz Optical Receiver	40 - 750	750	0 - 2	1	11		-75	-63	746.5	1	7	FC	205
<b>40 - 860 MHz Forward Path Receiver</b>														
<b>BGO807</b>	870 MHz Optical Receiver	40 - 870	800	0 - 2	1	11		-71	-55	854.5	1	8.5	--	205
<b>BGO807/FC0</b>	870 MHz Optical Receiver	40 - 870	750	0 - 2	1	11		-71	-55	854.5	1	8.5	FC	205
<b>BGO807/SC0</b>	870 MHz Optical Receiver	40 - 870	750	0 - 2	1	11		-71	-55	854.5	1	8.5	SC	205
BGO827	870 MHz Optical Receiver	40 - 870	800	0 - 2	1	11		-73	-57	854.5	1	9	--	205
BGO827/FC0	870 MHz Optical Receiver	40 - 870	750	0 - 2	1	11		-73	-57	854.5	1	8.5	FC	205
BGO827/SC0	870 MHz Optical Receiver	40 - 870	750	0 - 2	1	11		-73	-57	854.5	1	8.5	SC	205
BGO847	870 MHz Optical Receiver	40 - 870	800	0 - 2	1	11		-73	-63	854.5	1	8	--	205
BGO847/SC0	870 MHz Optical Receiver	40 - 870	750	0 - 2	1	11		-73	-63	854.5	1	8	SC	205
CGO869	870 MHz Optical Receiver with Gain Control	40 - 870	800	0 - 2	1.1	11		-69	-61	854.5	0.5	6.5	--	205

**Notes:**

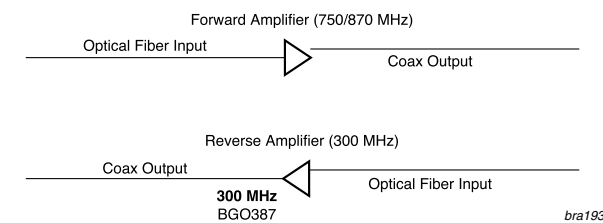
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- @fm Measurement frequency
- F> Noise Figure in dB or Noise in pA/Sqrt(Hz)
- FL Flatness
- Rmin Minimum Responsivity of optical receivers

**Optical Receivers**

- 750 MHz**  
BGO747  
BGO747/FC0  
BGO747/SC0
- 870 MHz**  
BGO807  
BGO807/FC0  
BGO807/SC0
- BGO827  
BGO827/FC0  
BGO827/SC0
- BGO847  
BGO847/SC0  
CGO869
- CGO869/SC0



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**...CATV Optical Receivers**

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Part number	Function	Datarate Mb/s	Package Type	Bare Die	Features			Vcc	Power Dissipation	Process Technology
					I <sub>mod</sub> /I <sub>bias</sub> [mA]	Dual Loop	Input			
<b>Laser Drivers</b>										
TZA3047A	Laser Driver	30-1250	HBCC32	X	100-100	X	CML/PECL	3.3	420	BiCMOS
TZA3047B	Laser Driver	30-1250	HBCC32	X	100-100	X	CML/PECL	3.3 <sup>1</sup>	420	BiCMOS
TZA3050	Laser Driver, Burst Mode	30-1250	HBCC32	X	100-100	-	CML/PECL	3.3 <sup>1</sup>	420	BiCMOS
TZA3010B	Laser Driver	30-3200	HBCC32	-	60-100	-	CML/PECL	3.3 <sup>1</sup>	420	BiCMOS
TZA3011A	Laser Driver	30-3200	HBCC32	X	100-100	X	CML/PECL	3.3	420	BiCMOS
TZA3011B	Laser Driver	30-3200	HBCC32	X	100-100	X	CML/PECL	3.3 <sup>1</sup>	420	BiCMOS
<b>Trans Impedance Amplifier</b>										
					I <sub>n</sub> [nA]	Eq Sens [dBm]	Output		mW	
<b><i>TZA3036</i></b>	TIA	0-155	die only	X	12	-39	50 Ω	3.3	50	BiCMOS
<b><i>TZA3026</i></b>	TIA	0-622	die only	X	64	-32	50 Ω	3.3	60	BiCMOS
<b><i>TZA3046</i></b>	TIA	0-1250	die only	X	150	-28	50 Ω	3.3	70	BiCMOS
TZA3013	TIA	0-2488	die only	X	450	-24	50 Ω	3.3	86	BiCMOS

**Notes:**

All figures given are typical at 25 °C

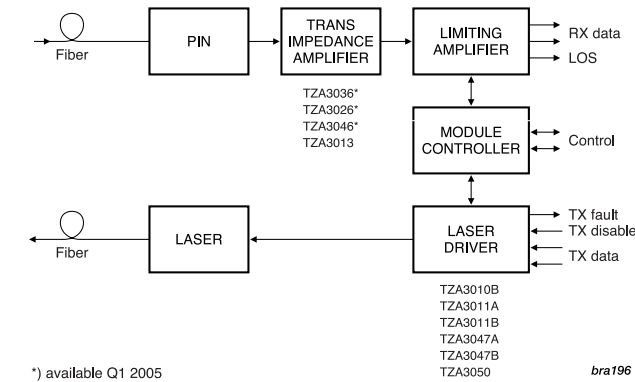
Power dissipation is given for V<sub>cc</sub> = 3.3 V

Eq.Sensitivity conditions: extinction ratio=10, Responsivity diode=0.85 A/W, Bandwidth= 60% of datarate

3.3<sup>1</sup> means that the output stage is capable of driving 5 V laser applications

**Optical Modules : Fiber optic transceiver IC's**

Optical Modules - fiber optic transceiver IC's



\*) available Q1 2005

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**Why choose Philips Semiconductors?**

- ...Optical Networking
- \* Low power dissipation
- \* Easy to design
- \* Excellent RF performance
- \* Broad application area

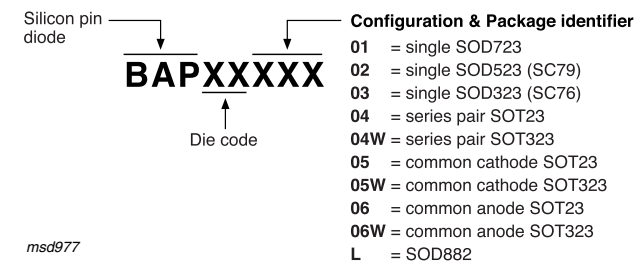
GENERAL PURPOSE PIN DIODES

types in **bold red** represent new products

Type	Package	Conf	Limits		RD ( $\Omega$ ) type @			Cd (pF) type @		
			Vr(V)	If(mA)	0.5 mA	1 mA	10 mA	0V	1V	20V
BAP142L	SOD882	S	60	60	5.5	3.6	1.5	0.4	0.3	0.2 @ 5V
BAP50-02	SOD523	S	50	50	25	14	3	0.4	0.3	0.22 @ 5V
BAP50-03	SOD323	S	50	50	25	14	3	0.4	0.3	0.2 @ 5V
BAP50-04	SOT23	SS	50	50	25	14	3	0.45	0.35	0.3 @ 5V
BAP50-04W	SOT323	SS	50	50	25	14	3	0.45	0.35	0.3 @ 5V
BAP50-05	SOT23	CC	50	50	25	14	3	0.45	0.35	0.3 @ 5V
BAP50-05W	SOT323	CC	50	50	25	14	3	0.45	0.35	0.3 @ 5V
BAP51L	SOD882	S	60	60	5.5	3.6	1.5	0.4	0.3	0.2 @ 5V
BAP51-02	SOD523	S	60	60	5.5	3.6	1.5	0.4	0.3	0.2 @ 5V
BAP51-03	SOD323	S	60	60	5.5	3.6	1.5	0.4	0.3	0.2 @ 5V
BAP51-04W	SOD323	S	50	50	5.5	3.6	1.5	0.4	0.3	0.2 @ 5V
BAP51-05W	SOT323	CC	60	60	5.5	3.6	1.5	0.4	0.3	0.2 @ 5V
BAP51-06W	SOT323	CA	50	50	5.5	3.6	15	0.4	0.3	0.2 @ 5V
<b>BAP55L</b>	SOD882	S	50	100	3.4	2.3	0.8	0.27	0.23	0.18 @ 5V
BAP63-02	SOD523	S	50	100	2.5	1.95	1.17	0.36	0.32	0.25
BAP63-03	SOD323	S	50	100	2.5	1.95	1.17	0.4	0.35	0.27
BAP63-05W	SOT323	CC	50	100	2.5	1.95	1.17	0.4	0.35	0.3
BAP64-02	SOD523	S	200	175	20	10	2	0.52	0.37	0.23
BAP64-03	SOD323	S	200	175	20	10	2	0.52	0.37	0.23
BAP64-04	SOT23	SS	200	175	20	10	2	0.52	0.37	0.23
BAP64-04W	SOT323	SS	200	100	20	10	2	0.52	0.37	0.23
BAP64-05	SOT23	CC	200	175	20	10	2	0.52	0.37	0.23
BAP64-05W	SOT323	CC	200	100	20	10	2	0.52	0.37	0.23
BAP64-06	SOT23	CA	200	175	20	10	2	0.52	0.37	0.23
BAP64-06W	SOT323	S	100	100	20	10	2	0.52	0.37	0.23
BAP65-02	SOD523	S	30	100	-	1	0.56	0.65	0.6	0.375
BAP65-03	SOD323	S	30	100	-	1	0.56	0.65	0.6	0.375
BAP65-05	SOT23	CC	30	100	-	1	0.56	0.65	0.6	0.375
BAP65-05W	SOT323	CC	30	100	-	1	0.56	0.65	0.6	0.375
BAP70-02	SOD523	S	70	100	70	27	4.5	0.29	0.2	0.125
BAP70-03	SOD323	S	70	100	70	27	4.5	0.29	0.2	0.125
BAP70-04W	SOD323	S	70	100	70	27	4.5	0.29	0.2	0.125
BAP70-05	SOD323	S	70	100	70	27	4.5	0.29	0.2	0.125
BAP1321-02	SOD523	S	60	100	3.4	2.4	1.2	0.4	0.35	0.25
BAP1321-03	SOD323	S	60	100	3.4	2.4	1.2	0.4	0.35	0.25
BAP1321-04	SOT23	SS	60	100	3.4	2.4	1.2	0.4	0.35	0.25

RF PIN Diodes part numbering

RF pin diode part numbering



Why choose Philips Semiconductors?

- ...PIN diodes
- \* Unrivalled performance
  - \* Wide portfolio
  - \* Short leadtimes
  - \* Low series inductance
  - \* Low insertion loss
  - \* Low capacitance

Type	Package	MAXIMUM RATINGS		CHARACTERISTICS ; maximals					
		VR (V)	IF (mA)	Rd	@ IF (mA)	and f (MHz)	Cd (pF)	@ VR (V)	and f (MHz)
BA277	SOD523	35	100	0.7	2	100	1.2	6	1
BA278	SOD523	35	100	0.7	2	100	1.2	6	1
BA891	SOD523	35	100	0.7	3	100	0.9	3	1
BA591	SOD323	35	100	0.7	3	100	0.9	3	1
BA792	SOD110	35	100	0.7	3	200	1.1	3	1 to 100
BAT18	SOT23	35	100	0.7	5	200	1	20	1

Why choose Philips Semiconductors?

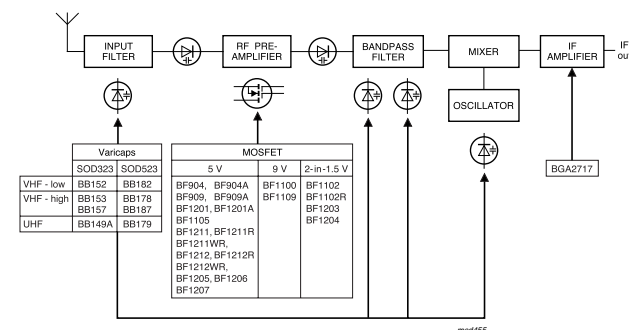
- ...Bandswitch diodes
- \* Volume delivery
  - \* Short leadtimes
  - \* Low series inductance
  - \* Low insertion loss
  - \* Low capacitance
  - \* High reverse isolation

TV & SATELLITE VARICAP DIODES

types in **bold red** represent new products

Type	Package	Cd @ Vr (pF)			TUNING RANGE Cd over voltage range (V)		TUNING RANGE Cd over voltage range (V)		rs (Ω)	MATCHED SETS %	TYPICAL APPLICATIONS			
		min	max	(V)	ratio	V1 to V2	V1 to V2	max				TV	VCO	SAT.
<b>TV &amp; Satellite Varicap Diodes - UHF tuning</b>														
<b>Matched</b>														
BB134	SOD323	1.7	2.1	28	10	0.5	28	0.75	0.5	X	-	X	X	
BB146	SOD323	1.7	2.1	28	23	0.5	28	1.4	1.6	X	-	-	X	
BB149	SOD323	1.9	2.25	28	9	1	28	0.75	1	X	-	-	X	
BB149A	SOD323	1.95	2.22	28	9.7	1	28	0.75	2	X	-	-	X	
BB149A/TM	SOD323	1.95	2.22	28	9.7	1	28	0.75	2	X	-	-	X	
BB179	SOD523	1.95	2.22	28	9.7	1	28	0.75	2	X	X	-	X	
<b>BB179L</b>	SOD523	1.95	2.22	28	9.7	1	28	0.75	2	X	X	-	X	
BB179B	SOD523	1.9	2.25	28	9.2	1	28	0.75	2	X	-	-	X	
<b>BB179BL</b>	SOD882	1.9	2.25	28	9.2	1	28	0.75	2	X	-	-	X	
BB184	SOD523	1.87	2.13	10	6	1	10	0.65 typ.	2	X	X	-	-	
<b>Unmatched</b>														
BB135	SOD323	1.7	2.1	28	10	0.5	28	0.75	-	X	X	-	-	
BB159	SOD323	1.9	2.25	28	9	1	28	0.75	-	X	-	-	-	
BBY31 BBY39	SOT23	1.6	2	28	8.3	1	28	1.2	-	X	-	-	X	
BBY62	SOT143	1.6	2	28	8.3	1	28	1.2	-	X	-	-	X	
<b>TV &amp; Satellite Varicap diodes - VHF tuning</b>														
<b>Matched</b>														
BB132	SOD323	2.3	2.75	28	26	0.5	28	2	1	X	-	-	X	
BB133	SOD323	2.2	2.75	28	16	0.5	28	0.9	0.7	X	-	-	X	
BB147	SOD323	2.4	2.8	28	40	0.5	28	2.8	2	X	-	-	X	
BB148	SOD323	2.4	2.75	28	15	1	28	0.9	1	X	-	-	X	
BB152	SOD323	2.48	2.89	28	>20.6	1	28	1.2	2	X	-	-	X	
BB153	SOD323	2.36	2.75	28	>13.5	1	28	0.8	2	X	-	-	X	
BB157	SOD323	2.57	2.92	25	11	2	25	0.75	2	X	-	-	X	
BB157/TM	SOD323	2.57	2.92	25	11	2	25	0.75	2	X	-	-	X	
BB164	SOD323	2.9	3.4	28	>19.5	1	28	1.4	2	X	-	-	X	
BB178	SOD523	2.36	2.75	28	>13.5	1	28	0.8	2	X	-	-	X	
BB178L	SOD882	2.36	2.75	28	>13.5	1	28	0.8	2	X	-	-	X	
BB182	SOD523	2.48	2.89	28	>20.6	1	28	1.2	2	X	-	-	X	
<b>BB182L</b>	SOD882	2.48	2.89	28	>20.6	1	28	1.2	2	X	-	-	X	
BB187	SOD523	2.57	2.92	25	11	2	25	0.75	2	X	-	-	X	
<b>Unmatched</b>														
BB131	SOD323	0.7	1.055	28	14	0.5	28	3	-	-	-	X	-	
BB158	SOD323	2.4	2.75	28	15	1	28	0.9	-	X	-	X	-	
BB181	SOD523	0.7	1.055	28	14	0.5	28	3	-	-	-	X	-	
<b>BB181L</b>	SOD882	0.7	1.055	28	14	0.5	28	3	-	-	-	X	-	
BBY40	SOT23	4.3	6	25	5.5	3	25	0.7	-	X	-	-	X	

TV/VCR/DVD tuning application diagram



### Why choose Philips Semiconductors?

**...Varicaps**

- \* Broad portfolio
- \* Direct matching process
- \* Small tolerances
- \* Volume delivery
- \* Short leadtimes



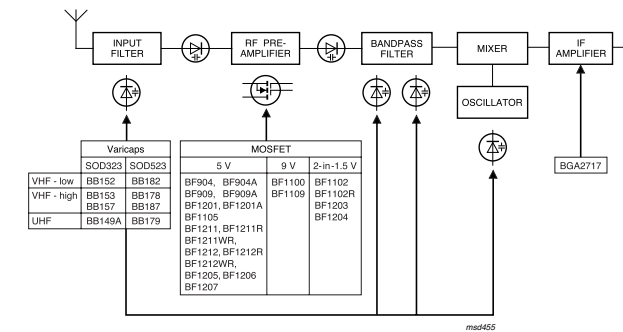
VCO/CXO & RADIO VARICAPS

types in **bold red** represent new products

Type	Package	Cd @ Vr (pF)			Cd @ Vr (pF)			TUNING RANGE Cd over voltage range (V)			rs (Ω)
		min	max	(V)	min	max	(V)	ratio	V1 to V2	typ.	
<b>VCO/CXO Varicap diodes</b>											
BB140L	SOD882	2.48	2.69	1	1.27	1.38	3	1.88 - 2.04	1	3	1.2
BB141	SOD523	3.9	4.5	1	2.22	2.55	4	1.76	1	4	0.4
BB142	SOD523	4	4.9	1	1.85	2.35	4	2.2	1	4	0.5
BB143	SOD523	4.75	5.75	1	2.05	2.55	4	2.35	1	4	0.5
BB145	SOD523	6.4	7.4	1	2.75	3.25	4	2	1	4	0.6
BB145B	SOD523	6.4	7.4	1	2.55	2.95	4	.2.2	1	4	0.6
BB145C	SOD523	6.4	7.2	1	2.55	2.85	4	2.39 - 2.53	1	4	-
BB202	SOD523	28.2	33.5	0.2	7.2	11.2	2.3	2.5	0.2	2.3	0.35
<b>BB202L</b>	SOD882	28	33.5	0.2	7.2	11.2	2.3	2.5	0.2	2.3	0.4
BB151	SOD323	15.4	17	1	9 typ.	9 typ.	4	1.8	1	4	0.4
BB156	SOD323	14.4	17.6	1	7.6	9.6	4	1.86	1	4	0.4
<b>BB198</b>	SOD523	25	28.5	0.5	4.8	6.8	2	-	-	-	0.8 max
BB199	SOD523	36.5	42.5	0.5	11.8	13.8	2	-	-	-	0.25
BB208-02*	SOD523	19.9	23.2	1	4.5	5.4	7.5	4.3	1	7.5	0.35
BB208-03*	SOD323	19.9	23.2	1	4.5	5.4	7.5	4.3	1	7.5	0.35
<b>Radio Varicap diodes FM radio tuning</b>											
BB804	SOT23	42	46.5	2	26 typ.	26 typ.	8	1.75 (min)	2	8	0.2
BB200	SOT23	65.8	74.2	1	12	14.8	4.5	5 (min)	1	4.5	0.43
BB201	SOT23	89	102	1	25.5	29.7	7.5	3.1 (min)	1	7.5	0.3
BB202	SOD523	28.2	33.5	0.2	7.2	11.2	2.3	2.5 (min)	0.2	2.3	0.35
<b>BB202L</b>	SOD882	28	33.5	0.2	7.2	11.2	2.3	2.5 (min)	0.2	2.3	0.4
BB156	SOD323	14.4	17.6	1	7.6	9.6	4	3.3 (min)	1	7.5	0.4
BB207	SOT23	76	86	1	25.5	29.7	7.5	2.6	1	7.5	0.2

**Note:**  
including special design for FM car radio (CREST-IC: TEF6860)

TV/VCR/DVD tuning application diagram



### Why choose Philips Semiconductors?

**...Varicaps**

- \* Broad portfolio
- \* Direct matching process
- \* Small tolerances
- \* Volume delivery
- \* Short leadtimes

GENERAL PURPOSE WIDEBAND AMPLIFIERS, 50 Ω GAIN BLOCKS

types in **bold red** represent new products

Type	Package	@		f <sub>u1</sub>	@ 1GHz				@ 1GHz	Gain <sup>3</sup> (dB) @					Limits		
		Vs (V)	Is (mA)		@-3dB (GHz)	NF (dB)	Psat (dBm)	Gain <sup>3</sup> (dB)		P <sub>1dB</sub> (dBm)	OIP <sub>3</sub> (dBm)	100 MHz	2.2 GHz	2.6 GHz	3.0 GHz	Vs (V)	Is (mA)
BGA2711	SOT363	5	12	3.6 <sup>2)</sup>	4.7	2	12.9	-2	10	13	14.1	13.8	12.8	6	20	200	
BGA2748	SOT363	3	5.7	1.9	1.8 <sup>2)</sup>	-4	21.3	-10	-2	14.8	17.6	14.2	11.3	4	15	200	
BGA2771	SOT363	3	33	2.4	4.4	12 <sup>2)</sup>	21	11	22	20.3	20.4	17.5	15.2	4	50	200	
BGA2776	SOT363	5	23.8	2.8	4.7	8	22.8 <sup>2)</sup>	5.5	17	22.2	23.2	20.8	18.7	6	34	200	
BGA2709	SOT363	5	23.5	2.8	4	12.4	22.7	8.3	24	22.6	22.7	22	21.1	6	35	200	
BGA2712	SOT363	5	12.5	2.8	3.9	4.8	21.3	0	12	20.9	21.9	20.8	18.6	6	25	200	
BGM1011	SOT363	5	25.5	-	4.7	13.8	30	12.2	23	25	37	32	28	6	35	200	
BGM1012	SOT363	3	14.6	3.6	4.8	9.7	20.1	6	18	19.5	20.4	19.9	18.7	4	50	200	
BGM1013	SOT363	5	27.5	2.1	4	15	35	12	24	34.4	31	28.2	25.3	6	35	200	
<b>BGM1014</b>	SOT363	5	21	2.7	4.6	13.5	32.2	12.2	22	31.5	34.2	32	28	6	30	200	
BGA2715	SOT363	5	4.3 <sup>2)</sup>	3	2.6	-5	22	-9	14	14	22	21	19	6	8	200	
BGA2716	SOT363	5	15.9 <sup>2)</sup>	3.6	4.9	11	24	7	24	24	24	24	23	6	25	200	
BGA2717	SOT363	5	8	3	2.1	1	23	-3	20	20	23	23	20	6	15	200	

1) Upper -3dB point, to gain at 1GHz  
 2) Optimized parameter  
 3) Gain = |S<sub>21</sub>|<sup>2</sup>

### Why choose Philips Semiconductors?

**...MMIC's**

- \* Reduced RF component count
- \* Easy circuit design-in
- \* Reduced board size
- \* Short time-to-market
- \* Volume delivery
- \* Short leadtimes

2-STAGE VARIABLE GAIN LINEAR AMPLIFIER

Type	Package	@		Frequency Range		@ 900MHz				@1900 MHz				Limits		
						Gain <sup>4)</sup> (dB)	DG <sup>5)</sup> (dB)	P1dB (dBm)	ACPR (dBc)	Gain <sup>4)</sup> (dB)	DG <sup>5)</sup> (dB)	P1dB (dBm)	ACPR (dBc)	Vs (V)	Is (mA)	Ptot (mW)
BGA2031/1	SOT363	3	51	800-2500	800-2500	24	62	11	49	23	56	13	49	3.3	50	200

4) Gain = Gp, power gain  
 5) DG = Gain control range

WIDEBAND LINEAR MIXER

Type	Package	@		RF Input Freq. Range (MHz)	IF Output Freq. Range (MHz)	@ 880MHz		@ 880MHz.		@2450 MHz			Limits		
						NF (dB)	Gain <sup>6)</sup> (dB)	OIP <sub>3</sub> (dBm)	NF (dB)	Gain <sup>6)</sup> (dB)	OIP <sub>3</sub> (dBm)	Vs (V)	Is (mA)	Ptot (mW)	
BGA2022	SOT363	3	51	800-2500	50-500	9	5	4	9	6	10	4	20	40	

LOW NOISE WIDEBAND AMPLIFIERS

Type	Package	@		@ 900MHz			@ 1800MHz			Gain <sup>3)</sup> (db) @				Limits		
				NF (dB)	Gain (dB)	IIP <sub>3</sub> (dBm)	NF (dB)	Gain (dB)	IIP <sub>3</sub> (dBm)	100 MHz	1 GHz	2.6 GHz	3.0 GHz	Vs (V)	Is (mA)	Ptot (mW)
BGA2001	SOT343R	2.5	4	1.3	22 <sup>7)</sup>	-7.4	1.3	19.5 <sup>7)</sup>	-4.5	20	17.1	11.6	10.7	4.5	30	135
BGA2003	SOT343R	2.5	10 <sup>8)</sup>	1.8	24 <sup>7)</sup>	-6.5	1.8	16 <sup>7)</sup>	-4.8	26	18.6	11.1	10.1	4.5	30	135
BGA2004 <sup>9)</sup>	SOT363	2.7	6	-	-	-	1.4	18	-5	-	-	-	-	3.3	15	50
BGA2011	SOT363	3	15	1.5	19 <sup>3)</sup>	10	-	-	-	24	14.8	8	6.5	4.5	30	135
BGA2012	SOT363	3	7	-	-	-	1.7	16 <sup>3)</sup>	10	22	18.2	11.6	10.5	4.5	15	70
BGU2003	SOT343R	2.5	10 <sup>8)</sup>	1	23	-6	1.1	18	-5	25	19	12.3	11.6	4.5	30	135

3) Gain = |S<sub>21</sub>|<sup>2</sup>  
 7) MSG  
 8) Adjustable bias  
 9) Switched LNA with internal match for 1.8 GHz. Objective data

GENERAL PURPOSE MEDIUM POWER AMPL., 50 Ω GAIN BLOCKS

Type	Package	@		@900MHz					@900MHz			Gain <sup>3)</sup>	f <sub>10</sub> <sup>10)</sup> @-3dB (MHz)	Limits		
				NF (dB)	Gain <sup>3)</sup> (dB)	OIP <sub>3</sub> (dBm)	P <sub>1</sub> dB (dBm)	NF (dB)	Gain <sup>3)</sup> (dB)	NF (dB)	P <sub>1</sub> dB (dBm)			Vs (V)	Is (mA)	Ptot (mW)
BGA6289	SOT89	3.8	83	3.8	15	31	17	4.1	13	4.1	15	12	4000	6	120	480
BGA6489	SOT89	5.1	83	3.1	20	33	20	3.3	16	3.3	17	15	4000	6	120	480
BGA6589	SOT89	4.8	83	3	22	33	21	3.3	17	3.3	20	15	4000	6	120	480

3) Gain = |S<sub>21</sub>|<sup>2</sup>  
 10) Determined by return loss (10 dB)

**Why choose Philips Semiconductors?**

...MMIC's

- \* Reduced RF component count
- \* Easy circuit design-in
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Type	Package	Ft (GHz)	Vceo (V)	Ic (mA)	Ptot (mW)	Polarity	Gum (dB)	F (dB)	@ (MHz)	Gum (dB)	F (dB)	@ (MHz)	Vo (mV)	PI (dBm)	ITD (dBm)	@ Ic & (mA)	Vce (V)	
		Typical	Maximum values															
BFG10(X)	SOT143	-	8	250	250	NPN	-	-	-	7	-	1900	-	-	-	-	-	
BFG10W(X)	SOT343	-	10	250	400	NPN	-	-	-	7	-	1900	-	-	-	-	-	
BLT80	SOT223	-	10	250	2000	NPN	>6	-	900	-	-	-	-	-	-	-	-	
BLT81	SOT223	-	9.5	500	2000	NPN	>6.5	-	900	-	-	-	-	-	-	-	-	
BLT50	SOT223	-	10	500	2000	NPN	>7	-	900	-	-	-	-	-	-	-	-	
BLT70	SOT223	-	8	250	2100	NPN	>6	-	900	-	-	-	-	-	-	-	-	
PMBHT10	SOT23	0.65	25	40	400	NPN	-	-	-	-	-	-	-	-	-	-	-	
BFS17	SOT23	1	15	25	300	NPN	-	4.5	500	-	-	-	-	-	-	-	-	
BFS17W	SOT323	1.6	15	50	300	NPN	-	4.5	500	-	-	-	-	-	-	-	-	
BFT25	SOT23	2.3	5	6.5	30	NPN	18	3.8	500	12	-	800	-	-	-	-	-	
BFS17A	SOT23	2.8	15	25	300	NPN	13.5	2.5	800	-	-	-	150	-	-	14	10	
BFR94A	SOT122	3.5	25	150	3500	NPN	-	8	200	-	5	500	-	-	-	-	-	
BFG35	SOT223	4	18	150	1000	NPN	15	-	500	11	-	800	750	-	-	100	10	
BFQ18	SOT89	4	18	150	1000	NPN	-	-	-	-	-	-	-	-	-	-	-	
BFQ34/01	SOT122	4	18	150	2700	NPN	16.3	8	500	-	-	-	1200	26	45	120	15	
BFQ68	SOT122	4	18	300	4500	NPN	13	-	800	-	-	1600	1600	28	47	240	15	
BFG25A(X)	SOT143	5	5	6.5	32	NPN	18	1.8	1000	-	-	-	-	-	-	-	-	
BFG25W(X)	SOT343	5	5	6.5	500	NPN	16	2	1000	8	-	2000	-	-	-	-	-	
BFG31	SOT223	5	15	100	1000	PNP	16	-	500	12	-	800	550	-	-	70	10	
BFG590(X)	SOT143	5	15	200	400	NPN	13	-	900	7.5	-	2000	-	-	-	-	-	
BFG590W(X)	SOT343	5	15	200	500	NPN	13	-	900	7.5	-	2000	-	21	-	80	5	
BFG92A(X)	SOT143	5	15	25	400	NPN	16	2	1000	11	3	2000	-	-	-	-	-	
BFQ149	SOT89	5	15	100	1000	PNP	12	3.75	500	-	-	-	-	-	-	-	-	
BFR106	SOT23	5	15	100	500	NPN	11.5	3.5	800	-	-	-	350	-	-	50	9	
BFR92A	SOT23	5	15	25	300	NPN	14	2.1	1000	8	3	2000	150	-	-	14	10	
BFR92AW	SOT323	5	15	25	300	NPN	14	2	1000	-	3	2000	-	-	-	-	-	
BFR93AW	SOT323	5	12	35	300	NPN	13	1.5	1000	8	2.1	2000	-	-	-	-	-	
BFS25A	SOT323	5	5	6.5	32	NPN	13	1.8	1000	-	-	-	-	-	-	-	-	
BFT25A	SOT23	5	5	6.5	32	NPN	15	1.8	1000	-	-	-	-	-	-	-	-	
BFT92	SOT23	5	15	25	300	PNP	18	2.5	500	-	-	-	150	-	-	14	10	
BFT92W	SOT323	5	15	35	300	PNP	17	2.5	500	11	3	1000	-	-	-	-	-	
BFT93	SOT23	5	12	35	300	PNP	16.5	2.4	500	-	-	-	300	-	-	30	5	
BFT93W	SOT323	5	12	50	300	PNP	15.5	2.4	500	10	3	1000	-	-	-	-	-	
BFG97	SOT223	5.5	15	100	1000	NPN	16	-	500	12	-	800	700	-	-	70	10	
BFQ19	SOT89	5.5	15	100	1000	NPN	11.5	3.3	500	7.5	-	800	-	-	-	-	-	
BFG93A(X)	SOT143	6	12	35	300	NPN	16	1.7	1000	10	2.3	2000	-	-	-	-	-	
BFG94	SOT223	6	12	60	700	NPN	-	2.7	500	13.5	3	1000	500	21.5	34	45	10	
BFQ270	SOT172	6	19	500	10000	NPN	16	-	500	-	-	-	1600	-	-	240	18	
BFR93A	SOT23	6	12	35	300	NPN	13	1.9	1000	-	3	2000	425	-	-	30	8	
BFQ135	SOT172	6.5	19	150	2700	NPN	17	-	500	13.5	-	800	1200	-	-	120	18	
BFG135	SOT223	7	15	150	1000	NPN	16	-	500	12	-	800	850	-	-	100	10	
BFG591	SOT223	7	15	200	2000	NPN	13	-	900	7.5	-	2000	-	-	-	-	-	
BFQ591	SOT89	7	15	200	2000	NPN	13	-	900	7.5	-	2000	-	-	-	-	-	
BFQ621	SOT172	7	16	150	800	NPN	18.5	-	500	-	-	-	1200	-	-	120	18	
BFG198	SOT223	8	10	100	1000	NPN	18	-	500	15	-	800	700	-	-	70	8	
BFG67(X)	SOT143	8	10	50	380	NPN	17	1.7	1000	10	2.5	2000	-	-	-	-	-	
BFQ67	SOT23	8	10	50	300	NPN	14	1.7	1000	8	2.7	2000	-	-	-	-	-	
BFQ67W	SOT323	8	10	50	300	NPN	13	2	1000	8	2.7	2000	-	-	-	-	-	
PBR941	SOT23	8	10	50	360	NPN	15	1.4	1000	9.5	2	2000	-	-	-	-	-	
PBR951	SOT23	8	10	100	365	NPN	14	1.3	1000	8	2	2000	-	-	-	-	-	
PRF947	SOT323	8.5	10	50	250	NPN	16	1.5	1000	10	2.1	2000	-	-	-	-	-	
PRF957	SOT323	8.5	10	100	270	NPN	15	1.3	1000	9.2	1.8	2000	-	-	-	-	-	
BFG505(X)	SOT143	9	15	18	150	NPN	20	1.6	900	13	1.9	2000	-	4	10	5	6	
BFG520(X)	SOT143	9	15	70	300	NPN	19	1.6	900	13	1.9	2000	275	17	26	20	6	
BFG520W(X)	SOT343	9	15	70	500	NPN	17	1.6	900	11	1.85	2000	275	17	26	20	6	
BFG540(X)	SOT143	9	15	120	500	NPN	18	1.9	900	11	2.1	2000	500	21	34	40	8	
BFG540W(X)	SOT343	9	15	120	500	NPN	16	1.9	900	10	2.1	2000	500	21	34	40	8	

types in **bold red** represent new products

Type	Package	Ft (GHz)	Vceo (V)	Ic (mA)	Ptot (mW)	Polarity	Gum (dB)	F (dB)		@ (MHz)	Gum (dB)	F (dB)	@ (MHz)	Vo (mV)	PI (dBm)	ITD (dBm)	@ Ic & (mA)	Vce (V)	
		Typical	Maximum values																
BFG541	SOT223	9	15	120	650	NPN	15	1.9		900	9	2.1	2000	500	21	34	40	8	
BFM505	SOT363	9	8	18	500	NPN	17	1.4		900	10	1.9	2000	-	-	-	-	-	
BFM520	SOT363	9	8	70	1000	NPN	15	1.7		900	9	1.9	2000	-	-	-	-	-	
BFQ540	SOT89	9	12	120	1200	NPN	-	1.9		900	-	-	-	500	-	-	40	8	
BFR505	SOT23	9	15	18	150	NPN	17	1.6		900	10	1.9	2000	-	4	10	5	6	
BFR505T	SOT416	9	-	18	150	NPN	17	1.2		900	-	-	-	-	-	-	-	-	
BFR520	SOT23	9	15	70	300	NPN	15	1.6		900	9	1.9	2000	-	17	26	20	6	
BFR520T	SOT416	9	-	70	150	NPN	15	1.6		900	9	1.9	2000	-	17	26	-	-	
BFR540	SOT23	9	15	120	500	NPN	14	1.9		900	7	2.1	2000	550	21	34	40	8	
BF5505	SOT323	9	15	18	150	NPN	17	1.6		900	10	1.9	2000	-	4	10	5	6	
BF5520	SOT323	9	15	70	300	NPN	15	1.6		900	9	1.9	2000	-	17	26	20	6	
BF5540	SOT323	9	15	120	500	NPN	14	1.9		900	8	2.1	2000	-	21	34	40	8	
PRF949	SOT416	9	10	50	150	NPN	16	1.5		1000	-	-	-	-	-	-	-	-	
BFG310W/XR	SOT343XR	14	6	10	60	NPN	18	1.1		1000	-	-	-	-	1.8	8	5	3	
BFG310/XR	SOT143XR	14	6	10	60	NPN	18	1.1		1000	-	-	-	-	1.8	8	5	3	
BFG325VW/XR	SOT343XR	14	6	35	210	NPN	18	1.1		3000	-	-	-	-	8.7	19	15	3	
BFG325/XR	SOT143XR	14	6	35	210	NPN	18	1.1		3000	-	-	-	-	8.7	19	15	3	
BFG403W	SOT343	17	4.5	3.6	16	NPN	-	1		900	-	1.6	2000	-	5	6	1	1	
BFG21W	SOT343	18	4.5	200	600	NPN	-	-		-	10	-	1900	-	-	-	-	-	
BFG480W	SOT343	21	4.5	250	360	NPN	-	1.2		900	-	1.8	2000	-	-	28	80	2	
BFG410W	SOT343	22	4.5	12	54	NPN	-	0.9		900	-	1.2	2000	-	5	15	10	2	
<b>BFG424F</b>	SOT343F	25	4.5	30	135	NPN	-	-		-	-	1.2	2000	-	12	22	25	2	
BFG425V	SOT343	25	4.5	30	135	NPN	-	0.8		900	-	1.2	2000	-	12	22	25	2	
BFU510	SOT343	45	2.5	15	38	NPN	-	0.6		900	20	0.9	2000	-	-	-	-	-	
BFU540	SOT343	45	2.5	50	125	NPN	-	0.6		900	20	0.9	2000	-	-	-	-	-	

## Why choose Philips Semiconductors?

- ...Wideband transistors
- \* Broad portfolio
- \* Short leadtimes
- \* Smallest packages
- \* Volume delivery

## RF J-FETS FOR SWITCHING

Type	Package	V <sub>DS</sub>	I <sub>G</sub>	I <sub>DSS</sub>		V <sub>(p)GS</sub>		R <sub>DS(on)</sub>	C <sub>rs</sub>		t <sub>on</sub>		t <sub>off</sub>		
		(V)	(mA)	min	max	min	max		(Ω)	min	max	typ	max	typ	max
<b>N-channel Junction Field-effect transistors for switching</b>															
BSR56	SOT23	40	50	50	-	4	10	25	-	5	-	-	-	25	-
BSR57	SOT23	40	50	20	100	2	6	40	-	5	-	-	-	50	-
BSR58	SOT23	40	50	8	80	0.8	4	60	-	5	-	-	-	100	-
PMBFJ108	SOT23	25	50	80	-	3	10	8	-	15	4	-	6	-	-
PMBFJ109	SOT23	25	50	40	-	2	6	12	-	15	4	-	6	-	-
PMBFJ110	SOT23	25	50	10	-	0.5	4	18	-	15	4	-	6	-	-
PMBFJ111	SOT23	40	50	20	-	3	10	30	-	typ.3	13	-	35	-	-
PMBFJ112	SOT23	40	50	5	-	1	5	50	-	typ.3	13	-	35	-	-
PMBFJ113	SOT23	40	50	2	-	0.5	3	100	-	typ.3	13	-	35	-	-
J108	SOT54	25	50	80	-	3	10	8	-	15	4	-	6	-	-
J109	SOT54	25	50	40	-	2	6	12	-	15	4	-	6	-	-
J110	SOT54	25	50	10	-	0.5	4	18	-	15	4	-	6	-	-
J111	SOT54	40	50	20	-	3	10	30	-	typ.3	13	-	35	-	-
J112	SOT54	40	50	5	-	1	5	50	-	typ.3	13	-	35	-	-
J113	SOT54	40	50	2	-	0.5	3	100	-	typ.3	13	-	35	-	-
PMBF4391	SOT23	40	50	50	150	4	10	30	-	3.5	-	15	-	20	-
PMBF4392	SOT23	40	50	25	75	2	5	60	-	3.5	-	15	-	35	-
PMBF4393	SOT23	40	50	5	30	0.5	3	100	-	3.5	-	15	-	50	-
<b>P-channel Junction Field-effect transistors for switching</b>															
PMBFJ174	SOT23	30	50	20	135	5	10	85	typ.4	typ.4	7	-	15	-	-
PMBFJ175	SOT23	30	50	7	70	3	6	125	typ.4	typ.4	15	-	30	-	-
PMBFJ176	SOT23	30	50	2	35	1	4	250	typ.4	typ.4	35	-	35	-	-
PMBFJ177	SOT23	30	50	1.5	20	0.8	2.25	300	typ.4	typ.4	45	-	45	-	-
J174	SOT54	30	50	20	135	5	10	85	typ.4	typ.4	7	-	15	-	-
J175	SOT54	30	50	7	70	3	6	125	typ.4	typ.4	15	-	30	-	-
J176	SOT54	30	50	2	35	1	4	250	typ.4	typ.4	35	-	35	-	-
J177	SOT54	30	50	1.5	20	0.8	2.25	300	typ.4	typ.4	45	-	45	-	-

## Why choose Philips Semiconductors?

### ... FETs

- \* Volume delivery
- \* Short leadtimes
- \* Broad portfolio
- \* Smallest packages

N-CHANNEL, RF J-FETS VARIOUS AMPLIFIERS

Type	Package	V <sub>DS</sub> (V)	I <sub>G</sub> (Ma)	I <sub>DSS</sub> (mA)		V <sub>(p)GS</sub> (V)		Y <sub>f</sub> s  (mS)		C <sub>rs</sub> (pF)	
				min	max	min	max	min	max	min	max
<b>DC, LF and HF amplifiers</b>											
BF245A	SOT54	30	10	2	6.5	<8	<8	3	6.5	1.1	-
BF245B	SOT54	30	10	6	15	<8	<8	3	6.5	1.1	-
BF245C	SOT54	30	10	12	25	<8	<8	3	6.5	1.1	-
BF545A	SOT23	30	10	2	6.5	0.4	7.5	3	6.5	0.8	-
BF545B	SOT23	30	10	6	15	0.4	7.5	3	6.5	0.8	-
BF545C	SOT23	30	10	12	25	0.4	7.5	3	6.5	0.8	-
BF556A	SOT23	30	10	3	7	0.5	7.5	4.5	4.5	0.8	-
BF556B	SOT23	30	10	6	13	0.5	7.5	4.5	4.5	0.9	-
BF556C	SOT23	30	10	11	18	0.5	7.5	4.5	4.5	0.8	-
<b>Preamplifiers for AM tuners in car radios</b>											
BF861A	SOT23	25	10	2	6.5	0.2	1	12	12	2.1	2.7
BF861B	SOT23	25	10	6	15	0.5	1.5	16	16	2.1	2.7
BF861C	SOT23	25	10	12	25	0.8	2	20	20	2.1	2.7
BF862	SOT23	20	10	13	25	<20	<20	35	35	2.5	-
<b>RF stages FM portables, car radios, main radios &amp; mixer stages</b>											
BF510	SOT23	20	10	0.7	3	typ. 0.8	typ. 0.8	2.5	2.5	0.4	0.5
BF511	SOT23	20	10	2.5	7	typ. 1.5	typ. 1.5	4	4	0.4	0.5
BF512	SOT23	20	10	6	12	typ. 2.2	typ. 2.2	6	6	0.4	0.5
BF513	SOT23	20	10	10	18	typ. 3	typ. 3	7	7	0.4	0.5
<b>Low level general purpose amplifiers</b>											
BFR30	SOT23	25	5	4	10	<5	<5	1	4	1.5	-
BFR31	SOT23	25	5	1	5	<2.5	<2.5	1.5	4.5	1.5	-
<b>General purpose amplifiers</b>											
BFT46	SOT23	25	5	0.2	1.5	<1.2	<1.2	>1	>1	1.5	-
<b>AM input stages UHF/VHF amplifiers</b>											
PMBFJ308	SOT23	25	50	12	60	1	6.5	>10	>10	1.3	2.5
PMBFJ309	SOT23	25	50	12	30	1	4	>10	>10	1.3	2.5
PMBFJ310	SOT23	25	50	24	60	2	6.5	>10	>10	1.3	2.5
PMBFJ620	SOT363	25	50	24	60	2	6.5	10	10	1.3	2.5

**Why choose Philips Semiconductors?**

... FETs

- \* Volume delivery
- \* Short leadtimes
- \* Broad portfolio
- \* Smallest packages

RF FETs

N-CHANNEL, MOS FETS FOR SWITCHING

Type	Package	V <sub>DS</sub> (V)	I <sub>D</sub> mA	I <sub>DSS</sub> (mA)		V <sub>(p)GS</sub> (V)		R <sub>DSON</sub> (Ω)	C <sub>rs</sub> (pF)		t <sub>on</sub> (ns)		t <sub>off</sub> (ns)		S <sub>21(on)</sub>   <sup>2</sup> (dB)	S <sub>21(off)</sub>   <sup>2</sup> (dB)	MODE
				min	max	min	max		max	min	max	typ	max	typ			
<b>N-channel, single MOS-FETS for switching</b>																	
BSD22	SOT143	20	50	-	-	-	2	30	typ.0.6	typ.0.6	-	1	-	5	-	-	depl.
BSS83	SOT143	10	50	-	-	0.1 <sup>2)</sup>	2 <sup>1)</sup>	45	typ.0.6	typ.0.6	-	1	-	5	-	-	enh.
<b>Silicon RF Switches</b>																	
BF1107	SOT23	3	10	-	100 <sup>3)</sup>	-	7 <sup>4)</sup>	20	-	-	-	-	-	-	2.5	30	depl.
BF1108	SOT143B	3	10	-	100 <sup>3)</sup>	-	7 <sup>4)</sup>	20	-	-	-	-	-	-	3	30	depl.
BF1108R	SOT143R	3	10	-	100 <sup>3)</sup>	-	7 <sup>4)</sup>	20	-	-	-	-	-	-	3	30	depl.

1) Asymmetrical  
 2) V<sub>GS(th)</sub>  
 3) I<sub>D</sub>  
 4) V<sub>SG</sub>

**Why choose Philips Semiconductors?**

... FETs

- \* Volume delivery
- \* Short leadtimes
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## N-CHANNEL, DUAL GATE MOS-FETs

Type	Package	V <sub>DS</sub> (V)	I <sub>D</sub> (mA)	I <sub>DSS</sub> (mA)		V <sub>(p)GS</sub> (V)			Y <sub>f</sub>   (mS)		C <sub>is</sub> (pF)	C <sub>os</sub> (pF)	F @ 800 MHz (dB)	VHF	UHF
				min	max	min	max		min	max					
<b>With external bias</b>															
BF901	SOT143	12	30	2	18	-	0.7 <sup>2)</sup>		25	-	2.35	1.4	1.7	X	X
BF901R	SOT143R	12	30	2	18	-	0.7 <sup>2)</sup>		25	-	2.35	1.4	1.7	X	X
BF908	SOT143	12	40	3	27	-	2		36	-	3.1	1.7	1.5	X	X
BF908R	SOT143R	12	40	3	27	-	2		36	-	3.1	1.7	1.5	X	X
BF908VVR	SOT343R	12	40	3	27	-	2		36	-	3.1	1.7	1.5	X	X
BF991	SOT143	20	20	4	25	-	2.5		10	-	2.1	1.1	0.7 <sup>3)</sup>	X	-
BF992	SOT143	20	40	-	-	-	1.3		20	-	4	2	1.2 <sup>3)</sup>	X	-
BF994S	SOT143	20	30	4	20	-	2.5		15	-	2.5	1	1 <sup>3)</sup>	X	-
BF996S	SOT143	20	30	4	20	-	2.5		15	-	2.3	0.8	1.8	-	X
BF998	SOT143	12	30	2	18	-	2.5		21	-	2.1	1.05	1	X	X
BF998R	SOT143R	12	30	2	18	-	2.5		21	-	2.1	1.05	1	X	X
BF998VVR	SOT343R	12	30	2	18	-	2.5		22	-	2.1	1.05	1	X	X
<b>Fully internal bias</b>															
BF1105	SOT143	7	30	8	16	-	-		25	-	2.2 <sup>5)</sup>	1.2 <sup>4)</sup>	1.7	X	X
BF1105R	SOT143R	7	30	8	16	-	-		25	-	2.2 <sup>5)</sup>	1.2 <sup>4)</sup>	1.7	X	X
BF1105VVR	SOT343R	7	30	8	16	-	-		25	-	2.2 <sup>5)</sup>	1.2 <sup>4)</sup>	1.7	X	X
BF1109	SOT143	11	30	8	16	-	1.2 <sup>2)</sup>		24	-	2.2 <sup>5)</sup>	1.3 <sup>4)</sup>	1.5	X	X
BF1109R	SOT143R	11	30	8	16	-	1.2 <sup>2)</sup>		24	-	2.2 <sup>5)</sup>	1.3 <sup>4)</sup>	1.5	X	X
BF1109VVR	SOT343R	11	30	8	16	-	1.2 <sup>2)</sup>		24	-	2.2 <sup>5)</sup>	1.3 <sup>4)</sup>	1.5	X	X
<b>Partly internal bias</b>															
BF904(A)	SOT143	7	30	8	13	-	1 <sup>2)</sup>		22	-	2.2	1.3	2	X	X
BF904(A)R	SOT143R	7	30	8	13	-	1 <sup>2)</sup>		22	-	2.2	1.3	2	X	X
BF904(A)VVR	SOT343R	7	30	8	13	-	1 <sup>2)</sup>		22	-	2.2	1.3	2	X	X
BF909(A)	SOT143	7	40	12	20	-	1 <sup>2)</sup>		36	-	3.6	2.3	2	X	X
BF909(A)R	SOT143R	7	40	12	20	-	1 <sup>2)</sup>		36	-	3.6	2.3	2	X	X
BF909(A)VVR	SOT343R	7	40	12	20	-	1 <sup>2)</sup>		36	-	3.6	2.3	2	X	X
BF1100	SOT143	14	30	8	13	-	1 <sup>2)</sup>		24	-	2.2	1.4	2	X	X
BF1100R	SOT143R	14	30	8	13	-	1 <sup>2)</sup>		24	-	2.2	1.4	2	X	X
BF1100VVR	SOT343R	14	30	8	13	-	1 <sup>2)</sup>		24	-	2.2	1.4	2	X	X
BF1101	SOT143	7	30	8	16	-	1 <sup>2)</sup>		25	-	2.2	1.2 <sup>4)</sup>	1.7	X	X
BF1101R	SOT143R	7	30	8	16	-	1 <sup>2)</sup>		25	-	2.2	1.2 <sup>4)</sup>	1.7	X	X
BF1101VVR	SOT343R	7	30	8	16	-	1 <sup>2)</sup>		25	-	2.2	1.2 <sup>4)</sup>	1.7	X	X
BF1102(R)	SOT363	7	40	12	20	-	1.2 <sup>2)</sup>		36	-	2.8 <sup>5)</sup>	1.6 <sup>4)</sup>	2	X	X
BF1201	SOT143	10	30 <sup>1)</sup>	11	19	-	1.2 <sup>2)</sup>		23	-	2.6	0.9	1.9	X	X
BF1201R	SOT143R	10	30 <sup>1)</sup>	11	19	-	1.2 <sup>2)</sup>		23	-	2.6	0.9	1.9	X	X
BF1201VVR	SOT343R	10	30 <sup>1)</sup>	11	19	-	1.2 <sup>2)</sup>		23	-	2.6	0.9	1.9	X	X
BF1202	SOT143	10	30	8	16	-	1.2 <sup>2)</sup>		25	-	1.7	0.85	1	X	X

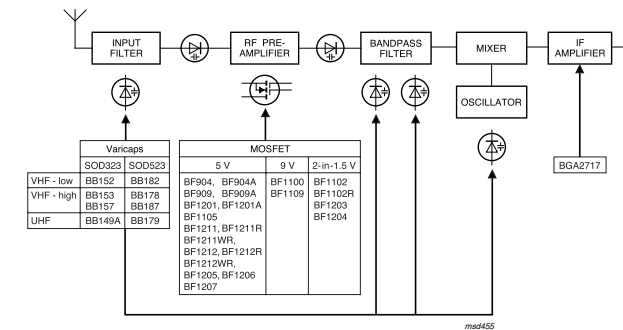
N-CHANNEL, DUAL GATE MOS-FETS

types in **bold red** represent new products

Type	Package	V <sub>DS</sub> (V)	I <sub>D</sub> (mA)	I <sub>DSS</sub> (mA)		V <sub>(p)GS</sub> (V)			Y <sub>fs</sub>   (mS)		C <sub>is</sub> (pF)	C <sub>os</sub> (pF)	F @ 800 MHz (dB)	VHF	UHF
				min	max	min	max		min	max					
BF1202R	SOT143R	10	30	8	16	-	1.2 <sup>2)</sup>		25	-	1.7	0.85	1	X	X
BF1202VWR	SOT343R	10	30	8	16	-	1.2 <sup>2)</sup>		25	-	1.7	0.85	1	X	X
BF1203 <sup>6)</sup>	SOT363	10	30	11	19	-	1.2 <sup>2)</sup>		23	-	2.6	0.9	1.8	X	X
BF1204 <sup>6)</sup>	SOT363	10	30	8	16	-	1.2 <sup>2)</sup>		25	-	1.7	0.85	1	X	X
BF1205C <sup>6)</sup> 7 <sup>8)</sup>	SOT363	6	30	14	24	0.3	1		26	41	2.2	0.75	1.4	X	-
	SOT363	6	30	9	17	0.3	1		28	43	2	0.85	1.4	-	X
BF1205 <sup>6)</sup> 7 <sup>8)</sup>	SOT363	10	30	8	16	0.3	1		26	40	1.8	0.75	1.2	X	-
	SOT363	7	30	8	16	0.3	1		26	40	2	0.85	1.4	-	X
BF1206 <sup>6)</sup>	SOT363	6	30	14	23	0.3	1		33	45	2.6	1.1	1.6	X	-
	SOT363	6	30	9	17	0.3	1		29	41	1.9	0.85	1.4	-	X
<b>BF1207<sup>6)</sup>7<sup>8)</sup></b>	SOT363	6	30	13	23	0.3	1		30 typ	-	2.2	0.9	1.4	X	-
	SOT363	6	30	8	18	0.3	1		32 typ	-	2	0.85	1.4	-	X
<b>BF1207F<sup>6)</sup>7<sup>8)</sup></b>	SOT666	6	30	13	23	0.3	1		30 typ	-	2.2	0.9	1.4	X	-
	SOT666	6	30	8	18	0.3	1		32 typ	-	2	0.85	1.4	-	X
BF1211	SOT143	6	30	11	19	0.3	1		25	40	2.1	0.9	1.4	X	-
BF1211R	SOT143R	6	30	11	19	0.3	1		25	40	2.1	0.9	1.4	X	-
BF1211VWR	SOT343	6	30	11	19	0.3	1		25	40	2.1	0.9	1.4	X	-
BF1212	SOT143	6	30	8	16	0.3	1		28	43	1.7	0.9	1.1	-	X
BF1212R	SOT143R	6	30	8	16	0.3	1		28	43	1.7	0.9	1.1	-	X
BF1212VWR	SOT343	6	30	8	16	0.3	1		28	43	1.7	0.9	1.1	-	X

- 1) Asymmetrical
- 2) V<sub>GS(th)</sub>
- 3) @ 200 MHz
- 4) C<sub>oss</sub>
- 5) C<sub>ig</sub>
- 6) Two low noise gain amplifiers in one package
- 7) Transistor A: fully internal bias, transistor B: partly internal bias
- 8) With internal switch circuit

TV/VCR/DVD tuning application diagram



## Why choose Philips Semiconductors?

### ... Dual Gate MOS-FETs

- \* Volume delivery
- \* Short leadtimes
- \* Broad portfolio
- \* Smallest packages
- \* Fet's for tuner applications with optimized performance
- \* 2-in-1 FET's for tuner applications



Device Name	Packages	Package Thermal Resistance (°C/W)	Description	Operating Temperature Range	Channels	Single Supply (V <sub>DC</sub> )	Dual Supply (+/- V <sub>DC</sub> )	Quiescent Current Max/Min (mA)	Max Power Dissipation (mW)		Slew Rate (V/us)	GBW Product (MHz)	Closed Loop Gain Min/Max (dB)	Input Offset Voltage V <sub>io</sub> (mV)	Input Bias Current I <sub>b</sub> (nA)	SVRR (dB)	Maximum Output Power @ (THD + N)/S	(THD + N)/S @ V <sub>DD</sub> = 5V; V <sub>O(P-P)</sub> = 3.5V (0 dBV) (dB/%)	Channel Output Power 10% (watts)	THD Typ/Max (%)
TDA1308/N1	N (DIP8)	100	Class AB Stereo Headphone Driver	-40 - +85 °C	2	3 to 7	1.5 to 3.5	3 / 5	25		5	5.5	70 (typ)	10	0.01	90	60	-70 / 0.03	--	--
TDA1308/N2	N (DIP8)	100	Class AB Stereo Headphone Driver	-40 - +85 °C	2	3 to 7	1.5 to 3.5	3 / 5	25		5	5.5	70 (typ)	10	0.01	90	60	-70 / 0.03	--	--
TDA1308UK	UK (WL-CSP8)	TBD	Class AB Stereo Headphone Driver	-40 - +85 °C	2	3 to 7	1.5 to 3.5	2.4 / 5	25		5	5.5	70 (typ)	10	0.01	90	60	-70 / 0.03	--	--
TDA1308AT/N1	D (SO8)	160	Class AB Stereo Headphone Driver	-40 - +85 °C	2	2.4 to 7	1.2 to 3.5	3 / 5	25		5	5.5	70 (typ)	10	0.01	90	60	-70 / 0.03	--	--
TDA1308AT/N2	D (SO8)	160	Class AB Stereo Headphone Driver	-40 - +85 °C	2	2.4 to 7	1.2 to 3.5	3 / 5	25		5	5.5	70 (typ)	10	0.01	90	60	-70 / 0.03	--	--
TDA1308T/N1	D (SO8)	160	Class AB Stereo Headphone Driver	-40 - +85 °C	2	3 to 7	1.5 to 3.5	3 / 5	25		5	5.5	70 (typ)	10	0.01	90	60	-70 / 0.03	--	--
TDA1308T/N2	D (SO8)	160	Class AB Stereo Headphone Driver	-40 - +85 °C	2	3 to 7	1.5 to 3.5	3 / 5	25		5	5.5	70 (typ)	10	0.01	90	60	-70 / 0.03	--	--
TDA1308TT/N1	DH (TSSOP8)	220	Class AB Stereo Headphone Driver	-40 - +85 °C	2	3 to 7	1.5 to 3.5	3 / 5	25		5	5.5	70 (typ)	10	0.01	90	60	-70 / 0.03	--	--
TDA1308TT/N2	DH (TSSOP8)	220	Class AB Stereo Headphone Driver	-40 - +85 °C	2	3 to 7	1.5 to 3.5	3 / 5	25		5	5.5	70 (typ)	10	0.01	90	60	-70 / 0.03	--	--
TDA8541T/N1	D (SO8)	160	1.0 Watt BTL Audio Amplifier	-40 - +85 °C	1	2.2 to 18	No	8 / 12	900		--	--	6 / 30	--	500 (max)	50 (min)	--	--	1	0.15 / 0.3 @ P <sub>O</sub> = 0.5W
TDA8542AT/N1	D (SO20)	60	2 x 1.5 Watt BTL Audio Amplifier	-40 - +85 °C	2	2.2 to 18	No	15 / 22	2200		--	--	6 / 30	--	500 (max)	50 (min)	--	--	1.5	0.15 / 0.3 @ P <sub>O</sub> = 0.4W
TDA8542TS/N1	D (SO20)	110	2 x 0.7 Watt BTL Audio Amplifier	-40 - +85 °C	2	2.2 to 18	No	15 / 22	1120		--	--	6 / 30	--	500 (max)	50 (min)	--	--	0.7	0.15 / 0.3 @ P <sub>O</sub> = 0.4W
TDA8543T/N1	D (SO16)	100	1.4 Watt BTL Audio Amplifier	-40 - +85 °C	1	2.2 to 18	No	8 / 12	1200		--	--	6 / 30	--	500 (max)	50 (min)	--	--	1.4	0.15 / 0.3 @ P <sub>O</sub> = 0.5W
TDA8547TS/N1	DB (SSOP20)	110	2 x 0.7 Watt BTL Audio Amplifier	-40 - +85 °C	2	2.2 to 18	No	15 / 22	1100		--	--	6 / 30	--	500 (max)	50 (min)	--	--	0.7	0.15 / 0.3 @ P <sub>O</sub> = 0.4W

Note: All Audio Amplifiers have short circuit protection

RAIL TO RAIL OP AMPS

Device	Packages	Operating Temperature Range (°C)	Channels	Single Supply Voltage (V)	Dual Supply Voltage Range (+/- V)	Slew Rate (V/us)	CMRR Min/Typ (dB)	PSRR Min/Typ (dB)	GBW Product (MHz)	Input Offset Voltage (+/- mV)	Input Offset Current (+/- nA)	Input Bias Current (nA)	Max Power Dissipation (mW)	Short Circuit Protection	Input Swing	Output Swing	Open Loop Gain (dB)	Input Noise Voltage (nV/sqrt (Hz))
NE5232	D (SO8) N (DIP8)	0 to +70	2	2 - 5.5	1 - 2.75	0.8	80/100	80/100	2.5	0.4	4	-90	500	Y	250mV Beyond ± Rails	≤ 50mV of Rails	110	33
NE5232/01	D (SO8) N (DIP8)	0 to +70	2	2 - 5.5	1 - 2.75	0.8	80/100	80/100	2.5	0.4	4	-90	500	Y	250mV Beyond ± Rails	≤ 50mV of Rails	110	33
NE5234	D (SO14) N (DIP14)	0 to +70	4	2 - 5.5	1 - 2.75	0.8	80/100	80/100	2.5	0.2	3	-90	500	Y	250mV Beyond ± Rails	≤ 50mV of Rails	110	25
NE5234/01	D (SO14) N (DIP14)	0 to +70	4	2 - 5.5	1 - 2.75	0.8	80/100	80/100	2.5	0.2	3	-90	500	Y	250mV Beyond ± Rails	≤ 50mV of Rails	110	25
SA5232	D (SO8) (N DIP8)	-40 to +85	2	2 - 5.5	1 - 2.75	0.8	80/100	80/100	2.5	0.6	6	-90	500	Y	250mV Beyond ± Rails	≤ 50mV of Rails	110	33
SA5232/01	D (SO8) (N DIP8)	-40 to +85	2	2 - 5.5	1 - 2.75	0.8	80/100	80/100	2.5	0.6	6	-90	500	Y	250mV Beyond ± Rails	≤ 50mV of Rails	110	33
SA5234	D (SO14) N (DIP14)	-40 to +85	4	2 - 5.5	1 - 2.75	0.8	80/100	80/100	2.5	0.2	3	-90	500	Y	250mV Beyond ± Rails	≤ 50mV of Rails	110	25
SA5234/01	D (SO14) N (DIP14)	-40 to +85	4	2 - 5.5	1 - 2.75	0.8	80/100	80/100	2.5	0.2	3	-90	500	Y	250mV Beyond ± Rails	≤ 50mV of Rails	110	25
SE5234/01	N (DIP8)	-40 to +125	4	2 - 5.5	1 - 2.75	0.8	80/100	80/100	2.5	0.2	3	-90	500	Y	250mV Beyond ± Rails	≤ 50mV of Rails	110	25
AU5232	D (SO8) N (DIP8)	-40 to +125	2	2 - 5.5	1 - 2.75	0.8	80/100	80/100	2.5	0.6	6	-90	500	Y	250mV Beyond ± Rails	≤ 50mV of Rails	110	33
AU5232/01	D (SO8) N (DIP8)	-40 to +125	2	2 - 5.5	1 - 2.75	0.8	80/100	80/100	2.5	0.6	6	-90	500	Y	250mV Beyond ± Rails	≤ 50mV of Rails	110	33

Post Amplifiers

Type number	Package	Description	Power Dissipation (mW)	Operating Temperature (°C)	Operating Frequency (MHz)	Analog Supply Voltage Range (V)	Digital Supply Voltage Range (V)	Analog Supply Current Typ/Max (mA)	Digital Supply Current Typ/Max (mA)	Differential Input Resistance at IN <sub>1</sub> (Ωs)	Differential Input Resistance at IN <sub>2</sub> (Ωs)	Hysteresis Voltage Single-ended Output (mVp-p)
SA51214	D (SO20)	Postamplifier with Link Status Indicator	250	-40 to +85	75	4.75 - 5.25	4.75 - 5.25	30 / 41.2	10 / 13.5	1200	1200	3
SA51214/01	D (SO20)	Postamplifier with Link Status Indicator	250	-40 to +85	75	4.75 - 5.25	4.75 - 5.25	30 / 41.2	10 / 13.5	1200	1200	3
SA5217	D (SO20)	Postamplifier with Link Status Indicator	300	-40 to +85	75	4.5 - 5.5	4.5 - 5.5	30 / 41.2	10 / 13.5	1200	2000	10
SA5217/01	D (SO20)	Postamplifier with Link Status Indicator	300	-40 to +85	75	4.5 - 5.5	4.5 - 5.5	30 / 41.2	10 / 13.5	1200	2000	10

Device Name	Package	Operating Temperature (°C)	Operating Voltage Range (V)	Power Dissipation (mW)	I/O Type	Maximum Astable Oscillator Frequency (kHz)	Threshold Voltage Typ (xV <sub>DD</sub> )	Trigger Voltage Typ(xV <sub>DD</sub> )	Trigger Current V <sub>DD</sub> = V <sub>TRIG</sub> = V <sub>MAX</sub> Typ (pA)	Threshold Current V <sub>DD</sub> = V <sub>TRIG</sub> = V <sub>MAX</sub> Typ (pA)	Reset Current V <sub>DD</sub> = V <sub>TRIG</sub> = V <sub>MAX</sub> Typ (pA)	Reset Voltage V <sub>DD</sub> = V <sub>TRIG</sub> = V <sub>MAX</sub> Typ (pA)	Output Rise Time Typ/Max (ns)	Output Fall Time Typ/Max (ns)
ICM7555C	D (SO8)	0 to +70	3 - 16	780	CMOS,TTL	>= 500	0.65	0.31	50	50	100	0.4 / 1.0	45 / 75	20 / 75
ICM7555C/01	D (SO8)	0 to +70	3 - 16	780	CMOS,TTL	>= 500	0.65	0.31	50	50	100	0.4 / 1.0	45 / 75	20 / 75
ICM7555C	N (DIP8)	0 to +70	3 - 16	1160	CMOS,TTL	>= 500	0.65	0.31	50	50	100	0.4 / 1.0	45 / 75	20 / 75
ICM7555CN/01	N (DIP8)	0 to +70	3 - 16	1160	CMOS,TTL	>= 500	0.65	0.31	50	50	100	0.4 / 1.0	45 / 75	20 / 75
ICM7555I	D (SO8)	-40 to +85	3 - 16	780	CMOS,TTL	>= 500	0.65	0.31	50	50	100	0.4 / 1.0	45 / 75	20 / 75
ICM7555I/01	D (SO8)	-40 to +85	3 - 16	780	CMOS,TTL	>= 500	0.65	0.31	50	50	100	0.4 / 1.0	45 / 75	20 / 75
ICM7555I	N (DIP8)	-40 to +85	3 - 16	1160	CMOS,TTL	>= 500	0.65	0.31	50	50	100	0.4 / 1.0	45 / 75	20 / 75
ICM7555I/01	N (DIP8)	-40 to +85	3 - 16	1160	CMOS,TTL	>= 500	0.65	0.31	50	50	100	0.4 / 1.0	45 / 75	20 / 75

Transimpedance Pre-Amplifiers

Device	Packages	Description	Operating Temperature (°C)	Single Supply Voltage Range (V)	Supply Current Max/Min (mA)	I <sub>OMAX</sub> Min/Typ (mA)	I <sub>IN</sub> Input Current Min/Typ (uA)	BW <sub>-3 dB</sub> ( MHz)	Differential O/P Transresistance (kΩ)	Differential O/P Voltage Swing Min/Typ (Vp-p)	Max Power Dissipation (mW)	PSRR (dB)	Input Noise Current Density (pA/sqrt(Hz))
SA5211	D (SO14)	180 MHz Transimpedance Amp	-40 to +85	4.5 - 5.5	20 / 31	3 / 4	±20 / ±40	180	28	1.7 / 3.2	1000	65	1.8
SA5211/01	D (SO14)	180 MHz Transimpedance Amp	-40 to +85	4.5 - 5.5	20 / 31	3 / 4	±20 / ±40	180	28	1.7 / 3.2	1000	65	1.8
SA5212A	D (SO8)	140 MHz Transimpedance Amp	-40 to +85	4.5 - 5.5	20 / 33	3 / 4	±40 / ±80	140	14	1.7 / 3.2	750	33	2.5
SA5212A/01	D (SO8)	140 MHz Transimpedance Amp	-40 to +85	4.5 - 5.5	20 / 33	3 / 4	±40 / ±80	140	14	1.7 / 3.2	750	33	2.5

Wideband Variable Gain Amplifier

Type number	Package	Operating Temperature (°C)	V <sub>CC</sub> Supply Voltage Range (V)	I <sub>CC</sub> Supply Current Min/Max (mA)	Maximum Power Dissipation (mW)	GBW product (MHz)	Voltage Gain (Singed ended in/single ended out) R <sub>L</sub> = 10 kΩ (dB)	Voltage Gain (Singed ended in/Differential) R <sub>L</sub> = 10 kΩ (dB)	PSRR Min/Typ (mV/V)	Noise Figure f = 50MHz R <sub>s</sub> = 50 Ωs Typ (dB)	S21 Reverse Isolation f = 100MHz Typ (dB)	P <sub>1-1dB</sub> f = 100MHz V <sub>AGC</sub> = 0.1V Typ (dBm)	P <sub>O-1dB</sub> f = 100MHz Typ (dBm)	IP <sub>3IN</sub> f = 100MHz V <sub>AGC</sub> Typ (dBm)	IP <sub>3OUT</sub> f = 100MHz V <sub>AGC</sub> > 0.5V Typ (dBm)
SA5209	D (SO16)	-40 to +85	4.5 - 7.0	38 / 48	1100	850	17 / 21	16 / 22	20 / 45	9.3	- 60	- 10	- 3	+ 5	+ 13
SA5209/01	D (SO16)	-40 to +85	4.5 - 7.0	38 / 48	1100	850	17 / 21	16 / 22	20 / 45	9.3	- 60	- 10	- 3	+ 5	+ 13
SA5219	D (SO16)	-40 to +85	4.5 - 7.0	36 / 50	1100	700	18 / 22	22 / 28	18 / 45	9.3	- 60	- 10	- 3	+ 5	+ 13
SA5219/01	D (SO16)	-40 to +85	4.5 - 7.0	36 / 50	1100	700	18 / 22	22 / 28	18 / 45	9.3	- 60	- 10	- 3	+ 5	+ 13

RF/IF Mixers with VCO

Device	Package	V <sub>CC</sub> Operating Range (V)	I <sub>CC</sub> Max (mA)	RF Input Frequency Typ (MHz)	LO Frequency Typ (MHz)	Low Noise Amplifier	LNA Gain, S21 Typ (dB)	LNA Input 3rd Order Intercept IIP3 Typ/Max (dBm)	LNA Noise Figure Typ/Max (dB)
SA601	DK (SSOP20)	4.5 - 8.0	7.4	800-1200	1200	Yes	11.5	-2.0/-0.5	1.6/1.9
SA620	DK (SSOP20)	4.5 - 8.0	10.4	800-1200	1200	Yes	11.5	-3.0/-1.5	1.6/1.9
SA612A	D (SO8) N (DIP8)	4.5 - 8.0	2.8	500	200	No	No LNA	No LNA	No LNA
SA604A	D (SO16)	4.5 - 8.0	3.0	500	200	No	No LNA	No LNA	No LNA

RF/IF Systems

Device	Package	V <sub>CC</sub> Operating Range (V)	IF 3dB Bandwidth (MHz)	-3dB Limiting	Fast RSSI	Muted and Unmuted	Two Audio Outputs
SA604A	D (SO16)	4.5 - 8.0	41	-92dBm		Yes	Yes
SA614A	D (SO16)	4.5 - 8.0	41	-92dBm	Note 1		

Note 1: @ 455kHz IF: tr = 1.4us (typ), tf = 21.3us (typ)  
@ 10.7MHz IF: tr = 1.5us (typ), tf = 19.4us (typ)

Device	Package	V <sub>CC</sub> Operating Range (V)	I <sub>CC</sub> Max (mA)	RF Input Frequency Typ (MHz)	LO Frequency Typ (MHz)	RSSI Dynamic Range (dB)	IF 3 dB Bandwidth (MHz)		12 dB SINAD Sensitivity (dBm)	Audio Amp Feedback	Differential Limiter Outputs	Fast RSSI	Muted and Unmuted	Power Down Control	RSSI Amp Feedback	Two Audio Outputs
SA605	D (SO20) DK (SSOP20)	4.5 - 8.0	6.6	500	150	90	41		-120 <sup>1</sup>				Yes			Yes
SA615	D (SO20) DK (SSOP20)	4.5 - 8.0	7.4	500	150	80	41		-118 <sup>1</sup>				Yes			Yes
SA606	D (SO20) DK (SSOP20)	2.7 - 6.0	4.2	150	150	90	5.5		-117 <sup>1</sup>	Yes					Yes	
SA616	D (SO20) DK (SSOP20)	2.7 - 6.0	5	150	150	80	5.5		-117 <sup>1</sup>							
SA676	D (SO20) DK (SSOP20)	2.7 - 6.0	5	100	100	70	5.5		-114 <sup>1</sup>							
SA58640	DK (SSOP20)	4.5 - 6.0	6	100	100	60	5.5		-110 <sup>1</sup>	Yes	Yes					
SA607	DK (SSOP20)	2.7 - 7.0	4.2	150	150	90	5.5		-117 <sup>1</sup>		Yes				Yes	
SA608	DK (SSOP20)	2.7 - 6.0	4.2	150	150	90	5.5		-117 <sup>1</sup>		Yes			Yes		
SA647	DH (TSSOP20)	2.7 - 5.5	7	200 max	200 max	85	2		N/A			Yes <sup>4</sup>		Yes		
SA636	DK (SSOP20)	2.7 - 5.5	7.5	500	500	90	41		-106 <sup>2</sup>			Yes <sup>5</sup>		Yes		
SA639	DH (TSSOP24)	2.7 - 5.5	10	500	500	80	41		-85 <sup>2</sup>							

**Notes:**

- 1) 12dB SINAD Sensitivity (f<sub>RF</sub> = 45 MHz f<sub>IF</sub> = 455kHz 1kHz, +/- 8kHz Dev)
- 2) 12dB SINAD Sensitivity (f<sub>RF</sub> = 240MHz f<sub>IF</sub> = 10.7MHz 1kHz, +/- 125kHz Dev)
- 3) 12dB SINAD Sensitivity (f<sub>RF</sub> = 110.592MHz f<sub>IF</sub> = 9.8MHz)
- 4) Fast RSSI @ -56dBm RF Level: tr = 1.2us (typ), tf = 2.0us (typ)
- 5) Fast RSSI @ -45dBm RF Level: tr = 0.8us (typ), tf = 2.0us (typ)



Device	Package	V <sub>DD</sub> Operating Range	I <sub>DD</sub> (uA)	Channel Enable		Insertion Loss, S <sub>21</sub> , S <sub>12</sub> (ON Channel)			Isolation S <sub>21</sub> , S <sub>12</sub> (OFF Channel)				Return Loss S <sub>11</sub> , S <sub>22</sub> (ON Channel)		Return Loss S <sub>11</sub> , S <sub>22</sub> (OFF Channel)		ON Switching Time (ns)	OFF Switching Time (ns)	P <sub>-1</sub> dB DC - 1GHz Typ (dBm)	IP <sub>3</sub> 100MHz Typ (dBm)	IP <sub>2</sub> 100MHz Typ (dBm)	(Z <sub>0</sub> = 50 Ω)	
				Logic 1 Level (V <sub>IH</sub> )	Logic 0 Level (V <sub>IL</sub> )	DC-100 MHz Typ/Max (dB)	500 MHz Typ/Max (dB)	900 MHz Typ/Max (dB)	10 MHz Min/Typ (dB)	100 MHz Min/Typ (dB)	500 MHz Min/Typ (dB)	900 MHz Min/Typ (dB)	DC - 400 MHz Typ (dB)	900 MHz Typ (dB)	DC - 400 MHz Typ	900 MHz Typ (dB)						100 MHz Typ (dB)	900 MHz Typ (dB)
SA630	D (SO8)	3.0 - 5.5	40 / 300	2.0 / V <sub>DD</sub>	-0.3 / 0.8	1 / --	1.4 / --	2 / 2.8	70 / 80	-- / 60	-- / 50	-- / 30	20	12	17	13	20	20	18	+ 33	+ 52	1	2
SA58643	DH (TSSOP8)	3.0 - 5.5	40 / 300	2.0 / V <sub>DD</sub>	-0.3 / 0.8	0.5 / 0.6 @ 50 MHz	--	0.8 / 0.9 @ 1 GHz	--	73 / 75 @ 50 MHz	--	40 / 42 @ 1GHz	--	16 / 17 @ 1 GHz	--	116 / 17 @ 1GHz	20	20	30 min/32 typ	+ 50 min	--	1	2 @ 1GHz

Dual, Fractional-N, PLL Synthesizer

Device	Package	V <sub>DD</sub> Operating Range (Analog & Digital) (V)	I <sub>DD</sub> Operating Supply Current Typ (mA)	I <sub>DD</sub> (Power Down Mode) Typ (uA)	Main V <sub>CO</sub>				Auxillary V <sub>CO</sub>						Synthesizer Phase Noise						
					Input Frequency Range Min/Max (MHz)	Input Signal Level (AC Coupled) Min/Max (dBm) mVp-p	Nmain Main Divider Ratio Min/Max	Phase Comparator Frequency Max (MHz)	V <sub>CO</sub> Input Frequency Range Min/Max (MHz)	Input Signal Level (AC Coupled) Min/Max (dBm) mVp-p	N <sub>AUX</sub> Auxillary Divider Ratio Min/Max	Input Frequency Range Min/Max (MHz)	Input Signal Level (AC Coupled) Min/Max mVp-p	R <sub>REF</sub> Reference Divider Ratio Min/Max	GSM f <sub>REF</sub> = 13MHz (TCXO) f <sub>COMP</sub> = 1MHz f <sub>RF</sub> = 900MHz 1kHz offset (dBc/Hz)		TDMA f <sub>REF</sub> = 19.44MHz (TCXO) f <sub>COMP</sub> = 240kHz				
SA8027	DH (TSSOP20)	2.7 - 3.6	7.7	1	350 / 2500	-18 / 0	512 / 65535	4	100 / 550	-15 / 0	128 / 16383	5 / 40	360 / 1300	4 / 1023	f <sub>RF</sub> = 1800 MHz 1 kHz offset (dBc/Hz)	f <sub>RF</sub> = 800 MHz 1kHz offset (dBc/Hz)	f <sub>RF</sub> = 2100 MHz 1 kHz offset (dBc/Hz)	- 90	- 83	- 85	- 77

Notes:  
1) Pin compatible with Peregrine PE4231