Ordering number : EN8268A

SANYO Semiconductors
DATA SHEET

LA7795T — Monolithic Linear IC
AGC Amplifier with Step Gain Control

Overview

The LA7795T bipolar monolithic IC is an AGC amplifier with driver amplifier for analog-to-digital converters. It is ideally suited for use with receiver systems that receive QPSK and/or QAM data transmissions.

Functions

- IF AGC control
- IF AGC amplifier
- IF step gain controlled amplifier
- Driver amplifier

Applications

- Digital CATV
- Cable modem receivers
- IP Telephony receivers

Specitications

Absolute Maximum Ratings at Ta = 25 °C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum Supply Voltage	V_{CC} max	Pin 1	7.0	V
Circuit Voltages	V max	Pin 4, Pin 5	V_{CC} op	V
Circuit Current	I_6 I_7	Pin 6 sink current Pin 7 sink current	2 2	mA
Allowable Power Dissipation	Pd max	Ta ≤ 85°C	190*	mW
Operating Temperature	Topr		-20 to +85	°C
Storage Temperature	Tstg		-55 to +150	°C

*Mounted on PCB (paper phenol 20.0 × 10.0 × 0.8 t mm)

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Recommended Operating Conditions at Ta = 25 °C

Parameter	Symbol	Conditions	Ratings	Unit
Recommended Supply Voltage	V_{CC}	Pin 1	5.0	V
Operating Supply Voltage Range	V_{CC} op	Pin 1	4.5 to 5. 5	V

Electrical Characteristics

AC Characteristics at Ta = 25 °C, V_{CC} = 5.0 V

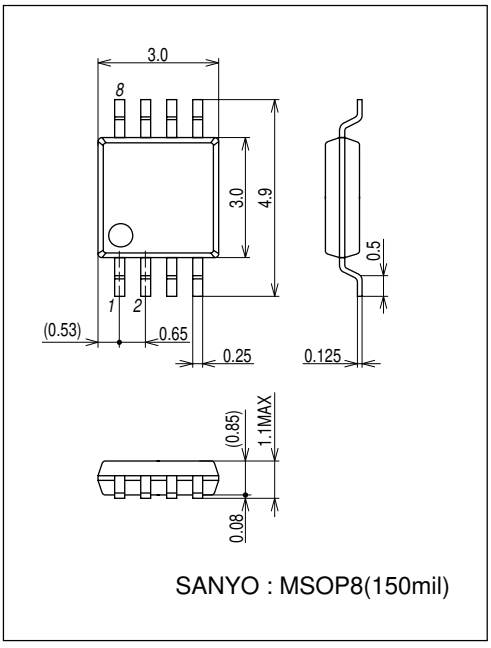
Parameter	Symbol	Pin No.	Conditions			Ratings min	Ratings typ	Ratings max	Unit
Circuit Current	Itotal	1	No Signal		*1	18	24	30	mA
IF Input Frequency Range	f(in)	2, 3	fc : -3 dB		*1	30	-	100	MHz
Noise Figure	NF	6, 7	V4 = 3.0 V, f = 45 MHz	Pin 5 : V_{CC}	*2	-	5	-	dB
			V4 = 3.0 V, f = 45 MHz	Pin 5 : GND	*2	-	5	-	dB
			V4 = 3.0 V, f = 45 MHz	Pin 5 : OPEN	*2	-	8	-	dB
Intermodulation	IM3	6/2, 3 7/2, 3	f1 = 44 MHz, f2 = 45 MHz Input = 90 dBμ/Tone, Output = 104 dBμ/Tone		*1	50	-	-	dBc
Total Amplifier Gain	$G_{(AGC1)}$	6/2, 3 7/2, 3	V4 = 3.0 V, f = 45 MHz	Pin 5 : V_{CC}	*1	57.5	60	62.5	dB
	$G_{(AGC2)}$		V4 = 3.0 V, f = 45 MHz	Pin 5 : GND	*1	47.5	50	52.5	dB
	$G_{(AGC3)}$		V4 = 3.0 V, f = 45 MHz	Pin 5 : OPEN	*1	33.5	36	38.5	dB
AGC Range 1	GR1	6/2, 3 7/2, 3	IF Output Level < ±1 dB, f = 45 MHz		*1	40	-	-	dB
IF Output Level	V_O(IF)	6, 7	Output Level, f = 45 MHz		*1	-	1.0	-	Vp-p
AGC Control Max. Voltage	V4H	4	Gain Max.		*1	2.5	-	3.3	V
AGC Control Min. Voltage	V4L	4	Gain Min.		*1	0	-	0.5	V
Input impedance	Zin	2, 3	V4 = 0 V, f = 45 MHz		*3	-	1 // 4.9	-	kΩ // pF

Note) *1 : Measurement circuit 1, *2 : Measurement circuit 2, *3 : Measurement circuit 3

Package Dimensions

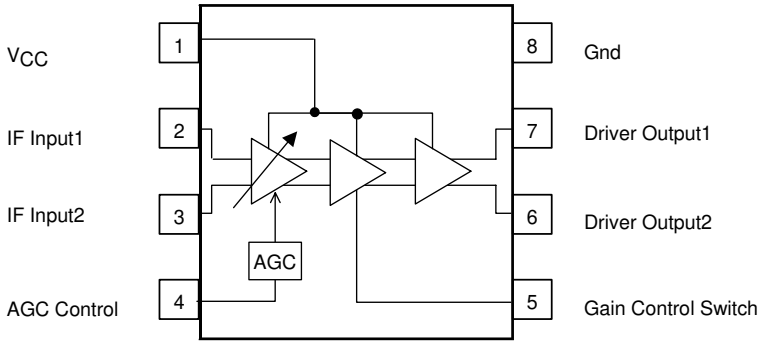
unit : mm (typ)

3245B

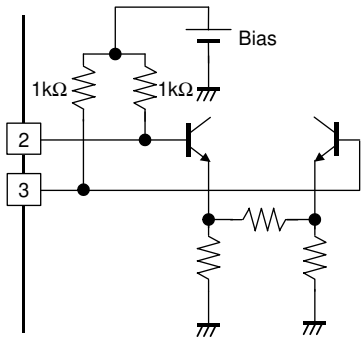
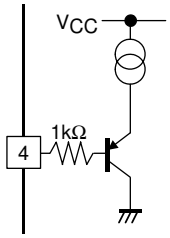
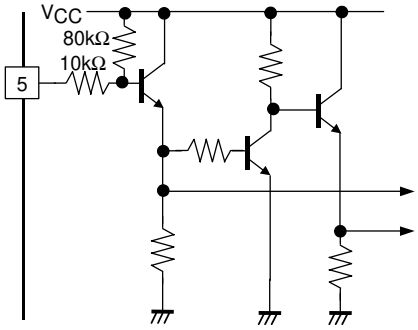
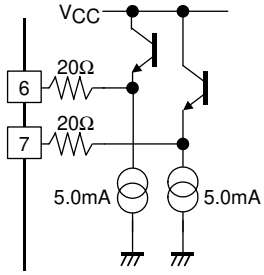


SANYO : MSOP8(150mil)

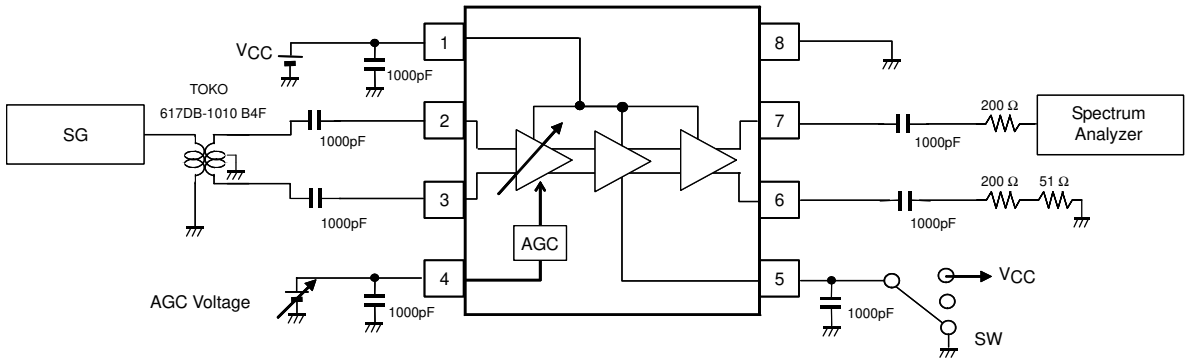
Block Diagram



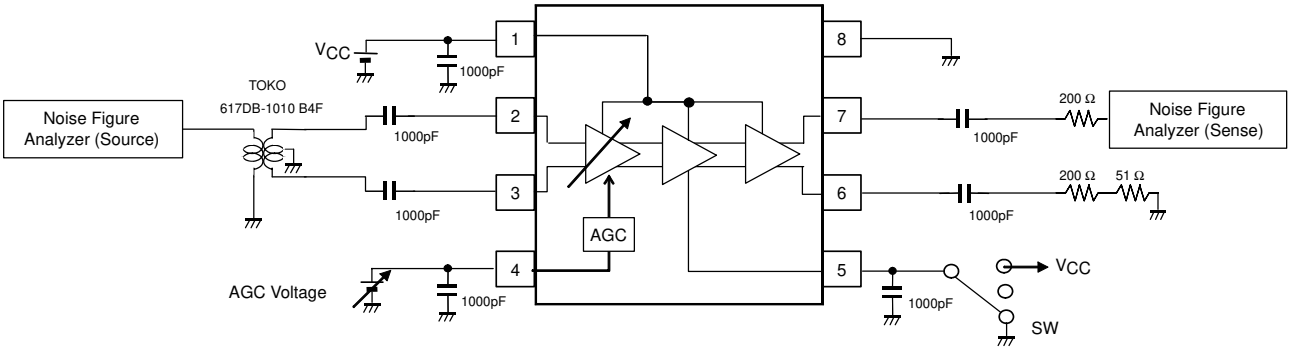
Pin Functions

Pin Number	Pin Name	Descriptions
1	V_{CC}	
2 3	IF Input	
4	AGC Control	
5	Gain Control Switch	
6 7	Driver Output	
8	GND	

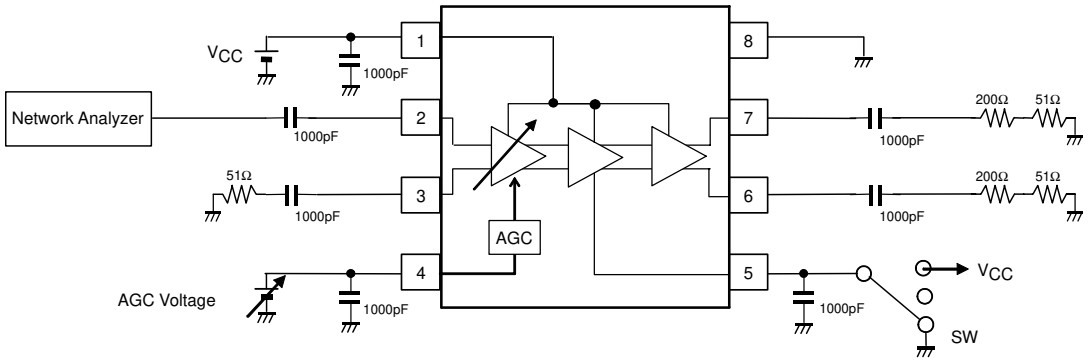
LA7795T Gain Measurement Circuit 1



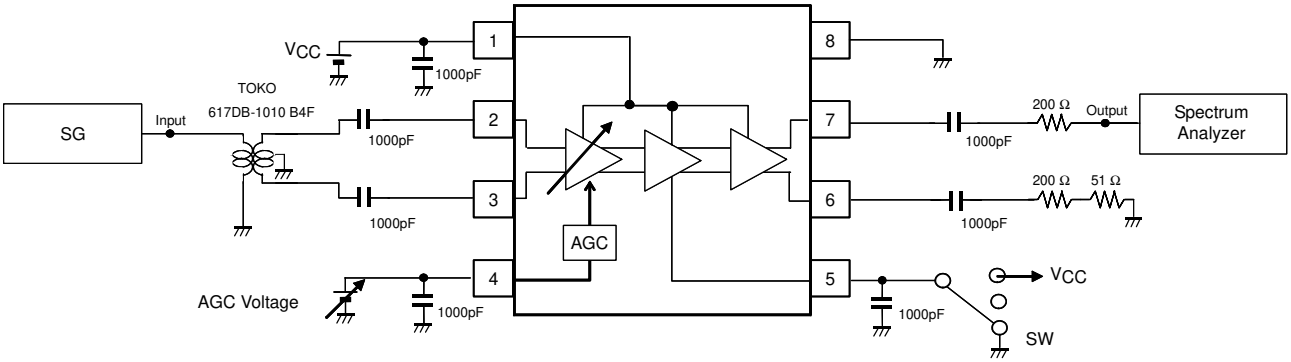
LA7795T Noise Figure Measurement Circuit 2



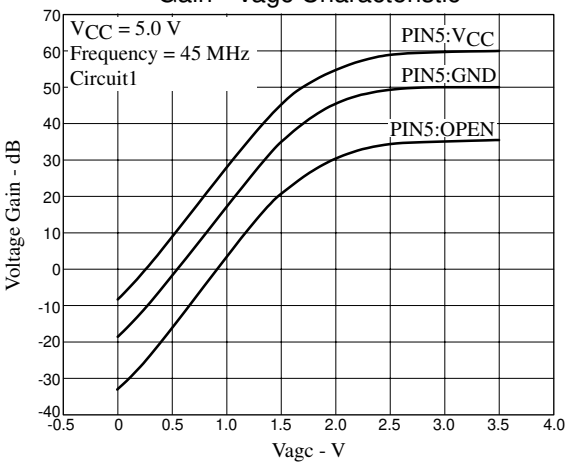
LA7795T Input Impedance Measurement Circuit 3



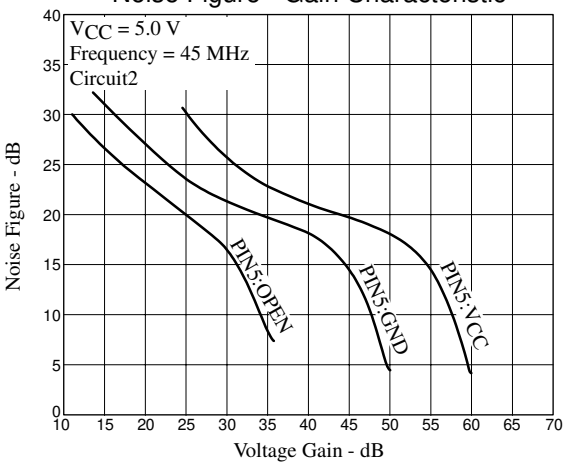
LA7795T Intermodulation Measurement Circuit 4



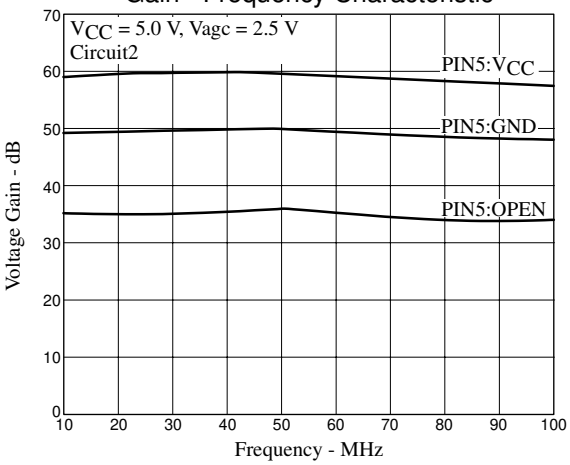
Gain - Vagc Characteristic



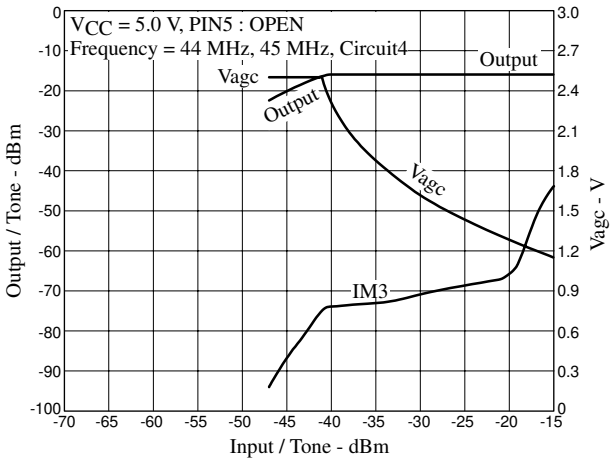
Noise Figure - Gain Characteristic



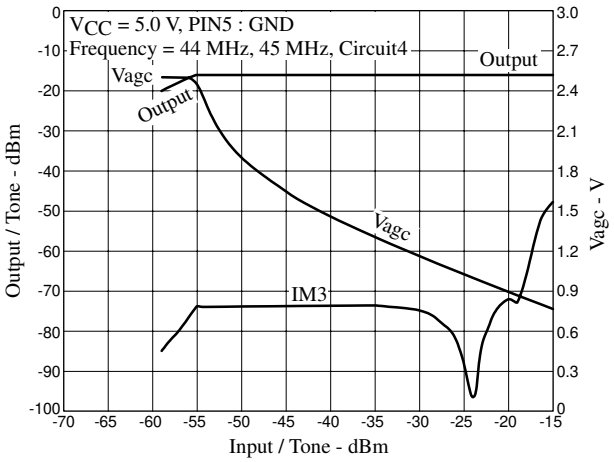
Gain - Frequency Characteristic



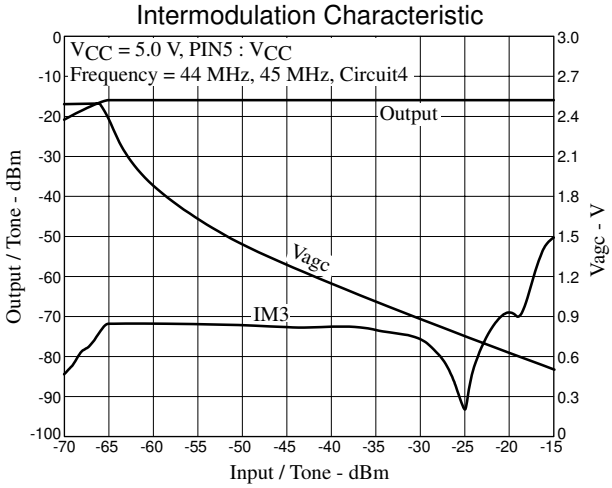
Intermodulation Characteristic



Intermodulation Characteristic



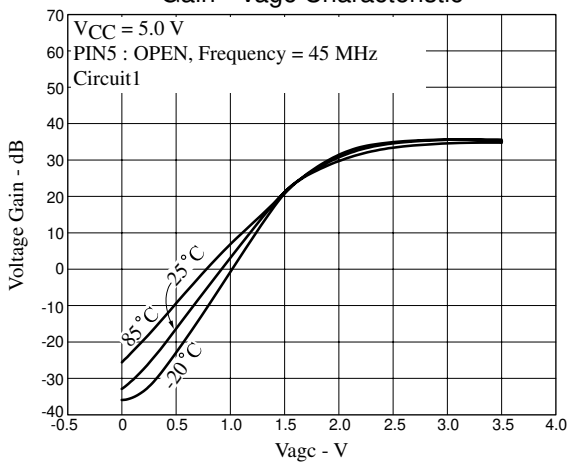
Intermodulation Characteristic



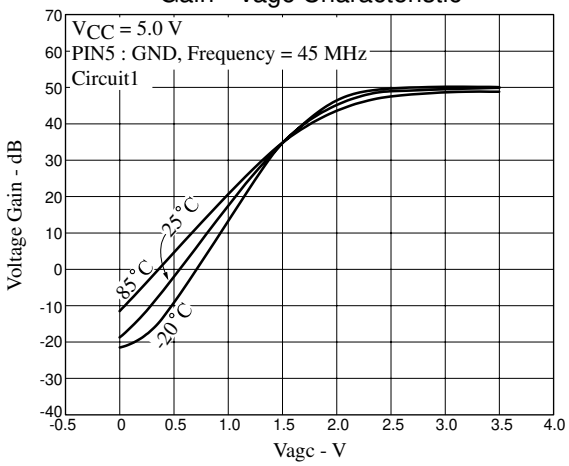
The vertical axis (Output/Tone) on this graph shows the values displayed by the spectrum analyzer for circuit 4.
The actual output power for the corresponding pins is given by the following formula.

{output power [dBm]}=
{displayed value [dBm]}+10 · log (250 Ω/50 Ω)

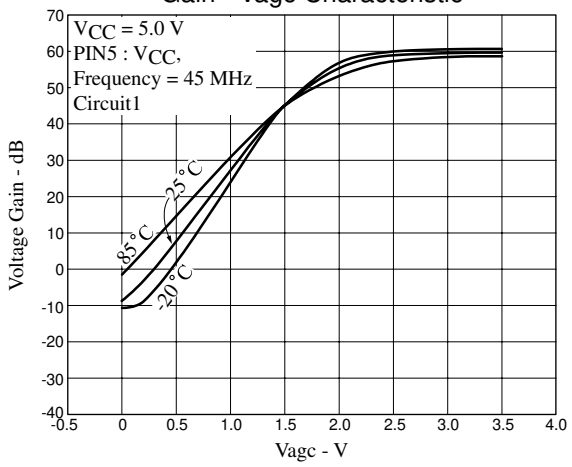
Gain - Vagc Characteristic



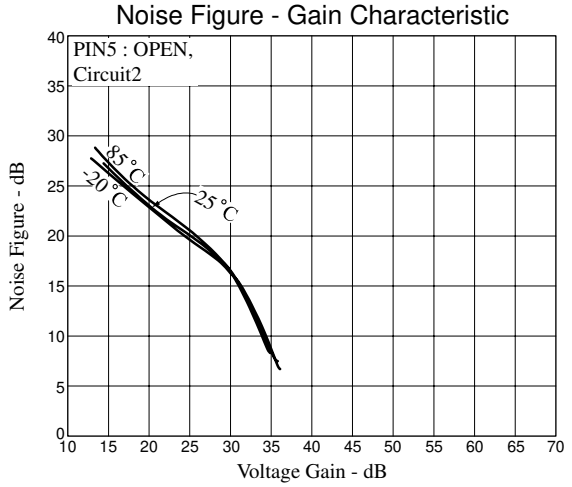
Gain - Vagc Characteristic



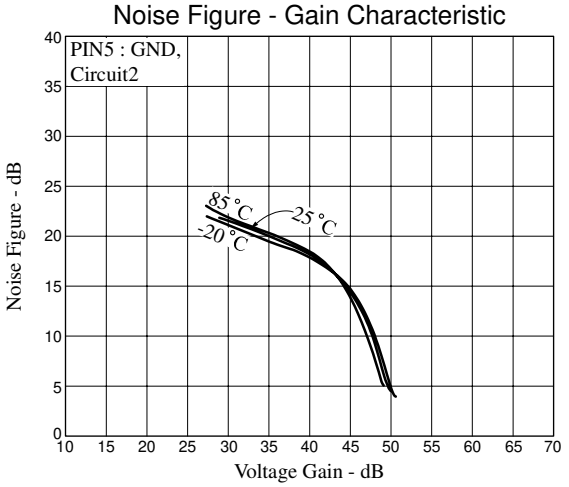
Gain - Vagc Characteristic



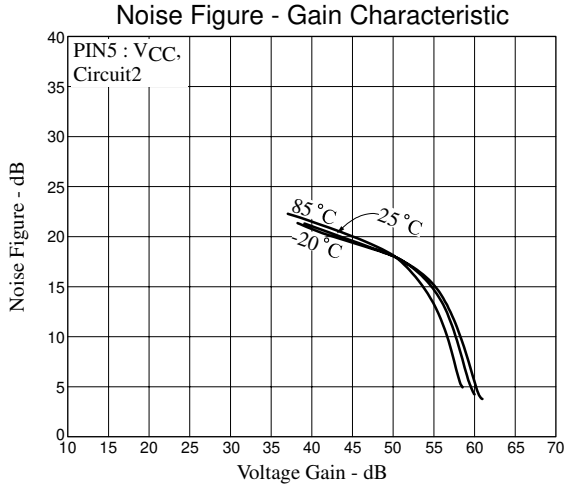
Noise Figure - Gain Characteristic



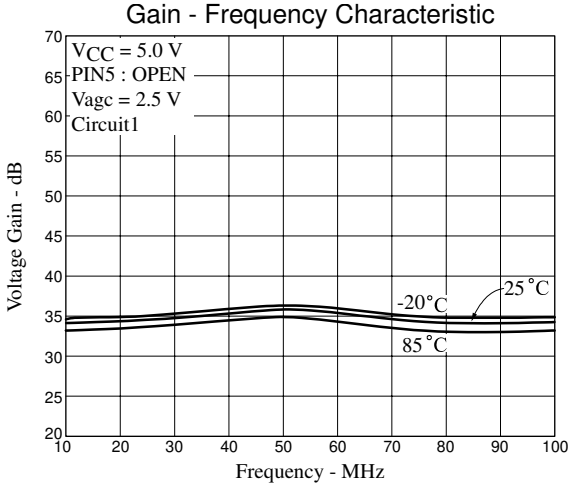
Noise Figure - Gain Characteristic



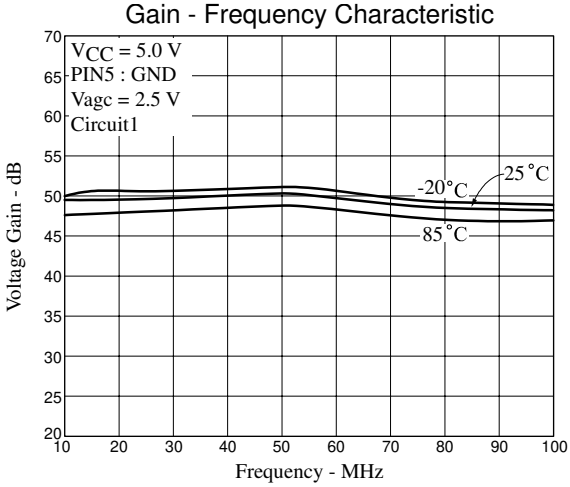
Noise Figure - Gain Characteristic



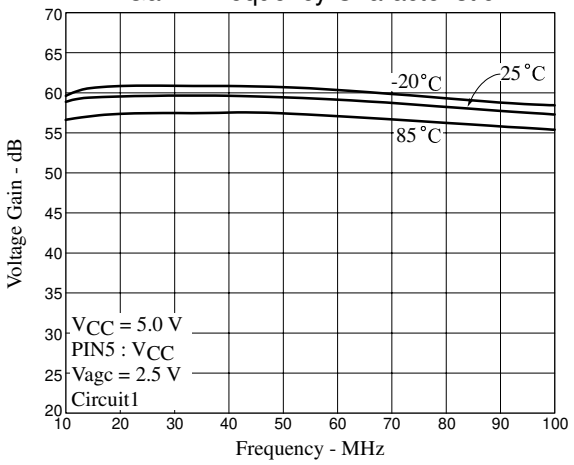
Gain - Frequency Characteristic



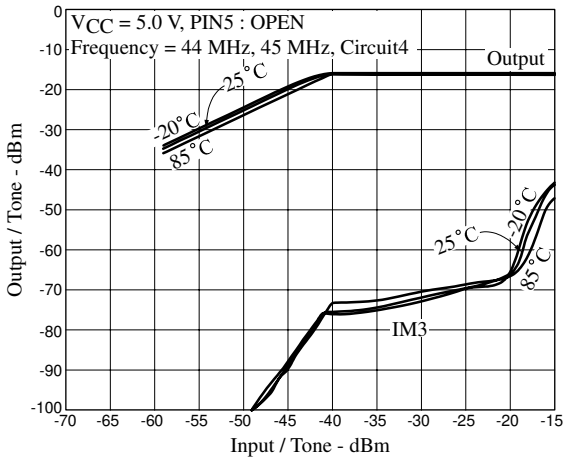
Gain - Frequency Characteristic



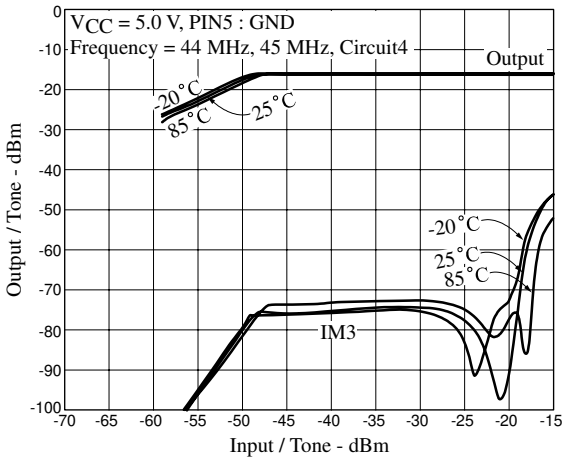
Gain - Frequency Characteristic



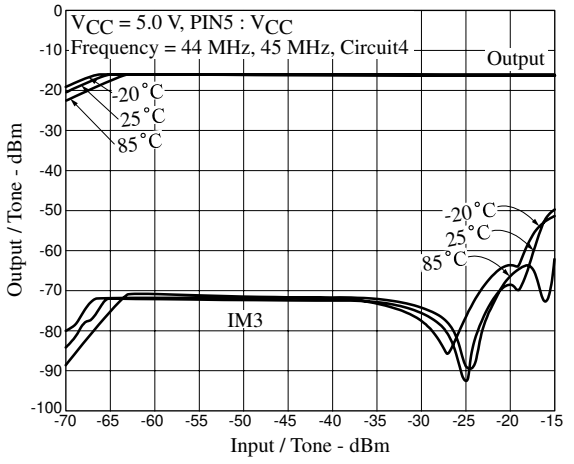
Intermodulation Characteristic



Intermodulation Characteristic



Intermodulation Characteristic



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