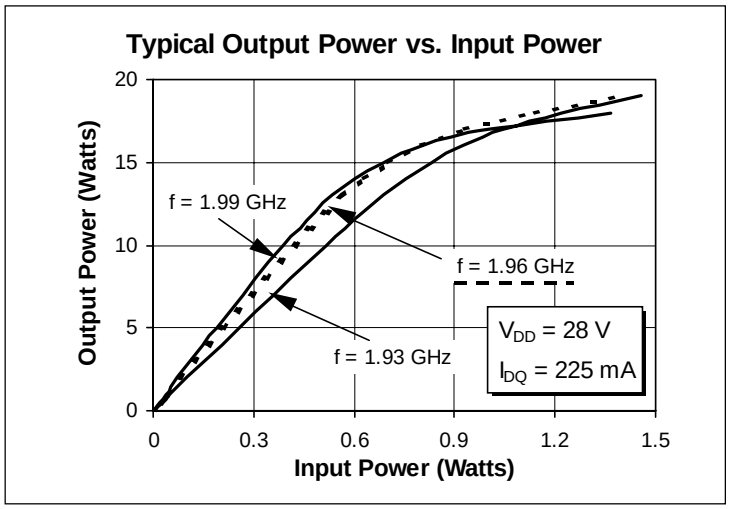
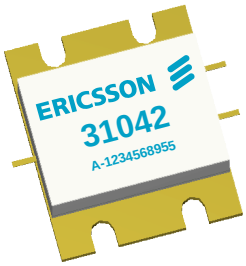
PTH 31042
10 Watts, 1.9–2.0 GHz
50-Ohm Power Hybrid

Description

The PTH 31042 is a 50–ohm power hybrid intended for applications requiring linear power amplification in the PCS frequency range. The part is designed to operate with 50–ohm source and load impedances and includes bias circuitry with temperature compensation. The design is intended to simplify system design and save space with an overall size of less than one square inch.

- **Guaranteed Performance at 1.93 to 1.99 GHz, 28 V**
  - **Output Power = 12 Watts (P-1dB) Min**
  - **Power Gain = 11 dB Min**
  - **Efficiency = 40% Min @ P-1dB**
- **Rugged Hybrid Design**
- **High Single Stage Gain**
- **Excellent Linearity**
- **Input VSWR less than 1:5:1**
- **Full Gold Metallization**
- **100% Lot Traceability**





Package A

Performance Characteristics

Parameter	Symbol	Min	Typ	Max	Units
Frequency Range V_{DD} (Nom.) = 28, I_{DQ} (Nominal) = 225 mA	f	1930	—	1990	MHz
Power Gain V_{DD} (Nom.) = 28, I_{DQ} (Nominal) = 225 mA	G_p	11	12.5	—	dB
Output Power at 1 dB Compressed V_{DD} (Nom.) = 28, I_{DQ} (Nominal) = 225 mA	P-1dB	12	16	—	W
Input Return Loss V_{DD} (Nom.) = 28, I_{DQ} (Nominal) = 225 mA	RL	14	19	—	dB
Efficiency at P-1dB V_{DD} (Nom.) = 28, I_{DQ} (Nominal) = 225 mA	η	40	48	—	%

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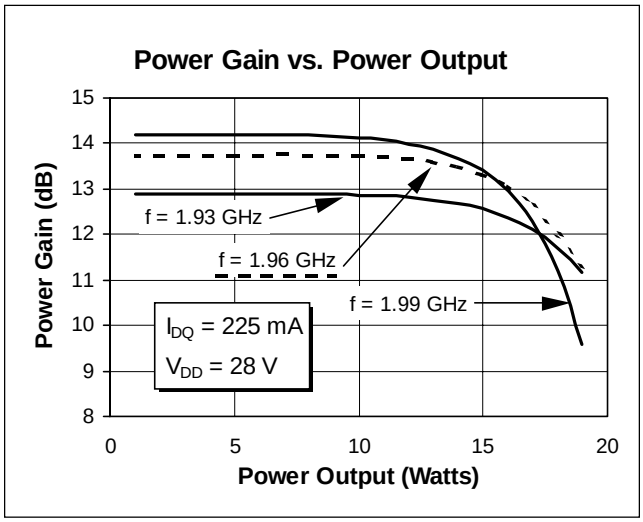
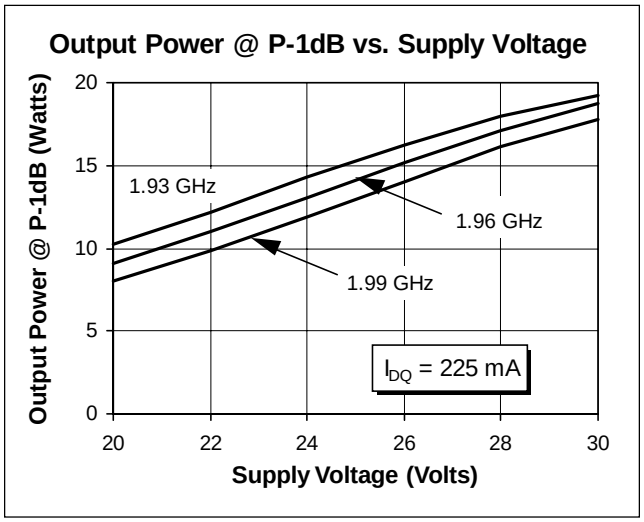
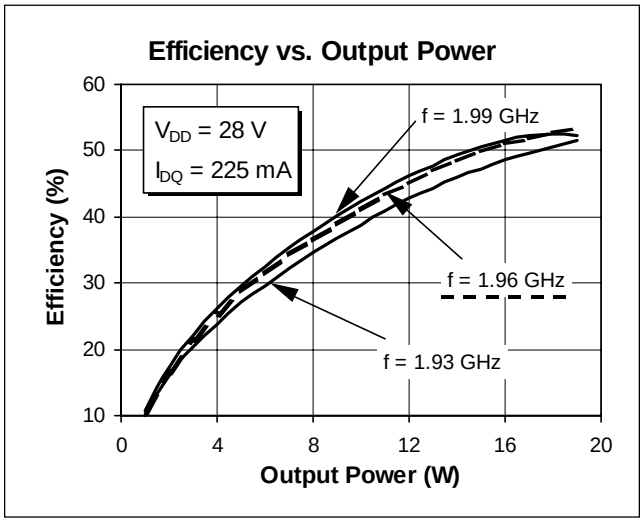
Maximum Ratings

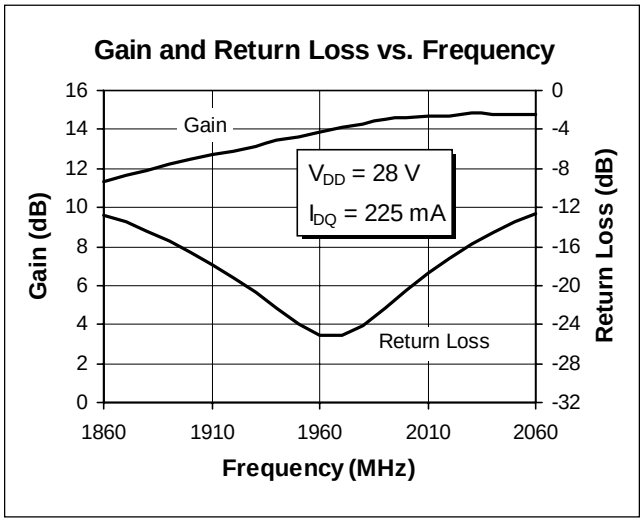
Parameter	Symbol	Value	Unit
Supply Voltage	V_{DD}	32	Vdc
Bias Current	I_{DQ}	1000	mA
Operating Temperature	T_{CASE}	90	°C
Total Device Dissipation at T_{CASE} = 25°C Above 25°C derate by	P_D	TBD	Watts W/°C
Storage Temperature	T_{STG}	125	°C

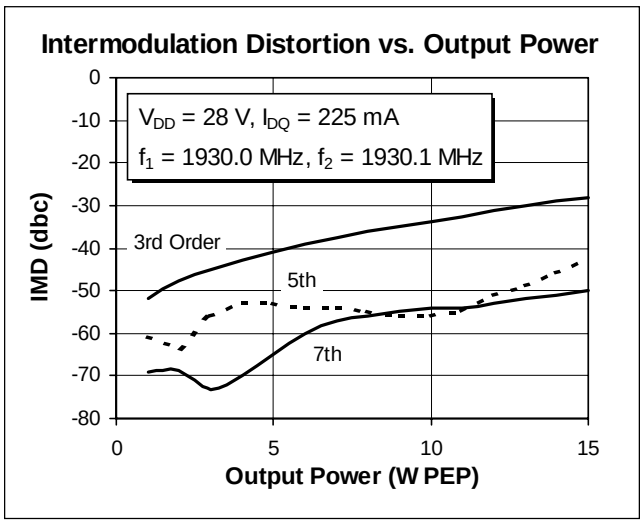
Typical Performance

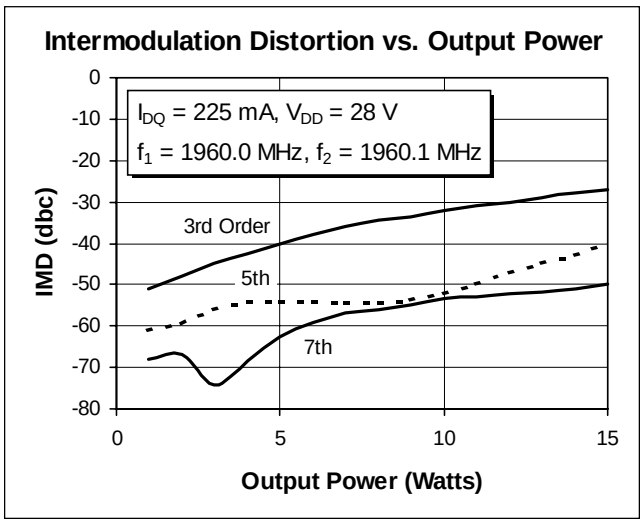


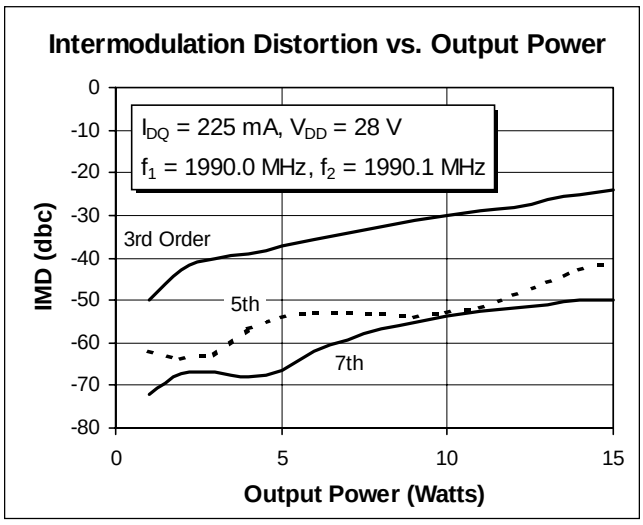


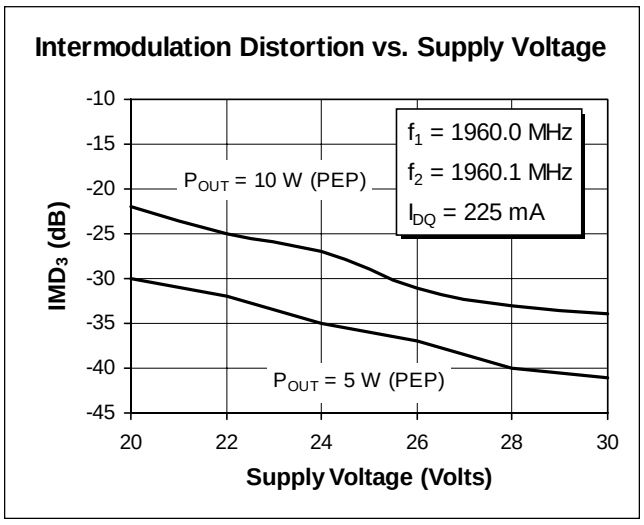


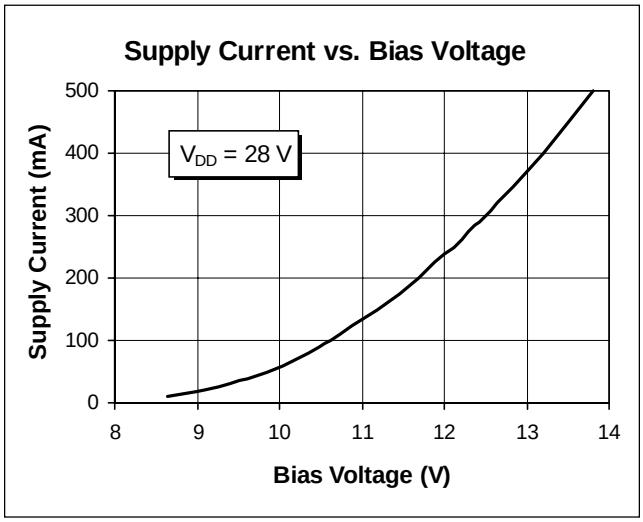


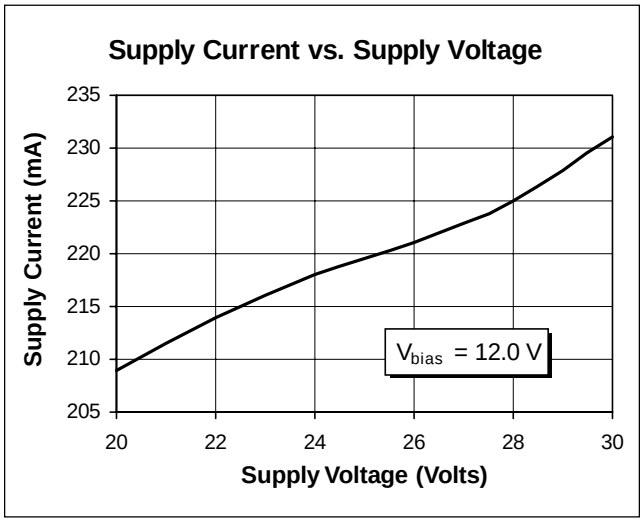

Intermodulation Distortion vs. Output Power
V_{DD} = 28 V, I_{DQ} = 225 mA
f_1 = 1930.0 MHz, f_2 = 1930.1 MHz
3rd Order
5th
7th
IMD (dbc)
Output Power (W PEP)


Intermodulation Distortion vs. Output Power
I_{DQ} = 225 mA, V_{DD} = 28 V
f_1 = 1960.0 MHz, f_2 = 1960.1 MHz
3rd Order
5th
7th
IMD (dbc)
Output Power (Watts)

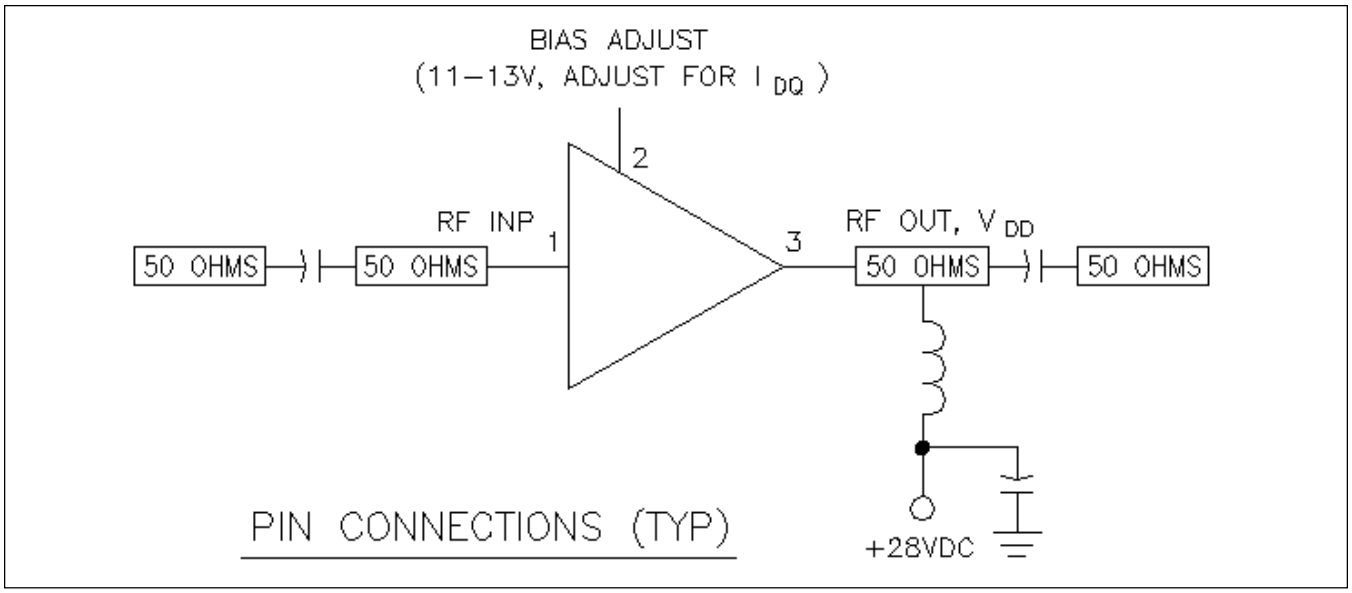

Intermodulation Distortion vs. Output Power
I_{DQ} = 225 mA, V_{DD} = 28 V
f_1 = 1990.0 MHz, f_2 = 1990.1 MHz
3rd Order
5th
7th
IMD (dbc)
Output Power (Watts)


Intermodulation Distortion vs. Supply Voltage
f_1 = 1960.0 MHz
f_2 = 1960.1 MHz
I_{DQ} = 225 mA
P_{OUT} = 10 W (PEP)
P_{OUT} = 5 W (PEP)
IMD_3 (dB)
Supply Voltage (Volts)

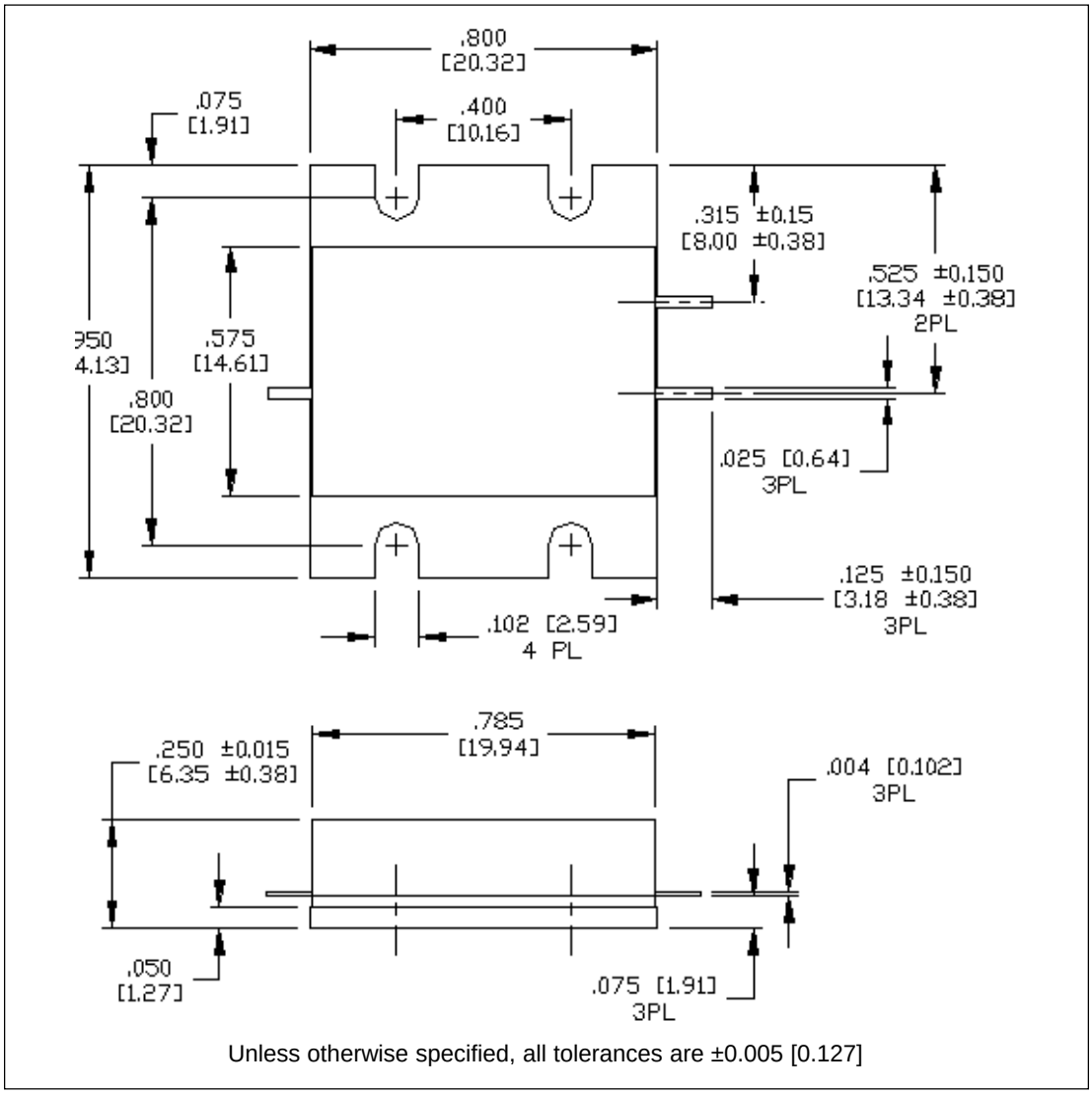

Supply Current vs. Bias Voltage
V_{DD} = 28 V
Supply Current (mA)
Bias Voltage (V)


Supply Current vs. Supply Voltage
V_{bias} = 12.0 V
Supply Current (mA)
Supply Voltage (Volts)

Schematic


BIAS ADJUST
(11–13V, ADJUST FOR I DQ)
2
RF INP
1
3
RF OUT, V DD
50 OHMS
50 OHMS
50 OHMS
50 OHMS
PIN CONNECTIONS (TYP)
+28VDC

Package Mechanical Specifications



Unless otherwise specified, all tolerances are ±0.005 [0.127]

Package A

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