

### MACOM RF Power Products

#### Next generation high power semiconductor technology

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MACOM offers a broad range of RF power transistor products—bare die/discrete devices, modules, and pallets designed to operate from 1 MHz to 6 GHz. Our high power transistors are ideal for communications, avionics, radar, and industrial, scientific, and medical applications. MACOM's product portfolio provides both standard and custom solutions using bipolar, MOSFET, and Gallium Nitride (GaN) technologies.



#### GaN-on-Si

- > Discrete transistors and integrated amplifiers utilizing a 0.5 micron HEMT process
- > Includes a broad range of RF power transistor products as discrete devices and modules
- > Designed to operate from 1 MHz to 6 GHz
- > Excellent RF performance, power, gain, gain flatness, efficiency, and ruggedness

#### Hybrid Amplifiers

- > Optimized for commercial air traffic control and military radar applications
- > New surface mount technology (SMT) laminate packaged modules
- > Supports standard surface mount assembly for high-volume manufacturing
- > Improves assembly yield and lowers component count
- > Available for the S-, L- and avionics bands

#### Bipolar

- > Discrete devices, modules, and pallets from 1 MHz to 3.5 GHz
- > For civil avionics, communications, networks, radar, and industrial, scientific, and medical applications
- > All gold metallization fabrication processes ensure high performance and long term reliability

#### MOSFET

- > TMOS and DMOS RF power MOSFET transistor products as discrete devices from 1 MHz to 1.0 GHz
- > All gold metallization fabrication processes ensures high performance and long term reliability

#### Silicon Bipolar Pallets

- > Designed for applications from 1 GHz to 3.5 GHz
- > Ideal for civil avionics, radar, industrial, scientific and medical applications
- > Gold metallization fabrication processes ensure high performance and long term reliability

**RF Energy / RF Power Transistors GaN-on-Si: CW**

Part Number	Min Freq (MHz)	Max Freq (MHz)	Operating Voltage (V)	Output Power Psat (W)	Gain (dB)	Efficiency (%)	Test Freq (MHz)	Package
MAGx-100027-002*	10	2700	50	2	16	68	2000	6 x 3 mm PDFN-14
MAGx-100027-005*	10	2700	50	5	16	68	2000	6 x 3 mm PDFN-14
MAGx-100027-010*	10	2700	50	10	16	70	2000	6 x 3 mm PDFN-14
MAGx-100027-015*	10	2700	50	15	16	70	2000	6 x 3 mm PDFN-14
MAGe-100809-500*	896	928	50	500	19	75	915	AC-780S-4
MAGe-100809-600*	896	928	50	600	19	75	915	AC <sup>2</sup> -780S-2
MAGe-100809-1K0*	896	928	50	1000	19	75	915	AC <sup>2</sup> -1280S-2
MAGe-102425-050*	2400	2500	50	50	17	70	2450	TO-272S-2
MAGe-102425-100*	2400	2500	50	100	17	70	2450	TO-272S-2
MAGe-102425-200*	2400	2500	50	200	17	70	2450	TO-272S-4
MAGe-102425-300*	2400	2500	50	300	16	70	2450	AC <sup>2</sup> -780S-2

\* In development

**Aerospace & Defense Power Transistors, Pallets, and Modules GaN-on-Si**

Part Number	Min Freq (MHz)	Max Freq (MHz)	Operating Voltage (V)	Output Power Psat (W)	Gain (dB)	Efficiency (%)	Test Freq (MHz)	Package
MAGx-100027-002*	10	2700	50	2	16	68	2000	6 x 3 mm PDFN-14
MAGx-100027-005*	10	2700	50	5	16	68	2000	6 x 3 mm PDFN-14
MAGx-100027-010*	10	2700	50	10	16	70	2000	6 x 3 mm PDFN-14
MAGx-100027-015*	10	2700	50	15	16	70	2000	6 x 3 mm PDFN-14
MAGx-100027-050*	10	2700	50	50	17	70	2000	TO-272S-2
MAGx-100914-125*	900	1400	50	125	17	>71	1400	AC-400B-2/AC-400S-2
MAGx-100914-250*	900	1400	50	250	17	>68	1400	AC-400B-2/AC-400S-2
MAGx-100912-500*	900	1215	50	500	>16	>69	1215	AC-780B-2/AC-780S-2
MAGx-101214-500*	1200	1400	50	500	>15.5	>69	1400	AC-780B-2/AC-780S-2
MAGx-103135-145*	3100	3500	50	145	14	55	3500	AC-360B-2/AC-360S-2
MAGx-102731-180*	2700	3100	50	180	15	55	3100	AC-360B-2/AC-360S-2
MAPG-102729-400*	2700	2900	50	400	15	57	2900	Pallet
MAMG-102933-030*	2900	3300	32	30	20.5	51	3300	7 x 7 mm PQFN-28
MAMG-102733-085*	2700	3300	50	85	25	50	3300	14 x 24 mm SMT
MAMG-103135-085*	3100	3500	50	85	25	50	3500	14 x 24 mm SMT
MAMG-100227-010*	225	2600	28	14	12	45	2600	14 x 18 mm

\* In development

**Multipurpose / RF Power Transistors GaN-on-Si: CW and Pulsed**

Part Number	Min Freq (MHz)	Max Freq (MHz)	Operating Voltage (V)	Output Power Psat (W)	Gain (dB)	Efficiency (%)	Test Freq (MHz)	Package
NPA1003QA	20	1500	28	7	15	>40	1000	4 x 4 mm QFN-16
NPA1006	20	1000	28	12.5	14	>45	900	6 x 5 mm DFN-8
NPA1007	30	2500	28	10	10	>50	2000	6 x 5 mm DFN-8
NPA1008	20	2700	28	5	12	>45	1900	4 x 4 mm PQFN-24
NPTB00004A	1	6000	28	5	17	>50	2500	SOIC-8NE
NPT2018	1	3500	50	12.5	17.5	>50	2500	6 x 3 mm PDFN-14
NPT2021	1	2500	50	4	17	>55	2500	TO-272
NPT2022	1	2000	50	50	20	>60	900	TO-272
NPT2024	1	2700	50	200	22	65	900	TO-272-4

Multipurpose / RF Power Transistors GaN-on-Si: CW and Pulsed (continued)

Part Number	Min Freq (MHz)	Max Freq (MHz)	Operating Voltage (V)	Output Power Psat (W)	Gain (dB)	Efficiency (%)	Test Freq (MHz)	Package
NPTB00025B	1	4000	28	25	13	>50	3000	AC360B-2
MAGx-011086	1	6000	28	4	9	>50	5800	4 x 4 mm QFN-24
NPT1004	1	4000	28	45	14	>55 PEP	2500	SOIC-8NE
NPT25015	1	3000	28	23	14	>60 PEP	2500	SOIC-8NE
NPT35015	1	3800	28	18	11	>48 PEP	3500	SOIC-8NE
NPT2020	1	3500	50	45	14	>60	3500	AC360B-2
NPT2010	1	2200	50	100	17	>65	2100	AC360B-2
NPT1012B	1	4000	28	25	13	>50	3000	AC360B-2
NPT1015B	1	3500	28	45	13.5	>60	3000	AC360B-2
NPT25100	1	2700	28	90	16	>60	3000	AC780B-2
MAGx-100027-002*	10	2700	50	2	16	68	2000	6 x 3 mm PDFN-14
MAGx-100027-005*	10	2700	50	5	16	68	2000	6 x 3 mm PDFN-14
MAGx-100027-010*	10	2700	50	10	16	70	2000	6 x 3 mm PDFN-14
MAGx-100027-015*	10	2700	50	15	16	70	2000	6 x 3 mm PDFN-14
MAGx-100027-050*	1	2700	50	50	17	65	2700	TO-272S-2
MAGx-100027-100*	1	2700	50	100	17	65	2700	TO-272S-2
MAGx-100027-300*	1	2700	50	300	16	63	2700	TO-272S-4

\* In development

RF Power Transistors: Silicon Bipolar

Part Number	Min Freq (MHz)	Max Freq (MHz)	Pout (W)	Gain (dB)	Efficiency (%)	Package Type
MRF421	1	30	100	10	40	Flange Ceramic
MRF428	2	30	150	13	45	Flange Ceramic
MRF429	2	60	150	13	45	Flange Ceramic
MRF422	2	30	150	10	40	Flange Ceramic
MRF426	2	30	25	22	35	Flange Ceramic
MRF454	2	30	80	12	50	Flange Ceramic
MRF455	2	30	60	13	55	Flange Ceramic
MRF448	2	30	250	12	45	Flange Ceramic
MRF141G	5	175	300	12	50	Flange Ceramic
MRF316	30	200	80	10	55	Flange Ceramic
MRF314	30	200	30	10	50	Flange Ceramic
MRF317	30	200	100	9	55	Flange Ceramic
MRF313	100	400	1	15	45	Flange Ceramic
MRF393	100	500	100	9.5	55	Flange Ceramic
MRF392	100	400	125	10	55	Flange Ceramic
MRF587	100	500	—	13	—	Flange Ceramic
MRF321	150	400	10	12	50	Flange Ceramic
MRF323	150	400	20	10	50	Flange Ceramic
2N6439	225	400	60	7.8	55	Flange Ceramic
MRF327	225	400	80	7.3	50	Flange Ceramic
MAPR-000912-500S00	960	1215	500	9	45	Flange Ceramic
MAPRST0912-50	960	1215	50	9.1	40	Flange Ceramic
MAPRST0912-350	960	1215	350	9.4	45	Flange Ceramic
MRF1004MB	960	1215	4	10	40	Flange Ceramic
MRF10031	960	1215	30	9	40	Flange Ceramic
MRF10005	960	1215	5	8.5	45	Flange Ceramic
MRF10120	960	1215	120	8	50	Flange Ceramic

RF Power Transistors: Silicon Bipolar (continued)

Part Number	Min Freq (MHz)	Max Freq (MHz)	Pout (W)	Gain (dB)	Efficiency (%)	Package Type
MRF1000MB	960	1215	0.7	10	—	Flange Ceramic
MRF1150MB	960	1215	150	7.8	35	Flange Ceramic
MRF1090MB	960	1215	90	8.4	35	Flange Ceramic
MAPR-001090-350S00	1025	1150	350	9	45	Flange Ceramic
MAPR-001011-850S00	1025	1150	850	7.8	42	Flange Ceramic
MRF10150	1025	1150	150	9.5	40	Flange Ceramic
MRF10350	1025	1150	350	8.5	40	Flange Ceramic
MRF10502	1025	1150	500	8.5	40	Flange Ceramic
MAPRST1030-1KS	1030	1030	1000	8	45	Flange Ceramic
PH1090-700B	1030	1090	700	7.5	50	Flange Ceramic
PH1090-15L	1030	1090	15	9	40	Flange Ceramic
PH1090-550S	1030	1090	550	7.4	55	Flange Ceramic
PH1090-175L	1030	1090	175	8.3	55	Flange Ceramic
PH1090-350L	1030	1090	350	8	55	Flange Ceramic
PH1090-75L	1030	1090	75	9	45	Flange Ceramic
PH1214-300M	1200	1400	300	8.75	50	Flange Ceramic
PH1214-25L	1200	1400	25	9.5	50	Flange Ceramic
PH1214-55EL	1200	1400	55	6.6	50	Flange Ceramic
PH1214-12M	1200	1400	12	9	45	Flange Ceramic
PH1214-25M	1200	1400	25	9.5	50	Flange Ceramic
PH1214-110M	1200	1400	110	7.4	50	Flange Ceramic
PH1214-80M	1200	1400	80	7.5	50	Flange Ceramic
PH1214-100EL	1200	1400	100	6	52	Flange Ceramic
PH1214-6M	1200	1400	6	7	45	Flange Ceramic
PH1214-220M	1200	1400	220	7.4	50	Flange Ceramic
PH1214-40M	1200	1400	40	8.5	50	Flange Ceramic
MRF16006	1600	1640	6	7.4	40	Flange Ceramic
PH1617-2	1600	1700	2	10	35	Flange Ceramic
PH2226-50M	2200	2600	50	8	45	Flange Ceramic
PH2226-110M	2200	2600	110	8	40	Flange Ceramic
MAPR-002729-170M00	2700	2900	170	9	45	Flange Ceramic
PH2729-65M	2700	2900	65	8.5	40	Flange Ceramic
PH2729-130M	2700	2900	130	7.5	40	Flange Ceramic
PH2729-8.5M	2700	2900	8.5	8.1	35	Flange Ceramic
PH2729-25M	2700	2900	25	9.2	45	Flange Ceramic
PH2731-5M	2700	3100	5	7	30	Flange Ceramic
PH2729-110M	2700	2900	110	6.8	35	Flange Ceramic
PH2731-20M	2700	3100	20	8.2	45	Flange Ceramic
PH2731-75L	2700	3100	75	7	40	Flange Ceramic
PH2856-160	2856	2856	160	7.5	40	Flange Ceramic
PH2931-20M	2900	3100	20	8.2	45	Flange Ceramic
PH3134-30S	3100	3400	30	7.5	35	Flange Ceramic
PH3134-55L	3100	3400	55	7.5	35	Flange Ceramic
PH3134-20L	3100	3400	20	7.5	35	Flange Ceramic
PH3134-25M	3100	3400	25	7.5	35	Flange Ceramic

Detailed specifications can be found quickly on our website at [macom.com](http://macom.com) by typing the part number into the search box. All specifications are subject to change.

**RF Power Transistors: Silicon Bipolar (continued)**

Part Number	Min Freq (MHz)	Max Freq (MHz)	Pout (W)	Gain (dB)	Efficiency (%)	Package Type
PH3135-65M	3100	3500	65	7.5	35	Flange Ceramic
PH3134-10M	3100	3400	10	8	35	Flange Ceramic
PH3135-25S	3100	3500	25	7.5	35	Flange Ceramic
PH3135-5M	3100	3500	5	8.5	30	Flange Ceramic
PH3135-90S	3100	3500	90	7.5	35	Flange Ceramic
PH3134-65M	3100	3400	65	7.5	35	Flange Ceramic
PH3135-20M	3100	3500	20	7.5	35	Flange Ceramic

**RF Power Transistors: MOSFET**

Part Number	Min Freq (MHz)	Max Freq (MHz)	Pout (W)	Gain (dB)	Efficiency (%)	Package Type
PH3135-65M	3100	3500	65	7.5	35	Flange Ceramic
PH3134-10M	3100	3400	10	8	35	Flange Ceramic
PH3135-25S	3100	3500	25	7.5	35	Flange Ceramic
PH3135-5M	3100	3500	5	8.5	30	Flange Ceramic
PH3135-90S	3100	3500	90	7.5	35	Flange Ceramic
PH3134-65M	3100	3400	65	7.5	35	Flange Ceramic
PH3135-20M	3100	3500	20	7.5	35	Flange Ceramic
MRF175LU	5	400	100	10	55	Flange Ceramic
MRF140	5	150	150	15	40	Flange Ceramic
MRF175GU	5	400	150	12	55	Flange Ceramic
MRF141	5	175	150	18	40	Flange Ceramic
MRF173CQ	5	175	80	13	60	Flange Ceramic
MRF136Y	5	400	30	14	54	Flange Ceramic
MRF148A	5	175	30	18	40	Flange Ceramic
MRF158	5	500	2	16	55	Flange Ceramic
MRF174	5	200	125	9	50	Flange Ceramic
MRF175GV	5	225	200	14	65	Flange Ceramic
MRF177	5	400	100	12	60	Flange Ceramic
MRF173	5	175	80	11	60	Flange Ceramic
MRF166C	5	500	20	13.5	50	Flange Ceramic
MRF166W	5	500	40	14	50	Flange Ceramic
MRF134	5	400	5	11	50	Flange Ceramic
MRF177	5	400	100	12	60	Flange Ceramic
MRF173	5	175	80	11	60	Flange Ceramic
MRF166C	5	500	20	13.5	50	Flange Ceramic
MRF166W	5	500	40	14	50	Flange Ceramic
MRF134	5	400	5	11	50	Flange Ceramic
MRF151	5	175	150	13	40	Flange Ceramic
MRF137	5	400	30	13	60	Flange Ceramic
MRF150	5	150	150	17	45	Flange Ceramic
MRF275G	5	500	150	10	50	Flange Ceramic
MRF160	5	500	4	16	55	Flange Ceramic
MRF154	5	80	600	17	45	Flange Ceramic
MRF275L	5	500	100	8.8	55	Flange Ceramic
MRF151G	5	175	300	14	50	Flange Ceramic
MRF157	5	80	600	21	45	Flange Ceramic
MRF136	5	400	15	16	60	Flange Ceramic
DU2880V	30	175	80	13	60	Flange Ceramic

## RF Power Transistors: MOSFET (continued)

Part Number	Min Freq (MHz)	Max Freq (MHz)	Pout (W)	Gain (dB)	Efficiency (%)	Package Type
DU2860T	30	175	60	13	60	Flange Ceramic
DU28120T	30	175	120	13	60	Flange Ceramic
DU2880U	30	175	80	13	60	Flange Ceramic
DU1215S	30	175	15	9.5	60	Flange Ceramic
DU2810S	30	175	10	13	55	Flange Ceramic
DU2880T	30	175	80	13	60	Flange Ceramic
DU28120V	30	175	120	13	60	Flange Ceramic
DU2805S	30	175	5	11	55	Flange Ceramic
DU2820S	30	175	20	13	60	Flange Ceramic
DU28200M	30	175	200	13	55	Flange Ceramic
DU2860U	30	175	60	13	60	Flange Ceramic
DU2840S	30	175	40	13	60	Flange Ceramic
MRF171A	100	200	45	17	60	Flange Ceramic
UF28100H	100	500	100	10	50	Flange Ceramic
UF2815B	100	500	15	10	50	Flange Ceramic
UF2805B	100	500	5	10	50	Flange Ceramic
UF2840P	100	500	40	10	50	Flange Ceramic
UF2820P	100	500	20	10	50	Flange Ceramic
UF2810P	100	500	10	10	50	Flange Ceramic
UF28100V	100	500	100	10	50	Flange Ceramic
UF28100M	100	500	100	10	50	Flange Ceramic
UF2840G	100	500	40	10	50	Flange Ceramic
UF28150J	100	500	150	8	55	Flange Ceramic
LF2805A	500	1000	5	10	50	Flange Ceramic

## RF Power: Silicon Bipolar Pallets

Part Number	Min Freq (MHz)	Max Freq (MHz)	Pout (W)	Gain (dB)	Efficiency (%)	Package Type
PHA2729-300M	2700	2900	300	7.5	36	Pallet
PHA2731-140L	2700	3100	140	7	35	Pallet
PHA3135-130M	3100	3500	130	7.4	35	Pallet