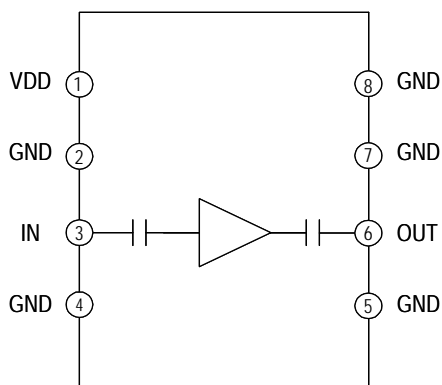


Wide Band Power Amplifier Gain Block

Functional Block Diagram



Product Description

The TQ9132 amplifier is a 500-2500 MHz amplifier capable of providing moderate output power (50 mW) for a wide variety of transmit and receive applications. The amplifier's input and output are matched to 50 Ω with internal circuitry, simplifying interfaces to 50 Ω systems. In addition, DC blocking capacitors are included on chip, permitting direct connections to the input and output. Its 8-pin surface mount package and low cost are well suited to many wireless communications applications.

Electrical Characteristics¹

Parameter	Typ	Units
Gain	16	dB
Output 1 dB Gain Compression	17.0	dBm
Input Return Loss	14	dB
Output Return Loss	12.5	dB
DC Supply Current	85	mA

Note 1: Test Conditions: $V_{DD} = 5.0 V$, $Freq. = 2500 MHz$, $T_A = 25^\circ C$.

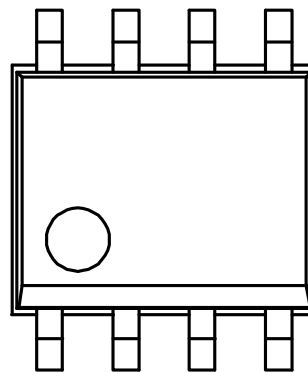
Features

- Single 3V-6V supply
- Wide frequency range
- +17 dBm output power
- Input and output matched to 50 Ω
- SOIC-8 surface mount plastic package
- RoHS compliant, Pb-free

Applications

- Power Amplifier drivers
- PCN Medium-power amplifiers
- Medium-power WLAN's
- CDPD Modems
- Base Station receivers

Package Style



SOIC-8 5x6mm

Wide Band Power Amplifier Gain Block

Absolute Maximum Ratings

Symbol	Parameter	Absolute Maximum Value	Units
V _{DD}	DC Power Supply	7.0	V
P _{DISS}	Power Dissipation	500	mW
P _{IN}	Input Power	+10	dBm
T _{STG}	Storage Temperature	-55 to +150	°C
T _{OP}	Operating Temperature (case)	-40 to +85	°C
	Thermal Resistance	135.5	°C/W

Note: The part may not survive all maximums applied simultaneously.

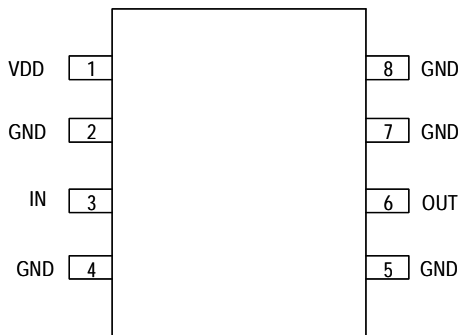
Electrical Specifications¹

Parameter	Conditions	Min.	Typ	Max.	Units
Frequency		500		2500	MHz
Supply Voltage (V _{DD})		3.0	5.0	6.0	V
Gain	f = 0.5 GHz		15.5		dB
	f = 1.0 GHz		18.0		
	f = 1.5 GHz		18.6		
	f = 2.0 GHz	16.0	17.8		
	f = 2.5 GHz		16.0		
Noise Figure	f = 0.5 to 2.5 GHz		5.0		dB
Output 1 dB Gain Compression	f = 0.5 to 2.5 GHz	15.5	18.0		dBm
Output 3 rd Order Intercept	f = 0.5 to 2.5 GHz		29		dBm
Input Return Loss	f = 0.75 to 2.5 GHz		14		dB
Output Return Loss	f = 0.75 to 2.5 GHz		12.5		dB
DC Supply Current			85	100	mA

Note 1: Test Conditions: V_{DD} = 5.0 V, T_A = 25°C.

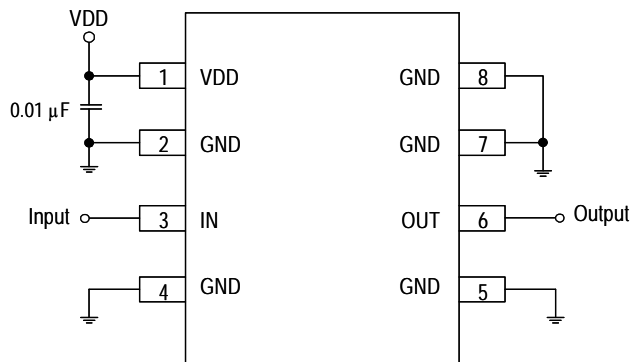
Wide Band Power Amplifier Gain Block

Pin Out and Assignments



Pin	Symbol	Description
1	V _{DD}	Voltage from desired power supply. Decoupling is required. Decouple with a 0.01 μ F capacitor within 5 mm of package.
3	IN	RF Input. Internally DC blocked and matched to 50 ohms. Connect directly to any 50 ohm source with 50 ohm printed microstrip line.
6	OUT	RF Output. Internally DC blocked and matched to 50 ohms. Connect directly to any 50 ohm source with 50 ohm printed microstrip line.
2,4,5,7,8	GND	Ground connections. Connect immediately to ground plan for stability and performance. Pins are internally connected.

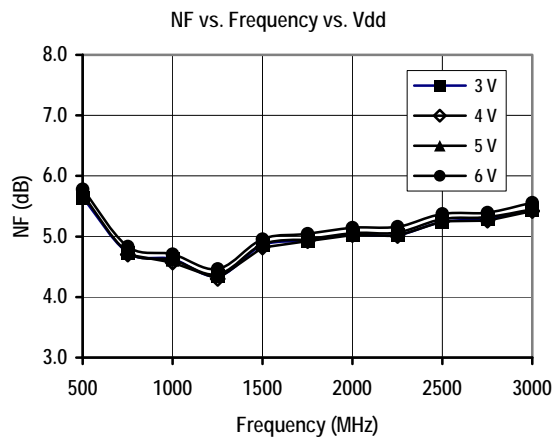
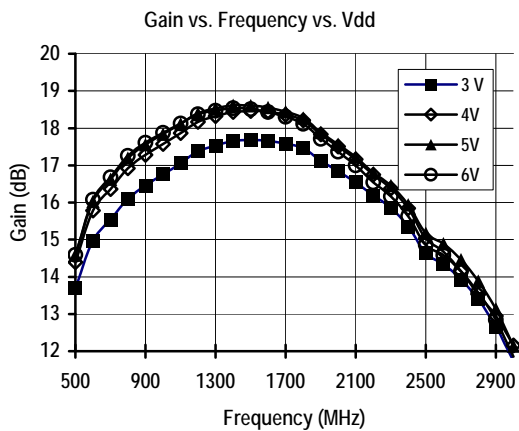
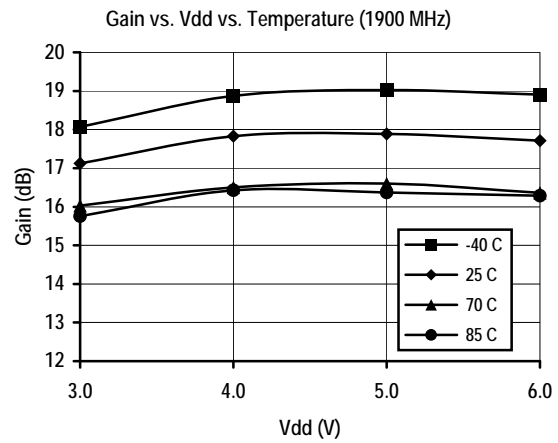
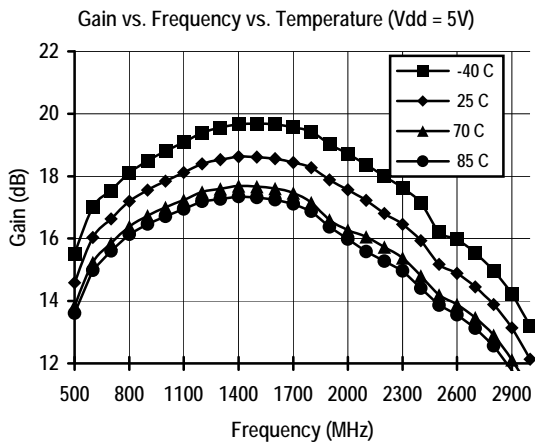
Typical Test Circuit



Wide Band Power Amplifier Gain Block

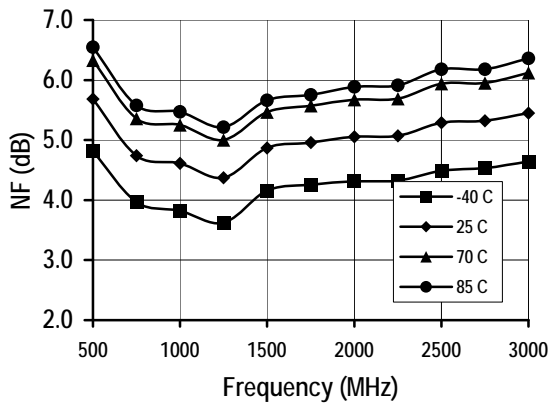
Typical Performance

Test Conditions (Unless Otherwise Specified): VDD = 5 V, Freq. = 2500 Mhz, TC = 25° C.

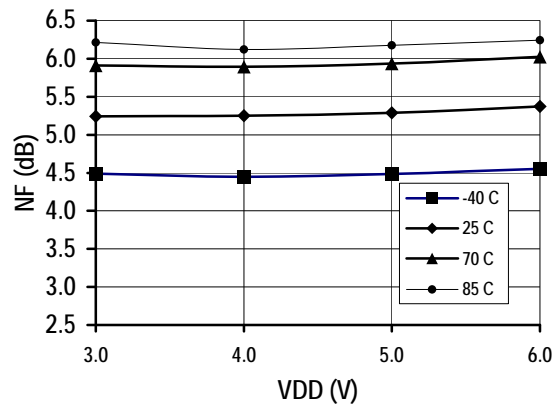


Wide Band Power Amplifier Gain Block

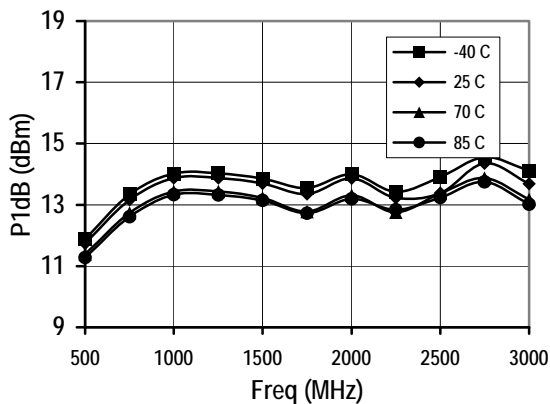
NF vs. Frequency vs. Temperature



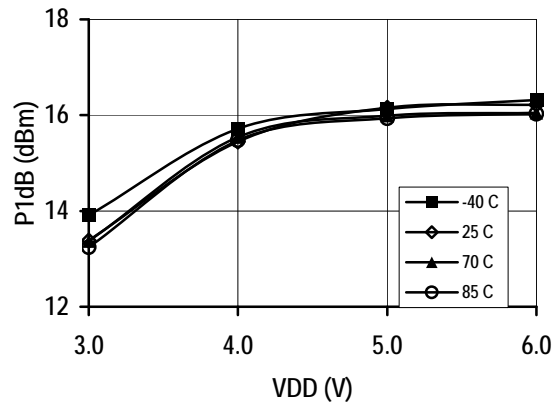
NF vs. VDD vs. Temperature



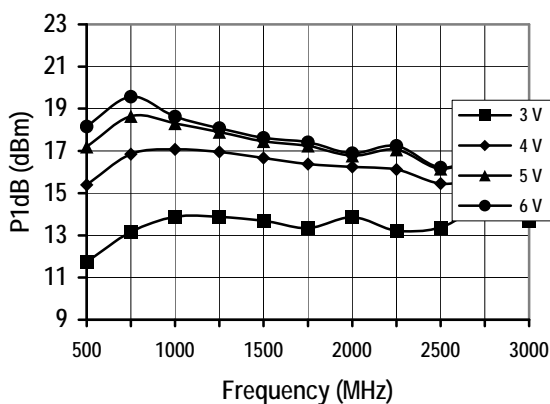
P1dB vs. Frequency vs. Temperature (Vdd = 3V)



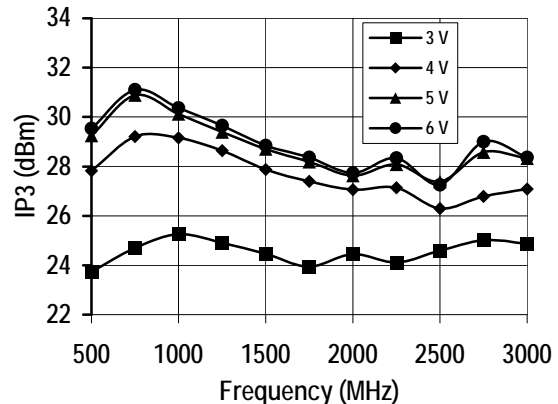
P1dB vs. VDD vs. Temperature



P1dB vs. Frequency vs. Vdd

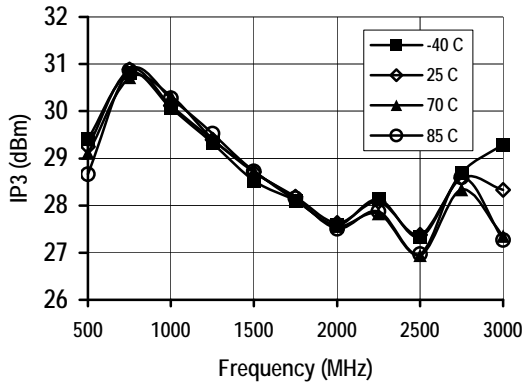


IP3 vs. Frequency vs. VDD

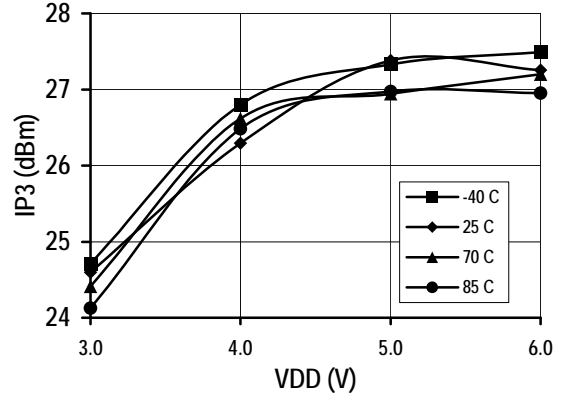


Wide Band Power Amplifier Gain Block

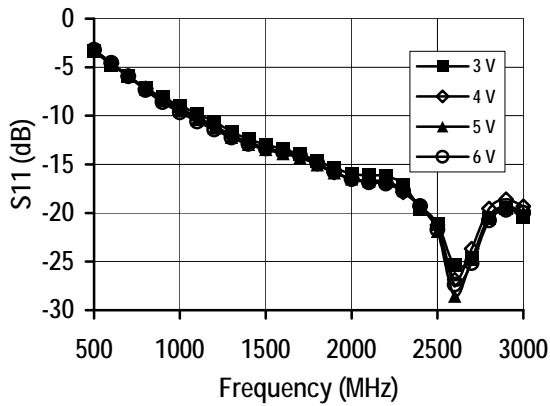
IP3 vs. Frequency v.s Temperature



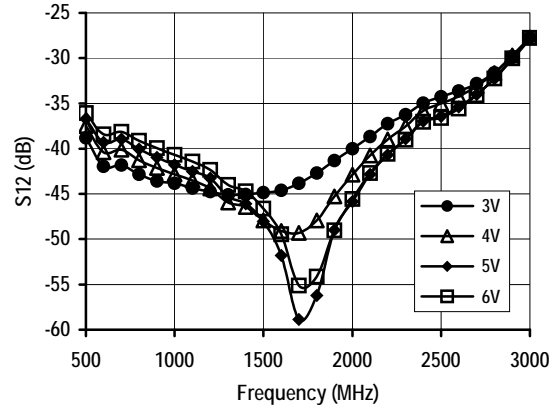
IP3 vs. VDD vs. Temperature



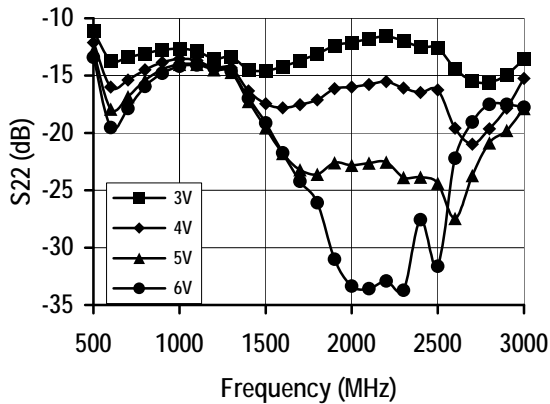
S11 vs. Frequency vs. VDD



S12 vs. Frequency vs. VDD



S22 vs. Frequency vs. VDD



Wide Band Power Amplifier Gain Block

S-Parameters (typical)¹

<i>Freq (MHz)</i>	<i> S11 </i>	<i>∠S11</i>	<i> S21 </i>	<i>∠S21</i>	<i> S12 </i>	<i>∠S12</i>	<i> S22 </i>	<i>∠S22</i>
500	0.769	-110	5.2	22	0.012	83	0.157	12
600	0.644	-127	5.9	-15	0.010	17	0.159	-44
700	0.543	-144	6.5	-48	0.011	-17	0.185	-77
800	0.450	-159	7.0	-78	0.010	-38	0.206	-103
900	0.382	-172	7.4	-106	0.010	-56	0.216	-126
1000	0.326	92	7.7	-132	0.010	-72	0.219	-150
1100	0.281	166	7.9	-158	0.010	-85	0.221	-125
1200	0.247	157	8.2	152	0.010	-98	0.214	-164
1300	0.220	147	8.4	151	0.010	-109	0.204	140
1400	0.199	137	8.5	126	0.009	-120	0.194	118
1500	0.177	126	8.6	102	0.009	-130	0.185	92
1600	0.154	113	8.6	78	0.009	-137	0.175	64
1700	0.131	99	8.5	53	0.009	-133	0.165	36
1800	0.102	85	8.4	30	0.010	-141	0.165	7
1900	0.072	62	8.1	6	0.011	-158	0.165	-24
2000	0.053	-2	7.8	-17	0.012	-155	0.171	-54
2100	0.050	-49	7.5	-39	0.013	-127	0.18	-82
2200	0.063	-105	7.2	-62	0.015	137	0.188	-107
2300	0.085	-84	6.7	-84	0.016	159	0.194	-128
2400	0.119	58	6.4	-105	0.017	147	0.199	-148
2500	0.153	149	6.0	-127	0.019	134	0.201	-107
2600	0.182	146	5.6	-147	0.020	120	0.199	-8
2700	0.210	131	5.3	-132	0.021	107	0.198	160
2800	0.234	117	5.0	135	0.023	93	0.196	145
2900	0.258	103	4.7	151	0.024	76	0.191	128
3000	0.285	86	4.4	131	0.025	63	0.178	112

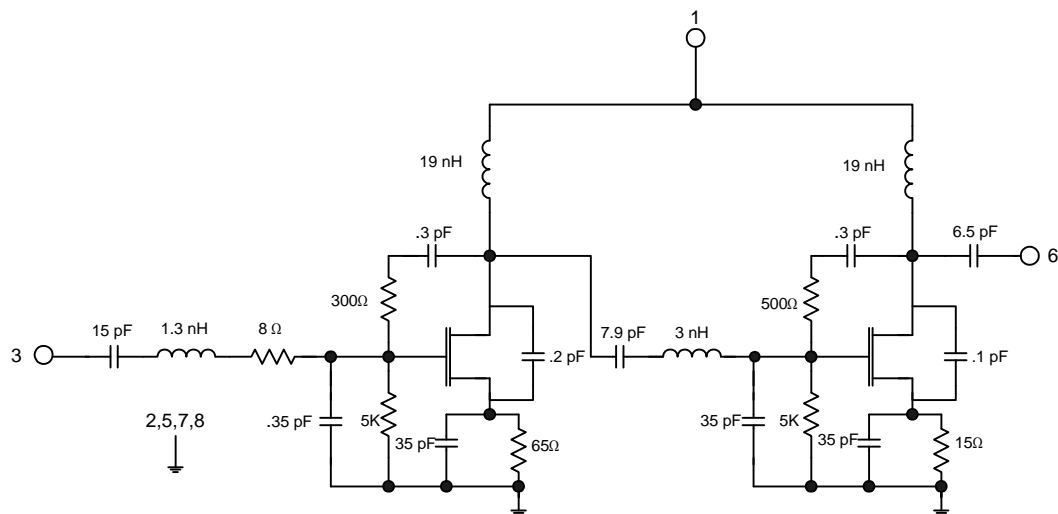
Note 1: Test Conditions: V_{DD} = 5.0 V, Freq. = 2500 MHz, T_A = 25° C. Reference plane at package leads.

For additional information and latest specifications, see our website: www.triquint.com

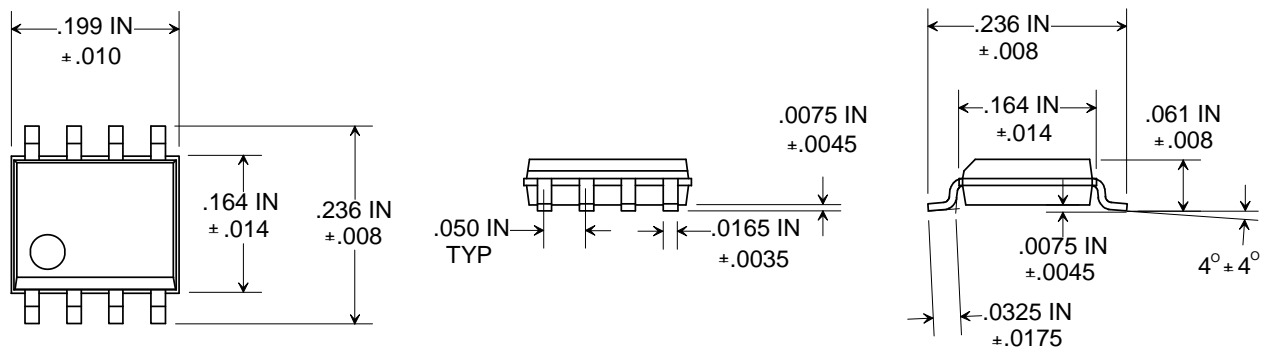


Wide Band Power Amplifier Gain Block

Simplified Schematic

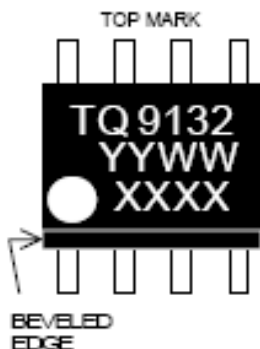


Package Type: SOIC-8 Plastic Package



Wide Band Power Amplifier Gain Block

Package Marking



Line 1- TriQuint Part number (TQ9132)

Line 2 – YYWW=Year/Week

Line 3 – XXXX (TriQuint lot number)

Additional Information¹

This part is compliant with RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment).

The part is rated Moisture Sensitivity Level 1 at 260°C per JEDEC standard IPC/JEDEC J-STD-020.

¹ For latest specifications, additional product information, worldwide sales and distribution locations, and information about TriQuint:

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