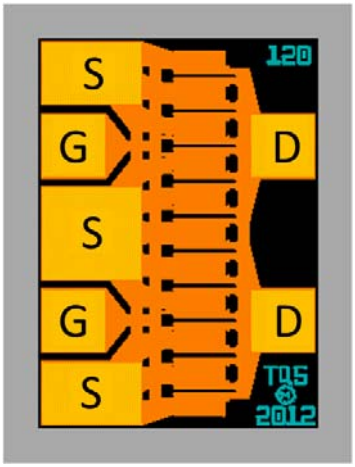
TGF2120

1200um Discrete GaAs pHEMT

Applications

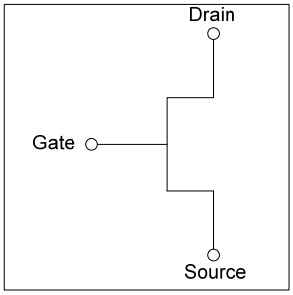
- Defense & Aerospace
- High-Reliability
- Test and Measurement
- Commercial
- Broadband Wireless



Product Features

- Frequency Range: DC - 20 GHz
- 31 dBm Typical Output Power - P1dB
- 11 dB Typical Gain @ 12 GHz
- 57% Typical PAE @ 12 GHz
- No Vias
- Technology: 0.25 um GaAs pHEMT
- Chip Dimensions: 0.41 x 0.54 x 0.10 mm

Functional Block Diagram



General Description

The TriQuint TGF2120 is a discrete 1200-Micron pHEMT which operates from DC to 20 GHz. The TGF2120 is designed using TriQuint's proven standard 0.25um power pHEMT production process. This process features advanced techniques to optimize microwave power and efficiency at high drain bias operating conditions.

The TGF2120 typically provides 31 dBm of output power at P1dB with gain of 11 dB and 57% power-added efficiency at 1 dB compression. This performance makes the TGF2120 appropriate for high efficiency applications. The protective overcoat layer with silicon nitride provides a level of environmental robustness and scratch protection.

Lead-free and RoHS compliant.

Pad Configuration

Pad Dimensions	Terminals
G (71um X 71um)	Gate
D (71um X 71um)	Drain
S (113.8um X 71um)	Source (outermost)
S (113.8um X 106um)	Source (center)

Ordering Information

Part	ECCN	Description
TGF2120	EAR99	1200um GaAs pHEMT

© 2013 TriQuint

Absolute Maximum Ratings

Symbol	Parameter	Absolute	Continuous	Units
Vds	Drain-Source Voltage[2]	12	8	V
Vgs	Gate- Source Voltage	-7	-3	V
Id	Drain Current[2]	Idss	Idss	mA
Ig,f	Forward Gate Current	60	10	mA
Tch	Channel Temperature[3]	175 [4]	150 [5]	°C
Tstg	Storage Temperature	-65 to 150	-65 to 150	°C
Pin	Input Continuous Wave Power[2]	27	@ 3 dB Compression	dBm
Ptot	Total Power Dissipation	6.4	4.2	W

Notes:

1. These ratings represent the maximum operable values for this device. Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device and/or affect device lifetime. These are stress ratings only, and functional operation of the device at these conditions is not implied.
2. Combinations of supply voltage, supply current, input power, and output power shall not exceed the maximum total power dissipation listed in the table.
3. Junction operating temperature will directly affect the device median time to failure. For maximum life, it is recommended that junction temperatures be maintained at the lowest possible levels.
4. When operated at this channel temperature, the median life is 1.0E+5 hours.
5. When operated at this channel temperature, the median life is 1.0E+6 hours.

Electrical Characteristics

Test conditions unless otherwise noted: Temperature = 25 °C.

Symbol	Parameter	Conditions	Min	Typ	Max	Units
P1dB	Output Power at 1dB Compression	Freq = 12 GHz, Vds = 8 V, Ids = 50% Idss		31		dBm
G1dB	Gain at P1dB	Freq = 12 GHz, Vds = 8 V, Ids = 50% Idss		11		dB
PAE	PAE at P1dB	Freq = 12 GHz, Vds = 8 V, Ids = 50% Idss		57		%
Idss	Saturated Drain Current	Vds = 2 V, Vgs = 0 V	240	388 [1]	536	mA
Gm	Transconductance	Vds = 2 V, Ids = 50% Idss		464		mS
Vp	Pinch-Off Voltage	Vds = 2 V, Ids = 1.20 mA	-1.5	-1.0	-0.5	V
BVgd	Gate-Drain Breakdown Voltage	Ig = 1.20 mA, source open		-15	-12	V
BVgs	Gate-Source Breakdown Voltage	Ig = 1.20 mA, drain open		-15		V
Rth	Thermal Resistance	AuSn eutectic attach		31†		°C/W

† Based on IR Scan

Notes:

1. Typical Standard Deviation of 10.3mA (1 σ).

© 2013 TriQuint

S-Parameters

Test Conditions: V_{DS}=+8 V (typ.), I_{DS}=50% I_{DSS}, Temp=+25°C, 50Ω system

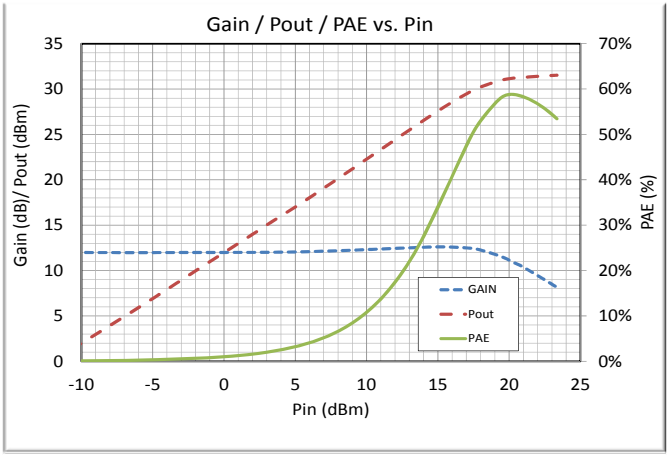
Freq (GHz)	S11 (mag)	S11 (ang)	S21 (mag)	S21 (ang)	S12 (mag)	S12 (ang)	S22 (mag)	S22 (ang)
1	0.92	-105.9	15.23	120.1	0.033	34.1	0.30	-112.2
2	0.91	-146.6	9.06	95.4	0.039	13.6	0.31	-148.4
3	0.91	-166.5	6.26	80.5	0.041	2.7	0.33	-165.0
4	0.91	-179.8	4.74	68.7	0.041	-5.1	0.34	-175.6
5	0.92	170.0	3.79	58.4	0.040	-11.2	0.36	176.6
6	0.92	161.5	3.13	48.9	0.040	-16.5	0.38	169.8
7	0.93	153.9	2.66	39.8	0.039	-21.6	0.40	163.9
8	0.94	147.1	2.29	30.9	0.038	-26.6	0.43	158.6
9	0.95	140.6	2.00	22.3	0.037	-32.2	0.46	153.2
10	0.96	134.7	1.76	13.8	0.035	-36.5	0.48	148.2
11	0.96	129.2	1.56	5.7	0.033	-38.9	0.51	143.4
12	0.97	123.9	1.39	-2.3	0.031	-42.4	0.54	138.9
13	0.97	119.1	1.25	-10.1	0.029	-45.3	0.57	134.2
14	0.98	114.2	1.13	-17.8	0.027	-47.4	0.61	129.7
15	0.99	109.9	1.01	-25.1	0.025	-44.9	0.64	125.3
16	0.99	105.4	0.92	-32.3	0.025	-45.0	0.67	121.1
17	0.99	101.4	0.84	-39.4	0.025	-45.5	0.70	116.9
18	0.99	97.2	0.76	-46.6	0.023	-46.8	0.73	112.6

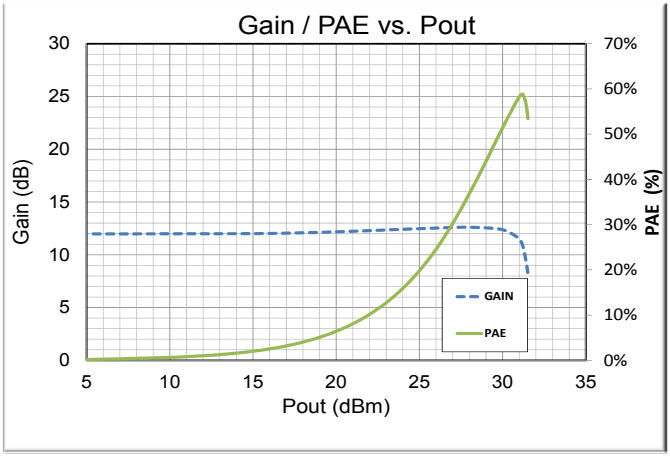
Includes 1 bond wire on each Gate, 1 bond wire on each Drain, and 3 bond wires on each Source pad.

© 2013 TriQuint

RF Tuned Data at 12 GHz

Bias conditions: V_{DS} = 8 V, I_{DQ} = 50% Idss, F = 12 GHz





© 2013 TriQuint

Assembly Notes

Component placement and adhesive attachment assembly notes:

- Vacuum pencils and/or vacuum collets are the preferred method of pick up.
- Air bridges must be avoided during placement.
- The force impact is critical during auto placement.
- Organic attachment (i.e. epoxy) can be used in low-power applications.
- Curing should be done in a convection oven; proper exhaust is a safety concern.

Reflow process assembly notes:

- Recommend Eutectic die attach with AuSn (80/20) solder and limit exposure to temperatures above 300°C to 30 seconds, maximum.
- An alloy station or conveyor furnace with reducing atmosphere should be used.
- Do not use any kind of flux.
- Coefficient of thermal expansion matching is critical for long-term reliability.
- Devices must be stored in a dry nitrogen atmosphere.

Interconnect process assembly notes:

- Either Thermo-compression Wedge Bonding or Thermosonic Ball Bonding can be used to bond onto the die.
- Force, time, and ultrasonics are critical bonding parameters.
- Aluminum wire should not be used.
- Devices with small pad sizes should be bonded with 0.0008-inch wire.

Product Compliance Information

ESD Sensitivity

Caution! ESD-Sensitive Device

Caution – ESD Sensitive Device

• Proper ESD procedures should be followed when handling this device.

Not HAST Compliant.

RoHs Compliance

This part is compliant with EU 2002/95/EC RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment).

This product also has the following attributes:

- Lead Free
- Halogen Free (Chlorine, Bromine)
- Antimony Free
- TBBP-A ($C_{15}H_{12}Br_4O_2$) Free
- PFOS Free
- SVHC Free

© 2013 TriQuint

Disclaimer

GaAs devices are susceptible to damage from Electrostatic Discharge. Proper precautions should be observed during handling, assembly and test.

Contact Information

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

Web: www.triquint.com
Email: info-sales@triquint.com
Tel: +1.503.615.9000
Fax: +1.503.615.8902

For technical questions and application information: **Email:** sjcapplications.engineering@triquint.com

Important Notice

The information contained herein is believed to be reliable. TriQuint makes no warranties regarding the information contained herein. TriQuint assumes no responsibility or liability whatsoever for any of the information contained herein. TriQuint assumes no responsibility or liability whatsoever for the use of the information contained herein. The information contained herein is provided "AS IS, WHERE IS" and with all faults, and the entire risk associated with such information is entirely with the user. All information contained herein is subject to change without notice. Customers should obtain and verify the latest relevant information before placing orders for TriQuint products. The information contained herein or any use of such information does not grant, explicitly or implicitly, to any party any patent rights, licenses, or any other intellectual property rights, whether with regard to such information itself or anything described by such information.

TriQuint products are not warranted or authorized for use as critical components in medical, life-saving, or life-sustaining applications, or other applications where a failure would reasonably be expected to cause severe personal injury or death.

© 2013 TriQuint

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for RF JFET Transistors ***category:***

Click to view products by Qorvo ***manufacturer:***

Other Similar products are found below :

CE3514M4 CE3514M4-C2 CE3520K3-C1 CE3521M4 CE3521M4-C2 CE3512K2-C1 CE3520K3 CG2H80030D-GP4 TGF2023-2-02 NPT1004D MAGX-011086 NPT25015D JANTXV2N4858 MMBFJ211 NPT2021 NPTB00025B 2SK3557-6-TB-E J211_D74Z NPTB00004A QPD0020 QPD1006 QPD1016 QPD1025L QPD1029L QPD1881L T2G6001528-Q3 SKY65050-372LF TGF2965-SM QPD1009 QPD1010 J304 CGH27015F CGH55015F1 CMPA801B030F GTVA262711FA-V2-R0 GTVA262701FA-V2-R0 CGH40006S CGH40010F CGH40025F CGH40035F CGH40045F CGH40120F CGH55015F2 CGH60008D CGH60030D CGHV14500F CGHV1F006S CGHV1J006D CGHV27030S CGHV27060MP