

AN INTRODUCTION TO POLYFET RF DEVICES: COMPANY AND PRODUCTS

WHO IS POLYFET RF DEVICES?

Founded in 1984, Polyfet RF Devices is a California based, ISO 9001:2015 certified, manufacturer of broadband LDMOS, VDMOS, and GaN power transistors and power modules.

POLYFET'S FINANCIALS

PRIVATE CORPORATION

PROFITABLE EACH YEAR
SINCE 1991

OWN OUR BUILDING
AND CAPITAL EQUIPMENT

NO LONG-TERM DEBT

HOW DOES POLYFET SIZE UP?

HAVE 25 EMPLOYEES

7500 (700 SQUARE METERS) SQUARE FOOT
FACILITY

ANNUAL REVENUE ROUGHLY \$5,000,000

AUTOMATED ASSEMBLY EQUIPMENT

CURRENT THROUGHPUT CAPABILITY OF OVER
5KPCS/MO (CAN INCREASE BY ADDING 2ND SHIFT)

OWN OUR MASKS (IP)

ISO9001 AND MIL-I-45208A STANDARDS

MANUFACTURING AND TEST EQUIPMENT

West Bond die attach machines

West Bond automatic wire bond machines

Scientific Test DC Test Sets

RJR Lidding Machines

Agilent RF Test Equipment

Werlatone, Innovative Power Products,
Mega Phase, and Aeroflex/Weinschel misc.

WHAT DOES POLYFET OFFER TO THE MARKET?

GaN transistors

LDMOS transistors

VDMOS transistors

Broadband modules

Linear and non-linear models for simulation

2 - 4wk lead times

Application notes

Custom amplifier and module design service

Technical support

Long-Term (20+ years) production support

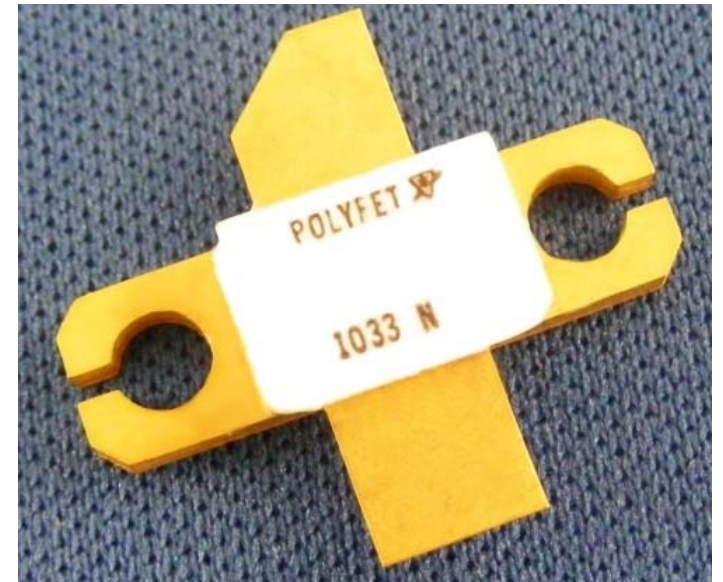
GALLIUM NITRIDE TRANSISTORS

GaN on SiC technology (high thermal conductivity)

Usable power/gain up to 3GHz

Output power up to 160W P3dB CW

Operating voltage across 24 - 48VDC



GAN DEVICES' SPECIFICATIONS



GP1001: 10W, 2.5GHz, 11dB, 50%, 28VDC

GP2001: 20W, 2.0GHz, 11dB, 65%, 28VDC

GP1441: 10W, 2.5GHz, 11dB, 35%, 48VDC

GP2441: 40W, 2.5GHz, 11dB, 55%, 48VDC



GX2001: 20W, 2.0GHz, 11dB, 65%, 28VDC

GX4001: 35W, 2.0GHz, 11dB, 60%, 28VDC

GX2441: 50W, 2.0GHz, 11dB, 55%, 48VDC

GX3441: 80W, 2.0GHz, 11dB, 60%, 48VDC

GX4441: 100W, 2.0GHz, 11dB, 60%, 48VDC

GX3442: 120W, 2.0GHz, 11dB, 55%, 48VDC

GX4002: 70W, 2.0GHz, 11dB, 55%, 28VDC

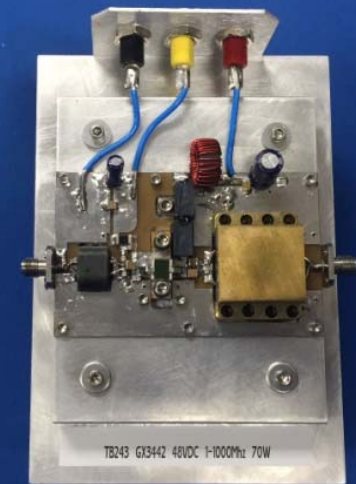
GX4442: 160W, 2.0GHz, 12dB, 55%, 48VDC

GAN EVALUATION AMPLIFIERS

(T) TB243 featuring the GX3442: 1-1000MHz,
70W P3dB, 15dB, 40%, 48VDC

(M) TB255 featuring the GX3442: 30-
512MHz, 100W P3dB, 19dB, 65%, 48VDC

(B) TB256 featuring the GP2001: 20-
3000MHz, 10W P3dB, 10dB, 25%, 28VDC

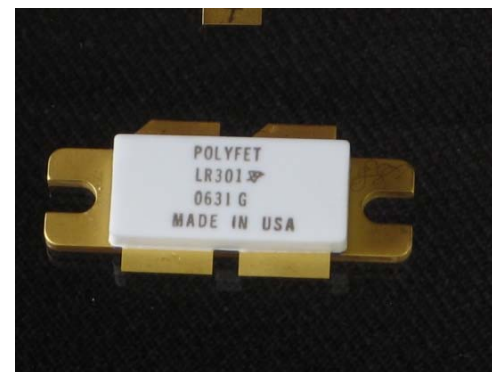


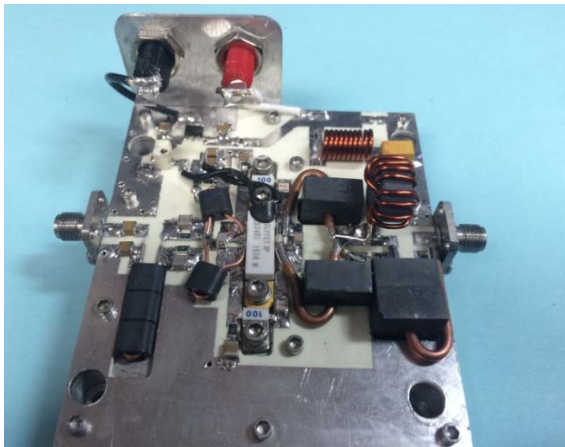
POLYFET LDMOS DEVICES

Usable power/gain up to 1.5GHz

Output power up to 600W CW
(900W Pulsed)

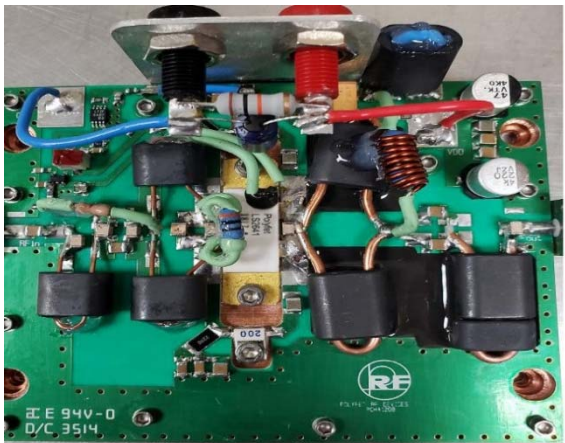
Operating voltage across 5.0 -
50VDC



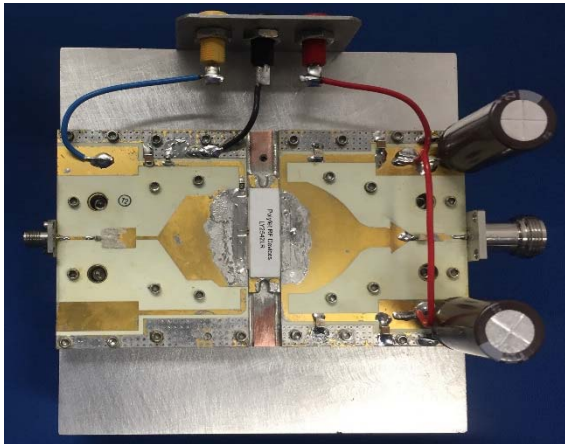


(T) TB230A featuring the LB2401: 20-1000MHz, 100W P1dB, 15dB, 40%, 28VDC

(M) TB263 featuring the LS2641: 30-512MHz, 180W P1dB, 17dB, 55%, 28VDC



(B) TB277C featuring the LY2542LR: 1.2-1.4GHz, 850W P1dB (300uS, 12%), 14dB, 50%, 50VDC



LDMOS EVALUATION AMPLIFIERS

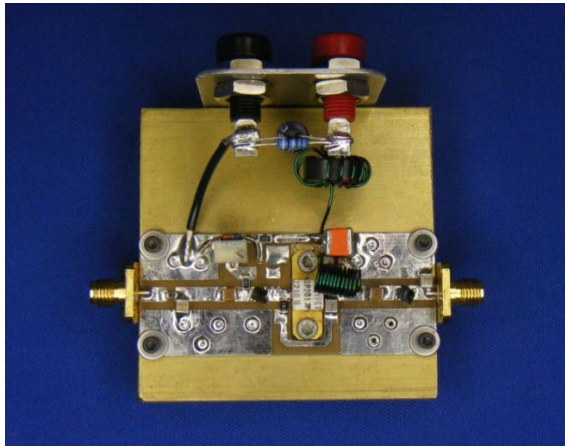
POLYFET VDMOS DEVICES

Usable power/gain up to 1GHz

Output power up to 400W CW

Operating voltage across 12.5 - 50VDC

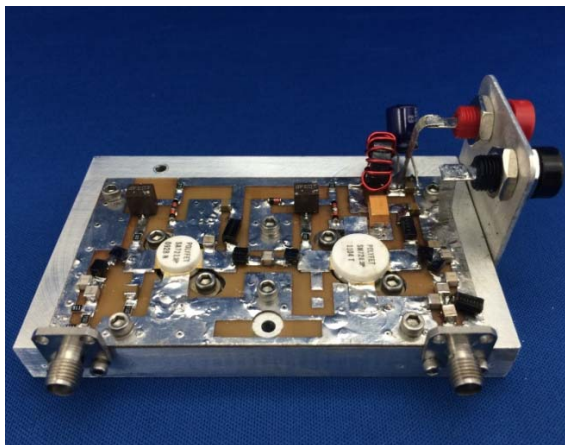




(T) TB224 featuring the SP201: 30-512MHz, 1.0W P1dB, 10dB, 12%, 28VDC

(M) TB184C featuring the SR401: 2-30MHz, 200W P1dB, 20dB, 50%, 28VDC

(B) TB252 featuring the SA721 → SM724: 118-136MHz, 25W P1dB, 30dB, 40%, 28VDC



VDMOS EVALUATION AMPLIFIERS

BROADBAND MODULES

Frequency range of 1.6 - 1260MHz

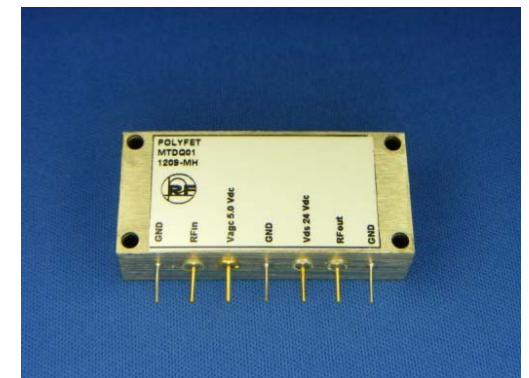
Output power up to 300W

Operating voltage across 12 - 50VDC

Zin/Zout: 50 ohms

Connection type: Feed-thru pin or SMA

Details in “Modules” section of web site



NEW LDMOS DEVICES

Feature high drain breakdown (min 80VDC) voltage for improved ruggedness for the 28V devices, and higher gain than previous generation.

Examples:

LB2401: 100W P1dB, 20-1000MHz, 15dB, 40%, 28VDC

LS2541: 150W P1dB, 30-512MHz, 18db, 50%. 28VDC

LS2641: 180W P1dB, 30-512MHz, 17dB, 55%, 28VDC

LS2541HF: 500WP1dB, 2-30MHz, 26dB, 65%, 50VDC

LY2542LB: 800W P1dB (128uS pulse), 960-1215MHz, 14dB, 45%, 50VDC

LY2542LR: 850W P1dB (300uS pulse), 1.2-1.4GHz, 14dB, 50%, 50VDC

LINEAR AND NON-LINEAR DEVICE MODELS

S-parameters

Spice, ADS, AWR models

Simulation design files
for extracting Z_{in}/Z_{out}

Broadband amplifier
design files

All found in the “Design”
section of web site

TECHNICAL BULLETINS (EVALUATION AMPLIFIERS)

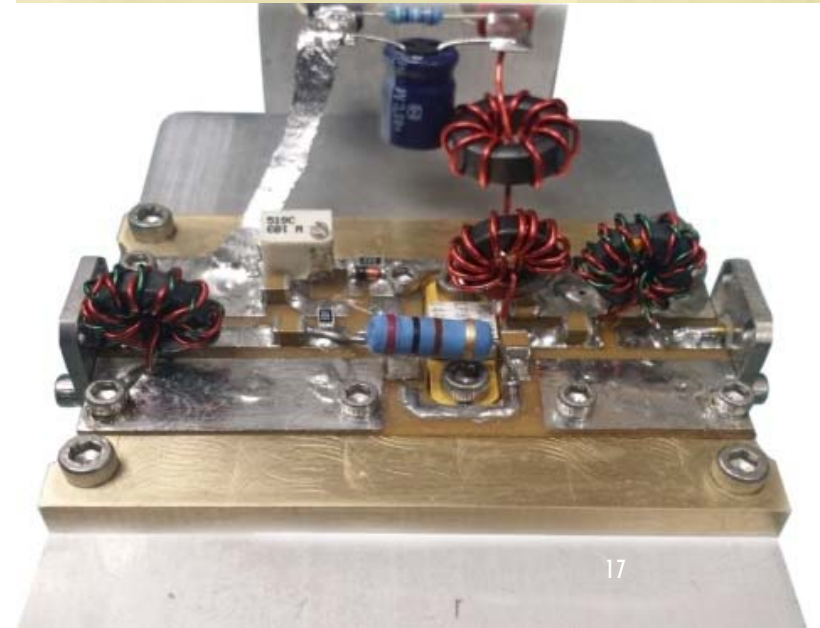
Working amplifiers used to demonstrate the performance of our devices

Free to evaluate

ACAD pcb layouts with each application note

Reduces customers' engineering time

Complete amplifier listing in the "Application Notes" section of web site



APPLICATIONS/MARKETS FOR OUR PRODUCT

520-1610kHz (AM)

2-30MHz (HF or Short wave)

30-88MHz (Military ground communications)

54-88MHz (TV VHF I)

88-108MHz (FM)

118-136MHz (Avionics)

136-174MHz (Commercial ground communications)

160-230MHz (TV VHF III)

30-512MHz (Military: Jammer, Ground/Air communications)

470-860MHz (TV UHF)

100kHz - 1000MHz (ISM, NMR, Medical, Instrumentation or EMC)

1-3GHz (L-band avionics/radar, Public communication, Jammers, Instrumentation)

TECHNICAL SUPPORT

Polyfet understands the complex nature of matching power MOSFETs. Polyfet offers extensive technical support to their customers.

DO NOT FEAR OBSOLESCENCE

- Majority of customer base is Military
- 20+ year product life cycles
- Obsolescence is rare, not driven by sales
- Still manufacturing products today that we introduced 30 years ago
- Customers come to Polyfet for replacements for obsolete competitors' devices

Examples of replacements:

Ampleon for Polyfet as follows:

BLF245 for SA701

BLF245B for SE701

BLF404 for S8222

BLF246 for SM704

BLF246B for SD702

BLF147 for SM401

BLF647 for LR2401

BLF1043 for L2801

ST Microelectronics for Polyfet as follows:

LET9120 for LB2301

LET9045C for LX2301

ROAD MAP FOR POLYFET

Q2-2022: Release new line of 50VDC LDMOS discrete transistors. Target specifications are as follows:

Up to 2.0kW CW, push-pull, narrow band HF, FM, and VHF

Up to 300W, push-pull, broad band (30-512MHz)

Min 20dB gain narrow band (19dB broad band)

Min 75% efficiency narrow band (50% broad band)

Utilizing ceramic packages with high thermal conductivity

CONTACT INFORMATION



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