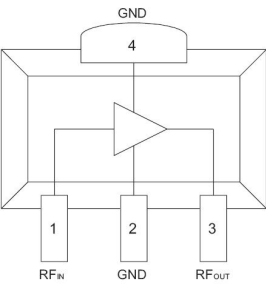


DESCRIPTION

Sanland's SG122 is a 47-1218 MHz High Gain, Low EIN, Single ended RF Optical Receiver for FTTH PON applications. It is a technology leader with an optical input range from -18 dBm to 0 dBm. The SG122, with recommended external control circuitry, provides automatic gain control to maintain a constant +14 dBmV to +20 dBmV / channel output to insure consistent video quality. It runs on a single +5 V supply eliminating the need for an extra ONT supply.

Major Applications

- FTTH xPON
- DOCSIS 3.1
- Head End CMTS Equipment
- Cable Modem and Set Top Box
- Optical Node
- Low Noise, High Gain Amplifier for Active Off-Air/TV
- Antenna



KEY FEATURES



- High Linearity: +40 dBm OIP3 and +48dBm OIP2 at 550 MHz
- 47 – 1218 MHz Operational Bandwidth
- Low Noise: 3.5 pA / $\sqrt{\text{Hz}}$ Equivalent Input Noise Current (EINC)
- High Gain: >30 dB gain at 550 MHz
- 30 dB AGC Range with Recommended External Control Circuitry
- Efficient Power Consumption: 550 mW for +5 V



ESD Class 1A

Appropriate precautions in handling , packaging and testing devices must be observed !

PIN DEFINITION

Pin	Name	Function
1	RF in	RF Input
2	GND	Ground
3	RF out	RF Output/Bias
4	GND	Ground

Stresses in excess of the absolute ratings may cause permanent damage

Parameters	MIN	MAX	UNIT
Voltage	0	+8	V
Input Power	-	+10	dBm
Storage Temperature	-65	+150	°C

Absolute Minimum Range and Maximum Application Conditions

Parameters	MIN	TYP	MAX	UNIT
Frequency	50	-	1218	MHz
Operating Voltage	5	5	8	V
Application Temperature	-40	-	+85	°C
Operating Junction temperature		150		°C

TYPICAL PARAMETERS

($T_A=+25^{\circ}\text{C}$, $V_{DD}=+5\text{V}$, 75Ω system)

Parameter	Units	Min	Typical	Max
Frequency	MHz	50	550	1218
Noise Figure	dB	-	0.7	-
Gain	dB	-	29	-
S11	dB	-	-12	-
S22	dB	-	-10	-
Output P1dB	dBm	-	22	-
Output IP3 ^①	dBm	-	39.8	-
Output IP2 ^②	dBm	-	48	-
Supply Current	mA	-	135	-
Supply Voltage	V	-	5	-
Thermal resistance	$^{\circ}\text{C/W}$	-	21	-

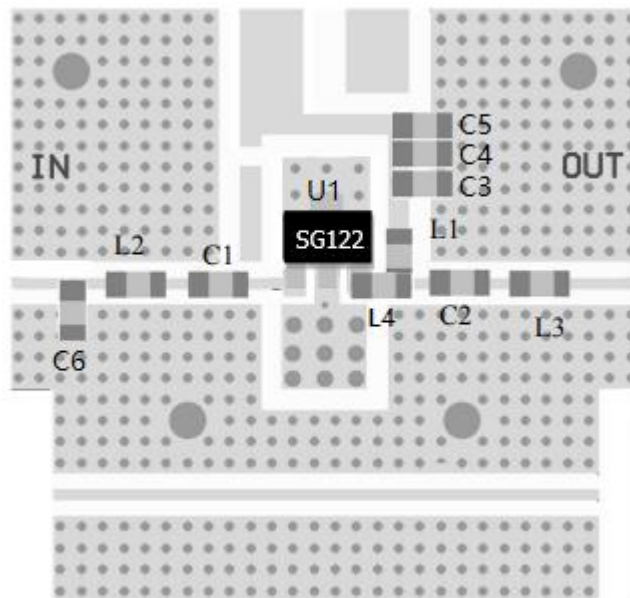
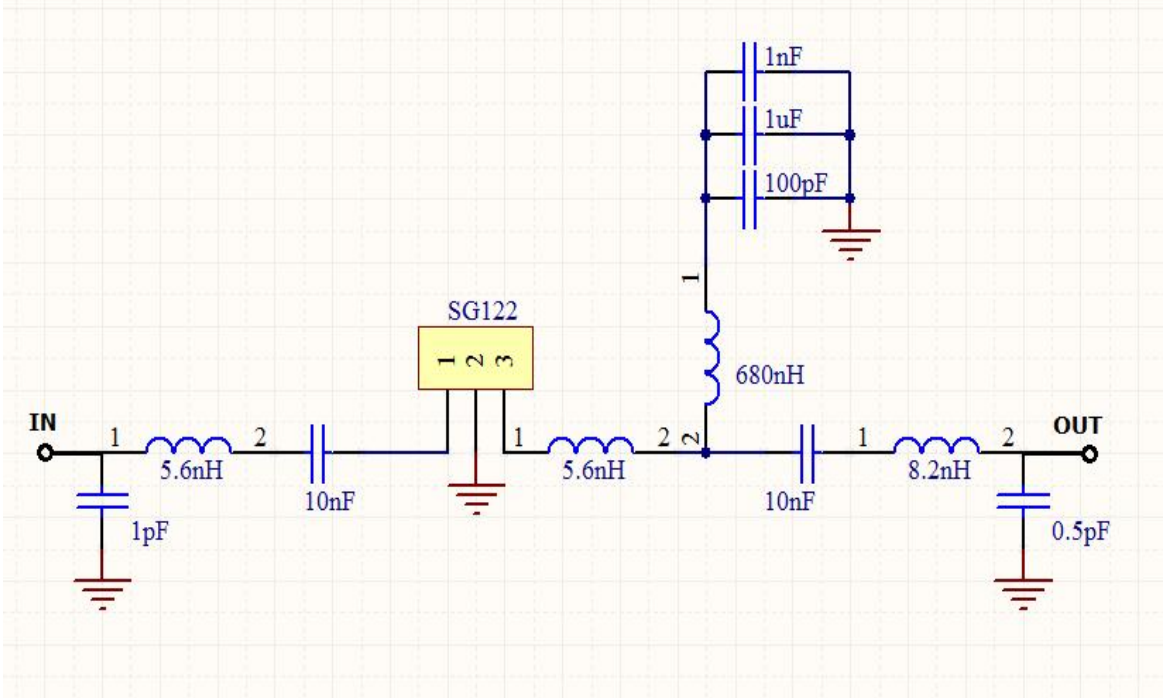
① Tone Spacing=1MHz, Pout per ton=10dBm ② OIP2 is measured at F1+F2 Frequency

③ 79Ch.,Flat,+38dBmV

Important Note:

The information provided in this datasheet is deemed to be accurate and reliable only at present time. Sanland Technology Corp. reserves the right to make any changes to the specifications in this datasheet without prior notice.

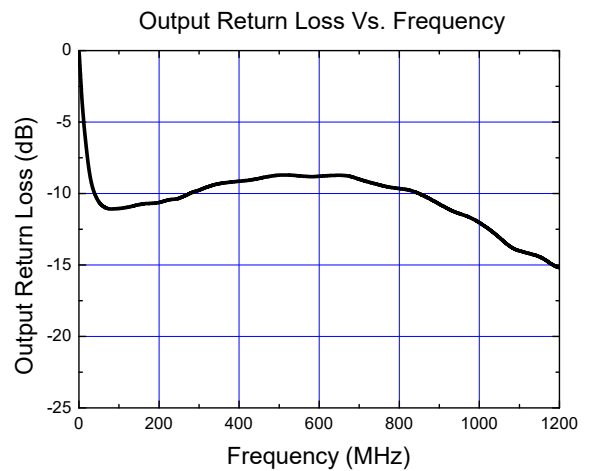
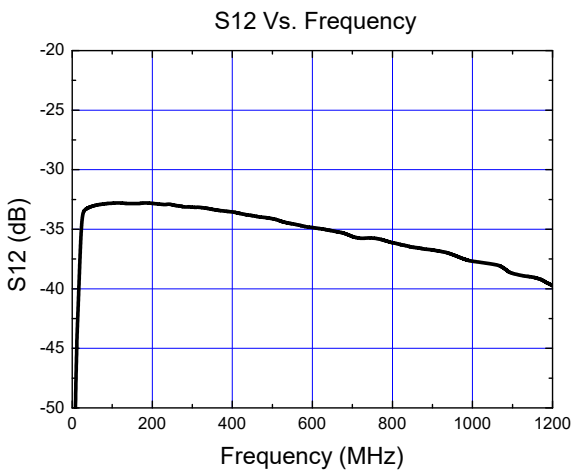
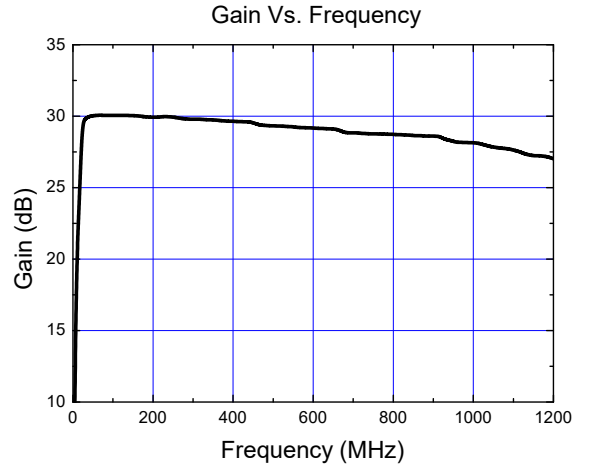
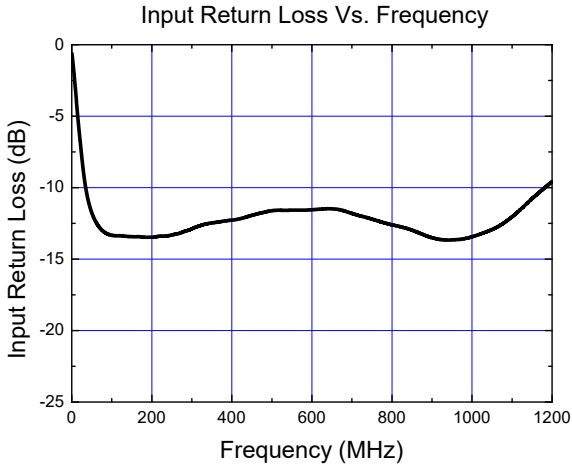
TYPICAL APPLICATION CIRCUIT

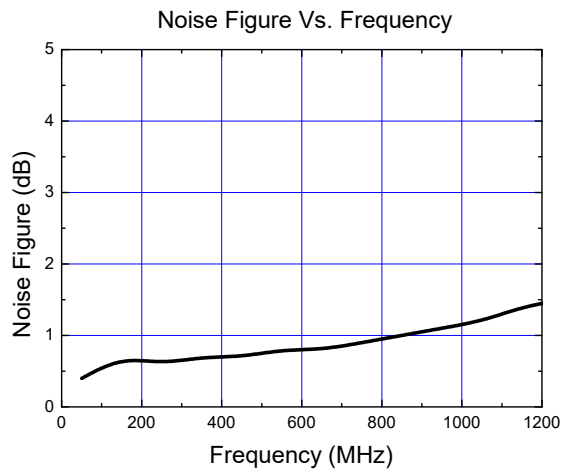
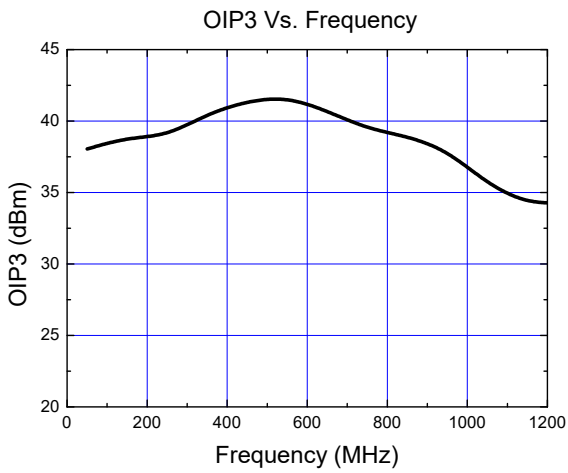
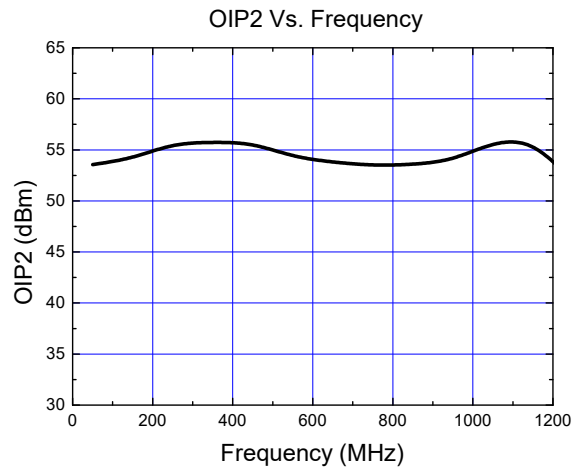
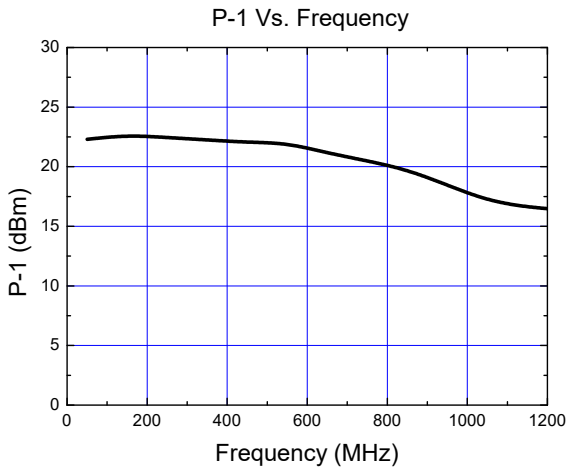


Designator	Description	Manufacturer	Part Number
U1	FTTH - Low EINC Optical Front End	SANLAND	SG122
L1	IND, 680nH, 5%, 590mA, W/W, 0805	COILCRAFT INC	0805LS-681XJLC
L2,L4	IND, 5.6nH, +/-0.1nH, T/F, 0402	MURATA ELECTRONICS	LQP15MN5N6B02D
L3	IND, 8.2 nH, 5%, M/L, 0402	MURATA ELECTRONICS	LQG15HH8N2J02D
C1,C2	CAP, 10nF, +/-20%, 50V, STD, 1206	MURATA ELECTRONICS	GRM1882C1H103J A01D
C3	CAP, 100pF, 5%, 50V, C0G, 0603	MURATA ELECTRONICS	GRM1885C1H101J A01D
C4	CAP, 1.0uF, +/-20%, 50V, STD, 1206	MURATA ELECTRONICS	GRM31MR71H105 MA88L
C5	CAP, 1000pF, 10%, 50V, STD, 0402	TAIYO YUDEN PTE LTD	UMK105B7102KV-F
C6	CAP, 1pF, +/-0.1pF, 100V, HI-Q, 0402	Kamaya, Inc	RF15N1R0B101CT

PERFORMANCES CHART

($T_A=+25^{\circ}\text{C}$, $V_{DD}=+5\text{V}$, 75Ω system)





TYPICAL PARAMETERS

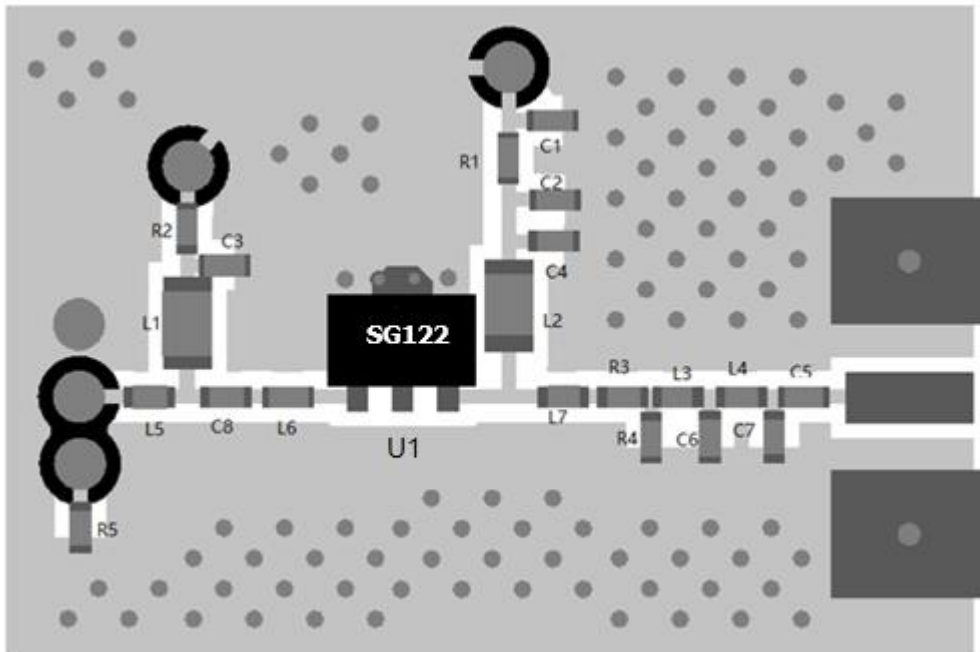
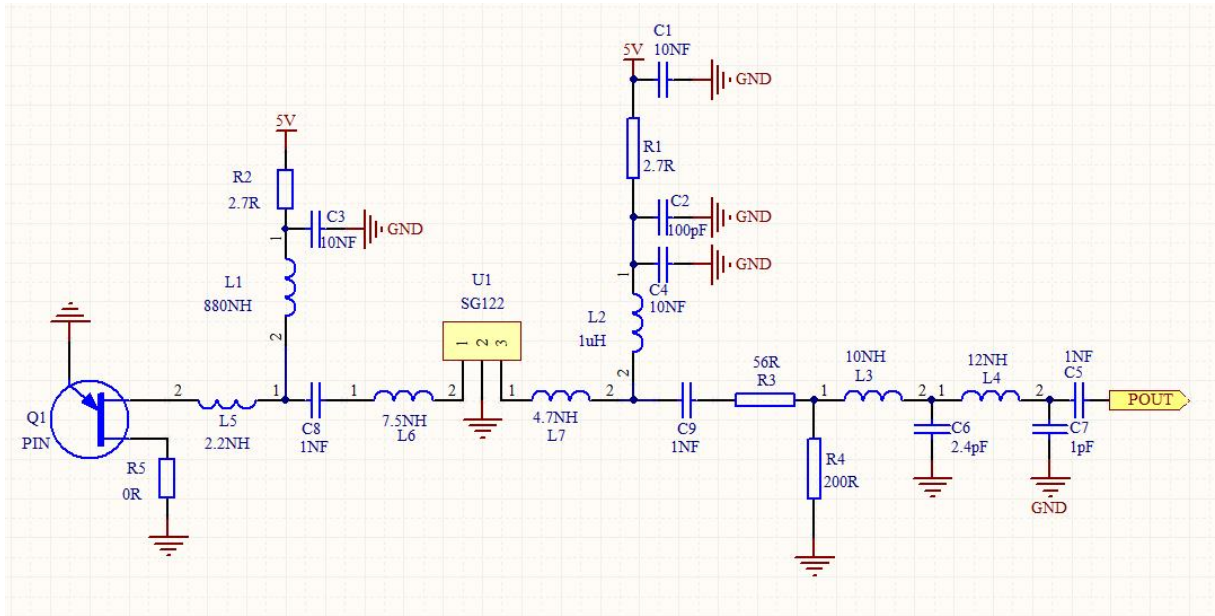
($T_A=+25^{\circ}\text{C}$, $V_{DD}=+5\text{V}$, Optical Input to Electrical RF Out EVB)

Parameter	Units	Min	Typical	Max
Frequency	MHz	50	550	1218
Noise Figure	dB	-	0.7	-
Gain	dB	-	29	-
S11	dB	-	-12	-
S22	dB	-	-10	-
MER	dB	-	35.2	-

Important Note:

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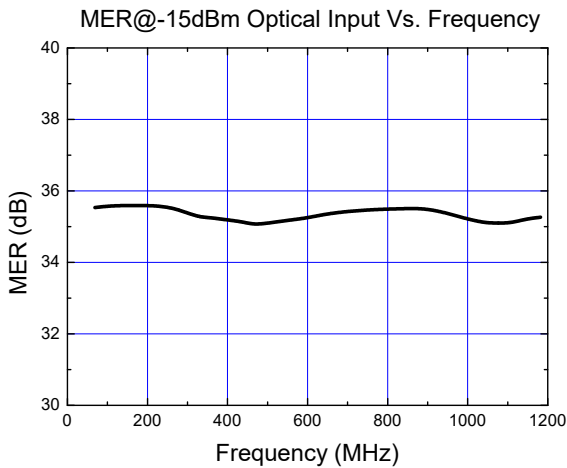
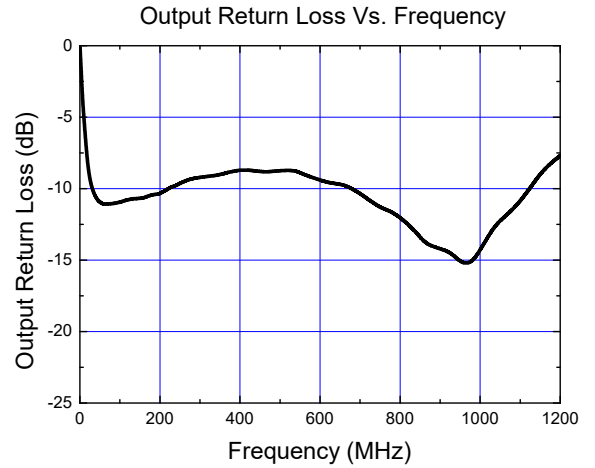
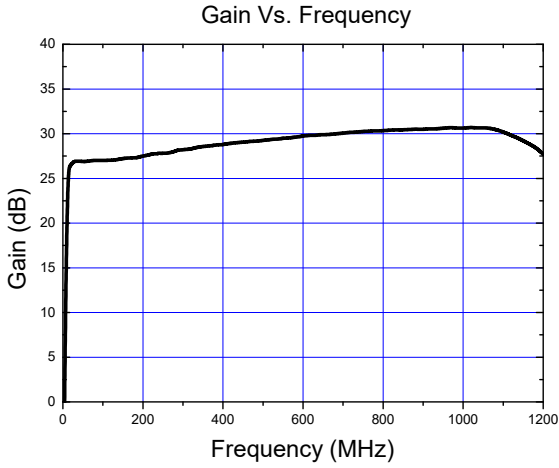
TYPICAL APPLICATION CIRCUIT



Designator	Description	Manufacturer	Part Number
U1	FTTH - Low EINC Optical Front End	SANLAND	SG122
L1	IND, 880nH, 5%, W/W, 0805	Gowanda Electronics	CC0805-880J-2
L2,	IND, 1uH, 5%, W/W, 0805	Coil craft, Inc.	0805LS-102XJLC
L3	IND, 10nH, 3%, 500mA, W/W, 0402	MURATA ELECTRONICS	LQW15AN10NH00D
L4	IND, 12nH, 3%, W/W, 0402	MURATA ELECTRONICS	LQW15AN12NH00D
L5	IND, 2.2nH, +/-0.2nH, W/W, 0402	MURATA ELECTRONICS	LQW15AN2N2C10D
L6	IND, 7.5nH, 5%, M/L, 0402	MURATA ELECTRONICS	LQG15HN7N5J02D
L7	IND, 4.7nH, +/-0.1nH, W/W, 0402	MURATA ELECTRONICS	LQW15AN4N7B00D
C1,C3,C4	CAP, 10nF, +/-20%, 50V, STD, 1206	MURATA ELECTRONICS	GRM1882C1H103JA01D
C5,C8,C9	CAP, 1000pF, 10%, 50V, STD, 0402	TAIYO YUDEN PTE LTD	UMK105B7102KV-F
C6	CAP, 2.4pF, +/-0.25pF, 25V, HI-Q, 01005	Taiyo Yuden	TVS042CG2R4CC-W
C7	CAP, 1pF, +/-0.1pF, 100V, HI-Q, 0402	Kamaya, Inc	RF15N1R0B101CT
R1,R2	RES, 2.7ohms, 5%, 250V, STD, 0402	Kamaya, Inc	RC1/42R7JB
R3	RES, 56 OHM, 5%, 1/10W, 0402	Panasonic Industrial Devices	ERJ-2GEJ560X
R4	RES, 200 OHM, 5%, 1/16W, 0402	Panasonic Industrial Devices	ERJ-2GEJ201
R5	RES, 0 OHM, 5%, 1/10W, 0402	Kamaya, Inc	RMC1/16SJPTH

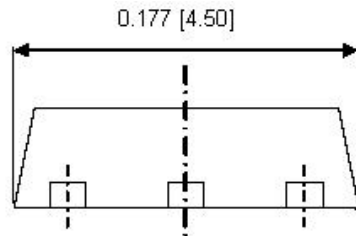
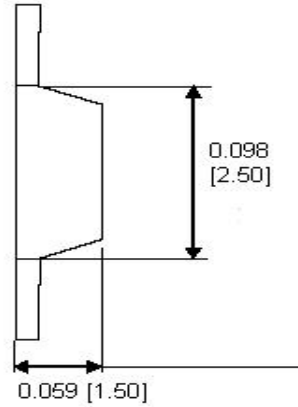
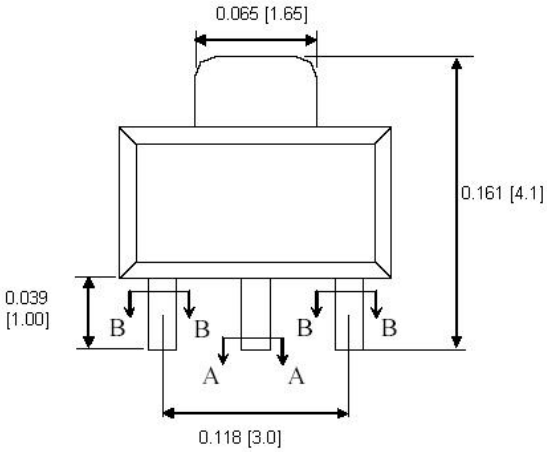
PERFORMANCES CHART

($T_A=+25^{\circ}\text{C}$, $V_{DD}=+5\text{V}$, Optical Input to Electrical RF Out EVB)



SOT89 PACKAGE AND PCB PAD LAYOUT

Units: inch [millimeter]



Symbol	inch	mm
A	0.016	0.42
B	0.019	0.5

