

The TQ9132 Amplifier is part of TriQuint's RFIC Building Block family. It is an 800 – 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 ohm 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 Specifications

Test Conditions: $V_{DD} = +5\text{ V}$, $T_A = 25^\circ\text{C}$, Frequency 2500 MHz

Parameter ⁽¹⁾	Min.	Typ.	Max.	Units
Frequency of operation	800		2500	MHz
Gain	13.5	16		dB
Output 1 dB Gain Compression	15.5	17		dBm
Input Return Loss		12		dB
Output Return Loss		12		dB
DC Supply Current		85	100	mA
Supply Voltage	3	5	6	V

Note: 1. Min/Max values listed are production tested.

TQ9132

50 mW Driver Amplifier

Features

- 800 – 2500 MHz operation
- +17 dBm output power
- Single 3 V to 6 V supply
- Input and output matched to 50 Ω
- SO-8 plastic package

Applications

- Power Amplifier Drivers
- Diode-Ring Mixer Buffers
- PCN Medium-Power Amplifiers
- Medium-Power WLANs
- Base Station Receivers

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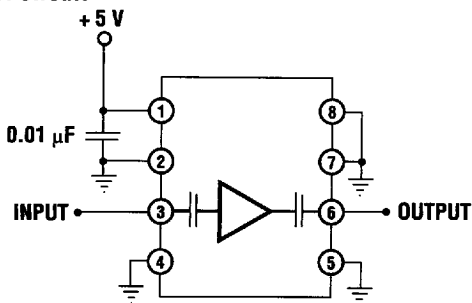
TQ9132

Electrical Specifications

Test Conditions: $V_{DD} = +5\text{ V}$, $T_A = 25^\circ\text{C}$, Frequency 2500 MHz

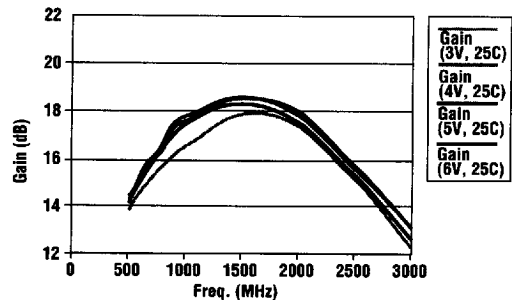
Parameter	Conditions	Min.	Typ.	Max.	Units
Frequency of operation		800		2500	MHz
Gain		13.5	16		dB
Noise Figure			4.1		dB
Output 1 dB Gain Compression		15.5	17		dBm
Output 3rd Order Intercept			27		dBm
Input Return Loss			12	10	dB
Output Return Loss			12	10	dB
DC Supply Current			85	100	mA
Supply Voltage		3	5	6	V

Test Circuit

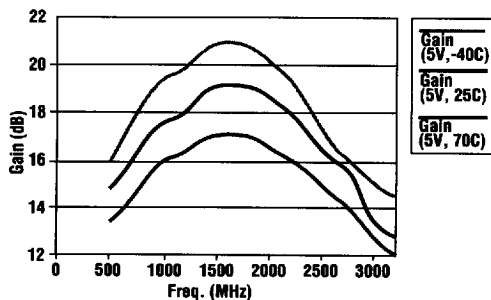


Typical Performance

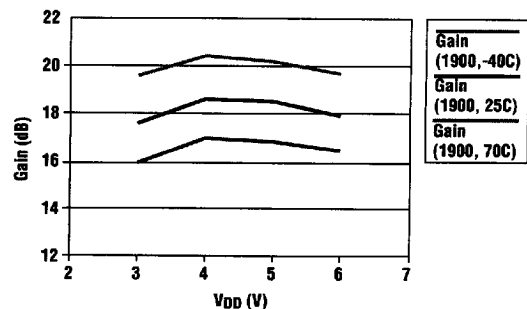
Gain vs. Frequency vs V_{DD}



Gain vs. Frequency vs Temperature

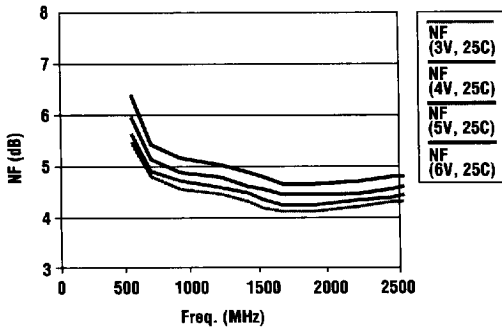


Gain vs. V_{DD} vs Temperature

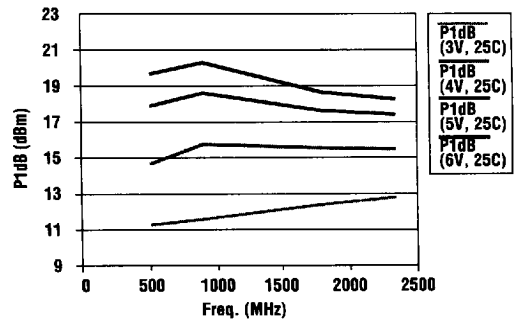


Typical Performance

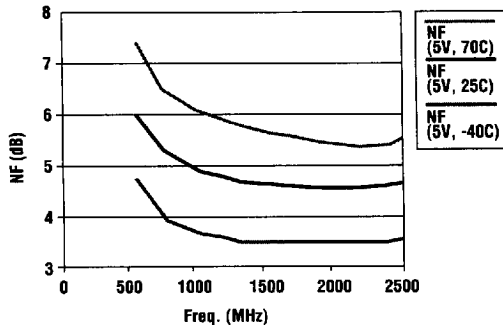
NF vs. Frequency vs V_{DD}



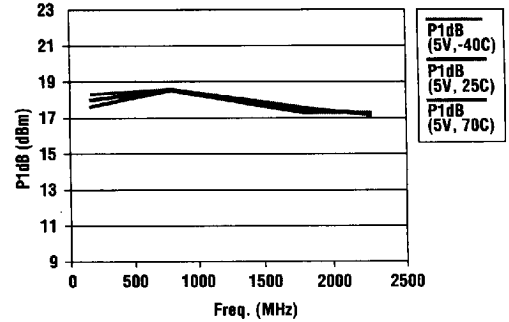
P1dB vs. Frequency vs V_{DD}



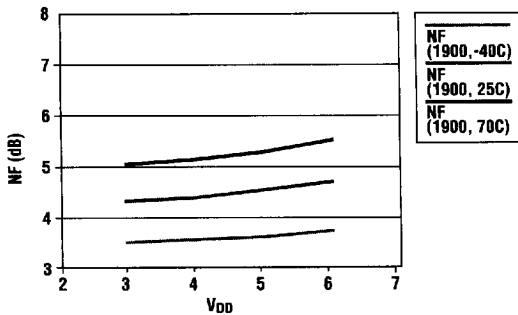
NF vs. Frequency vs Temperature



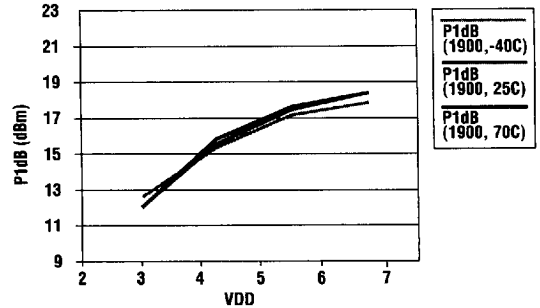
P1dB vs. Frequency vs Temperature



NF vs V_{DD} vs. Temperature



P1dB vs V_{DD} vs. Temperature

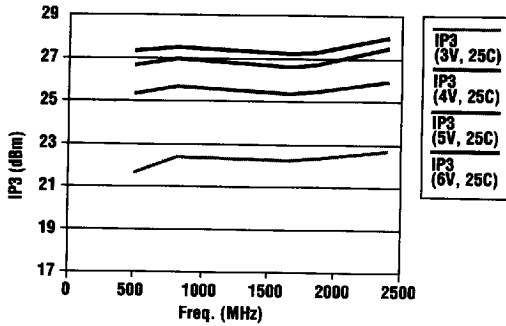


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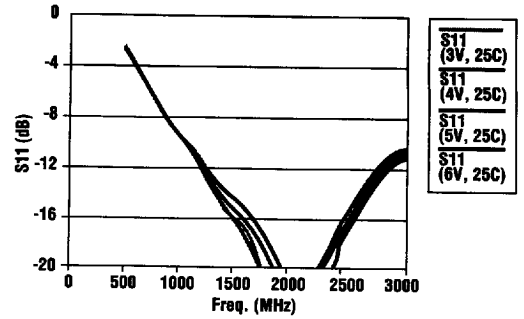
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Typical Performance

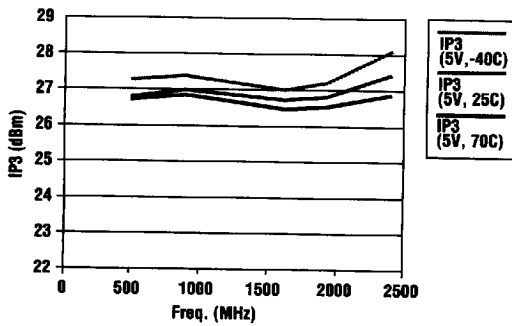
IP3 vs. Frequency vs V_{DD}



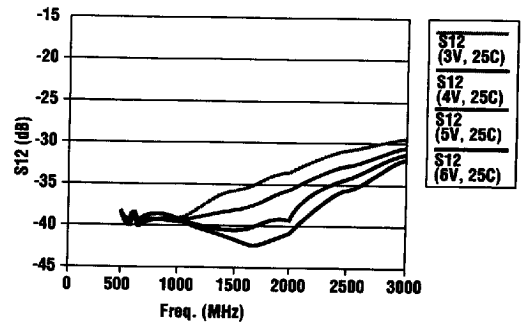
S11 vs. Frequency vs V_{DD}



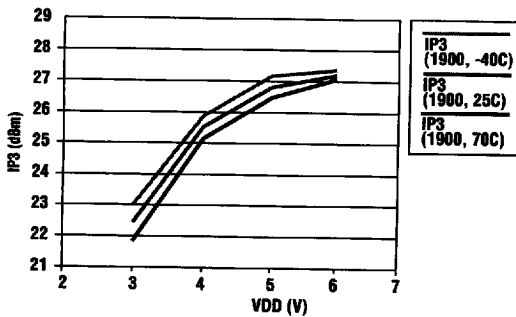
IP3 vs. Frequency vs Temperature



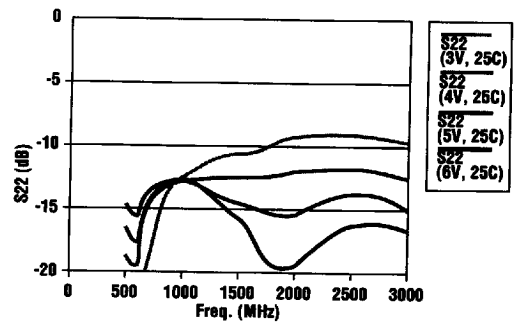
S12 vs. Frequency vs V_{DD}



IP3 vs. V_{DD} vs Temperature



S22 vs. Frequency vs V_{DD}



S-Parameters (typical)**Test Conditions: $V_{DD} = +5\text{ V}$, $T_A = 25^\circ\text{C}$, Reference plane at package leads**

Freq (MHz)	S11	$\angle S11$	S21	$\angle S21$	S12	$\angle S12$	S22	$\angle S22$
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

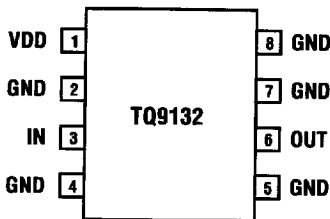
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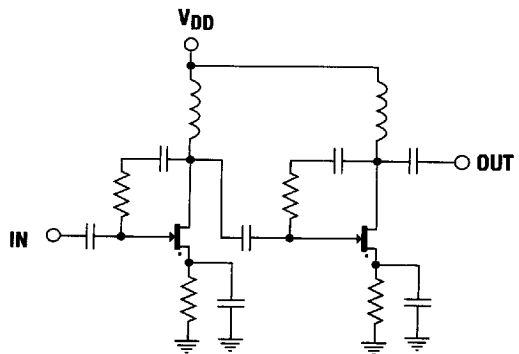
Pin Descriptions

Pin Name	Pin #	Description and Usage
V _{DD}	1	+5 V Power Supply. Decoupling is required. Decouple with 0.01 uF within 5 mm of package. V _{DD} may be varied to suit the application.
IN	3	Internally DC blocked and matched to 50 Ω . Connect directly to any 50 Ω source with 50 Ω printed microstrip line.
OUT	6	Internally DC blocked and matched to 50 Ω . Connect directly to any 50 Ω source with 50 Ω printed microstrip line.
GND	2, 4, 5, 7, 8	Ground connection. Connect immediately to ground plane for stability and performance. Pins are internally connected.

TQ9132 Pinout



Simplified Circuit Schematic



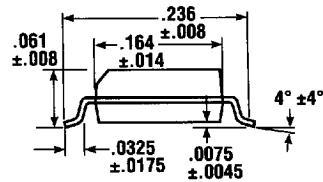
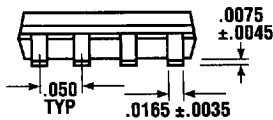
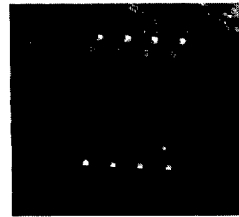
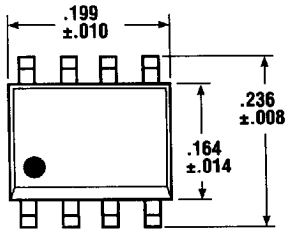
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Absolute Maximum Ratings

Parameter	Min.	Typ.	Max.	Units
DC Power Supply			7.0	V
Power Dissipation			500	mW
Input Power			+10	dBm
Storage Temperature	-55		+150	°C
Operating Temperature	-40		+70	°C
Thermal Resistance θ_{JC}			135.5	°C/W

ESD-sensitive device - Class 1

SO-8 Plastic Package



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