



GAIN BLOCK AMPLIFIERS

Part Number	Frequency (GHz)	NF(dB)	Gain (dB)	Gain Flatness (dB)	VSWR	P-1(out) (dBm)	Vdd/Idd (V/mA)
HG114FH-1	DC~6	2.5	17	±0.5	1.7/1.7	17	5/40
HG114F2	DC~4	3.4@3GHz	20	±0.3	1.5/1.5	16 20	5/40 5/80
HG114FH-1A	0.02~5	2.6	18	±0.5	1.4/1.6	15 20	5/40 5/67
HG114FH-3	0.02~6	3	22	±0.5	1.4/1.6	17@3GHz 19@3GHz	5/53 5/72
HG114FH-2 HG114FH-2-SOT89	0.02~6	2.8	20	±1.5	1.6/1.4	21	5/80
HG111F1	0.02~2	1.1	22	±0.1	1.2/1.3	14 15	5/25 5/32
HG111F2	0.02~2	2.8	21.5	±0.1	1.3/1.4	13 17.5	5/32 5/56
HG111F3	0.02~2	2.8	20	±0.1	1.3/1.3	16 20	5/40 5/65
HG113F5-PQ2A	0.4~2	0.4	20	/	1.2/1.6	22.5	5/65

LOW NOISE AMPLIFIERS

Part Number	Frequency (GHz)	NF(dB)	Gain (dB)	Gain Flatness(dB)	VSWR	P-1(out) (dBm)	Vdd/Idd (V/mA)
HG111FG-1	0.03~0.6	0.6	32	±0.5	1.4/1.4	23	5/95
HG511F	0.02~0.6	0.7	23	±0.5	1.5/1.5	19	5/80
HG112F8	0.02~1.2	1.5	16.5	±0.2	1.6/1.4	21	5/40
HG113F03	0.2~4	0.9	26	±1	1.4/1.6	21	5/72
HG112F4	0.3~2	0.8	29.5	±0.3	1.4/1.3	21	5/100
HG113FG HG113FG(M)	0.4~2.5	1.2	20.5 19.5	±0.5	1.3/1.6	20.5 16	5/46 3.3/30
HG113FF	0.4~2.6	0.8	23	±3	1.4/1.6	21	4/76,5/108
HG112F7 HG112F7(M)	0.8~2.5	0.5	35	±1	1.4/1.3	18.5 13	5/58 3.3/30
HG112F7-Q09	0.8~2.5	0.5	35	±1.3	1.4/1.3	18.5	5/58
HG112F9	0.8~2	1	22	±1.2	1.6/1.5	15	5/40
HG112F-1	0.9~1.5	0.5	32	±0.3	1.8/1.4	15	5/45
HG114F7	1~9	0.9	21.5	±0.5	2/1.5	17	5/50



LOW NOISE AMPLIFIERS(CONTINUED)

Part Number	Frequency (GHz)	NF(dB)	Gain (dB)	Gain Flatness(dB)	VSWR	P-1(out) (dBm)	Vdd/Idd (V/mA)
HG115F5	1~10	1.3	17	±1	1.4/1.5	19.5	5/45
HG115F5A	1~10	1.4	16	±1	1.6/1.6	21	5/65
HG115F6	1~10	1.2	18.5	±0.3	1.6/1.8	20	5/55
HG115F3	1~10	1.5	18	±0.7	1.8/1.8	16	5/35
HG116FD	1~12	1.6	19	±1.5	1.2/1.5	14	5/47
HG113FC-2A HG113FC-2A(M)	2~4	0.45	30	±0.8	1.4/1.3	11	5/28
HG113FC-2 HG113FC-2(M)	2~4	0.6	28.5	±0.8	1.4/1.3	11	5/28
HG113FW	2~4	4	11	±0.1	1.1/1.2	14	5/30
HG113FV-1	2~4	0.6	27	Positive Slope	1.3/1.3	10.5	5/27
HG113FV-2	2.5~3.5	0.6	33	±0.1	1.2/1.2	9.5	5/29
HG113FV-3	2~3.5	0.7	27	±1.5	1.4/1.3	17.5	5/50
HG113FV	2.5~3.5	0.8	33	±0.2	1.2/1.5	12	5/30
HG114F1	2~4.5	0.8	28	±0.5	1.5/1.5	14	5/30
HG113FW-1	2~5	2.8	14	±0.5	1.2/1.3	14	5/30
HG113FW-2	2~5	3.3	10	±0.5	1.2/1.3	10	5/19
HG114F10	2~6	0.8	29	±1.4	1.6/1.3	12	5/30
HG114FA-7	2~6	1	25.5	±0.4	1.6/1.3	14	5/38
HG114F12	2~8	0.6@6GHz	27	Positive Slope	1.5/1.8	13	5/33
HG114F8	2~8	0.8	28	±0.7	1.5/1.3	16	5/42
HG117FE	2~20	1.8	15	±0.25	1.2/1.4	12.5	5/50
HG117F5	2~20	2	17	Positive Slope	1.4/1.3	17	5/75
HG114F11	3~7	0.7@6GHz	28	Positive Slope	1.4/1.6	12	5/30
HG114FA-6 HG114FA-6(M)	4~6	0.65	26	±0.25	1.3/1.2	12	5/28
HG114FI-3	4~7	2.5	12	±0.1	1.4/1.6	17.5	5/37
HG114FK	4~8	0.7	23	±0.5	1.4/1.3	11.5	5/27
HG114FA-5	5~6	0.65	29	±0.1	1.3/1.1	11.5	5/28
HG114FI-1	5~6	2.8	20	±0.3	1.3/1.2	14	5/40



LOW NOISE AMPLIFIERS(CONTINUED)

Part Number	Frequency (GHz)	NF(dB)	Gain (dB)	Gain Flatness(dB)	VSWR	P-1(out) (dBm)	Vdd/Idd (V/mA)
HG114FJ	5~6	3	10.5	±0.01	1.2/1.5	12	5/20
HG114FA-3	5~6.5	0.75	25	±0.2	1.5/1.1	13	5/30
HG124F2	5~6.5	1.75	22.5	±0.5	1.4/1.8	22	5/135
HG116F-7	6~16	1.4	19	Positive Slope	1.6/1.6	15.5	5/60
HG116F-8	6~16	1.1	23.5	±0.5	1.6/1.4	17	5/65
HG116F-8A	6~18	1.2	22	±0.4	1.4/1.2	17	5/65
HG116F9	6~18	1.4	19.5	±1	1.6/2	12.5	5/28
HG116F10	6~18	1.5	27	±0.8	1.3/1.3	12	5/37
HG116F-3	6~18	1.5	25	±1.25	1.9/1.5	17	5/76
HG116F-5	6~18	2	24	±1	1.3/1.5	10	5/62
HG116F-6	6~18	1.6	29	±1.4	1.4/1.4	12.5	5/52
HG116F11	6~18	2.2	13	±0.5	1.8/2	16.5	5/55,6/60
HG116F12	6~18	1.4	20	±0.7	1.8/1.4	15	5/80
HG117F4	6~20	1.8	22	±1	1.6/1.4	10.5	3/68,5/75
HG115F7	7~9	1.2	27	±0.5	1.2/1.6	6	3.3/14
HG115FP-1	8~10.5	2.4	17	±0.25	1.4/1.6	15.5	5/60
HG115FD-5	8~12	0.9	21.5	±0.7	1.4/1.4	13.5	5/32
HG115FD-6	8~12	0.9	22.5	Positive Slope	1.4/1.3	7	5/43
HG115FQ	8~12	1	27	±0.5	1.4/1.1	19	5/95
HG115FN	8~12	1	28	±0.5	1.4/1.2	11	5/40
HG125F-2	8~12	1.1	23	±0.3	1.4/1.3	17	5/68
HG115FN-1	8~12	1.1	26	±0.6	1.4/1.3	10	5/30
HG115FL-2	8~12	1.2	26	Positive Slope	1.2/1.2	10	4/60
HG115FK	8~12	1.3	19.5	±0.5	1.6/1.4	4	5/15
HG115FD-7	8~12	2.5	19	±0.2	1.4/1.5	11	5/30
HG115FP	8~12	3.5	13.5	±0.3	1.3/1.3	12	5/30
HG115FS	10~13	0.9	30	±0.6	1.6/1.6	16	5/70
HG117FG	12~20	1.2	28	±0.7	1.2/1.5	8	5/14
HG117F3	12~20	1.3	28	±0.5	1.4/1.6	7	5/15
HG117FH-1	15~25	1.4	20	±0.4	1.6/1.4	4.5	5/13
HG117FF	18~22	1.8	24	Positive Slope	2.5/2.5	8	5/25



LOW NOISE AMPLIFIERS(CONTINUED)

Part Number	Frequency (GHz)	NF(dB)	Gain (dB)	Gain Flatness(dB)	VSWR	P-1(out) (dBm)	Vdd/Idd (V/mA)
HG117FH-2	18~25	1.7	24	±0.8	1.4/1.1	-1	5/7
HG117FC	20~23	1.9	27.5	±0.5	1.5/1.6	7	5/25
HG117FD	20~24	2.3	28	±1	1.5/1.5	1.2	5/8
HG118FC-2	22~32	2	25.5	±1	1.2/1.4	15	3.5/70
HG118F3	15~40	2.5	14	±0.5	1.2/1.4	16	5/60
HG118FD	32~37	2.6	28	Positive Slope	2/1.5	9	5/20
HG118FG	33~37	2.6	20	±0.6	1.8/1.5	16	5/50

MEDIUM POWER AMPLIFIERS (<27dBm)

Part Number	Frequency (GHz)	Psat (dBm)	P-1(out) (dBm)	Small Signal Gain(dB)	Gain Flatness(dB)	VSWR	Vdd/Idd (V/A)
HG128F1	DC~20	22@10GHz	20@10GHz	17	±2.5	1.5/1.2	5/0.16
HG123F6A	0.1~2.5	28	27.5	15	±0.5	1.4/1.6	8/0.15
HG123F6B	0.1~4	27.5	27	16	±0.5	1.7/2	8/0.15
HG128F3	0.8~18	22	21	14	±0.5	1.6/1.6	5/0.14
HG128F2	1~20	22	21	8.5	±0.5	1.4/1.4	5/0.08
HG128F5	2~20	25	24	17	±0.5	1.4/1.6	7/0.165
HG124FE	1.5~6	21.5	20.5	12	±0.5	1.6/1.4	5/0.095
HG123F2	2~4.2	23.5	22.5	10	±0.2	1.3/1.4	5/0.145
HG123F1	2~4.2	24.5	24	24	±1	1.2/1.4	5/0.18
HG123F3	2~4.2	25	24.5	11	±0.5	1.2/1.2	5/0.17
HG124F4	4.5~7	16	15	18.5	±0.5	1.7/1.5	5/0.035
HG124F3	4.5~7	21	18.5	9	±0.3	1.25/1.5	5/0.045



MEDIUM POWER AMPLIFIERS (<27dBm) (CONTINUED)

Part Number	Frequency (GHz)	Psat (dBm)	P-1(out) (dBm)	Small Signal Gain(dB)	Gain Flatness(dB)	VSWR	Vdd/Idd (V/A)
HG124F5	4.5~7	24	23	25	±0.8	1.6/1.3	5/0.13
HG124F8	4.5~6.5	24.5	23.5	24	±0.5	1.8/1.4	5/0.15
HG124F7	5~6	25.5	23.5	11.5	±0.7	1.8/1.4	5/0.115
HG125F	8~12	20	19.5	9	±0.25	1.4/1.6	5/0.08
HG125F4	7~13	22	21	20	±1	1.8/1.8	5/0.13
HG125F5	8~12	23.5	23	14	±0.1	1.6/1.8	5/0.185
HG125F3	6~12	25	23.5	9	±0.5	1.4/1.3	5/0.185
HG125F7	8~12	26.5	26	15	±0.5	1.6/2	8/0.14
HG125F7A	8~12	27	26.5	15	±0.5	1.2	8/0.11
HG125F-1	6~14	17.5	16.5	9.5	±0.5	1.4/1.1	5/0.038
HG126FA	10~16	17.5	16.5	19	±1	1.4/1.4	5/0.065
HG126FB	6~18	19	18	16.5	±0.5	1.6/1.2	5/0.098
HG126F7	6~20	19.5	18	20	±1	1.2/2	5/0.105
HG126FC	6~18	21.5	21	20	±1	1.4/1.4	5/0.115
HG126F6	6~18	22	21	14.5	±0.5	1.4/1.6	7/0.12
HG127FA	10~26	19	18	21	±0.5	1.6/1.6	5/0.08
HG126F5	15~18	24	23	6.5	±0.8	1.6/1.8	5/0.193
HG128FB	22~32	24.5	24	14.5	±1.5	1.4/1.6	5/0.1
HG128F	32~37	12	11	21	±0.5	1.8/1.4	5/0.028
HG128FD	33~37	23	22.5	21	±1	1.2/1.4	5/0.07
HG128FC	18~40	22.5	22	25	Positive Slope	1.6	5/0.14



POWER AMPLIFIERS ($\geq 27\text{dBm}$)

Part Number	Frequency (GHz)	Psat (dBm)	P _{-1dB} (dBm)	Power Gain(dB)	PAE (%)	Vdd/Id _d (V/A)
HG136F-5	2~16	25.5	/	8.5	23	5/0.3
		29			30	8/0.34
HG136F-4	2~18	24.5	/	10	35	5/0.13
		27			30	8/0.145
HG137FA	2~20	29.5	28	9.5	22	10/0.292
HG123F4	2.2~4.2	27	26	26.5	28	5/0.37
HG133F1	2~4.2	28	27.5	23.5	35	8/0.16
HG124FD	2~6	27	25	20	34	5/0.24
		27	26			
HG124F6	2~6	28	27	26	30	5/0.24
		27	27			6/0.24
HG134F3	2~6	32	/	24	33	8/0.38
HG134F3A	2~6	31	/	25	33	8/0.38
HG134F2A	2~6	31.5	/	18	36	8/0.345
HG134FC	4.2~5.2	37	/	20	38	8/0.64
HG134FB	5~6	41.5	/	31.5	35	8.5/3.2
HG135F6A	8~12	30.5	/	18	27	8/0.33
HG135F6	8~12	31	/	17	35	5/0.7
HG135F8	8~12	33.5	/	23	35	8/0.64
HG135F7	7~13	35	/	20	30	8/0.98
HG135F-1A	8.5~10.5	41	/	22	38	8/2.75
HG135FC-1	8~12	41.5	/	21.5	35	8.5/3.3
HG136F6	10~13	33	/	19	28	8/0.8
HG136F4	12~14	27	26	23	33	5/0.17
HG136F11	6~18	27	25.5	16	35	5/0.21
HG136F-3	6~18	30	28	19	26	5/0.59
HG136F9	6~18	30.5	30	17	25	6/0.6
HG136F12	6~18	32	31	23	35	6/0.48



POWER AMPLIFIERS ($\geq 27\text{dBm}$) (CONTINUED)

Part Number	Frequency (GHz)	Psat (dBm)	P-1(out) (dBm)	Power Gain(dB)	PAE (%)	Vdd/Idd (V/A)
HG136F8	12.5~17	32	31	23	30	6/0.6
HG136F10	12.5~16	35.5	34	25	35	6/1.3
HG136F5	14~18	25.5	24.5	15	28	5/0.24
		27	26		30	6/0.25
HG137FD	12~20	31	30	21	35	6/0.4
HG137FB	19~21	27	25	24	34	5/0.215
HG137FC	17.5~22	27	26	27	38	5/0.18
HG138FA	25~28	31	30	18	35	6/0.38
HG138FB	24~27.5	36	35.5	28	35	6/1.4
HG138FE	25~31	36	/	22	30	6/1.9
HG138F-4	34~37	29	28	14	25	5/0.53
HG138F7	32~39	27	26	16	17	5/0.25
HG138F8	33~37	30.5	30	19	25	6/0.62
HG138FC	30~38	32	/	18	20	6/0.96

BIDIRECTIONAL AMPLIFIERS

Part Number	Frequency (GHz)	Gain (dB)	Gain Flatness(dB)	NF (dB)	VSWR	P-1(out) (dBm)	Vdd/Idd (V/mA)
HG142F2	0.5~2	27	± 1.5	3.2	1.2/1.2	16.5	5/60
HG113F1	1.5~4	13.5	± 0.2	2.9	1.2/1.4	9	5/67
HG144FB	4.5~7	4.5/23	± 0.9	4.5	1.4/1.4	17/21	5/60,5/135
HG144FC	4.5~7	23/16.5	/	2.5	1.6/1.6	13/17	5/32,5/40
HG146FA	6~18	17	± 0.5	8	1.4/1.4	19	5/120
HG117FJ	21~23	24	± 2	2.7	1.6/1.5	19	5/50



GaN POWER AMPLIFIERS

(I) GaN POWER AMPLIFIERS

Part Number	Frequency (GHz)	P _{out} (dBm)	Power Gain(dB)	PAE(%)	V _{dd}	Mode
HG152FA	0.03~2.5	40.5	15	60	28	CW
HG152FB	0.2~2.5	44	13	50	48	CW
HG154FA	2~6	41	23	40	28	CW
HG154FB	2~6	43	17.5	35	28	CW
		44	20	40	28	Pulsed
HG134FA	5~6	48.5	25	50	28	Pulsed
HG155FA	7~13	42	14.5	35	28	CW
HG155FB-1	7~13	43.5	21	35	28	CW
HG135FC	8~11.5	46	19.5	35	28	Pulsed
HG155FB-2	8~12	43	21	35	28	CW
HG156FB	6~18	40	16	20	28	Pulse
HG156FC	12.5~17	43.5	21	30	28	Pulsed

(II) GaN INTERNAL MATCHED PALLET POWER AMPLIFIERS

Part Number	Frequency (GHz)	P _{out} (w)	Power Gain(dB)	PAE(%)	Voltage (V)	Size (mm×mm×mm)
HG532F3	2.7~3.5	50	20	45	28	8.8×8×0.7
HG534F3	5~6	40	23	53	28	8×8×0.75
HG535F3	8~10	40	25	40	28	6.5×7×0.75

(III) GaN INTERNAL MATCHED POWER AMPLIFIERS

Part Number	Frequency (GHz)	P _{out} (w)	Power Gain(dB)	PAE(%)	Voltage (V)	Size (mm×mm×mm)
HG532FI	0.9~1.3	50	15	60	28	24×17.4×5.5
HG532FF	0.9~1.3	200	14	60	48	24×17.4×5.5
HG532FD-F07	0.8~2	50	11	45	28	24×17.4×5.5
HG533F3	2~2.5	10	15	45	28	21×23×4.6
HG533FA-F07	2~2.5	50	10	45	28	24×17.4×5.5
HG534FM	2~6	50	33	35	28	24×10×1
HG533FG	2.7~3.5	250	12	55	28	24×17.4×5.5
HG533FB	2~3.4	100	10	45	28	16.4×9×1
HG534FI	3.7~4.2	60	12	55	28	21×13×1.65
HG534FB-F07	4.5~5	100	10	50	28	24×17.4×5.5
HG534FA-F07	5~6	60	9	50	28	24×17.4×5.5
HG535F	9~10	12	17	40	28	15.2×10.7



SWITCHES

Part Number	Function	Frequency (GHz)	Insertion Loss(dB)	Isolation (dB)	Vdd (V)	Control Voltage(V)	Integrated TTL Driver
HG117K1	SPST, Reflective Type	DC~20	1.2	40	-5	0/+3.3or0/+5	YES
HG117K2	SPST, Non-Reflective	DC~20	1.6	50	-5	0/+3.3or0/+5	YES
HG123KB	SPDT, Reflective Type	DC~4	0.5	30	/	0/-5or0/+5	NO
HG123KF-1	SPDT, Non-Reflective	DC~6	1.4	50	+5	0/+3.3or0/+5	YES
HG123KF-1A	SPDT, Non-Reflective	DC~8	0.8	55	+5	0/+3.3or0/+5	YES
HG124K2	SPDT, Non-Reflective, 5Watt	DC~6	0.8	21	-	0/-5or0/+5	NO
HG125KA-1 HG125KA-1(M)	SPDT, Reflective Type	DC~12	0.9	50	-5	0/+3.3or0/+5	YES
HG126KB	SPDT, Reflective Type	DC~20	1	40	-5	0/+3.3or0/+5	YES
HG127KC HG127KC(M)	SPDT, Non-Reflective	DC~30	2.4	40	-5	0/+3.3or0/+5	YES
HG128KB	SPDT, Reflective Type	DC~40	2	50	/	0/-5	NO
HG128K2	SPDT, Reflective Type	DC~40	2.4	35	-5	0/-5or0/+5	YES
HG123KA-3	SPDT, Non-Reflective	0.5~5	0.8	70	+5	0/+3.3or0/+5	YES
HG127K2	SPDT, Reflective Type 1Watt , PIN	2~20	0.7@10GH z	45	±5	/	NO
HG127K2A	SPDT, Reflective Type 1Watt , PIN	5~20	0.8	45	±5	/	NO
HG127KD	SPDT, Reflective Type	13~22	1.1	35	-5	0/+5	YES
HG128KC	SPDT, Reflective Type	20~40	1.7	35	-5	0/+5	YES
HG133K-2 HG133K-2(M)	SP3T, Non-Reflective	DC~6	1.4	35	+5	0/+3.3or0/+5	YES
HG134KA-1	SP3T, Non-Reflective	DC~8	1	40	-5	0/+5	YES
HG137KA	SP3T, Non-Reflective	DC~20	1.8	50	-5	0/+3.3or0/+5	YES
HG145KC-1	SP4T, Non-Reflective	DC~8	1.5	60	-5	0/+3.3or0/+5	YES
HG146KB HG146KB(M)	SP4T, Non-Reflective	DC~20	2.5	55	-5	0/+3.3or0/+5	YES
HG166KB	SP6T, Non-Reflective	DC~20	2	50	-5	0/+3.3or0/+5	YES
HG185KA	SP8T, Non-Reflective	DC~12	2	40	-5	0/+3.3or0/+5	YES



DIGITAL ATTENUATORS

Part Number	Bits	Frequency (GHz)	LSB (dB)	Attenuation Range (dB)	Att. Error (dB)	Insertion Loss(dB)	VSWR	Vdd (V)	Control Voltage(V)	Integrated Driver
HG114S1	1	DC~20	31	31	1	1.5	1.3/1.3	-5	0/+3.3or0/+5	YES
HG116S	1	DC~20	20	20	1	0.8	1.1/1.1	-5	0/+5	YES
HG116SA	1	DC~20	16	16	0.4	1.8	1.2/1.2	-5	0/+3.3or0/+5	YES
HG136S	3	DC~18	5	5~35	1	2	1.4/1.3	/	0/-5	NO
HG146SA	4	5~15	2	2~30	1	2.5	1.1/1.1	-5	0/+5	YES
HG166SB-1	6	DC~6	0.5	0.5~31.5	0.25	1.5	1.2/1.2	-5	0/+3.3or0/+5	YES
HG166SB-2	6	DC~18	0.5	0.5~31.5	1	2.5	1.4/1.4	-5	0/+3.3or0/+5	YES
HG166SE	6	DC~18	0.25	0.25~15.75	0.3	3	1.3/1.3	-5	0/+3.3or0/+5	YES
HG165S-5	6	DC~20	0.5	0.5~31.5	0.2	4.5	1.4/1.4	-5	0/+3.3or0/+5	YES
HG168S	6	DC~30	0.5	0.5~31.5	0.6	5	1.4/1.4	/	0/-5	NO
HG166SF	6	0.1~12	0.5	0.5~31.5	0.3	2.1	1.4/1.4	5	0/+3.3or0/+5	YES
HG166SF-1	6	0.1~12	0.5	0.5~31.5	0.3	2.0	1.4/1.3	5	0/+3.3or0/+5	YES
HG176SA	7	DC~20	0.25	0.25~31.75	0.2	6	1.6/1.6	-5	0/+3.3or0/+5	YES
HG108SA	Adjustable	DC~40	2	0~24	/	3.5	1.9/1.9	/	/	/

FIXED ATTENUATORS

Part Number	Bits	Frequency (GHz)	LSB (dB)	Attenuation Range (dB)	Insertion Loss(dB)	VSWR
HG136SA	Fixed	DC~20	0.5	0/0.5/1/1.5/2/2.5/3/3.5	0.25	1.2/1.2
HG140S	Fixed	DC~20	1	0/1/2/3	0.5	1.1/1.1
HG108S-A Series	Fixed ,0.5W	DC~40	1~5	1/2/3/4/5	0.2	1.3/1.3
HG108S-B Series	Fixed ,1W	DC~40	1~5	1/2/3/4/5	0.4	1.3/1.3
HG108S-C Series	Fixed ,2W	DC~40	1~5	1/2/3/4/5	0.5	1.3/1.3



DIGITAL PHASE SHIFTERS

Part Number	Bits	Frequency (GHz)	Phase Error (°)	Insertion Loss(dB)	Amplitude Variation(dB)	VSWR	Vdd (V)	Control Voltage(V)	Integrated Driver
HG161YA	6	0.38~0.8	4	7	±1	1.5/1.4	-5	0/+5	YES
HG162Y-1	6	0.9~1.3	1	6	±0.8	1.5/1.5	-5	0/+5	YES
HG162Y-2	6	0.95~1.2	0.5	5	-1~0.5	1.4/1.5	-5	0/+5	YES
HG162YC	6	1.2~1.7	1.5	4.5	-0.7~0.2	1.4/1.3	-5	0/+5	YES
HG163Y1	6	1.8~3.6	3	6	±1	1.4/1.4	-5	0/+5	YES
HG163YA-4	6	2~2.5	1.5	4	±0.5	1.4/1.4	-5	0/+5	YES
HG163YA-3	6	2.6~3.6	1	4.5	±0.5	1.4/1.4	-5	0/+5	YES
HG164YB	6	3.3~4.2	1	4.5	±0.3	1.2/1.4	-5	0/+3.3or0/+5	YES
HG164Y-2	6	4.5~6.5	2	4.5	±0.8	1.3/1.3	-5	0/+5	YES
HG164Y-1	6	5~6	0.4	4.5	±0.4	1.3/1.3	-5	0/+5	YES
HG155Y	5	7.5~9	1	6	-0.5~1.1	1.2/1.4	-5	0/+5	YES
HG165YA	6	8~12	1.5	9.5	±1	1.3/1.5	-5	0/+5	YES
HG166Y3	6	10~15	2.5	9	-1~0.5	1.6/1.7	-5	0/+5	YES
HG166Y2	6	14~18	2.8	8.5	±1	1.6/1.5	-5	0/+5	YES

DIGITAL DELAY LINE

Part Number	Bits	Frequency (GHz)	Insertion Loss(dB)	LSB (ps)	MSB(ps)	VSWR	Vdd (V)	Control Voltage(V)	Integrated Driver
HG144DA	4	0.1~7	14	80	1200	1.2/1.2	-5	0/+3.3or0/+5	YES
HG115DA	1	0.5~12	10	840	840	1.4/1.4	-5	0/+5	YES
HG165DA	6	7~13	10	1.6	100.8	1.6/1.6	-5	0/+3.3or0/+5	YES
HG125DA	2	8~12	8.5	105	315	1.4/1.4	-5	0/+3.3or0/+5	YES
HG176DA	7	6~18	18	1.5	190.5	1.6	-5	0/+5	YES



MIXERS

Part Number	RF Frequency (GHz)	IF Frequency (GHz)	LO Input Power(dBm)	Conversion Loss(dB)	LO-RF Isolation (dB)	Description
HG121HA	0.4~1.2	DC~0.4	13	10	50	Passive Double Balanced
HG121H-1	0.6~1.4	DC~0.8	13	10	35	Passive Double Balanced
HG124HA HG124HA(M)	1~4.5	DC~1	13	8.5	50	Passive Double Balanced
HG122HB	1.2~2	DC~1	13	8.5	45	Passive Double Balanced
HG123HB	2~4	DC~2	13	8	34	Passive Double Balanced
HG124H3	3~7	DC~2	13	8	50	Passive Double Balanced
HG124H4	4~7	DC~0.7	-3	8	32	Double Balanced (With LO Amplifier)
HG124H2 HG124H2(M)	4~8	DC~3.5	13	8	37	Passive Double Balanced
HG125HA	6~13	DC~5	13	8	48	Passive Double Balanced
HG126HC	7~15	DC~5	13	8	50	Passive Double Balanced
HG126HA HG126HA(M)	6~20	DC~6	13	7	35	Passive Double Balanced
HG126HB HG126HB(M)	6~18	DC~5	13	8	40	Passive Double Balanced
HG128HA	18~28	DC~6	17	9	35	I/Q Mirror Image
HG128HB	20~40	DC~6	13	9	30	Passive Double Balanced
HG128HC	28~40	DC~6	17	10	35	I/Q Mirror Image

FREQUENCY MULTIPLIERS

Part Number	Function	Input Frequency (GHz)	Output Frequency (GHz)	Pin (dBm)	Pout (dBm)	1Fo Isolation (dBc)	ISO(dBc)
HG125BA	X2	1.5~4.5	3~9	15	3	45	60@3f
HG136BA	X3	3~6	9~18	15	3	35	50@4f
HG126BA	X2	6~18	12~36	15	2	48	55@3f



FREQUENCY CONVERTERS

Part Number	Function	RF Freq. (GHz)	LO Freq. (GHz)	IF Freq. (GHz)	Gain (dB)	LO-RF Isol. (dB)	Vdd/Idd (V/mA)
HG143VA	Downconverter	1.2~2	1.2~2	0.05~0.15	1	40	-5/2, +5/60
HG133U-1	Upconverter	2~3.5	2~3.5	DC~0.6	8.5	20	+5/100
HG133V-1	Downconverter	2~4	2~4	DC~0.6	13	60	+5/85
HG153N1	Up-Downconverter	2.7~3.5	3.45~4.25	0.73~0.77	15	32	-5/3,+5/106
HG155VA	Downconverter	7~13	8~12	0.1~2	6	40	-5/3,+5/105

MULTI-FUNCTION CORE CHIPS

Part Number	Frequency (GHz)	Phase Shift Bits	Attenuation Bits	Gain (dB)	Phase Error (°)	Att. Error (dB)	VSWR	P-1(out) (dBm)	Control Interface
HG152NA	0.9~1.3	6	6	21/23.5	1/1.6	0.6	1.2/1.6	13.5/14	Parallel
HG133NA	2~2.5	6	6	17	1.4	0.2	1.3/1.2	19	Serial
HG133NB	2.5~3.5	6	7	/	1	0.1	1.4/1.4	/	Parallel
HG133NB-SC	2.5~3.5	6	7	/	1	0.1	1.4/1.4	/	Serial
HG154NA-1	4.5~6.5	6	7	9	2	0.3	1.4/1.4	15	Parallel
HG134N-1	5~6	5	-	8/8	2	/	1.2/1.2	20	Parallel
HG144ND	5~6	6	6	13.5	2	0.2	1.4/1.6	15	Parallel
HG154NA	5~6	6	7	9.5	1	0.3	1.4/1.4	15	Parallel
HG154NB	5~6	6	6	10/10	1	0.3	1.4/1.5	16/16	Serial
HG155NF	8~12	6	6	2	2.5	0.2	1.4/1.6	12	Parallel
HG155N2	8~12	6	6	11/19	2.5	0.2	1.4/1.6	13.5/23	Parallel
HG155N3	8~12	6	6	14/15	2.5	0.2	1.4/1.5	11.5/12	Parallel



SWITCH FILTER BANKS

Part Number	Frequency (GHz)	Pass Band (GHz)	Insertion Loss(dB)	Suppression (dBc)	VSWR
HG176MA-3	9.9~14.2	9.9~12	<5.5	>20@9.0GHz&12.9GHz >40@8.5GHz&13.5GHz	1.2
		11~13.1	<5.5	>20@10.1GHz&14GHz >40@9.4GHz&14.6GHz	1.3
		12.1~14.2	<5.5	>20@11GHz&15.3GHz >40@10.2GHz&15.9GHz	1.4
HG176MA-4	13.2~18.5	13.2~15.3	<5.5	>20@11.9GHz&16.8GHz >40@11.2GHz&17.5GHz	1.2
		14.3~16.4	<5.5	>20@13.2GHz&17.6GHz >40@12.3GHz&18.3GHz	1.2
		15.4~17.5	<5.5	>20@13.9GHz&19.4GHz >40@12.8GHz&20.4GHz	1.3
		16.5~18.5	<6	>20@14.5GHz&20.0GHz >40@13.3GHz&21.1GHz	1.3

POWER DIVIDERS

Part Number	Dividers	Frequency (GHz)	Insertion Loss(dB)	Isolation(dB)	Input VSWR	Output VSWR
HG124GA	2	2~6	0.8	20	1.3	1.2
HG126G2	2	2~18	1	15	1.3	1.2
HG126G3	2	2~18	1.2	20	1.4	1.4
HG124G2	2	4.5~6.5	0.35	23	1.3	1.2
HG125GB-1	2	7~13	0.55	25	1.4	1.4
HG126GB	2	6~18	0.6	20	1.4	1.2
HG126GC	2	12~18	0.5	24	1.3	1.2
HG128GC	2	15~40	0.6	20	1.4	1.2
HG127G	2	16~28	0.6	25	1.3	1.2
HG127GA	2	21~25	0.4	25	1.3	1.2
HG128GA	2	20~36	0.4	25	1.1	1.1
HG128GB	2	30~40	0.4	25	1.1	1.1
HG134GA	3	4~7	0.8	25	1.3	1.3
HG136GA	3	7~13	1	25	1.3	1.3
HG136GC	3	14~18	0.6	20	1.5	1.3
HG146GA	4	2~18	3.5@18GHz	20	1.4	1.2
HG146GC	4	2~18	3	15	1.2	1.4
HG146G1	4	6~18	1.5	20	1.5	1.4



FILTERS

Part Number	Function	Frequency (GHz)	Insertion Loss(dB)	Return Loss(dB)	Suppression (dB)
HGLF-0.5	LOW PASS	DC~0.5	1.2	20	20dB@0.95GHz, 40dB@1.1GHz
HG122LA	LOW PASS	DC~1	2	15/15	20dB@1.5GHz,60dB@2.3GHz
HG123LB	LOW PASS	DC~2	1	23/23	20dB@3.1GHz,40dB@3.6GHz
HG123LA	LOW PASS	DC~3	1.2	25/25	20@4.7GHz,40@5.6GHz
HG123LC	LOW PASS	DC~3.5	1.6	18/18	20dB@5GHz,40dB@5.9GHz
HG124LA	LOW PASS	DC~4	1.7	25/25	20@5.6GHz,40@6.2GHz
HG124L	LOW PASS	DC~4.5	1.6	20/20	20@6.3GHz,40@7.4GHz
HG124LB	LOW PASS	DC~5	1.3	15/15	20@7GHz,40@7.9GHz
HG124LC	LOW PASS	DC~6	1.8	15/15	20@7.8GHz,40@9GHz
HGLF-7	LOW PASS	DC~7	1.1	20/20	20dB@9.7GHz, 40dB@11GHz
HGLF-8	LOW PASS	DC~8	1.1	20/20	20dB@11.3GHz, 40dB@13.5GHz
HGLF-9	LOW PASS	DC~9	1.4	20/20	20dB@11.9GHz, 40dB@14.3GHz
HGLF-10	LOW PASS	DC~10	1.7	20/20	20dB@12.4GHz, 40dB@14.1GHz
HG118L	BAND PASS	30.5~32.5	1.7	15/15	30@22.6GHz,30.7@36GHz
HG118LC	BAND PASS	28~30.5	2	15/15	11.5dB@26GHz,22dB@33GHz
HG118LB	BAND PASS	29.5~32	2	18/18	14dB@27GHz,19dB@34GHz

EQUALIZERS

Part Number	Frequency(GHz)	Slope(dB)	Insertion Loss(dB)	Input VSWR	Output VSWR
HG114JD-Series	0.5~6	5/6	0.6@6GHz	1.2	1.2
HG115JD-Series	8~12	1/2/3	0.6@12GHz	1.2	1.2
HG116JD-Series	2~18	3/4/5/6/8	0.6@18GHz	1.2	1.2
	6~18	2/3/4/5/6			
HG113J2	1~4	2	1.2dB@4GHz	1.2	1.2
HG115J2	4~9	2.5	1.2dB@9GHz	1.2	1.2
HG114JA	5~6	0.3	0.2@5.9GHz	1.3	1.3
HG115JG-1	DC~12	9	0.7@12GHz	1.4	1.4
HG115JH-1	4~12	3.5	0.4@12GHz	1.4	1.4
HG118JA-6	0.1~40	6	1.7@40GHz	1.4	1.4
	18~40	4			



PHASE ADJUSTORS

Part Number	Phase Shift Bits	Frequency(GHz)	Insertion Loss(dB)	VSWR
HG125Y	2bit (10° ,20°)	4~12	0.2	1.2/1.2
HG126Y	2bit (7° ,14°)	6~14	0.25	1.2/1.1
HG126YA	2bit (±30°)	4~14	0.3	1.2/1.2
HG127Y	2bit (7.5° ,15°)	8~19	0.3	1.3/1.3
HG146Y-1	4bit (5° ~20°)	4~14	0.5	1.4/1.4

LIMITERS

Part Number	Frequency (GHz)	Maximum Input Power(W)	Insertion Loss (dB)	Leakage Power(dBm)	Size (mm×mm)
HG124X2	0.38~8	1(CW)	0.2	18	1.03×0.6
HG124X7	2~5	10	0.4	13.5	1.8×1.2
HG124X8	2~6	20	0.4	14	1.8×1.2
HG125X6	1~12	5	0.3	16	1×0.6
HG126X3	1~12	4(CW)	0.3	16	1×0.5
HG127X	1~22	5	0.5	17	1.2×0.75
HG124X5	3~8	10	0.15	15	1.8×1.2
HG124X4	4~6.5	10(CW)	0.5	14.5	2×1.5
HG124X3	4~6.5	10(CW)	0.4	16	2×1.5
HG126X4	6~18	10	0.3	17	1.5×0.95
HG126X7	6~18	5	0.4	16	1×0.6
HG125X3	8.5~11.5	40	0.7	15	1.7×1.4
HG125X2	8.5~11.5	10 (CW)	0.6	16	1.7×1.2

TERMINATION LOADS

Part Number	Frequency(GHz)	Maximum Input Power (W)	Size (mm×mm)
HG50R	DC~4	100	2.9×3.3
HG50RA	DC~6	50	1.5×1.85



SPIRAL INDUCTORS

Part Number	Inductance (nH)	Rs@DC (Ohm)	Q@1GHz	Resonant Frequency(GHz)	Max.Current (mA)	Size (mm×mm)
HG05L	5	1.4	23~28	14.5	180	0.53×0.53
HG10L	10	2.0	25~29	10.4	180	0.68×0.68
HG15L	15	2.5	30~35	1.9	180	0.8×0.8
HG20L	20	3.3	26~30	5.3	180	0.73×0.73
HG50L	50	4.7	24~28	3.8	180	0.93×0.93
HG80L	80	6.7	22~27	2.7	180	1.03×1.03
HG200L	200	13	18~23	1.3	180	1.38×1.38