QPD2795

360 W, 48 V 2.5-2.7GHz GaN RF Power Transistor

Applications

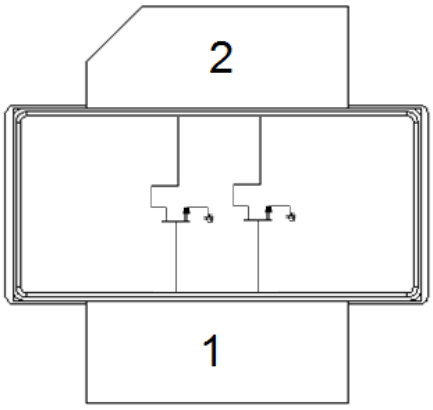
- W-CDMA / LTE
- Macrocell Base Station
- Active Antenna
- General Purpose Applications

2 Lead NI780 Package

Product Features

- Operating Frequency Range: 2.5-2.7 GHz
- Operating Drain Voltage: 48 V
- Maximum Output Power (P_{SAT}): 364 W
- Maximum Drain Efficiency: 72.5%
- Efficiency-Tuned P3dB Gain: 20 dB
- 2-lead, earless, ceramic flange NI780 package

Functional Block Diagram



General Description

The QPD2795 is a discrete GaN on SiC HEMT which operates from 2.5-2.7GHz. The device is a single stage matched power amplifier transistor.

The QPD2795 can be used in Doherty architecture for the final stage of a base station power amplifier for macrocell high efficiency systems.

QPD2795 can deliver P_{SAT} of 364 W at 48 V operation.

Lead-free and ROHS compliant.

Pin Configuration

Pin No.	Label
1	RF IN, V_G
2	RF OUT, V_D
Backside Paddle	RF/DC Ground

Ordering Information

Part No.	ECCN	Description
QPD2795	EAR99	360 W, 2.5-2.7 GHz, GaN RF Power Transistor

Absolute Maximum Ratings

Parameter	Rating
Gate Voltage (V_G)	−10 V
Drain Voltage (V_D)	+55 V
Peak RF Input Power	49 dBm
VSWR Mismatch, P1dB Pulse (10% duty cycle, 100 µ width), T = 25°C	10:1
Storage Temperature	−65 to +150 °C

Operation of this device outside the parameter ranges given above may cause permanent damage.

Recommended Operating Conditions

Parameter	Min	Typ	Max	Units
Operating Temperature	−40			°C
Gate Voltage (V_G)		−2.7		V
Drain Voltage (V_D)		48		V
Quiescent Current (I_{CQ})		360		mA
T_{CH} for >10^6 hours MTTF			225	°C

Electrical performance is measured under conditions noted in the electrical specifications table. Specifications are not guaranteed over all recommended operating conditions.

RF Characterization – Power-Tuned Load Pull Performance

Test conditions unless otherwise noted: V_D = 48 V, I_{DQ} = 700 mA, T = 25°C, Pulsed (10% duty cycle, 100 µs width)

Frequency (MHz)	Source Impedance	Load Impedance	Gain @ P3dB (dB)	P3dB (dBm)	Drain Efficiency (%)
2500	1.950 – j3.190	4.683 + j0.619	18.18	55.62	59.57
2620	4.960 – j8.320	3.631 + j1.668	17.90	55.57	58.79
2690	10.160 – j7.680	3.451 + j2.126	17.99	55.54	60.42

RF Characterization – Efficiency-Tuned Load Pull Performance

Test conditions unless otherwise noted: V_D = 48 V, I_{DQ} = 700 mA, T = 25°C, Pulsed (10% duty cycle, 100 µs width)

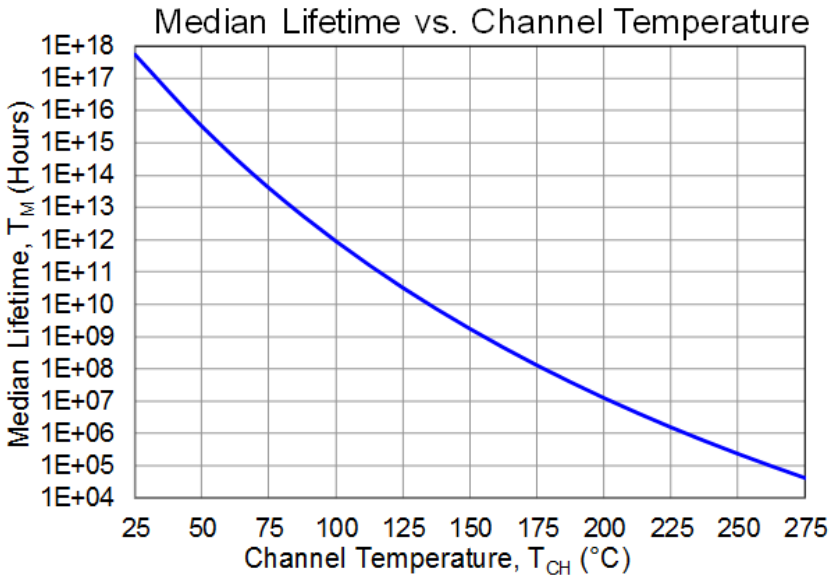
Frequency (MHz)	Source Impedance	Load Impedance	Gain @ P3dB (dB)	P3dB (dBm)	Drain Efficiency (%)
2500	1.950 – j3.190	3.353 – j3.178	19.95	53.27	71.72
2620	4.960 – j8.320	2.527 – j1.347	20.09	53.00	72.31
2690	10.160 – j7.680	3.306 – j0.903	19.87	53.44	72.52

Thermal Information

Parameter	Conditions	Value	Units
Thermal Resistance at Average Power (θ_{JC})	T_{CASE} = 85°C, T_{CH} = 143°C CW: P_{DISS} = 83.5 W, P_{OUT} = 100 W	0.69	°C/W

Notes:
1. Thermal resistance measured to package backside.

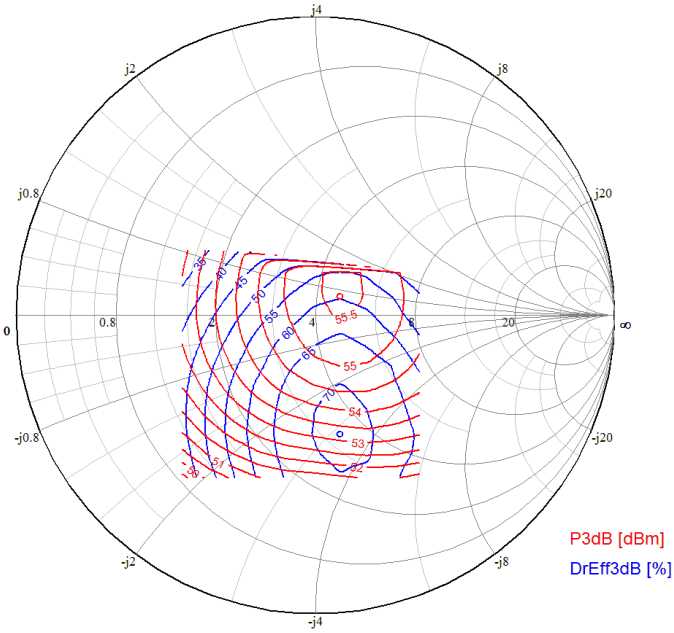
Median Lifetime



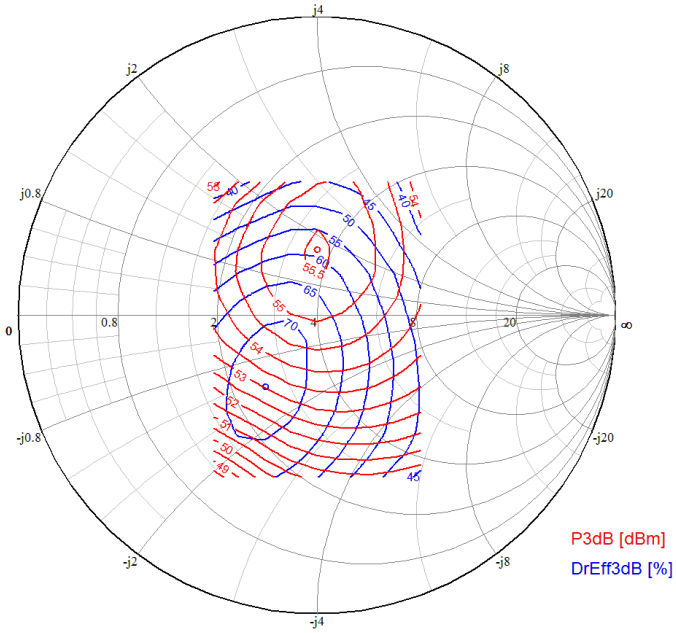
Load Pull Plots

Test conditions unless otherwise noted: V_D = 48 V, I_{CQ} = 700 mA, T = 25°C, Pulsed (10% duty cycle, 100 µs width)

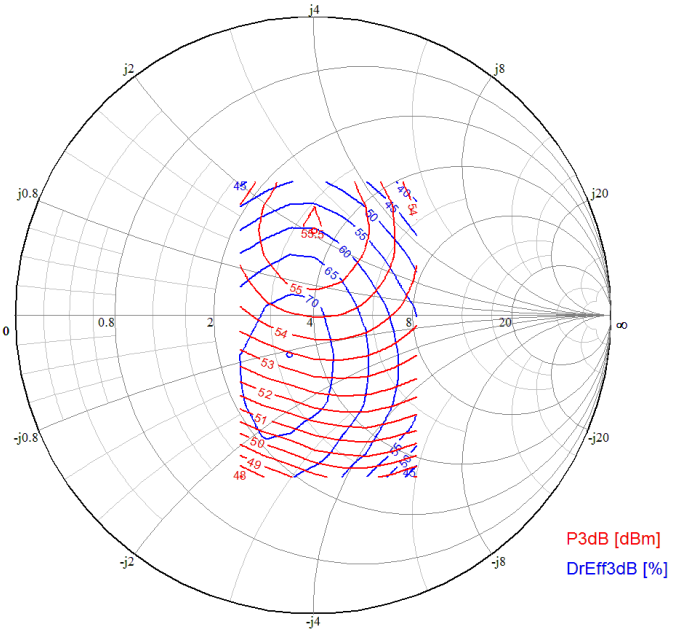
Load Pull at 2.5 GHz



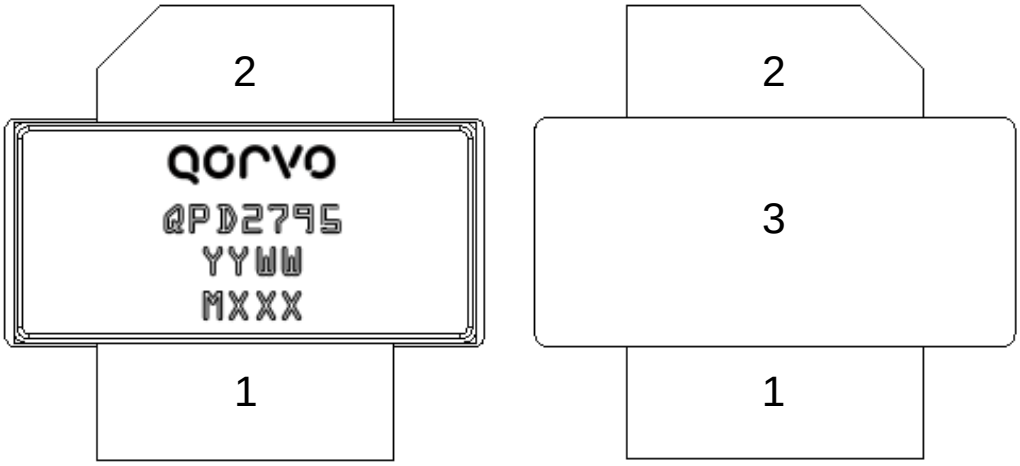
Load Pull at 2.62 GHz



Load Pull at 2.69 GHz



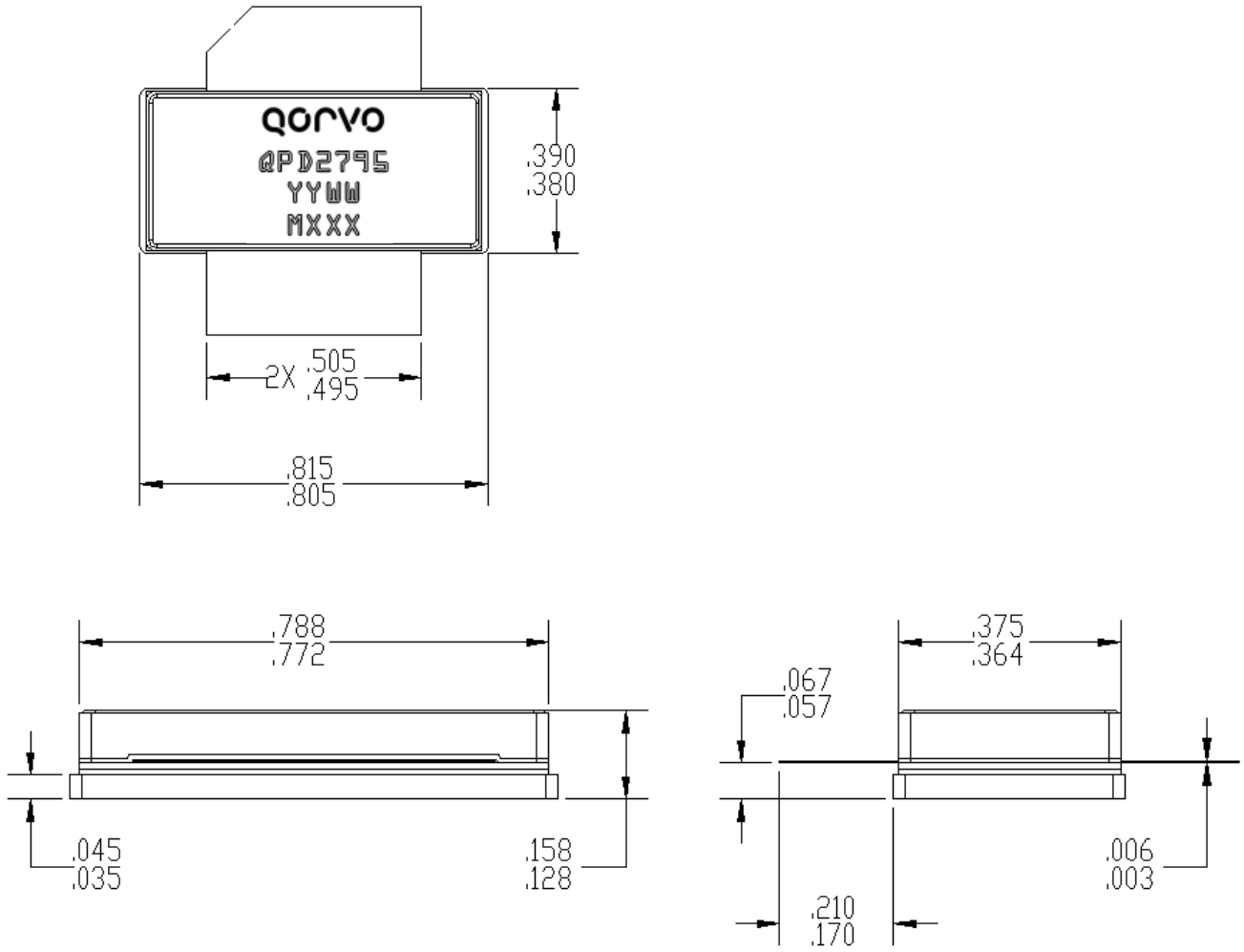
Pin Configuration and Description



Pin No.	Label	Description
1	RF IN, V_G	RF Input, Gate Bias
2	RF OUT, V_D	RF Output, Drain Bias
3 (Backside Paddle)	RF/DC GND	RF/DC Ground

Package Marking and Dimensions

Marking: Product Name – QPD2795
Year/Week Code– YYWW
Production Lot Number – MXXX



Notes:
1. All dimensions are in inches. Angles are in degrees.
2. Exposed metallization is NiAu plated.

Product Compliance Information

ESD Sensitivity Ratings

Caution! ESD-Sensitive Device

ESD Class:	TBD
Volt. Range:	TBD
Test:	Human Body Model (HBM)
Standard:	JEDEC Standard JS-001-2012

ESD Class:	TBD
Range:	TBD
Test:	Charged Device Model (CDM)
Standard:	JEDEC Standard JESD22-C101F

MSL Rating

MSL Rating:	TBD
Test:	260 °C convection reflow
Standard:	JEDEC Standard IPC/JEDEC J-STD-020

ECCN

US Department of Commerce EAR99

Solderability

Compatible with both lead-free (260 °C maximum reflow temperature) and tin/lead (245 °C maximum reflow temperature) soldering processes.

Contact plating: NiAu

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

Contact Information

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

Web: www.triquint.com **Tel: 877-800-8584**
Email: customer.support@qorvo.com

For information about the merger of RFMD and TriQuint as Qorvo: **Web:** www.qorvo.com

For technical questions and application information: **Email:** btsapplications@qorvo.com

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