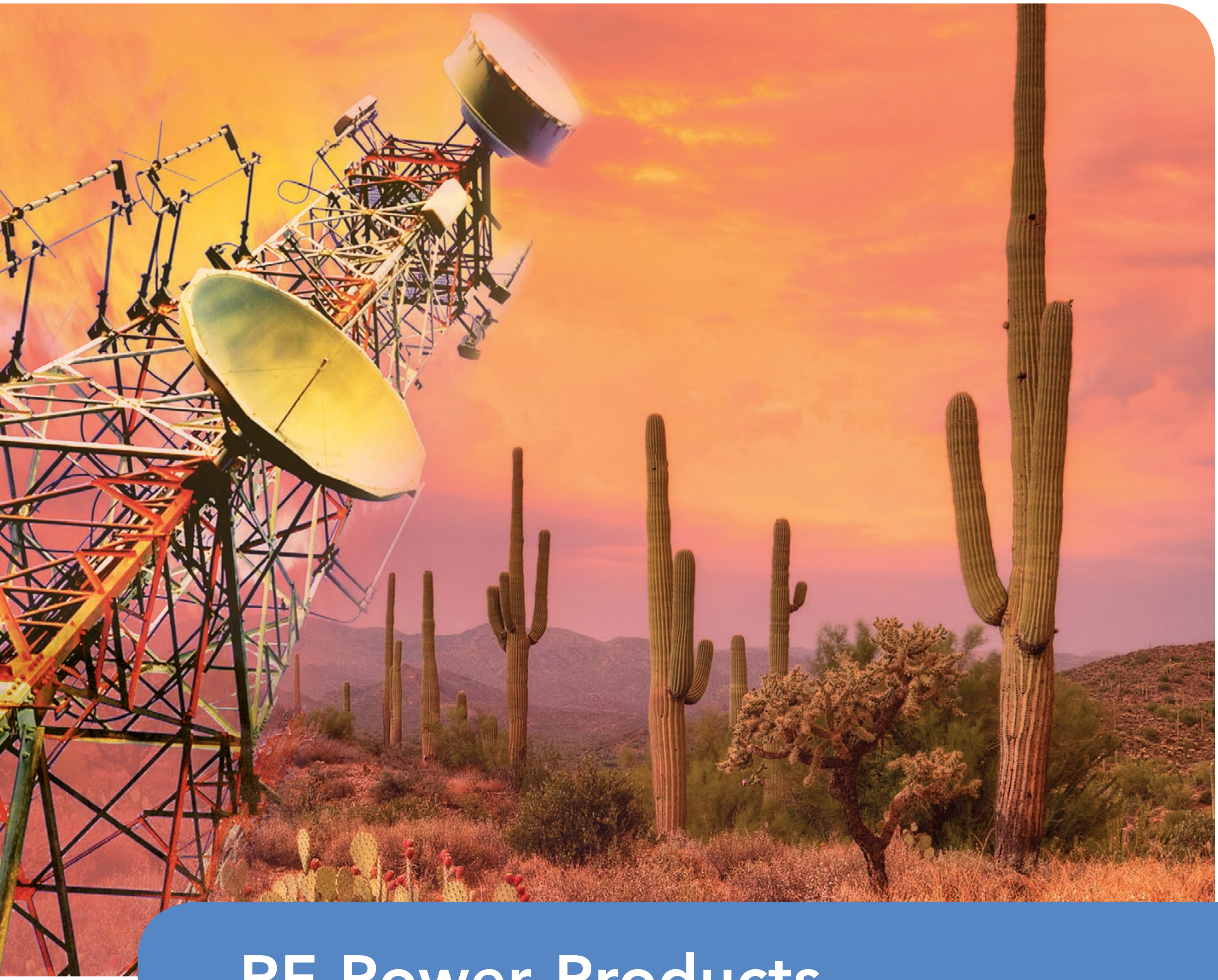
THE DATASHEET OF

A2T21H360-24SR6



RF Power Products

Selector Guide

RF Power Products Selector Guide

The global leader in RF innovation and technology for more than 60 years, NXP offers RF power transistors for communication and industrial applications serving these markets:

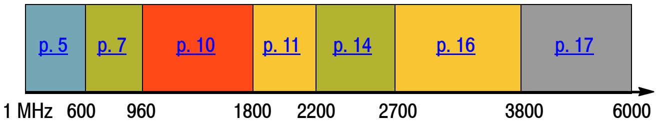
- wireless infrastructure
- industrial, scientific, medical (ISM) and broadcast
- 2-way radio
- aerospace and defense
- cooking
- low power

With products ranging from 1.8 mW to 1.8 kW and from DC to 6000 MHz, using LDMOS, GaN and GaAs technologies, NXP offers the broadest portfolio of RF power transistors.

How to Use This Selector Guide

Download this selector guide's PDF file (SG46 R44) from www.nxp.com/RFSelectorGuide.

Using the color bar below, click the frequency band of your choice to view our list of recommended RF power transistors.



Using the RF Power Product Portfolio graphical representation that begins on p. 5, choose a part with the desired output power and frequency, and click that product's corresponding page number to be taken to parametric information for that part.

Table of Contents

Access Data Online

Available online are part number search, the product library, documentation library, software and tools library, application sites, product sites, sales and support, training and where to buy at the following URL: http://www.nxp.com.

See the RF Design Resources at http://www.nxp.com/RF for specific RF product support information for:

- Data sheets
- Applications notes
- Selector guide
- Packaging information
- Application information
- Models
- MTTF calculators
- .s2p files
- Events
- RF Product Selector

Design Tools and Data Available Online for Your Design-in Process

RF High Power Models

NXP continues to populate its RF High Power Model Library with FET^2, MET and Root models. All product models available in the RF High Power Model Library (FET^2, MET and Root) include package, bond wire and internal matching network effects.

The FET^2 and MET models for RF High Power transistors and RF ICs are nonlinear models that examine both electrical and thermal phenomena and can account for dynamic self-heating effects of device performance. They are specifically tailored to model high power RF transistors and RF ICs used in wireless base station applications.

Implemented in the Keysight Advanced Design System and AWR Microwave Office®, the FET^2 and MET models are capable of performing small-signal, large-signal, harmonic- balance, noise and transient simulations. Because of their ability to simulate self-heating effects, the FET^2 and MET models are more accurate than existing models, enabling circuit designers to predict prototype performance more accurately and reduce design cycle time.

The current release of the FET^2 and MET models are available for these tools:

- Agilent EEsof ADS nonlinear circuit simulator
- AWR Microwave Office

The RF High Power Model Library is available for all major computer platforms supported by these simulators.

For more information and latest releases supported, go to http://www.nxp.com/RF/models.

RF Power Electromigration MTTF Calculation Program

Program Functionality

This MTTF/FIT calculator software is designed to assist our customers in estimating the LDMOS device reliability in terms of electromigration wear-out failures. The program evaluates LDMOS device Mean-Time-To-Failure (MTTF) using Black's Equations. It also estimates the Failures-in-Time (FIT) value at the expected base transceiver system (BTS) life span.

About the Program

This program is designed for estimating LDMOS device electromigration failure rate. According to electromigration theory, there are two wear-out modes for silicon components employing aluminum as a metallization material:

- The formation of an electrically open circuit due to the condensation of vacancies in the aluminum to form voids.
- The growth of etch-pits into silicon by the dissolution of silicon into aluminum (to short out an underlying junction).

The program also estimates the FIT value at the expected base BTS life span. The calculation requires input for the drain voltage, drain currents, case temperature, RF input/output power and expected BTS life.

MTTF Calculator Availability

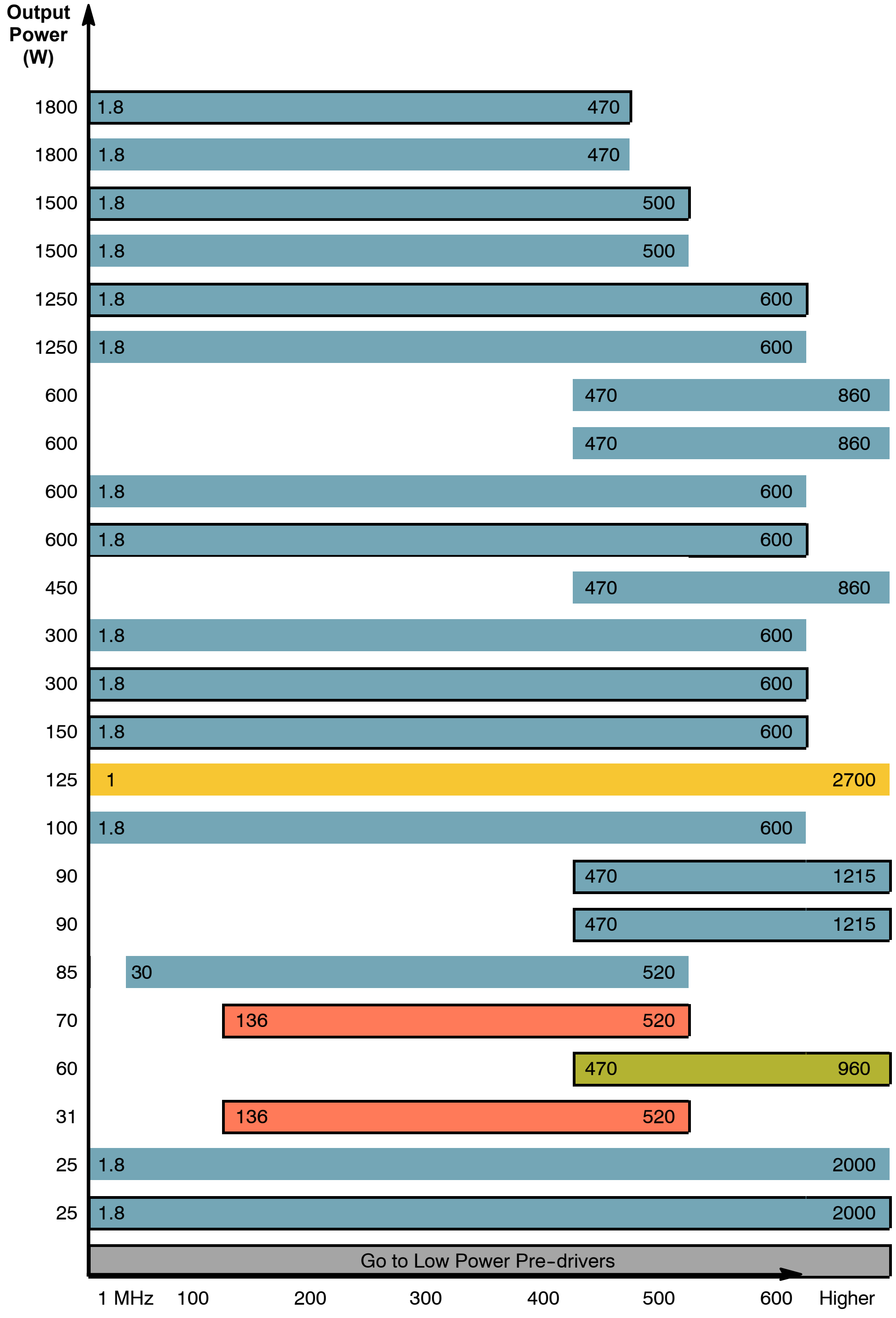
RF Power MTTF calculators are being added to the NXP web site for all RF Power LDMOS discrete transistor and IC devices. MTTF calculators are available at http://www.nxp.com/RF/calculators.

RF Power Product Portfolio

Choose the output power and frequency range needed to meet the design requirements for your end application.

🟦 48–65 V LDMOS
🟩 28–32 V LDMOS
🟥 7.2–12.5 V LDMOS
🟨 GaN
▨ GaAs
☐ Plastic

Table 1. RF Power Products — 1–600 MHz



Output Power (W)			*Product*	*Go to page*
1800	1.8	470	**MRFX1K80N**	23
1800	1.8	470	**MRFX1K80H**	23
1500	1.8	500	**MRF1K50N**	23
1500	1.8	500	**MRF1K50H**	23
1250	1.8	600	**MRFE6VP61K25N**	23
1250	1.8	600	**MRFE6VP61K25H**	23
600	470	860	MRFE8VP8600H	24
600	470	860	**MRFE6VP8600H**	24
600	1.8	600	**MRFE6VP5600H**	23
600	1.8	600	**MRFE6VP6600N**	23
450	470	860	MRF6VP3450H	24
300	1.8	600	**MRFE6VP6300HS**	23
300	1.8	600	**MRFE6VP5300N**	23
150	1.8	600	**MRFE6VP5150N**	23
125	1	2700	**MMRF5014H**	29
100	1.8	600	**MRFE6VP100H**	23
90	470	1215	MRF6VP3091N	24
90	470	1215	**MRF6V3090N**	24
85	30	520	**MRF085H**	23
70	136	520	**AFT05MP075N**	25
60	470	960	MRFE6S9060N	18, 24, 25
31	136	520	**AFT05MS031N**	25
25	1.8	2000	**MRFE6VS25L**	23
25	1.8	2000	**MRFE6VS25N**	23

Go to Low Power Pre-drivers

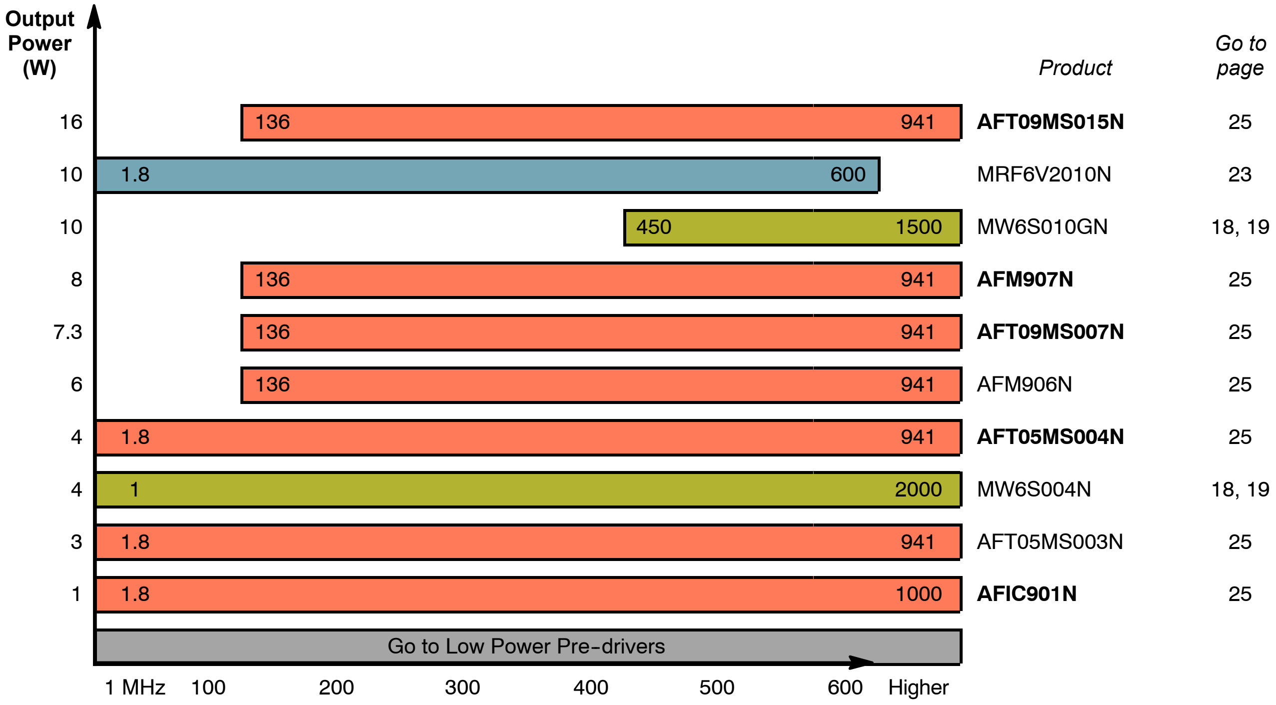
Bold = In NXP Product Longevity program
*Output Power measured at P3dB

(continued)

RF Power Product Porfolio (continued)

🟦 48–65 V LDMOS
🟩 28–32 V LDMOS
🟥 7.2–12.5 V LDMOS
🟨 GaN
⬜ GaAs
☐ Plastic

Table 1. RF Power Products — 1–600 MHz (continued)

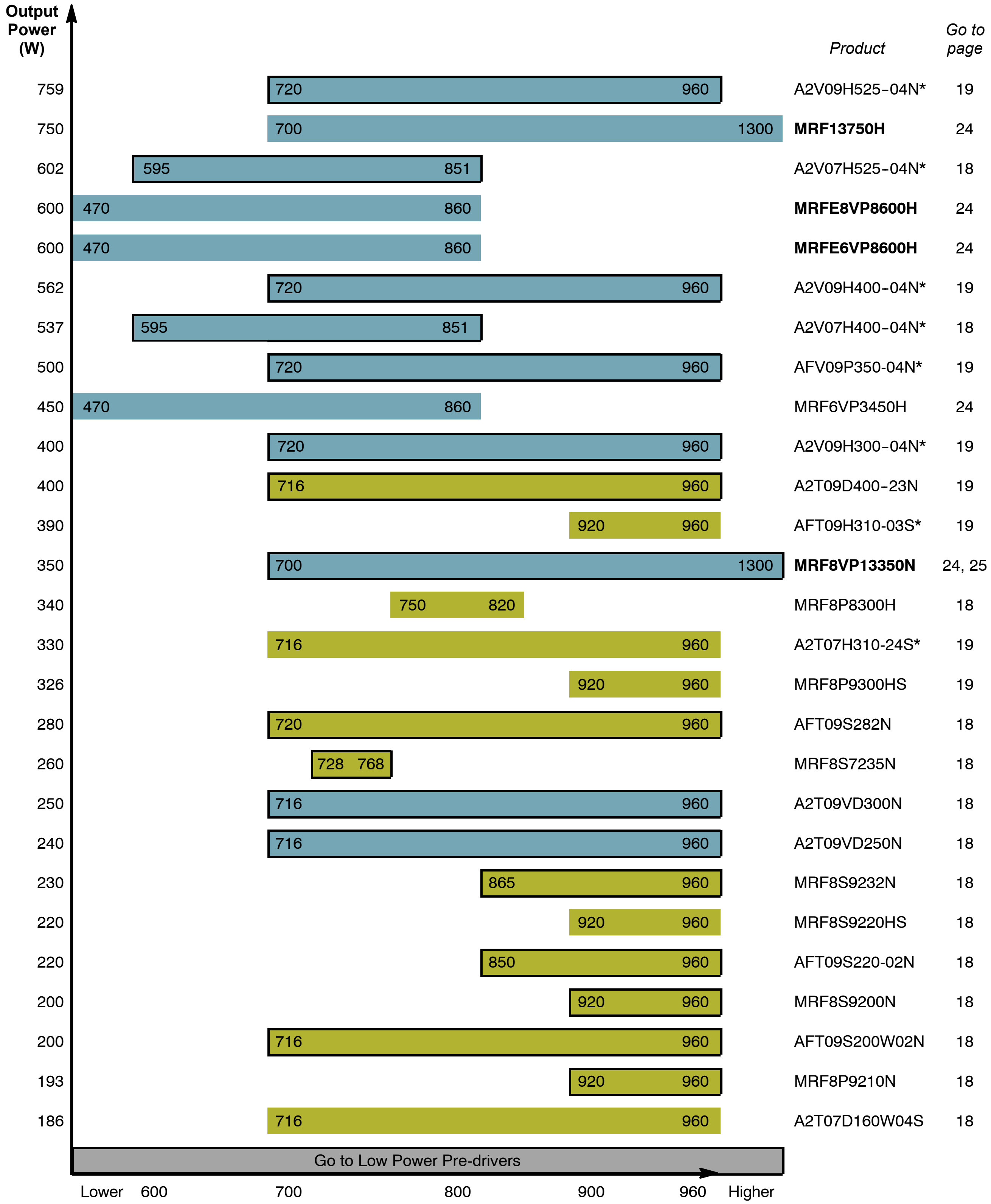


Bold = In NXP Product Longevity program
*Output Power measured at P3dB

RF Power Product Porfolio (continued)

🟦 48–65 V LDMOS
🟩 28–32 V LDMOS
🟥 7.2–12.5 V LDMOS
🟨 GaN
⬜ GaAs
▭ Plastic

Table 2. RF Power Products — 600–960 MHz

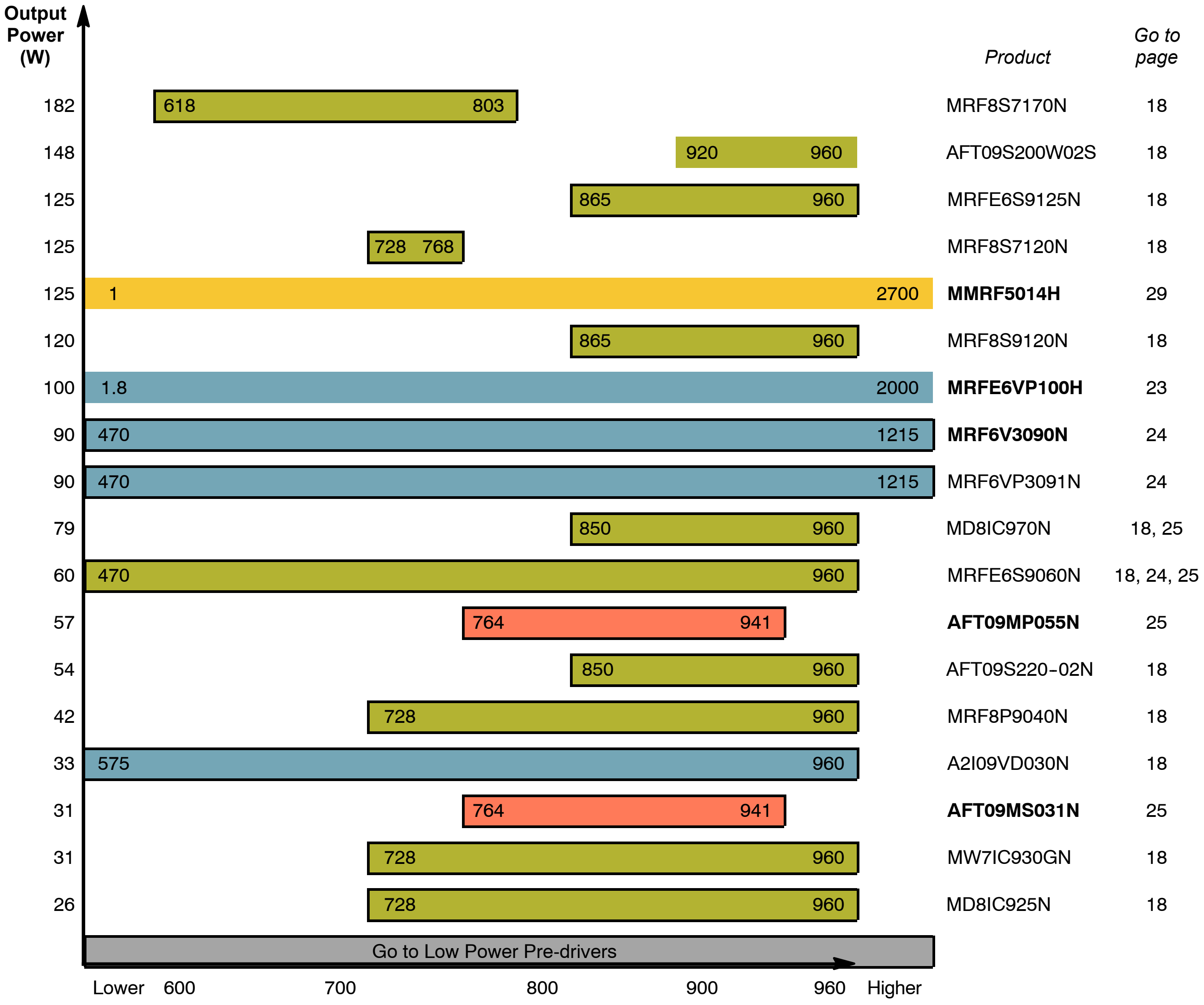


Bold = In NXP Product Longevity program
*Output Power measured at P3dB

(continued)

🟦 48–65 V LDMOS
🟩 28–32 V LDMOS
🟥 7.2–12.5 V LDMOS
🟨 GaN
⬜ GaAs
☐ Plastic

Table 2. RF Power Products — 600–960 MHz (continued)



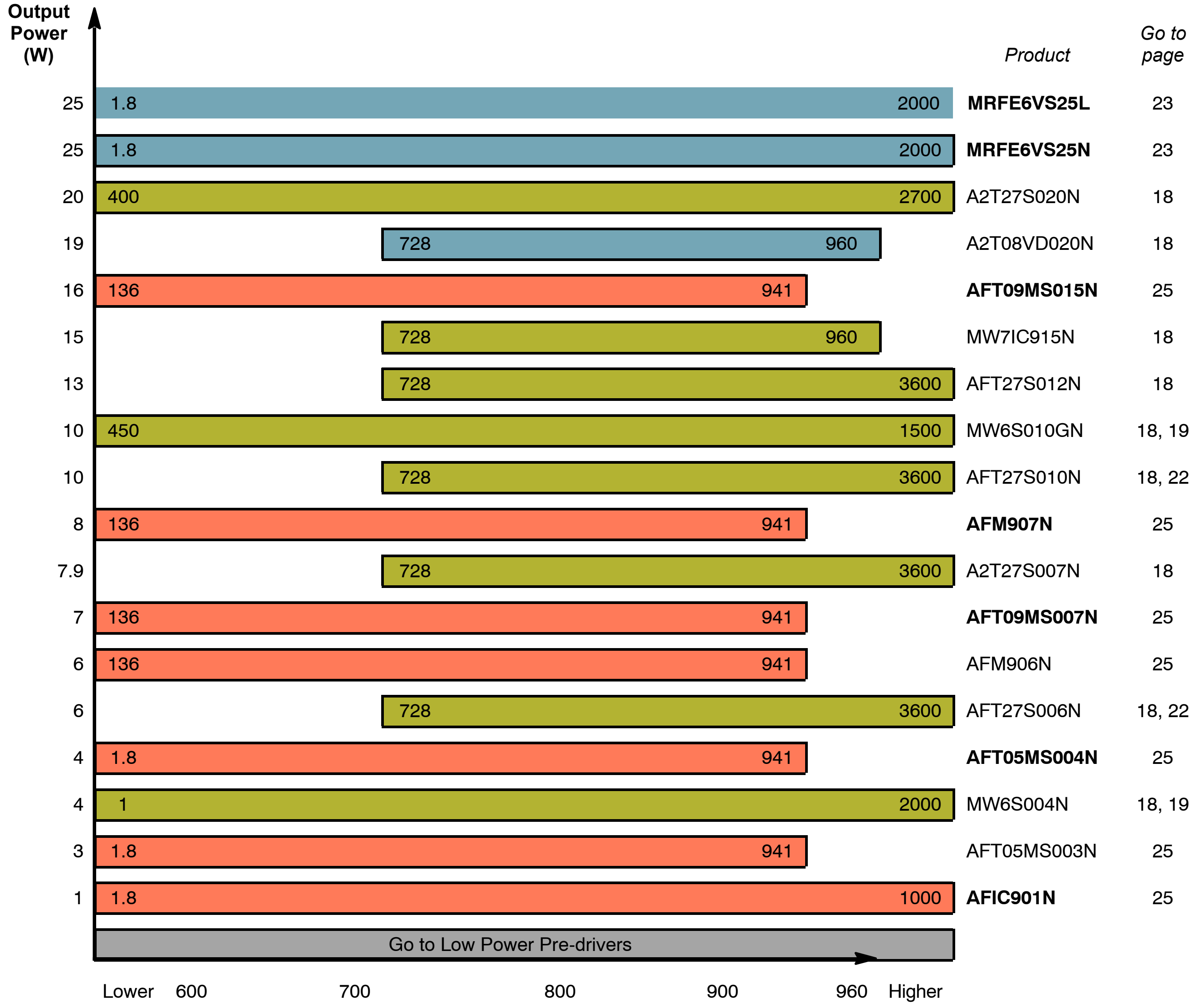
(continued)

Bold = In NXP Product Longevity program
*Output Power measured at P3dB

RF Power Product Porfolio (continued)

🟦 48–65 V LDMOS
🟩 28–32 V LDMOS
🟥 7.2–12.5 V LDMOS
🟨 GaN
▨ GaAs
□ Plastic

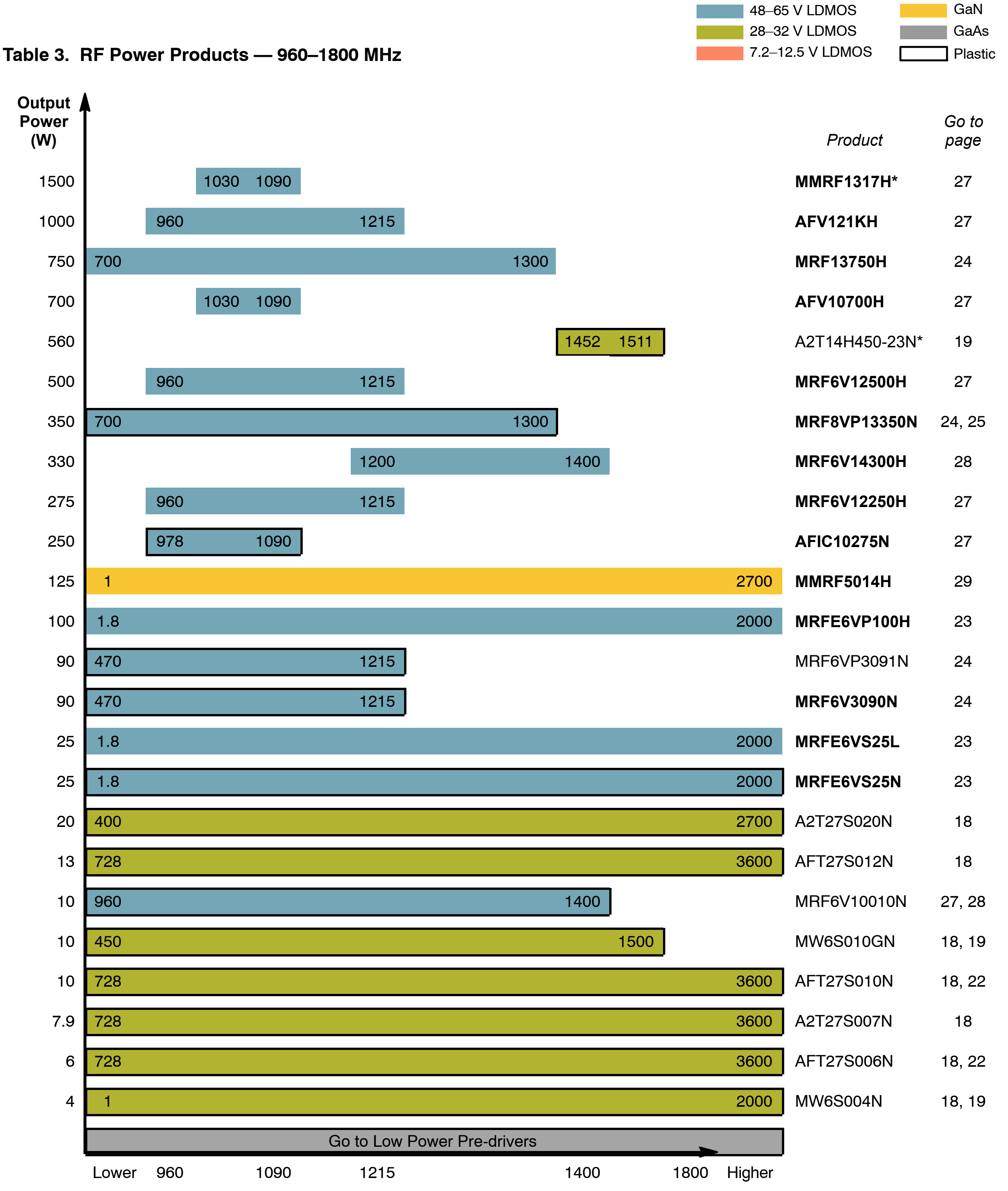
Table 2. RF Power Products — 600–960 MHz (continued)



Bold = In NXP Product Longevity program
*Output Power measured at P3dB

RF Power Product Porfolio (continued)

Table 3. RF Power Products — 960–1800 MHz



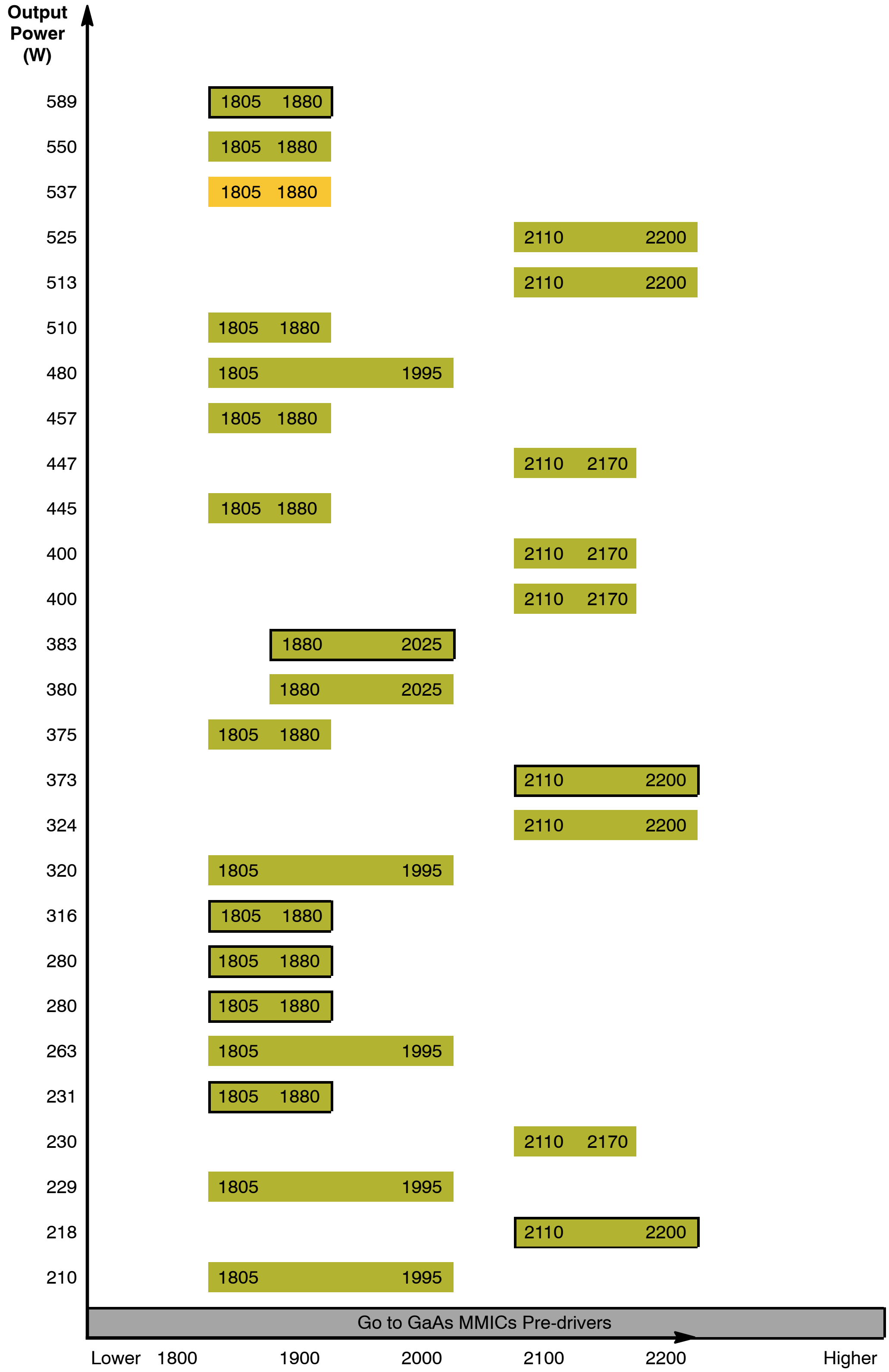
Output Power (W)			*Product*	*Go to page*
1500	1030	1090	**MMRF1317H***	27
1000	960	1215	**AFV121KH**	27
750	700	1300	**MRF13750H**	24
700	1030	1090	**AFV10700H**	27
560	1452	1511	A2T14H450-23N*	19
500	960	1215	**MRF6V12500H**	27
350	700	1300	**MRF8VP13350N**	24, 25
330	1200	1400	**MRF6V14300H**	28
275	960	1215	**MRF6V12250H**	27
250	978	1090	**AFIC10275N**	27
125	1	2700	**MMRF5014H**	29
100	1.8	2000	**MRFE6VP100H**	23
90	470	1215	MRF6VP3091N	24
90	470	1215	**MRF6V3090N**	24
25	1.8	2000	**MRFE6VS25L**	23
25	1.8	2000	**MRFE6VS25N**	23
20	400	2700	A2T27S020N	18
13	728	3600	AFT27S012N	18
10	960	1400	MRF6V10010N	27, 28
10	450	1500	MW6S010GN	18, 19
10	728	3600	AFT27S010N	18, 22
7.9	728	3600	A2T27S007N	18
6	728	3600	AFT27S006N	18, 22
4	1	2000	MW6S004N	18, 19

Bold = In NXP Product Longevity program
*Output Power measured at P3dB

RF Power Product Porfolio (continued)

🟦 48–65 V LDMOS
🟩 28–32 V LDMOS
🟧 7.2–12.5 V LDMOS
🟨 GaN
▨ GaAs
☐ Plastic

Table 4. RF Power Products — 1800–2200 MHz



Output Power (W)			*Product*	*Go to page*
589	1805	1880	A2T18H455W23N*	20
550	1805	1880	A2T18H450W19S*	20
537	1805	1880	A3G18H500-04S*	20
525	2110	2200	A2T21H450W19S*	21
513	2110	2200	A3T21H450W23S*	21
510	1805	1880	A3T18H455W23S*	20
480	1805	1995	AFT18H356-24S*	20
457	1805	1880	A2T18H410-24S*	20
447	2110	2170	A2T21H410-24S*	21
445	1805	1880	A3T18H400W23S*	20
400	2110	2170	AFT21H350W03S*	21
400	2110	2170	A2T21H360-24S*	21
383	1880	2025	A2T20H330W24N*	20
380	1880	2025	A2T20H330W24S*	20
375	1805	1880	A3T18H360W23S*	20
373	2110	2200	A2T21H360-23N*	21
324	2110	2200	A3T21H360W23S*	21
320	1805	1995	AFT18H357-24S*	20
316	1805	1880	AFT18H357-24N*	20
280	1805	1880	A2T18S261W12N	19
280	1805	1880	A2T18S260W12N	19
263	1805	1995	AFT18S290-13S	20
231	1805	1880	A2T18S262W12N	19
230	2110	2170	AFT21S240-12S	21
229	1805	1995	AFT18S260W31S	20
218	2110	2200	A2T21S260W12N	21
210	1805	1995	MRF8S18210WHS	20

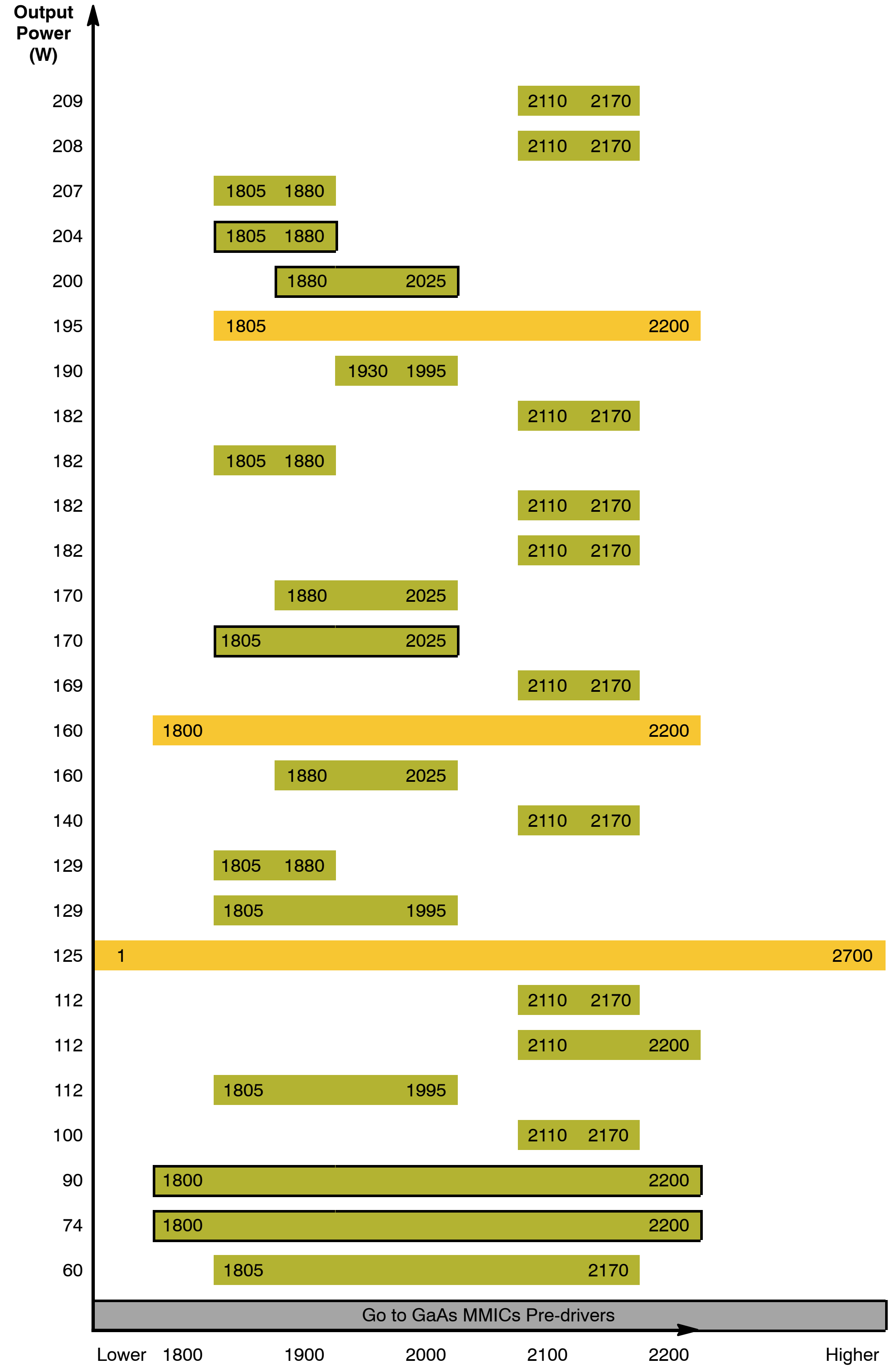
(continued)

*Output Power measured at P3dB

RF Power Product Porfolio (continued)

🟦 48–65 V LDMOS
🟩 28–32 V LDMOS
🟥 7.2–12.5 V LDMOS
🟨 GaN
▨ GaAs
☐ Plastic

Table 4. RF Power Products — 1800–2200 MHz (continued)



Output Power (W)			*Product*	*Go to page*
209	2110	2170	AFT21S220W02S	20
208	2110	2170	A2T21S260-12S	21
207	1805	1880	AFT18S230S	19
204	1805	1880	AFT18S230-12N	19
200	1880	2025	A2T20H160W04N*	20
195	1805	2200	A2G22S251-01S*	21
190	1930	1995	MRF8P20165WH*	20
182	2110	2170	AFT21S232S	21
182	1805	1880	A2T18H160-24S*	19
182	2110	2170	AFT21S230-12S	20
182	2110	2170	AFT21S230S	20
170	1880	2025	MRF8P20140WH*	20
170	1805	2025	AFT20P140-4WN*	20
169	2110	2170	A2T21H140-24S*	20
160	1800	2200	A2G22S160-01S*	20
160	1880	2025	MRF8P20160H*	20
140	2110	2170	A2T21S160-12S	20
129	1805	1880	A2T18S162W31S	19
129	1805	1995	A2T18S160W31S	20
125	1	2700	**MMRF5014H**	29
112	2110	2170	AFT21S140W02S	20
112	2110	2200	A2T21H100-25S*	20
112	1805	1995	A2T18H100-25S*	20
100	2110	2170	MRF8HP21080H*	20
90	1800	2200	A2I20H080N*	19
74	1800	2200	A2I20H060N*	19
60	1805	2170	AFT20P060-4N	20

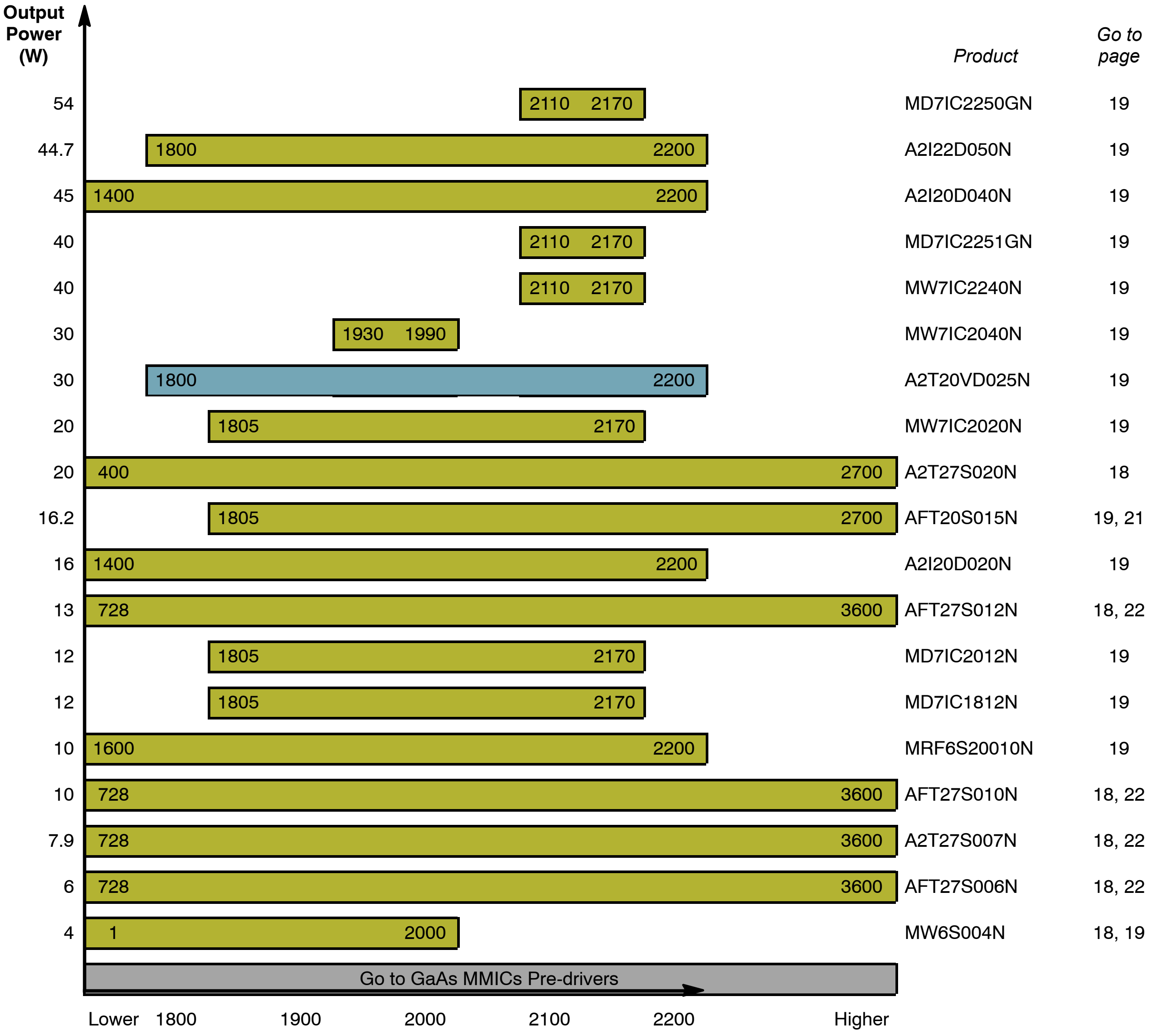
(continued)

*Output Power measured at P3dB

RF Power Product Porfolio (continued)

🟦 48–65 V LDMOS
🟩 28–32 V LDMOS
🟧 7.2–12.5 V LDMOS
🟨 GaN
▩ GaAs
☐ Plastic

Table 4. RF Power Products — 1800–2200 MHz (continued)

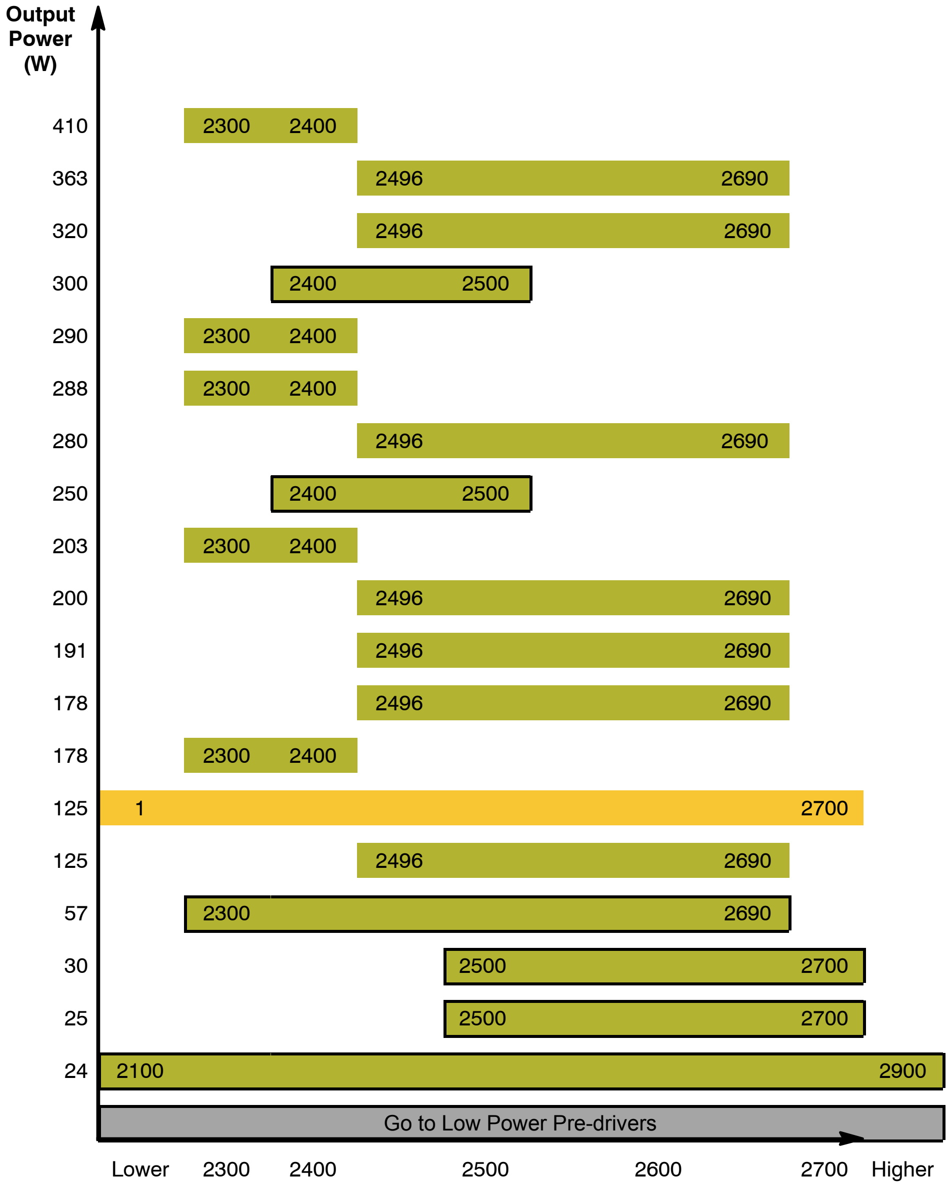


*Output Power measured at P3dB

RF Power Product Porfolio (continued)

🟦 48–65 V LDMOS
🟩 28–32 V LDMOS
🟥 7.2–12.5 V LDMOS
🟨 GaN
⬜ GaAs
☐ Plastic

Table 5. RF Power Products — 2200–2700 MHz



Output Power (W)			Product	Go to page
410	2300	2400	A2T23H300-24S*	21
363	2496	2690	A2T26H300-24S*	21
320	2496	2690	AFT26H250-24S*	21
300	2400	2500	**MRF24300N**	24
290	2300	2400	AFT23H200-4S2L*	21
288	2300	2400	A2T23H200W23S*	21
280	2496	2690	AFT26H200W03S*	21
250	2400	2500	**MRF7S24250N**	24
203	2300	2400	AFT23H160-25S*	21
200	2496	2690	AFT26H160-4S4*	21
191	2496	2690	A2T26H165-24S*	21
178	2496	2690	A2T26H160-24S*	21
178	2300	2400	A2T23H160-24S*	21
125	1	2700	**MMRF5014H**	29
125	2496	2690	AFT26P100-4WGS*	21
57	2300	2690	A2I25H060N*	21
30	2500	2700	MD7IC2755N	21
25	2500	2700	MW7IC2725N	21
24	2100	2900	A2I25D025N	21

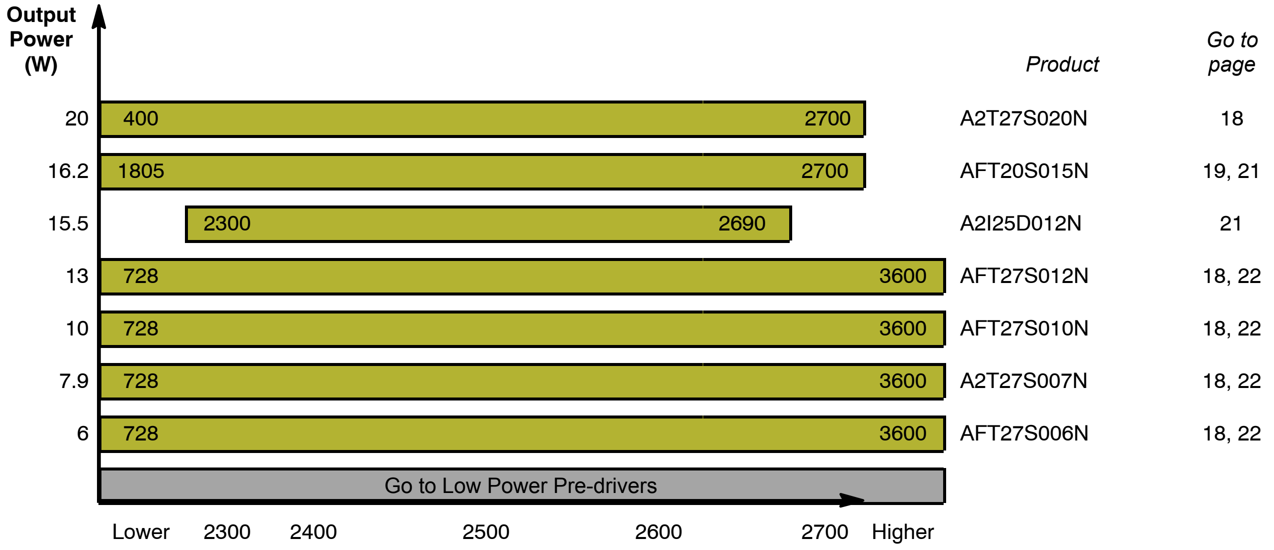
Bold = In NXP Product Longevity program
*Output Power measured at P3dB

(continued)

RF Power Product Porfolio (continued)

🟦 48–65 V LDMOS
🟨 GaN
🟩 28–32 V LDMOS
⬜ GaAs
🟥 7.2–12.5 V LDMOS
☐ Plastic

Table 5. RF Power Products — 2200–2700 MHz (continued)

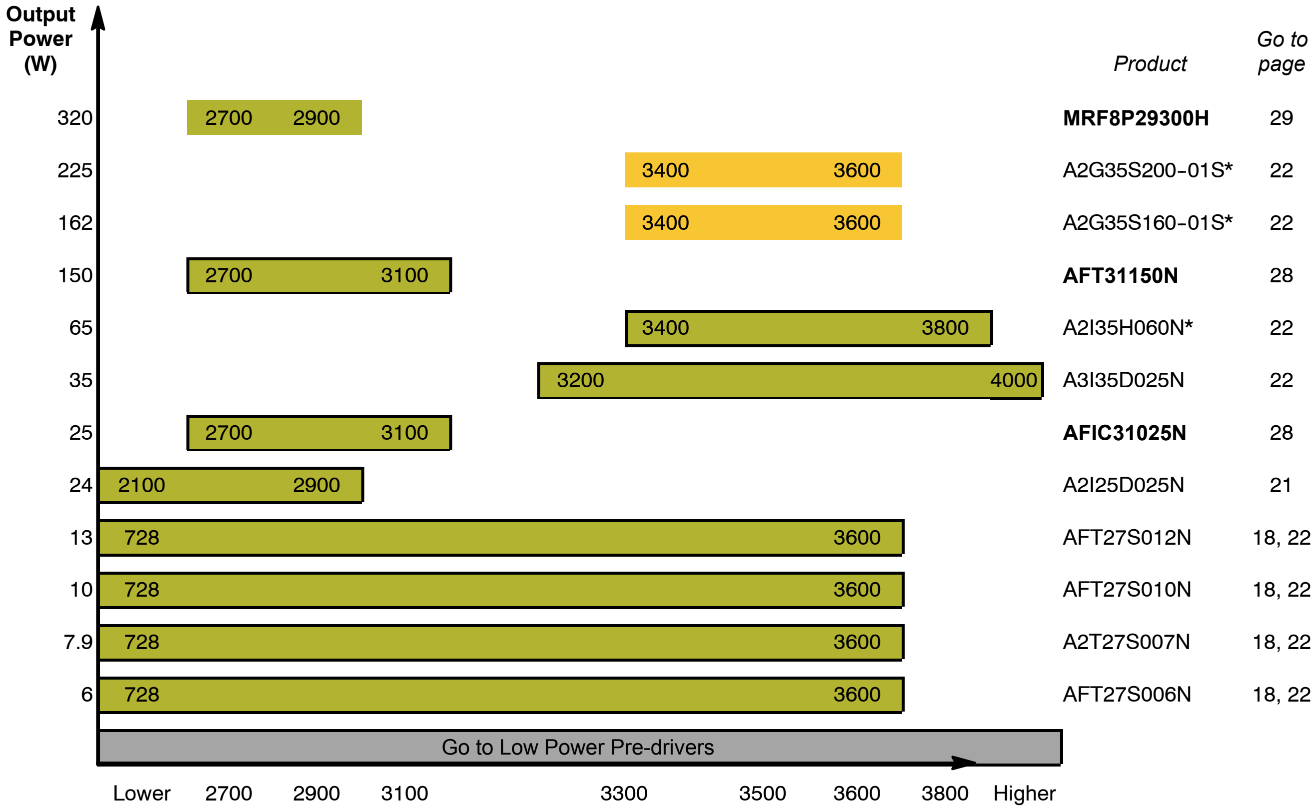


Bold = In NXP Product Longevity program

RF Power Product Porfolio (continued)

🟦 48–65 V LDMOS
🟩 28–32 V LDMOS
🟥 7.2–12.5 V LDMOS
🟨 GaN
⬜ GaAs
☐ Plastic

Table 6. RF Power Products — 2700–3800 MHz



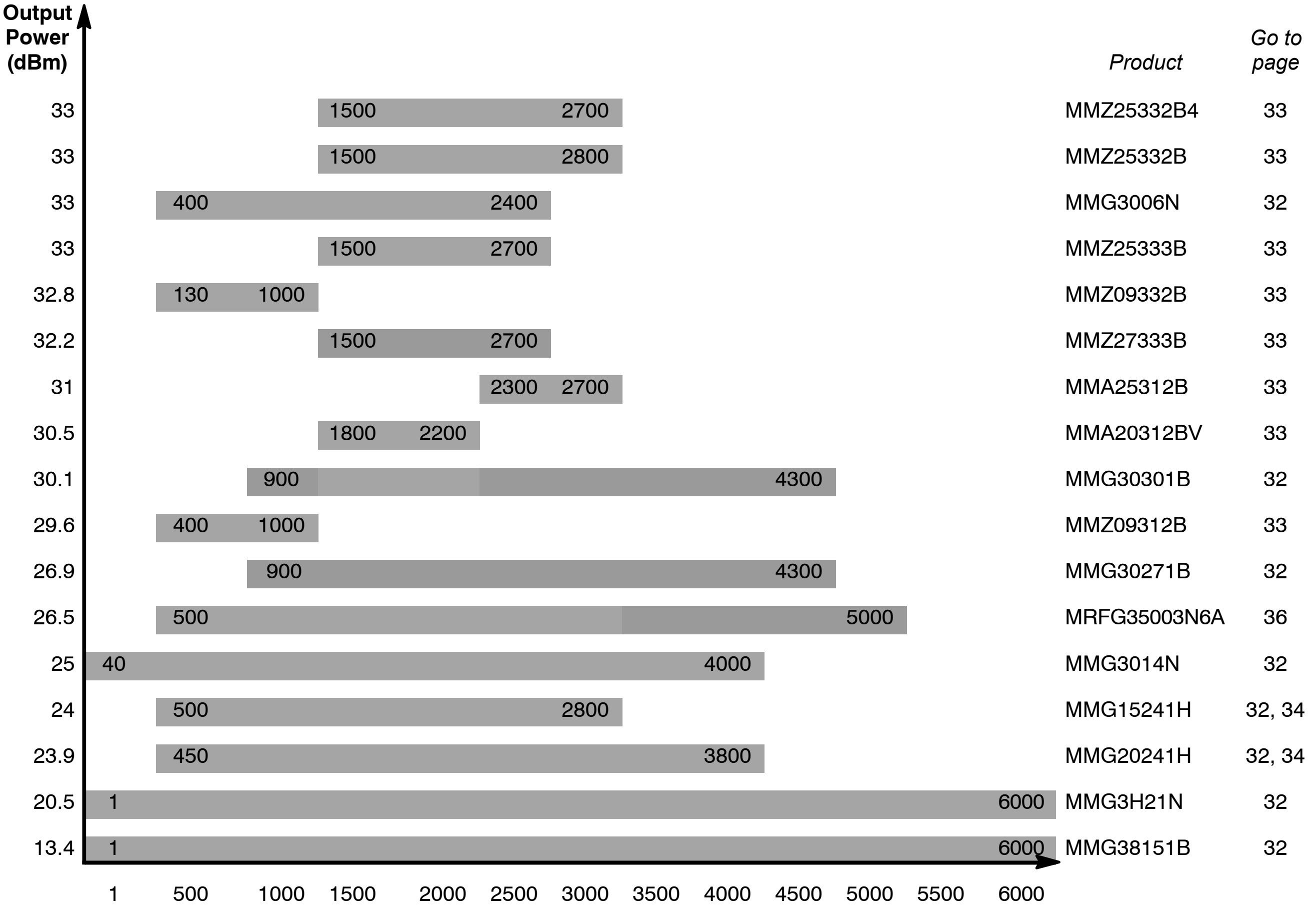
Output Power (W)			Product	Go to page
320	2700	2900	**MRF8P29300H**	29
225	3400	3600	A2G35S200-01S*	22
162	3400	3600	A2G35S160-01S*	22
150	2700	3100	**AFT31150N**	28
65	3400	3800	A2I35H060N*	22
35	3200	4000	A3I35D025N	22
25	2700	3100	**AFIC31025N**	28
24	2100	2900	A2I25D025N	21
13	728	3600	AFT27S012N	18, 22
10	728	3600	AFT27S010N	18, 22
7.9	728	3600	A2T27S007N	18, 22
6	728	3600	AFT27S006N	18, 22

Bold = In NXP Product Longevity program
*Output Power measured at P3dB

RF Power Product Porfolio (continued)

🟦 48–65 V LDMOS
🟩 28–32 V LDMOS
🟥 7.2–12.5 V LDMOS
🟨 GaN
⬛ GaAs
☐ Plastic

Table 7. RF Power Products — Low Power Pre-drivers



Output Power (dBm)			*Product*	*Go to page*
33	1500	2700	MMZ25332B4	33
33	1500	2800	MMZ25332B	33
33	400	2400	MMG3006N	32
33	1500	2700	MMZ25333B	33
32.8	130	1000	MMZ09332B	33
32.2	1500	2700	MMZ27333B	33
31	2300	2700	MMA25312B	33
30.5	1800	2200	MMA20312BV	33
30.1	900	4300	MMG30301B	32
29.6	400	1000	MMZ09312B	33
26.9	900	4300	MMG30271B	32
26.5	500	5000	MRFG35003N6A	36
25	40	4000	MMG3014N	32
24	500	2800	MMG15241H	32, 34
23.9	450	3800	MMG20241H	32, 34
20.5	1	6000	MMG3H21N	32
13.4	1	6000	MMG38151B	32

RF Cellular Infrastructure

The NXP RF cellular infrastructure high power portfolio offers a full lineup of LDMOS and GaN power transistors and solutions for base stations and wireless infrastructure applications. Devices are designed for 450–1000 MHz, 1450–2200 MHz, 2300–2690 MHz and 3400–3800 MHz frequency operation, supporting cellular standards such as LTE, W-CDMA/UMTS, GSM, EDGE, CDMA and TD-SCDMA.

Table 1. 450–1000 MHz

Product	Frequency Band(3) MHz		P_{out} (Typ) Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	Eff. (Typ) %	θ_{JC} °C/W	Packaging
MW6S004NT1	U	1–2000	4 PEP	2-Tone	28	18/1960	33	8.8	PLD-1.5
A2V07H400-04N(2b)	I	595–851	107 Avg.	W-CDMA	48	19.9/623	59.4	—	OM-780-4L
AFT27S006NT1	U	728–3600	0.76 Avg.	W-CDMA	28	22.5/2170	20.2	3.4	PLD-1.5W
A2T27S007NT1★	I/O	728–3600	0.76 Avg.	W-CDMA	28	22/2140	21.2	3.8	DFN 4 × 6
AFT27S010NT1	U	728–3600	1.26 Avg.	W-CDMA	28	21.7/2170	22.6	3.5	PLD-1.5W
AFT27S012NT1★	U	728–3600	1.6 Avg.	W-CDMA	28	21.7/2170	22.6	3.5	PLD-1.5W
MW6S010GNR1	U	450–1500	10 PEP	2-Tone	28	18/960	32	2.85	TO-270G-2
MW7IC915NT1	I	865–895	1.6 Avg.	W-CDMA	28	38/880	17.4	3.2	PQFN 8 × 8
A2T27S020NR1★	U	400–2700	2.5 Avg.	W-CDMA	28	21.1/1840	20.9	1.6	TO-270-2
A2T27S020GNR1★	U	400–2700	2.5 Avg.	W-CDMA	28	21.1/1840	20.9	1.6	TO-270G-2
A2T08VD020NT1	I	728–960	2 Avg.	W-CDMA	48	19.1/960	21.1	3.7	PQFN 8 × 8
MD8IC925NR1	I/O	728–960	2.5 Avg.	W-CDMA	28	36.2/940	17.4	1.8	TO-270WB-14
MD8IC925GNR1	I/O	728–960	2.5 Avg.	W-CDMA	28	36.2/940	17.4	1.8	TO-270WBG-14
A2I09VD030NR1★	I	575–960	4 Avg.	W-CDMA	48	34.3/960	19.8	2.8	TO-270WB-15
A2I09VD030GNR1★	I	575–960	4 Avg.	W-CDMA	48	34.3/960	19.8	2.8	TO-270WBG-15
MW7IC930GNR1	I/O	920–960	3.2 Avg.	W-CDMA	28	35.9/940	16.5	1.6	TO-270WBLG-16
A2I08H040NR1	I	728–960	9 Avg.	W-CDMA	28	30.7/920	45.9	3.4	TO-270WB-15
A2I08H040GNR1	I	728–960	9 Avg.	W-CDMA	28	30.7/920	45.9	3.4	TO-270WBG-15
MRF8S7120NR3	I/O	728–768	32 Avg.	W-CDMA	28	19.2/768	38.1	0.65	OM-780-2L
MRF8S7170NR3	I/O	728–768	50 Avg.	W-CDMA	28	19.5/748	37	0.37	OM-780-2L
MRF8S7235NR3	I/O	728–768	63 Avg.	W-CDMA	28	20/728	36.1	0.33	OM-780-2L
MRF8P8300HR6	I/O	790–820	96 Avg.	W-CDMA	28	20.9/820	35.7	0.26	NI-1230H-4S
MRF8P8300HSR6	I/O	790–820	96 Avg.	W-CDMA	28	20.9/820	35.7	0.26	NI-1230S-4S
A2V07H525-04NR6★	I	595–851	120 Avg.	W-CDMA	48	17.5/623	56.9	0.42	OM-1230-4L
MRFE6S9060NR1	U	865–895	14 Avg.	N-CDMA	28	21.4/880	32.1	0.88	TO-270-2
MRFE6S9125NR1	I	865–895	27 Avg.	N-CDMA	28	20.2/880	31	0.45	TO-270WB-4
MRFE6S9125NBR1	I	865–895	27 Avg.	N-CDMA	28	20.2/880	31	0.45	TO-272WB-4
MD8IC970NR1	I/O	850–940	35 Avg.	2-Tone	28	32.6/940	42.1	0.6	TO-270WBL-16
MD8IC970GNR1	I/O	850–940	35 Avg.	2-Tone	28	32.6/940	42.1	0.6	TO-270WBLG-16
MRF8P9040NR1	I	728–960	4 Avg.	W-CDMA	28	19.9/960	19.1	1.5	TO-270WB-4
MRF8S9120NR3	I/O	865–960	33 Avg.	W-CDMA	28	19.8/960	34.2	0.62	OM-780-2L
A2T07D160W04SR3	I/O	716–960	30 Avg.	W–CDMA	28	21.5/803	48.5	0.63	NI-780S-4L
AFT09S200W02NR3	I/O	716–960	56 Avg.	W-CDMA	28	19.2/960	36.5	0.35	OM-780-2L
AFT09S200W02GNR3	I/O	716–960	56 Avg.	W-CDMA	28	19.2/960	36.5	0.35	OM-780G-2L
AFT09S200W02SR3	I/O	920–960	56 Avg.	W-CDMA	28	19.4/960	35.6	0.34	NI-780S-2L
MRF8S9200NR3	I/O	920–960	58 Avg.	W-CDMA	28	19.9/940	37.1	0.30	OM-780-2L
MRF8P9210NR3	I/O	920–960	63 Avg.	W-CDMA	28	16.7/960	47.4	0.53	OM-780-4L
AFT09S220-02NR3	I/O	850–960	54 Avg.	W-CDMA	28	19.5/920	35.8	0.3	OM-780-2L
MRF8S9220HSR3	I/O	920–960	65 Avg.	W-CDMA	28	19.4/960	35.7	0.39	NI-780S-2L
MRF8S9232NR3	I/O	865–960	63 Avg.	W-CDMA	28	18.1/960	36.3	0.27	OM-780-2L
A2T09VD250NR1	I	716–960	65 Avg.	W-CDMA	48	22.5/920	34.8	0.56	TO-270WB-6A
AFT09S282NR3	I/O	720–960	80 Avg.	W-CDMA	28	20/960	36.1	0.31	OM-780-2L
A2T09VD300NR1	I	716–960	79 Avg.	W-CDMA	48	21.5/920	34.4	0.66	TO-270WB-6A

(2) To be introduced: a) 2Q17; b) 3Q17; c) 4Q17.

(3) U = Unmatched; I = Input; I/O = Input/Output.

★New Product

RF Cellular Infrastructure **(continued)**

Table 1. 450–1000 MHz (continued)

Product	Frequency Band(3) MHz		P_{out} (Typ) Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	Eff. (Typ) %	θ_{JC} °C/W	Packaging
A2V09H300-04NR3	I/O	720–960	79 Avg.	W-CDMA	48	19.7/940	55.9	0.34	OM-780-4L
A2V09H400-04NR3★	I	720–960	107 Avg.	W-CDMA	48	18/780	55.8	0.5	OM-780-4L
A2T09D400-23NR6	I/O	716–960	93 Avg.	W-CDMA	28	17.9/836	48	0.29	OM-1230-4L2S
MRF8P9300HSR6	I/O	920–960	100 Avg.	W-CDMA	28	19.4/960	35.8	0.22	NI-1230S-4S
A2T07H310-24SR6	I/O	716–960	47 Avg.	W-CDMA	28	18.6/880	51.3	0.36	NI-1230S-4L2L
AFT09H310-03SR6	I/O	920–960	56 Avg.	W-CDMA	28	17.9/920	47.4	0.41	NI-1230S-4S
AFT09H310-04GSR6	I/O	920–960	56 Avg.	W-CDMA	28	17.9/920	47.4	0.41	NI-1230GS-4L
AFV09P350-04NR3	I/O	720–960	100 Avg.	W-CDMA	48	19.5/920	48.5	0.45	OM-780-4L
AFV09P350-04GNR3	I/O	720–960	100 Avg.	W-CDMA	48	19.5/920	48.5	0.45	OM-780G-4L
A2V09H525-04NR6★	I	720–960	120 Avg.	W-CDMA	48	18.9/940	56.7	0.23	OM-1230-4L

Table 2. 1450–2200 MHz

Product	Frequency Band(3) MHz		P_{out} (Typ) Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	Eff. (Typ) %	θ_{JC} °C/W	Packaging
MW6S004NT1	U	1–2000	4 PEP	2-Tone	28	18/1960	33	8.8	PLD-1.5
MW6S010GNR1	U	450–1500	10 PEP	2-Tone	28	18/960	32	2.85	TO-270G-2
A2T14H450-23NR6★	I/O	1452–1511	93 Avg.	W-CDMA	31	18.8/1452	48.2	0.27	OM-1230-4L2S
MRF6S20010NR1	I	1600–2200	10 PEP	2-Tone	28	15.5/2170	36	5.9	TO-270-2
MRF6S20010GNR1	I	1600–2200	10 PEP	2-Tone	28	15.5/2170	36	5.9	TO-270G-2
MD7IC1812NR1	I/O	1805–2170	1.3 Avg.	W-CDMA	28	31.5/1880	14	2.9	TO-270WB-14
MD7IC1812GNR1	I/O	1805–2170	1.3 Avg.	W-CDMA	28	31.5/1880	14	2.9	TO-270WBG-14
MD7IC2012NR1	I/O	1805–2170	1.3 Avg.	W-CDMA	28	31.5/2170	14.9	3.1	TO-270WB-14
AFT20S015NR1	I	1805–2700	1.5 Avg.	W-CDMA	28	17.6/2170	22	4.2	TO-270-2
AFT20S015GNR1	I	1805–2700	1.5 Avg.	W-CDMA	28	17.6/2170	22	4.2	TO-270G-2
MW7IC2020NT1	I/O	1805–2170	2.4 Avg.	W-CDMA	28	32.6/2140	17	1.9	PQFN 8 × 8
A2I20D020NR1	I/O	1400–2200	2.5 Avg	W-CDMA	28	31/1800	19.7	2.9	TO-270WB-17
A2I20D020GNR1	I/O	1400–2200	2.5 Avg	W-CDMA	28	31/1800	19.7	2.9	TO-270WBG-17
A2T20VD025N(2b)	I/O	1800–2200	4 Avg.	W-CDMA	48	21.8/1840	18.4	—	TO-270-4
A2T20VD025GN(2b)	I/O	1800–2200	4 Avg.	W-CDMA	48	21.8/1840	18.4	—	TO-270G-4
MW7IC2040NR1	I/O	1930–1990	4 Avg.	W-CDMA	28	32/1930	17.5	1.5	TO-270WBL-16
MW7IC2240NR1	I/O	2110–2170	4 Avg.	W-CDMA	28	30/2110	14	1.3	TO-270WB-16
A2I20D040NR1	I/O	1400–2200	5 Avg	W-CDMA	28	32.7/1800	21.8	1.3	TO-270WB-17
A2I20D040GNR1	I/O	1400–2200	5 Avg	W-CDMA	28	32.7/1800	21.8	1.3	TO-270WBG-17
A2I22D050NR1	I	1800–2200	5.3 Avg.	W-CDMA	28	32.6/2170	17.9	1.1	TO-270WB-15
A2I22D050GNR1	I	1800–2200	5.3 Avg.	W-CDMA	28	32.6/2170	17.9	1.1	TO-270WBG-15
MD7IC2250GNR1	I/O	2110–2170	5.3 Avg.	W-CDMA	28	31.1/2170	16.8	1.1	TO-270WBG-14
MD7IC2251GNR1	I/O	2110–2170	12 Avg.	W-CDMA	28	29.0/2140	37.9	1.5	TO-270WBG-14
A2I20H060NR1	I/O	1800–2200	12 Avg	W-CDMA	28	28.4/1840	43.8	1.6	TO-270WB-15
A2I20H060GNR1	I/O	1800–2200	12 Avg	W-CDMA	28	28.4/1840	43.8	1.6	TO-270WBG-15
A2I20H080NR1	I/O	1800–2200	13.5 Avg	W-CDMA	30	28.2/1840	43.4	1.9	TO-270WB-15
A2I20H080GNR1	I/O	1800–2200	13.5 Avg	W-CDMA	30	28.2/1840	43.4	1.9	TO-270WBG-15
A2T18H160-24SR3	I/O	1805–1880	28 Avg.	W-CDMA	28	17.9/1805	49.9	0.45	NI-780S-4L2L
A2T18S162W31SR3	I/O	1805–1880	32 Avg.	W-CDMA	28	20.1/1840	33.9	0.36	NI-780S-2L2LA
A2T18S162W31GSR3	I/O	1805–1880	32 Avg.	W-CDMA	28	20.1/1840	33.9	0.36	NI-780GS-2L2LA
AFT18S230-12NR3	I/O	1805–1880	50 Avg.	W-CDMA	28	17.6/1880	33.8	0.27	OM-780-2L2L
AFT18S230SR3	I/O	1805–1880	50 Avg.	W-CDMA	28	19.0/1880	32.0	0.41	NI-780S-2L4S
A2T18S260W12NR3	I/O	1805–1880	56 Avg.	W-CDMA	28	18.7/1880	34.4	0.23	OM-880X-2L2L
A2T18S261W12NR3★	I/O	1805–1880	56 Avg.	W-CDMA	28	18.2/1880	34.8	0.23	OM-880X-2L2L
A2T18S262W12NR3★	I/O	1805–1880	56 Avg.	W-CDMA	28	19.3/1880	33.1	0.23	OM-880X-2L2L

(2) To be introduced: a) 2Q17; b) 3Q17; c) 4Q17.

(3) U = Unmatched; I = Input; I/O = Input/Output.

★New Product

RF Cellular Infrastructure **(continued)**

Table 2. 1450–2200 MHz (continued)

Product	Frequency Band(3) MHz		P_{out} (Typ) Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	Eff. (Typ) %	θ_{JC} °C/W	Packaging
AFT18H357-24NR6	I/O	1805–1880	63 Avg.	W-CDMA	28	17.5/1805	48.7	0.23	OM-1230-4L2L
A3T18H360W23SR6★	I/O	1805–1880	63 Avg.	W-CDMA	28	16.6/1880	51.6	0.22	ACP-1230S-4L2S
A3T18H400W23S(2b)	I/O	1805–1880	71 Avg.	W-CDMA	28	16.8/1840	53.4	—	ACP-1230S-4L2S
A2T18H410-24SR6	I/O	1805–1880	71 Avg.	W-CDMA	28	17.4/1805	51.2	0.24	NI-1230S-4L2L
A2T18H450W19SR6	I/O	1805–1880	89 Avg.	W-CDMA	30	16.5/1880	47.7	0.27	NI-1230S-4S4S
A2T18H455W23NR6	I/O	1805–1880	87 Avg.	W-CDMA	31.5	15.9/1880	48.4	0.23	OM-1230-4L2S
A3T18H455W23S(2b)	I/O	1805–1880	87 Avg.	W-CDMA	30	16.7/1805	50.4	—	ACP-1230S-4L2S
A3G18H500-04SR3★	I/O	1805–1880	107 Avg.	W-CDMA	28	15.4/1840	57.7	0.60	NI-780S-4L
A2T18H100-25SR3	I/O	1805–1995	18 Avg.	W-CDMA	28	18.1/1805	50.2	0.74	NI-780S-4L4S
A2T18S160W31SR3	I/O	1805–1995	32 Avg.	W-CDMA	28	19.9/1880	31.6	0.36	NI-780S-2L2LA
A2T18S160W31GSR3	I/O	1805–1995	32 Avg.	W-CDMA	28	19.9/1880	31.6	0.36	NI-780GS-2L2LA
A2T18S165-12SR3★	I/O	1805–1995	38 Avg.	W-CDMA	28	18.0/1840	34.3	0.39	NI-780S-2L2L
A2T18S260-12SR3★	I/O	1805–1995	50 Avg.	W-CDMA	28	18.9/1805	30.1	0.36	NI-780S-2L2L
MRF8P20165WHR3	I/O	1930–1995	37 Avg.	W-CDMA	28	16.3/1995	46.0	0.79	NI-780H-4L
AFT18S260W31SR3	I/O	1805–1995	50 Avg.	W-CDMA	28	19.8/1880	29.3	0.32	NI-780S-2L2LA
AFT18S260W31GSR3	I/O	1805–1995	50 Avg.	W-CDMA	28	19.8/1880	29.3	0.32	NI-780GS-2L2LA
MRF8S18210WHSR3	I/O	1805–1995	50 Avg.	W-CDMA	30	17.8/1930	29.2	0.48	NI-880XS-2L
MRF8S18210WGHSR3	I/O	1805–1995	50 Avg.	W-CDMA	30	17.8/1930	29.2	0.48	NI-880XGS-2L
AFT18S290-13SR3	I/O	1805–1995	63 Avg.	W-CDMA	28	18.2/1960	31.2	0.42	NI-880XS-2L4S
AFT18H356-24SR6	I/O	1805–1995	63 Avg.	W-CDMA	28	15/1880	46.7	0.47	NI-1230S-4L2L
AFT18H357-24SR6	I/O	1805–1995	63 Avg.	W–CDMA	28	17.3/1805	50.3	0.43	NI-1230S-4L2L
AFT20P140-4WNR3	I/O	1880–2025	24 Avg.	W-CDMA	28	17.6/2025	41.2	0.60	OM-780-4L
MRF8P20140WHR3	I/O	1880–2025	24 Avg.	W-CDMA	28	15.9/2025	42.0	0.68	NI-780H-4L
MRF8P20140WHSR3	I/O	1880–2025	24 Avg.	W-CDMA	28	15.9/2025	42.0	0.68	NI-780S-4L
MRF8P20140WGHSR3	I/O	1880–2025	24 Avg.	W-CDMA	28	15.9/2025	42.0	0.68	NI-780GS-4L
A2T20H160W04NR3	I/O	1880–2025	28 Avg.	W-CDMA	28	17/1960	47.7	0.45	OM-780-4L
MRF8P20160HR3	I/O	1880–2025	37 Avg.	W-CDMA	28	16.5/1920	45.8	0.75	NI-780H-4L
A2T20H330W24NR6★	I/O	1880–2025	55 Avg.	W-CDMA	28	15.9/1880	49.8	0.26	OM-1230-4L2L
A2T20H330W24SR6	I/O	1880–2025	58 Avg.	W-CDMA	28	16.5/1880	50.9	0.25	NI-1230S-4L2L
AFT20P060-4NR3	I/O	1805–2170	6.3 Avg.	W-CDMA	28	18.9/2170	20	0.56	OM-780-4L
AFT20P060-4GNR3	I/O	1805–2170	6.3 Avg.	W-CDMA	28	18.9/2170	20	0.56	OM-780G-4L
MRF8HP21080HR3	I/O	2110–2170	16 Avg.	W-CDMA	28	14.4/2170	45.7	1.0	NI-780H-4L
A2T21H100-25SR3	I/O	2110–2170	18 Avg.	W-CDMA	28	17.4/2170	50.5	0.76	NI-780S-4L4S
AFT21S140W02SR3	I/O	2110–2170	32 Avg.	W-CDMA	28	19.3/2140	33.5	0.59	NI-780S-2L
A2T21H140-24SR3★	I/O	2110–2170	36 Avg.	W-CDMA	28	17.4/2110	53.1	0.45	NI-780S-4L2L
A2T21S160-12SR3	I/O	2110–2170	38 Avg.	W-CDMA	28	18.4/2170	32.9	0.3	NI-780S-2L2L
A2G22S160-01SR3	I	1800–2200	32 Avg.	W-CDMA	48	19.6/2110	38	1.7	NI-400S-2S
AFT21S220W02SR3	I/O	2110–2170	50 Avg.	W–CDMA	28	19.1/2140	29.3	0.56	NI-780S-2L
AFT21S230SR3	I/O	2110–2170	50 Avg.	W-CDMA	28	16.7/2110	30.5	0.43	NI-780S-2L4S
AFT21S230-12SR3	I/O	2110–2170	50 Avg.	W-CDMA	28	16.7/2110	30.5	0.43	NI-780S-2L2L

(2) To be introduced: a) 2Q17; b) 3Q17; c) 4Q17.

(3) U = Unmatched; I = Input; I/O = Input/Output.

★New Product

RF Cellular Infrastructure **(continued)**

Table 2. 1450–2200 MHz (continued)

Product	Frequency Band(3) MHz		P_{out} (Typ) Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	Eff. (Typ) %	θ_{JC} °C/W	Packaging
AFT21S232SR3	I/O	2110–2170	50 Avg.	W-CDMA	28	16.7/2110	30.5	0.43	NI-780S-2L
AFT21S240-12SR3	I/O	2110–2170	55 Avg.	W-CDMA	28	20.4/2170	33.9	0.35	NI-880XS-2L2L
A2G22S251-01SR3	I	1805–2200	48 Avg.	W-CDMA	48	17.7/2170	37.5	1.3	NI-400S-2S
A2T21S260W12NR3★	I/O	2110–2220	56 Avg.	W-CDMA	28	17.9/2170	31.8	0.24	OM-880X-2L2L
A2T21S260-12SR3	I/O	2110–2170	65 Avg.	W-CDMA	28	18.7/2170	30.6	0.28	NI-780S-2L2L
AFT21H350W03SR6	I/O	2110–2170	63 Avg.	W-CDMA	28	16.4/2110	47.1	0.49	NI-1230S-4S
AFT21H350W04GSR6	I/O	2110–2170	63 Avg.	W-CDMA	28	16.4/2110	47.1	0.49	NI-1230GS-4L
A3T21H360W23S(2b)	I/O	2110–2200	56 Avg.	W-CDMA	28	16.5/2200	48.7	—	ACP-1230S-4L2S
A2T21H360-23NR6	I/O	2110–2200	63 Avg.	W-CDMA	28	16.8/2140	49.7	0.19	OM-1230-4L2S
A2T21H360-24SR6	I/O	2110–2170	63 Avg.	W-CDMA	28	16.2/2140	51.8	0.33	NI-1230S-4L2L
A2T21H410-24SR6	I/O	2110–2170	72 Avg.	W-CDMA	28	15.6/2170	48.9	0.24	NI-1230S-4L2L
A3T21H450W23S(2b)	I/O	2110–2200	87 Avg.	W-CDMA	30	15.1/2110	46.7	—	ACP-1230S-4L2S
A2T21H450W19SR6	I/O	2110–2200	89 Avg.	W-CDMA	30	15.7/2110	46.1	0.26	NI-1230S-4S4S

Table 3. 2300–2690 MHz

Product	Frequency Band(3) MHz		P_{out} (Typ) Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	Eff. (Typ) %	θ_{JC} °C/W	Packaging
A2I25D012NR1	I	2300–2690	2.2 Avg.	W-CDMA	28	33.2/2690	19.8	3.3	TO-270WB-15
A2I25D012GNR1	I	2300–2690	2.2 Avg.	W-CDMA	28	33.2/2690	19.8	3.3	TO-270WBG-15
AFT20S015NR1	I	1805–2690	1.5 Avg.	W-CDMA	28	17.6/2170	22	4.2	TO-270-2
AFT20S015GNR1	I	1805–2690	1.5 Avg.	W-CDMA	28	17.6/2170	22	4.2	TO-270G-2
A2I25D025NR1	I	2100–2900	3.2 Avg.	W-CDMA	28	32.5/2600	20	1.8	TO-270WB-17
A2I25D025GNR1	I	2100–2900	3.2 Avg.	W-CDMA	28	32.5/2600	20	1.8	TO-270WBG-17
MW7IC2725NR1	I/O	2500–2700	4 Avg.	WiMAX	28	28.5/2700	17	1.4	TO-270WB-16
MD7IC2755NR1	I/O	2500–2700	10 Avg.	WiMAX	28	25/2700	25	1.8	TO-270WB-14
A2I25H060NR1	I	2300–2690	10.5 Avg.	W-CDMA	28	27.5/2590	40.9	2.2	TO-270WB-17
A2I25H060GNR1	I	2300–2690	10.5 Avg.	W-CDMA	28	27.5/2590	40.9	2.2	TO-270WBG-17
A2T23H160-24SR3	I/O	2300–2400	28 Avg.	W-CDMA	28	17.7/2300	48.8	0.49	NI-780S-4L2L
AFT23H160-25SR3	I/O	2300–2400	32 Avg.	W-CDMA	28	16.7/2300	46.6	0.40	NI-880XS-4L4S
A2T23H200W23S(2a)	I/O	2300–2400	51 Avg.	W-CDMA	28	15.5/2300	50.7	0.29	ACP-1230S-4L2S
AFT23H200-4S2LR6	I/O	2300–2400	45 Avg.	W-CDMA	28	15.3/2300	42.8	0.32	NI-1230S-4L2L
AFT23H201-24SR6★	I/O	2300–2400	45 Avg.	W-CDMA	28	15.6/2300	46.2	0.027	ACP-1230S-4L2L
A2T23H300-24SR6	I/O	2300–2400	66 Avg.	W-CDMA	28	14.9/2300	46.7	0.25	NI-1230S-4L2L
AFT26P100-4WGSR3	I/O	2496–2690	22 Avg.	W-CDMA	28	15.3/2690	43.9	0.60	NI-780GS-4L
A2T26H160-24SR3	I/O	2496–2690	28 Avg.	W-CDMA	28	16.4/2690	48.1	0.56	NI-780S-4L2L
AFT26H160-4S4R3	I/O	2496–2690	32 Avg.	W-CDMA	28	14.9/2496	45.7	0.41	NI-880XS-4L4S
A2T26H165-24SR3	I/O	2496–2690	32 Avg.	W-CDMA	28	14.7/2496	45.4	0.45	NI-780S-4L2L
AFT26H200W03SR6	I/O	2496–2690	45 Avg.	W-CDMA	28	14.1/2496	45.2	0.46	NI-1230S-4S
AFT26H250-24SR6	I/O	2496–2690	50 Avg.	W-CDMA	28	14.1/2496	44.6	0.42	NI-1230S-4L2L
A2G26H281-04SR3★	I	2496–2690	50 Avg.	W-CDMA	48	14.3/2635	60.9	1.0	NI-780S-4L
A2T26H300-24SR6	I/O	2496-2690	60 Avg.	W-CDMA	28	14.5/2496	42.5	0.29	NI-1230S-4L2L

(2)To be introduced: a) 2Q17; b) 3Q17; c) 4Q17.

(3)U = Unmatched; I = Input; I/O = Input/Output.

★New Product

RF Cellular Infrastructure (continued)

Table 4. 3400–3800 MHz

Product	Frequency Band(3) MHz		P_{out} (Typ) Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	Eff. (Typ) %	θ_{JC} °C/W	Packaging
AFT27S006NT1	U	728–3600	0.76 Avg.	W-CDMA	28	22.5/2170	20.2	3.4	PLD-1.5W
A2T27S007NT1★	I/O	728–3600	0.76 Avg.	W-CDMA	28	22/2140	21.2	3.8	DFN 4 × 6
AFT27S010NT1	U	728–3600	1.26 Avg.	W-CDMA	28	21.7/2170	22.6	3.5	PLD-1.5W
AFT27S012NT1★	U	728–3600	1.6 Avg.	W-CDMA	28	21.7/2170	22.6	3.5	PLD-1.5W
A3I35D025N(2c)	I/O	3200–4000	3.4 Avg.	W-CDMA	28	27.8/3600	16.3	—	TO-270WB-17
A3I35D025GN(2c)	I/O	3200–4000	3.4 Avg.	W-CDMA	28	27.8/3600	16.3	—	TO-270WBG-17
A2I35H060NR1	I/O	3400–3800	10 Avg.	W-CDMA	28	24/3400	32.4	1.7	TO-270WB-17
A2I35H060GNR1	I/O	3400–3800	10 Avg.	W-CDMA	28	24/3400	32.4	1.7	TO-270WBG-17
A2G35S160-01SR3	I	3400–3600	32 Avg.	W-CDMA	48	15.7/3500	36.7	1.9	NI-400S-2S
A2G35S200-01SR3	I	3400–3600	40 Avg.	W-CDMA	48	16.1/3500	35.3	1.3	NI-400S-2S

(2)To be introduced: a) 2Q17; b) 3Q17; c) 4Q17.

(3)U = Unmatched; I = Input; I/O = Input/Output.

★New Product

RF ISM (Industrial, Scientific and Medical) and Broadcast

NXP RF industrial, scientific, medical (ISM) and broadcast RF power transistors are designed to simplify the use of solid-state RF in high-powered ISM applications at frequencies from 1 to 600 MHz. The devices serve applications in the 915, 1300 and 2450 MHz frequency bands and are well-suited for FM radio and VHF and UHF TV broadcast.

Table 1. Wideband GaN — 1–2500 MHz

Product	Frequency Band(3) MHz		P_{out} Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	Eff. (Typ) %	θ_{JC} °C/W	Packaging
AFG24S100HR5	I	1–2500	125 CW	CW	50	16/2500	64.2	0.86	NI-360H-2SB

Table 2. Wideband LDMOS — 1–2000 MHz

Product	Frequency Band(3) MHz		P_{out} Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	Eff. (Typ) %	θ_{JC} °C/W	Packaging
MRFE6VS25NR1	U	1.8–2000	25 CW	CW	50	25.5/512	75.0	1.2	TO-270-2
MRFE6VS25GNR1	U	1.8–2000	25 CW	CW	50	25.5/512	75.0	1.2	TO-270G-2
MRFE6VS25LR5	U	1.8–2000	25 CW	CW	50	25.9/512	74.0	1.4	NI-360H-2L
MRFE6VP100HR5	U	1.8–2000	100 CW	CW	50	27.2/512	70.0	0.38	NI-780H-4L
MRFE6VP100HSR5	U	1.8–2000	100 CW	CW	50	27.2/512	70.0	0.38	NI-780S-4L

Table 3. ISM and Broadcast LDMOS — 1–600 MHz

Product	Frequency Band(3) MHz		P_{out} Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	Eff. (Typ) %	θ_{JC} °C/W	Packaging
MRF6V2010NR1	U	1.8–600	10 CW	CW	50	23.9/220	62	3.0	TO-270-2
MRF6V2010GNR1	U	1.8–600	10 CW	CW	50	23.9/220	62	3.0	TO-270G-2
MRF085H(2b)	U	30–520	85 CW	CW	50	25.2/520	73.5	—	NI-650H-4L
MRFE6VP5150NR1	U	1.8–600	150 CW	CW	50	26.3/230	72	0.21	TO-270WB-4
MRFE6VP5150GNR1	U	1.8–600	150 CW	CW	50	26.3/230	72	0.21	TO-270WBG-4
MRFE6VP5300NR1	U	1.8–600	300 CW	CW	50	25/230	70	0.22	TO-270WB-4
MRFE6VP5300GNR1	U	1.8–600	300 CW	CW	50	25/230	70	0.22	TO-270WBG-4
MRFE6VP6300HSR5	U	1.8–600	300 CW	CW	50	25/130	80	0.19	NI-780S-4L
MRFE6VP6300GSR5	U	1.8–600	300 CW	CW	50	25/130	80	0.19	NI-1230GS-4L
MRFE6VP5600HR6	U	1.8–600	600 CW	CW	50	24.6/230	75.2	0.12	NI-1230H-4S
MRFE6VP5600HSR5	U	1.8–600	600 CW	CW	50	24.6/230	75.2	0.12	NI-1230S-4S
MRFE6VP6600NR3	U	1.8–600	600 CW	CW	50	24/98	81.8	0.33	OM-780-4L
MRFE6VP6600GNR3	U	1.8–600	600 CW	CW	50	24/98	81.8	0.33	OM-780G-4L
MRFE6VP61K25HR5	U	1.8–600	1250 CW	CW	50	22.9/230	74.6	0.15	NI-1230H-4S
MRFE6VP61K25HR6	U	1.8–600	1250 CW	CW	50	22.9/230	74.6	0.15	NI-1230H-4S
MRFE6VP61K25HSR5	U	1.8–600	1250 CW	CW	50	22.9/230	74.6	0.15	NI-1230S-4S
MRFE6VP61K25GSR5	U	1.8–600	1250 CW	CW	50	22.9/230	74.6	0.15	NI-1230GS-4L
MRFE6VP61K25NR6	U	1.8–600	1250 CW	CW	50	22.5/230	72.3	0.06	OM-1230-4L
MRFE6VP61K25GNR6	U	1.8–600	1250 CW	CW	50	22.5/230	72.3	0.06	OM-1230G-4L
MRF1K50HR5★	U	1.8–500	1500 CW	CW	50	23/230	74	0.028	NI-1230H-4S
MRF1K50NR5★	U	1.8–500	1500 CW	CW	50	23.4/230	75.1	0.015	OM-1230-4L
MRF1K50GNR5★	U	1.8–500	1500 CW	CW	50	23.4/230	75.1	0.015	OM-1230G-4L
MRFX1K80H(2b)	U	1.8–470	1800 CW	CW	65	24/230	74	0.09	NI-1230H-4S
MRFX1K80N(2b)	U	1.8–470	1800 CW	CW	65	24/230	74	—	OM-1230-4L
MRFX1K80GN(2b)	U	1.8–470	1800 CW	CW	65	24/230	74	—	OM-1230G-4L

(2) To be introduced: a) 2Q17; b) 3Q17; c) 4Q17.

(3) U = Unmatched; I = Input; I/O = Input/Output.

★New Product

RF ISM (Industrial, Scientific and Medical) and Broadcast (continued)

Table 4. UHF Broadcast LDMOS — 470–860 MHz

Product	Frequency Band (3) MHz		P_{out} Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	Eff. (Typ) %	θ_{JC} °C/W	Packaging
MRFE6S9060NR1	U	470–860	14 Avg.	N-CDMA	28	21.4/880	32.1	0.88	TO-270-2
MRF6V3090NR1	I	470–1215	18 Avg.	OFDM	50	22/860	28.5	0.79	TO-270WB-4
MRF6VP3091NR1	I	470–1215	18 Avg.	OFDM	50	22/860	28.5	0.79	TO-270WB-4
MRF6VP3450HR5	I	470–860	90 Avg.	OFDM	50	22.5/860	28	0.27	NI-1230H-4S
MRFE6VP8600HR5	I	470–860	125 Avg.	OFDM	50	19.3/860	30	0.19	NI-1230H-4S
MRFE6VP8600HSR5	I	470–860	125 Avg.	OFDM	50	19.3/860	30	0.19	NI-1230S-4S
MRFE8VP8600HR5	I	470–860	140 Avg.	OFDM	50	20/810	34	0.16	NI-1230H-4S
MRFE8VP8600HSR5★	I	470–860	140 Avg.	OFDM	50	20/810	34	0.16	NI-1230S-4S

Table 5. ISM LDMOS — 700–1300 MHz

Product	Frequency Band (3) MHz		P_{out} Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	Eff. (Typ) %	θ_{JC} °C/W	Packaging
MRFE6S9060NR1	U	470–860	14 Avg.	N-CDMA	28	21.4/880	32.1	0.88	TO-270-2
MRF8VP13350NR3	I	700–1300	350 CW	CW	50	20.7/915	67.5	0.24	OM-780-4L
MRF8VP13350GNR3	I	700–1300	350 CW	CW	50	20.7/915	67.5	0.24	OM-780G-4L
MRF13750H(2c)	I	700–1300	750 CW	CW	50	19.5/915	63	—	NI-1230H-4S
MRF13750HS(2c)	I	700–1300	750 CW	CW	50	19.5/915	63	—	NI-1230S-4S

Table 6. ISM LDMOS — 2400–2500 MHz

Product	Frequency Band(3) MHz		P_{out} Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	Eff. (Typ) %	θ_{JC} °C/W	Packaging
MRF7S24250NR3	I/O	2400–2500	250 CW	CW	32	15.9/2450	59	0.26	OM-780-2L
MRF24300NR3	I/O	2400–2500	300 CW	CW	32	13.1/2450	60.5	0.24	OM-780-2L

(2) To be introduced: a) 2Q17; b) 3Q17; c) 4Q17.

(3) U = Unmatched; I = Input; I/O = Input/Output.

★New Product

RF Mobile Radio and General Purpose Drivers

NXP RF 7.5 and 12.5 V transistors are designed for 2-way handheld and vehicle radios. The broadband performance of the devices makes them ideal as general purpose drivers for ISM and broadcast applications below 1 GHz.

Table 1. 7–12 V LDMOS — 1–1000 MHz

Product	Frequency Band(3) MHz		P_{out} Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	Eff. (Typ) %	θ_{JC} °C/W	Packaging
AFIC901NT1	U	1.8–1000	1 CW	CW	7.5	31.2/520	73	9.4	QFN 4 × 4, 24L
AFT05MS003NT1	U	1.8–941	3 CW	CW	7.5	20.8/520	68.3	4.1	SOT-89
AFT05MS004NT1	U	1.8–941	4 CW	CW	7.5	20.9/520	74.9	4.4	SOT-89
AFM906NT1★	U	136–941	6 CW	CW	7.5	20.3/520	70.8	1.9	DFN 4 × 6
AFM907NT1★	U	136–941	8 CW	CW	7.5	20.7/520	73.9	1.9	DFN 4 × 6
AFT09MS007NT1	U	136–941	7 CW	CW	7.5	15.2/870	71	1.1	PLD-1.5W
AFT09MS015NT1	U	136–941	16 CW	CW	12.5	17.2/941	77	1.0	PLD-1.5W
AFT05MS031NR1	U	136–520	31 CW	CW	13.6/12.5	17.7/520	71.0	0.67	TO-270-2
AFT05MS031GNR1	U	136–520	31 CW	CW	13.6/12.5	17.7/520	71.0	0.67	TO-270G-2
AFT09MS031NR1	U	764–941	31 CW	CW	13.6/12.5	17.2/870	71.0	0.63	TO-270-2
AFT09MS031GNR1	U	764–941	31 CW	CW	13.6/12.5	17.2/870	71.0	0.63	TO-270G-2
AFT09MP055NR1	U	764–941	55 CW	CW	12.5	17.5/870	69	0.32	TO-270WB-4
AFT09MP055GNR1	U	764–941	55 CW	CW	12.5	17.5/870	69	0.32	TO-270WBG-4
AFT05MP075NR1	U	136–520	70 CW	CW	12.5	18.5/520	68.5	0.29	TO-270WB-4
AFT05MP075GNR1	U	136–520	70 CW	CW	12.5	18.5/520	68.5	0.29	TO-270WBG-4
MD8IC970NR1	I/O	850–940	35 Avg.	2-Tone	28	32.6/940	42.1	0.6	TO-270WBL-16
MD8IC970GNR1	I/O	850–940	35 Avg.	2-Tone	28	32.6/940	42.1	0.6	TO-270WBLG-16
MRFE6S9060NR1	U	470–860	14 Avg.	N-CDMA	28	21.4/880	32.1	0.88	TO-270-2
MRF8VP13350NR3	I	700–1300	350 CW	CW	50	20.7/915	67.5	0.24	OM-780-4L
MRF8VP13350GNR3	I	700–1300	350 CW	CW	50	20.7/915	67.5	0.24	OM-780G-4L

(3)U = Unmatched; I = Input; I/O = Input/Output.

★New Product

RF Aerospace and Defense

NXP RF GaN and LDMOS technologies are ideally suited for aerospace and defense applications such as ADS-B and UAV transponders, distance measuring equipment, and primary and secondary radar covering HF, VHF, UHF, L-Band, S-Band, battlefield communications and electronic warfare jamming. The high power and high-gain performance of these devices make them ideal for common-source amplifier applications under demanding conditions.

Table 1. HF, VHF and UHF Radar (1–1000 MHz)

Product	Frequency Band(3) MHz		P_{out} Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	Eff. (Typ) %	θ_{JC} °C/W	Packaging
28 Volt LDMOS									
MMRF1315NR1	U	500–1000	14 Avg.	N-CDMA	28	21.1/880	33	0.88	TO-270-2
MMRF1017NR3	I/O	720–960	80 Avg.	W-CDMA	28	20/960	36.1	0.31	OM-780-2L
50 Volt LDMOS									
MMRF1018NR1	I	470–860	18 Avg.	OFDM	50	22/860	28.5	0.79	TO-270WB-4
MMRF1018NBR1	I	470–860	18 Avg.	OFDM	50	22/860	28.5	0.79	TO-272WB-4
MMRF1304LR5	U	1.8–2000	25 CW	CW	50	25.9/512	74	1.4	NI-360H-2L
MMRF1304NR1	U	1.8–2000	25 CW	CW	50	25.5/512	74.7	1.2	TO-270-2
MMRF1304GNR1	U	1.8–2000	25 CW	CW	50	25.5/512	74.7	1.2	TO-270G-2
MMRF1020-04NR3	I	720–960	100 Avg.	W-CDMA	48	19.5/920	48.5	0.45	OM-780-4L
MMRF1020-04GNR3	I	720–960	100 Avg.	W-CDMA	48	19.5/920	48.5	0.45	OM-780G-4L
MMRF1305HR5	U	1.8–2000	100 CW	CW	50	27.2/512	70	0.38	NI-780H-4L
MMRF1305HSR5	U	1.8–2000	100 CW	CW	50	27.2/512	70	0.38	NI-780S-4L
MMRF1320NR1	U	1.8–600	150 CW	CW	50	26.3/230	72	0.21	TO-270WB-4
MMRF1320GNR1	U	1.8–600	150 CW	CW	50	26.3/230	72	0.21	TO-270WBG-4
MMRF1310HR5	U	1.8–600	300 CW	CW	50	25/130	80	0.19	NI-780H-4L
MMRF1310HSR5	U	1.8–600	300 CW	CW	50	25/130	80	0.19	NI-780S-4L
MMRF1316NR1	U	1.8–600	300 CW	CW	50	25/230	70	0.22	TO-270WB-4
MMRF1318NR1	U	10–600	300 CW	CW	50	22/450	60	0.24	TO-270WB-4
MMRF1308HR5	U	1.8–600	600 CW	CW	50	24.6/230	75.2	0.12	NI-1230H-4S
MMRF1308HSR5	U	1.8–600	600 CW	CW	50	24.6/230	75.2	0.12	NI-1230S-4S
MMRF1016HR5	U	2–500	600 Peak	Pulse	50	25.3/225	59	0.20	NI-1230H-4S
MMRF1006HR5	U	10–500	1000 Peak	Pulse	50	20/450	64	0.03	NI-1230H-4S
MMRF1006HSR5	U	10–500	1000 Peak	Pulse	50	20/450	64	0.03	NI-1230S-4S
MMRF1306HR5	U	1.8–600	1250 CW	CW	50	22.9/230	74.6	0.15	NI-1230H-4S
MMRF1306HSR5	U	1.8–600	1250 CW	CW	50	22.9/230	74.6	0.15	NI-1230S-4S

(3) U = Unmatched; I = Input; I/O = Input/Output.

RF Aerospace and Defense (continued)

Table 2. Avionics (960–1215 MHz)

Product	Frequency Band(3) MHz		P_{out} Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	Eff. (Typ) %	θ_{JC} °C/W	Packaging
28 Volt LDMOS									
MMRF1014NT1	U	1–2000	4 PEP	2-Tone	28	18/1960	33	8.8	PLD-1.5
50 Volt LDMOS									
MRF6V10010NR4	I/O	960–1400	10 Peak	Pulse	50	25/1090	69	1.6	PLD-1.5
MMRF1304LR5	U	1.8–2000	25 CW	CW	50	25.9/512	74	1.4	NI-360H-2L
MMRF1304NR1	U	1.8–2000	25 CW	CW	50	25.5/512	74.7	1.2	TO-270-2
MMRF1304GNR1	U	1.8–2000	25 CW	CW	50	25.5/512	74.7	1.2	TO-270G-2
MRFE6VS25GNR1	U	1.8–2000	25 CW	CW	50	25.5/512	74.7	1.2	TO-270G-2
AFIC10275NR1	I	978–1090	250 Peak	Pulse	50	32.6/978	61	1.1	TO-270WB-14
AFIC10275GNR1	I	978–1090	250 Peak	Pulse	50	32.6/978	61	1.1	TO-270WBG-14
MMRF2010NR1	I	1030–1090	250 Peak	Pulse	50	32.5/1030	59.1	1.1	TO-270WB-14
MMRF2010GNR1	I	1030–1090	250 Peak	Pulse	50	32.5/1030	59.1	1.1	TO-270WBG-14
MMRF1008HR5	I/O	960–1215	275 Peak	Pulse	50	20.3/1030	65.5	0.08	NI-780H-2L
MMRF1008HSR5	I/O	960–1215	275 Peak	Pulse	50	20.3/1030	65.5	0.08	NI-780S-2L
MMRF1008GHR5	I/O	960–1215	275 Peak	Pulse	50	20.3/1030	65.5	0.08	NI-780GH-2L
MRF6V12250HR5	I/O	960–1215	275 Peak	Pulse	50	20.3/1030	65.5	0.08	NI-780H-2L
MRF6V12250HSR5	I/O	960–1215	275 Peak	Pulse	50	20.3/1030	65.5	0.08	NI-780S-2L
MMRF1009HR5	I/O	960–1215	500 Peak	Pulse	50	19.7/1030	62	0.044	NI-780H-2L
MMRF1009HSR5	I/O	960–1215	500 Peak	Pulse	50	19.7/1030	62	0.044	NI-780S-2L
MRF6V12500HR5	I/O	960–1215	500 Peak	Pulse	50	19.7/1030	62	0.044	NI-780H-2L
MRF6V12500HSR5	I/O	960–1215	500 Peak	Pulse	50	19.7/1030	62	0.044	NI-780S-2L
MRF6V12500GSR5	I/O	960–1215	500 Peak	Pulse	50	19.7/1030	62	0.044	NI-780GS-2L
AFV10700HR5★	I/O	1030–1090	700 Peak	Pulse	50	19.2/1030	58.5	0.03	NI-780H-4L
AFV10700HSR5★	I/O	1030–1090	700 Peak	Pulse	50	19.2/1030	58.5	0.03	NI-780S-4L
AFV121KHR5	I/O	960–1215	1000 Peak	Pulse	50	17.4/1090	52.2	0.017	NI-1230H-4S
AFV121KHSR5	I/O	960–1215	1000 Peak	Pulse	50	17.4/1090	52.2	0.017	NI-1230S-4S
AFV121KGSR5	I/O	960–1215	1000 Peak	Pulse	50	17.4/1090	52.2	0.017	NI-1230GS-4L
MMRF1007HR5	I	965–1215	1000 Peak	Pulse	50	20/1030	56	0.02	NI-1230H-4S
MMRF1007HSR5	I	965–1215	1000 Peak	Pulse	50	20/1030	56	0.02	NI-1230S-4S
MMRF1312HR5	I/O	900–1215	1200 Peak	Pulse	52	17.3/960	54	0.017	NI-1230H-4S
MMRF1312HSR5	I/O	900–1215	1200 Peak	Pulse	52	17.3/960	54	0.017	NI-1230S-4S
MMRF1312GSR5	I/O	900–1215	1200 Peak	Pulse	52	17.3/960	54	0.017	NI-1230GS-4L
MMRF1317HR5	I/O	1030–1090	1500 Peak	Pulse	50	18.9/1030	56	0.019	NI-1230H-4S
MMRF1317HSR5	I/O	1030–1090	1500 Peak	Pulse	50	18.9/1030	56	0.019	NI-1230S-4S

(3) U = Unmatched; I = Input; I/O = Input/Output.

★New Product

RF Aerospace and Defense **(continued)**

Table 3. L-Band Radar (1200–1400 MHz)

Product	Frequency Band(3) MHz		P_{out} Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	Eff. (Typ) %	θ_{JC} °C/W	Packaging
28 Volt LDMOS									
MMRF1014NT1	U	1–2000	4 PEP	2-Tone	28	18/1960	33	8.8	PLD-1.5
50 Volt LDMOS									
MRF6V10010NR4	I/O	960–1400	10 Peak	Pulse	50	25/1090	69	1.6	PLD-1.5
MMRF1304LR5	U	1.8–2000	25 CW	CW	50	25.9/512	74	1.4	NI-360H-2L
MMRF1304NR1	U	1.8–2000	25 CW	CW	50	25.5/512	74.7	1.2	TO-270-2
MMRF1304GNR1	U	1.8–2000	25 CW	CW	50	25.5/512	74.7	1.2	TO-270G-2
MMRF1011HR5	I/O	1200–1400	330 Peak	Pulse	50	18/1400	60.5	0.13	NI-780H-2L
MMRF1011HSR5	I/O	1200–1400	330 Peak	Pulse	50	18/1400	60.5	0.13	NI-780S-2L
MRF6V14300HR5	I/O	1200–1400	330 Peak	Pulse	50	18/1400	60.5	0.13	NI-780H-2L
MRF6V14300HSR5	I/O	1200–1400	330 Peak	Pulse	50	18/1400	60.5	0.13	NI-780S-2L
AFV141KHR5	I/O	1200–1400	1000 Peak	Pulse	50	17.7/1400	52.1	0.018	NI-1230H-4S
AFV141KHSR5	I/O	1200–1400	1000 Peak	Pulse	50	17.7/1400	52.1	0.018	NI-1230S-4S
AFV141KGSR5	I/O	1200–1400	1000 Peak	Pulse	50	17.7/1400	52.1	0.018	NI-1230GS-4L
MMRF1314HR5	I/O	1200–1400	1000 Peak	Pulse	52	15.5/1200	46.5	0.018	NI-1230H-4S
MMRF1314HSR5	I/O	1200–1400	1000 Peak	Pulse	52	15.5/1200	46.5	0.018	NI-1230S-4S
MMRF1314GSR5	I/O	1200–1400	1000 Peak	Pulse	52	15.5/1200	46.5	0.018	NI-1230GS-4L

Table 4. S-Band Radar (2700–3500 MHz)

Product	Frequency Band(3) MHz		P_{out} Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	Eff. (Typ) %	θ_{JC} °C/W	Packaging
32 Volt LDMOS									
AFIC31025NR1★	I	2700–3100	25 Peak	Pulse	32	30/2700	45	—	TO-270WB-17
AFIC31025GNR1★	I	2700–3100	25 Peak	Pulse	32	30/2700	45	—	TO-270WBG-17
AFT31150NR5★	I/O	2700–3100	150 Peak	Pulse	32	17/3100	50	0.042	OM-780-2L
MMRF1013HR5	U	2700–2900	320 Peak	Pulse	30	13.3/2900	50.5	0.06	NI-1230H-4S
MMRF1013HSR5	U	2700–2900	320 Peak	Pulse	30	13.3/2900	50.5	0.06	NI-1230S-4S
MRF8P29300HR6	U	2700–2900	320 Peak	Pulse	30	13.3/2900	50.5	0.06	NI-1230H-4S
MRF8P29300HSR6	U	2700–2900	320 Peak	Pulse	30	13.3/2900	50.5	0.06	NI-1230S-4S

(3)U = Unmatched; I = Input; I/O = Input/Output.

★New Product

RF Aerospace and Defense **(continued)**

Table 5. Communications and Electronic Warfare (1–2700 MHz)

Product	Frequency Band[3] MHz		P_{out} Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	Eff. (Typ) %	θ_{JC} °C/W	Packaging
50 Volt GaN									
MMRF5014HR5	I	1–2700	125 CW	CW	50	16/2500	64.2	0.86	NI-360H-2SB
28 Volt LDMOS									
MMRF1004NR1	I	1600–2200	1 Avg.	W-CDMA	28	15.5/2170	15	2.3	TO-270-2
MMRF1004GNR1	I	1600–2200	1 Avg.	W-CDMA	28	15.5/2170	15	2.3	TO-270G-2
MMRF2006NT1	I/O	1805–2170	2.4 Avg.	W-CDMA	28	32.6/2140	17	1.9	PQFN 8 × 8
MMRF2005GNR1	I/O	728–960	3.2 Avg.	W-CDMA	28	35.9/940	16.5	1.6	TO-270WBG-16
MMRF2004NBR1	I/O	2500–2700	4 Avg.	WiMAX	28	28.5/2700	17	1.4	TO-272WB-16
MMRF1015NR1	U	1–2000	10 PEP	2-Tone	28	18/960	32	2.85	TO-270-2
MMRF1015GNR1	U	1–2000	10 PEP	2-Tone	28	18/960	32	2.85	TO-270G-2
MMRF1315NR1	U	500–1000	14 Avg.	N-CDMA	28	21.1/880	33	0.88	TO-270-2
MMRF2007GNR1	I/O	136–940	35 Avg.	2-Tone	28	32.6/940	42.1	0.6	TO-270WBLG-16
MMRF1024HSR5	I/O	2496–2690	50 Avg.	W-CDMA	28	14.1/2496	44.6	0.42	NI-1230S-4L2L
MMRF1022HSR5	I/O	2110–2170	63 Avg.	W-CDMA	28	16.2/2140	51.8	0.33	NI-1230S-4L2L
MMRF1023HSR5	I/O	2300–2400	66 Avg.	W-CDMA	28	14.9/2300	46.7	0.25	NI-1230S-4L2L
MMRF1017NR3	I/O	720–960	80 Avg.	W-CDMA	28	20/960	36.1	0.31	OM-780-2L
50 Volt LDMOS									
MMRF1018NR1	I	470–860	18 Avg.	OFDM	50	22/860	28.5	0.79	TO-270WB-4
MMRF1018NBR1	I	470–860	18 Avg.	OFDM	50	22/860	28.5	0.79	TO-272WB-4
MMRF1304LR5	U	1.8–2000	25 Peak	Pulse	50	25.9/512	74	1.4	NI-360H-2L
MMRF1304NR1	U	1.8–2000	25 CW	CW	50	25.5/512	74.7	1.2	TO-270-2
MMRF1304GNR1	U	1.8–2000	25 CW	CW	50	25.5/512	74.7	1.2	TO-270G-2
MMRF1020-04NR3	I	720–960	100 Avg.	W-CDMA	48	19.5/920	48.5	0.45	OM-780-4L
MMRF1020-04GNR3	I	720–960	100 Avg.	W-CDMA	48	19.5/920	48.5	0.45	OM-780G-4L
MMRF1305HR5	U	1.8–2000	100 CW	CW	50	27.2/512	70	0.38	NI-780H-4L
MMRF1305HSR5	U	1.8–2000	100 CW	CW	50	27.2/512	70	0.38	NI-780S-4L
MMRF1320NR1	U	1.8–600	150 CW	CW	50	26.3/230	72	0.21	TO-270WB-4
MMRF1320GNR1	U	1.8–600	150 CW	CW	50	26.3/230	72	0.21	TO-270WBG-4
MMRF1316NR1	U	1.8–600	300 CW	CW	50	25/230	70	0.22	TO-270WB-4
MMRF1318NR1	U	10–600	300 CW	CW	50	22/450	60	0.24	TO-270WB-4

[3] U = Unmatched; I = Input; I/O = Input/Output.

★New Product

RF Cooking

NXP is leading a transformation from legacy RF power vacuum device-based systems to long-lasting solid-state transistor-based systems for a wide variety of consumer and commercial cooking applications.

NXP solid-state solutions provide clean, efficient, controllable RF energy while minimizing equipment maintenance and downtime.

Table 1. RF Cooking — 915 MHz

Product	Frequency Band(3) MHz		P_{out} (Typ) Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	Eff. (Typ) %	θ_{JC} °C/W	Packaging
MHT1002NR3	I	915	357 CW	CW	48	20.7/915	66.9	0.24	OM-780-4L
MHT1002GNR3	I	915	357 CW	CW	48	20.7/915	66.9	0.24	OM-780G-4L
MHT2001NT1	I	915	175 CW	CW	50	33.9/915	64.8	0.58	TO-270WB-14

Table 2. RF Cooking — 2450 MHz

Product	Frequency Band(3) MHz		P_{out} (Typ) Watts	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	Eff. (Typ) %	θ_{JC} °C/W	Packaging
MHT1001HR5	I/O	2400–2500	190 CW	CW	28	13.2/2450	46.2	0.22	NI-1230H-4S
MHT1003NR3	I/O	2400–2500	250 CW	CW	32	15.9/2450	59	0.26	OM-780-2L
MHE1003NR3	I/O	2400–2500	220 CW	CW	26	14.1/2450	63.5	0.24	OM-780-2L
MHT1004NR3	I/O	2400–2500	300 CW	CW	32	15.2/2450	57.9	0.24	OM-780-2L
MHT1004GNR3	I/O	2400–2500	300 CW	CW	32	15.2/2450	57.9	0.24	OM-780G-2L
MHT1006NT1	U	728–2700	10 CW	CW	28	19.8/2400	55.1	3.7	PLD-1.5W
MHT1008NT1	U	2400–2500	12.5 CW	CW	28	18.6/2450	56.3	2.6	PLD-1.5W
MHT1108NT1★	U	2400–2500	12.5 CW	CW	28	18.6/2450	56.3	3.8	DFN 4 × 6
MHT2000GNR1	I/O	2400–2500	25 CW	CW	28	27.7/2450	43.8	1.2	TO-270WBG-16

(3) U = Unmatched; I = Input; I/O = Input/Output.

★New Product

RF Low Power

Table of Contents

RF General Purpose Amplifiers

NXP's portfolio of GPAs combine the right level of gain, linearity, noise and power consumption specifications to meet the industry's most demanding applications. From high gain, small-signal applications found in consumer and commercial to industrial applications, NXP GPAs provide an excellent solution.

Table 1. General Purpose Amplifiers — InGaP HBT, GaAs E-pHEMT

Product	Frequency Band MHz	Supply Voltage (Typ) Volts	Supply Current (Typ) mA	Small Signal Gain (Typ)/Freq. dB/MHz	P1dB (Typ)/Freq. dBm/MHz	3rd Order Output Intercept (Typ)/Freq. dBm/MHz	NF (Typ)/Freq. dB/MHz	θ_{JC} °C/W	Packaging
MMG38151BT1	0–6000	5	47	17.1/3800	13.4/3800	25/3800	3.5/3800	55	SOT-89
MMG3H21NT1	0–6000	5	90	19.3/900	20.5/900	37/900	5.5/900	38.6	SOT-89
MMG20241HT1	450–3800	5	78	17.8/2655	23.9/2655	38/2655	2.1/2655	57	SOT-89
MMG15241HT1	500–2800	5	85	15.9/2140	24/2140	39.4/2140	1.6/2140	59	SOT-89
MMG3014NT1	40–4000	5	135	19.5/900	25/900	40.5/900	5.7/900	27.4	SOT-89
MMG30271BT1	900–4300	5	134	17.5/2140	26.9/2140	45.8/2140	3.8/2140	33	SOT-89
MMG30301BT1★	900–4300	5	258	16.2/2140	30.1/2140	—	3.7/2140	17	SOT-89
MMG3006NT1	400–2400	5	850	17.5/900	33/900	49/900	6.6/900	7.8	QFN 4 × 4

★New Product

RF Linear Amplifiers

Table 1. Linear Amplifiers — InGaP HBT

Product	Frequency Band MHz	Supply Voltage (Typ) Volts	Supply Current (Typ) mA	Small Signal Gain (Typ)/Freq. dB/MHz	P1dB (Typ)/Freq. dBm/MHz	3rd Order Output Intercept (Typ)/Freq. dBm/MHz	Packaging
MMZ09312BT1	400–1000	3-5	74	31.5/900	29.6/900	42/900	QFN 3 × 3
MMA20312BVT1	1800–2200	3-5	70	27.2/2140	30.5/2140	44.5/2140	QFN 3 × 3
MMA25312BT1	2300–2700	3-5	124	26/2500	31/2500	40/2500	QFN 3 × 3
MMZ38333BT1★	3400–3800	5	430	37.9/3600	31.7/3600	—	QFN 4 × 4
MMZ09332BT1	130–1000	3-5	108	30.5/760	32.8/760	43/760	QFN 3 × 3
MMZ25332BT1	1500–2800	3-5	390	26.5/2500	33/2500	48/2500	QFN 3 × 3
MMZ25332B4T1	1500–2700	3-5	392	26.5/2500	33/2500	48/2500	QFN 4 × 4
MMZ25333BT1	1500–2700	5	265	43/2600	32/2600	42.8/2600	QFN 4 × 4
MMZ27333BT1	1500–2700	5	430	35.8/2600	32.2/2600	45/2600	QFN 4 × 4

★New Product

RF Low Noise Amplifiers

Table 1. Low Noise Amplifiers — GaAs E-pHEMT

Product	Frequency Band MHz	Supply Voltage (Typ) Volts	Supply Current (Typ) mA	Small Signal Gain (Typ)/Freq. dB/MHz	P1dB (Typ)/Freq. dBm/MHz	3rd Order Output Intercept (Typ)/Freq. dBm/MHz	NF (Typ)/Freq. dB/MHz	θ_{JC} °C/W	Packaging
MML20211HT1	1400–2800	5	60	18.6/2140	21.3/2140	33/2140	0.65/2140	43.4	DFN 2 × 2
MML09211HT1	400–1400	5	60	21.3/900	22/900	32.6/900	0.52/900	37.5	DFN 2 × 2
MML09212HT1	400–1400	5	150	37.5/900	22.8/900	37/900	0.52/900	37	QFN 3 × 3
MML25231HT1	1000–4000	5	60	15.2/2500	22.5/2500	35.2/2500	0.54/2500	134	DFN 2 × 2
MMG20241HT1	450–3800	5	78	17.8/2655	23.9/2655	38/2655	2.1/2655	57	SOT-89
MMG15241HT1	500–2800	5	85	15.9/2140	24/2140	39.4/2140	1.6/2140	59	SOT-89
MML20242HT1	1400–2800	5	160	34/1950	24/1950	39.5/1950	0.59/1950	40	QFN 3 × 3
MML09231HT1	700–1400	5	55	17.2/900	24.5/900	37.4/900	0.36/900	77	DFN 2 × 2
MMG20271H9T1	1500–2700	5	215	16/2140	27.5/2140	43.1/2140	1.7/2140	29	SOT-89

RF Control Circuits

Table 1. ADAM (Advanced Doherty Alignment Module)

Advanced Doherty alignment module (ADAM) is an innovative class of highly integrated GaAs MMIC control circuits designed specifically to optimize the performance of today's Doherty amplifiers. When combined with Airfast power transistors, these sophisticated devices improve manufacturing yields and power added efficiency and are available for frequency bands spanning from 700 to 3800 MHz.

Product	Frequency Band MHz	Test Freq. MHz	Insertion Loss dB	Atten. Step Size dB	Atten. Control Range dB	Phase Step Size (°)	Phase Control Range (°)	P_{in} (Max) dBm	IIP3 dBm	Supply Voltage Volts	Supply Current mA	Packaging
MMDS09254HT1	700–1000	900	5.5	0.5	7.5	7	49	25	40	5	12	QFN 6 × 6
MMDS20254HT1	1800–2200	2140	5.5	0.5	7.5	7	49	25	40	5	12	QFN 6 × 6
MMDS25254HT1	2300–2700	2650	5.5	0.5	7.5	7	49	25	40	5	12	QFN 6 × 6
MMDS36254H(2c)	3400–3800	3600	6.5	0.25	7.75	6.5	45.5	25	—	5	12	QFN 6 × 6

Table 2. Digital Step Attenuator

The MMT20303H is an integrated 3-bit attenuator with 1 dB step size, is controlled via a 3-bit parallel interface and operates using a 3 to 5 V supply. This device is suitable for 3G/4G base station and small cell transmitter applications requiring a band of operation across 50–4000 MHz.

Product	Frequency Band MHz	Test Freq. MHz	Insertion Loss dB	Atten. Step Size dB	Atten. Accuracy (Max) dB	Atten. Max. Range dB	P_{in} (Max) dBm	IIP3 dBm	Supply Voltage Volts	Packaging
MMT20303HT1	50–4000	900	0.7	1	0.25	7	30	50	3–5	QFN 3 × 3

(2)To be introduced: a) 2Q17; b) 3Q17; c) 4Q17.

RF GaAs Linear Power Transistors

NXP GaAs power transistors are made using an InGaAs pHEMT or HFET epitaxial structure for superior RF efficiency and linearity. The FETs listed in this section are designed for operation in base station infrastructure RF power amplifiers and are grouped according to frequency range and type of application.

Table 1. Linear Transistors — To 5000 MHz — Class AB

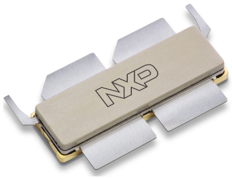
Product	Frequency Band(3) MHz		P_{out} (Typ)/Freq Watts/MHz	Test Signal	V_{DD} Volts	Gain (Typ)/Freq. dB/MHz	Eff. (Typ)/Freq. %/MHz	θ_{JC} °C/W	Packaging
MRFG35003N6AT1	U	500–5000	0.45 Avg./ 3550	W-CDMA(6)	6	10/3550	27/3550	5.9	PLD-1.5

(3) U = Unmatched; I = Input; I/O = Input/Output.

(6) Peak-to-Average Power Ratio = 8.5 dB.

RF Packages

AIR CAVITY PACKAGES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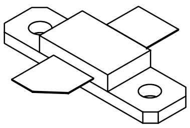
ACP-1230S-4L2S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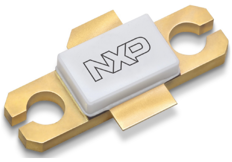
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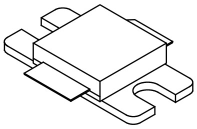
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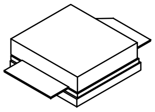
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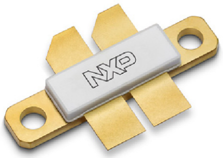
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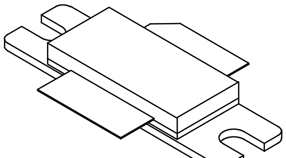
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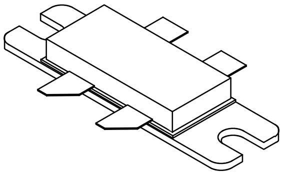
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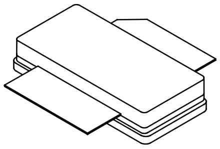
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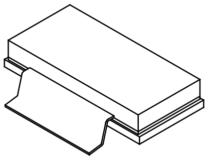
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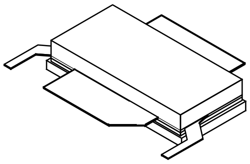
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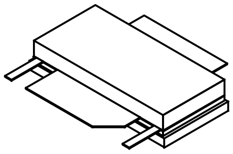
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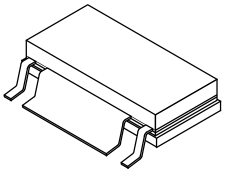
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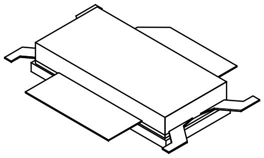
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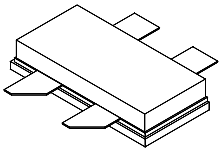
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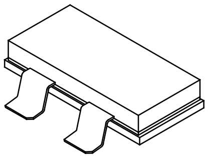
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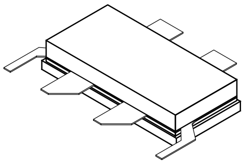
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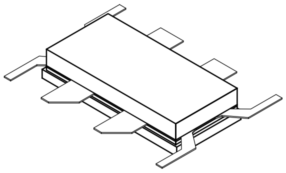
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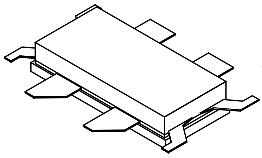
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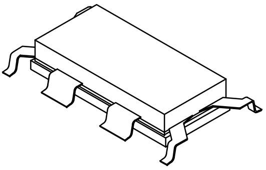
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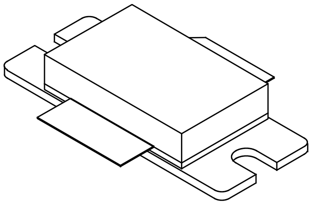
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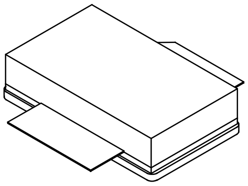
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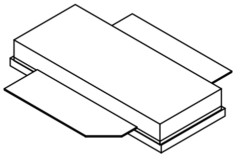
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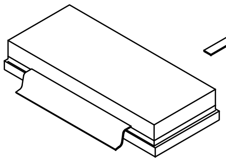
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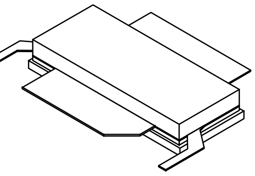
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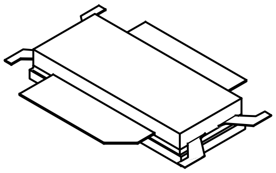
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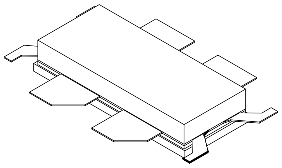
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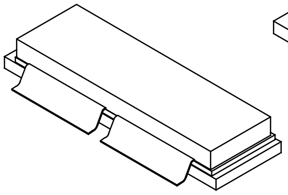
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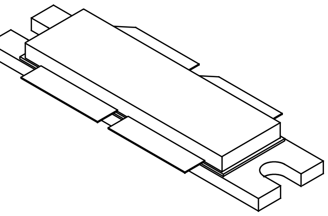
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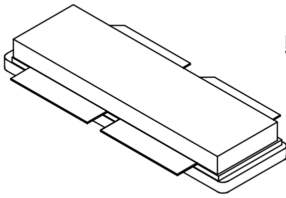
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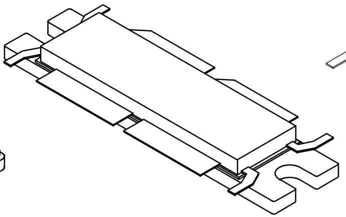
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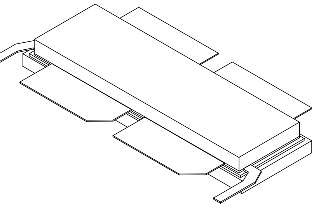
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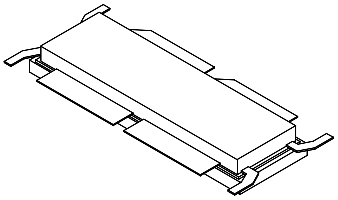
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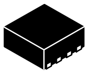
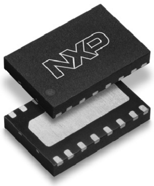
Not to scale unless otherwise indicated.

RF Packages (continued)

OVER-MOLDED PLASTIC PACKAGES


SCALE 3:1

DFN 2 × 2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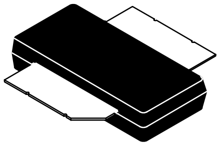
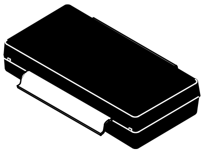

OM-780-2L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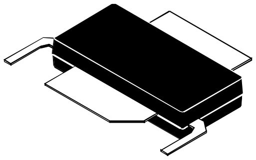
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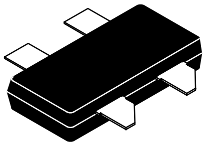
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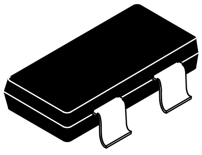
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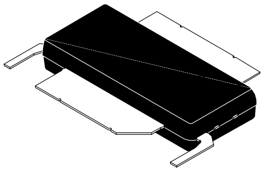
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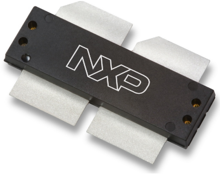
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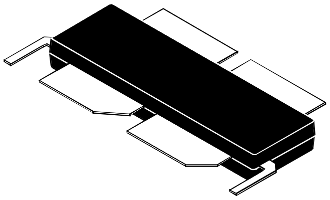
OM-1230G-4L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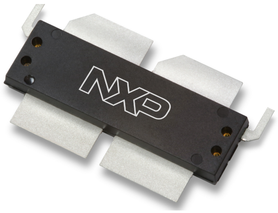
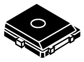

OM-1230-4L2S


PLD-1 5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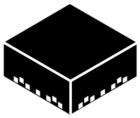
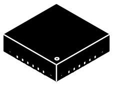
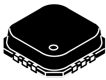
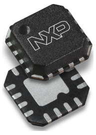

PQFN 5 × 5

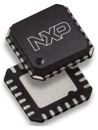

PQFN 8 × 8


SCALE 3:1

QFN 3 × 3


SCALE 2:1

QFN 4 × 4, 16L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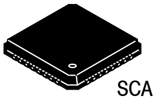
QFN 4 × 4, 24L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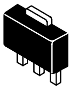
QFN 6 × 6


SCALE 2:1

SOT-89
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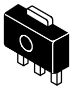
SCALE 2:1

SOT-89
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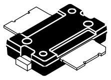
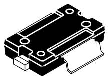

TO-270-2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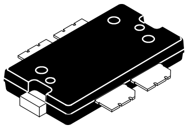
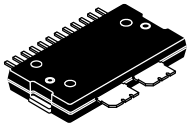

TO-270WB-4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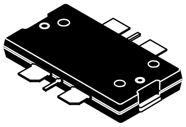
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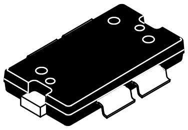
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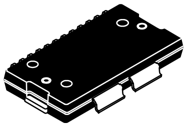
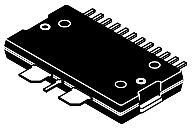

TO-270WBG-14

Not to scale unless otherwise indicated.

OVER-MOLDED PLASTIC PACKAGES (continued)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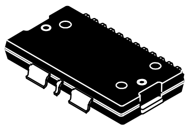
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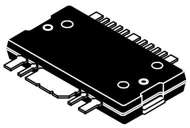
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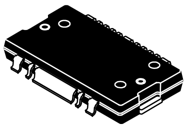
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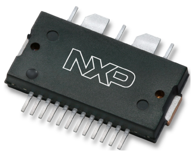
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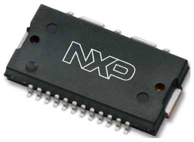
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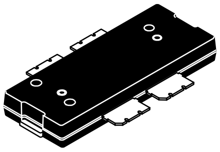
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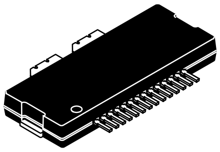
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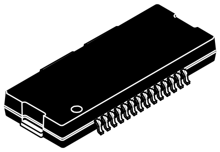
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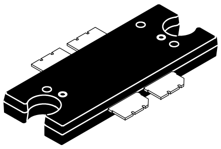
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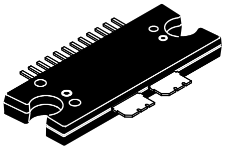
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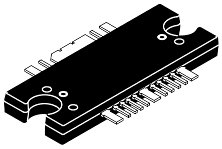
TO-272WB-16

SCALE 1:1

RF Power Tape and Reel Information

RF EMBOSSED TAPE AND REEL ORDERING INFORMATION

Package	Tape Width (mm)	Pitch mm (inch)	Reel Size mm (inch)	Devices Per Reel and Minimum Order Quantity	Device Suffix
ACP-1230S-4L2L	56	32.0 ± 0.1 (1.26 ± .004)	330 (13)	150	R6
ACP-1230S-4L2S	56	32.0 ± 0.1 (1.26 ± .004)	330 (13)	150	R6
DFN 2 × 2	12	8.0 ± 0.1 (.315 ± .004)	178 (7)	1,000	T1
DFN 4 × 6	16	8.0 ± 0.1 (.315 ± .004)	178 (7)	1,000	T1
NI-360H-2SB	32	24.0 ± 0.1 (.945 ± .004)	330 (13)	50	R5
NI-400H-2S	32	32.0 ± 0.1 (1.26 ± .004)	330 (13)	250	R3
NI-400S-2S	32	32.0 ± 0.1 (1.26 ± .004)	330 (13)	250	R3
NI-780H-2L	56	32.0 ± 0.1 (1.26 ± .004)	330 (13)	250	R3
NI-780S-2L	56	32.0 ± 0.1 (1.26 ± .004)	330 (13)	250	R3
NI-780GS-2L	56	32.0 ± 0.1 (1.26 ± .004)	330 (13)	250	R3
NI-780H-4L	56	32.0 ± 0.1 (1.26 ± .004)	330 (13)	250	R3
NI-780S-4L	32	28.0 ± 0.1 (1.10 ± .004)	330 (13)	250	R3
NI-780GS-4L	32	28.0 ± 0.1 (1.10 ± .004)	330 (13)	250	R3
NI-780S-2L2L	44	28.0 ± 0.1 (1.10 ± .004)	330 (13)	250	R3
NI-780S-2L2LA	44	28.0 ± 0.1 (1.10 ± .004)	330 (13)	250	R3
NI-780GS-2L2LA	44	28.0 ± 0.1 (1.10 ± .004)	330 (13)	250	R3
NI-780S-2L4S	44	28.0 ± 0.1 (1.10 ± .004)	330 (13)	250	R3
NI-780S-4L2L	44	28.0 ± 0.1 (1.10 ± .004)	330 (13)	250	R3
NI-780S-4L4L	44	28.0 ± 0.1 (1.10 ± .004)	330 (13)	250	R3
NI-780GS-4L4L	44	28.0 ± 0.1 (1.10 ± .004)	330 (13)	250	R3
NI-780S-4L4S	44	28.0 ± 0.1 (1.10 ± .004)	330 (13)	250	R3
NI-880H-2L	56	32.0 ± 0.1 (1.26 ± .004)	330 (13)	250	R3
NI-880S-2L	56	32.0 ± 0.1 (1.26 ± .004)	330 (13)	250	R3
NI-880XS-2L	56	28.0 ± 0.1 (1.10 ± .004)	330 (13)	250	R3
NI-880XGS-2L	56	28.0 ± 0.1 (1.10 ± .004)	330 (13)	250	R3
NI-880XS-2L4S	56	28.0 ± 0.1 (1.10 ± .004)	330 (13)	250	R3
NI-880XS-4L4S	56	28.0 ± 0.1 (1.10 ± .004)	330 (13)	250	R3
NI-1230H-4S	56 56	32.0 ± 0.1 (1.26 ± .004) 32.0 ± 0.1 (1.26 ± .004)	330 (13) 330 (13)	150 50	R6 R5
NI-1230S-4S	56 56	32.0 ± 0.1 (1.26 ± .004) 32.0 ± 0.1 (1.26 ± .004)	330 (13) 330 (13)	150 50	R6 R5
NI-1230S-4L2L	56	32.0 ± 0.1 (1.26 ± .004)	330 (13)	150	R6
NI-1230GS-4L	56	32.0 ± 0.1 (1.26 ± .004)	330 (13)	150	R6
NI-1230H-4S4S	56	32.0 ± 0.1 (1.26 ± .004)	330 (13)	150	R6
NI-1230S-4S4S	56	32.0 ± 0.1 (1.26 ± .004)	330 (13)	150	R6
OM-780-2L	32	28.0 ± 0.1 (1.10 ± .004)	330 (13)	250	R3
OM-780G-2L	32	28.0 ± 0.1 (1.10 ± .004)	330 (13)	250	R3
OM-780-2L2L	32	28.0 ± 0.1 (1.10 ± .004)	330 (13)	250	R3
OM-780-4L	32	28.0 ± 0.1 (1.10 ± .004)	330 (13)	250	R3
OM-780G-4L	32	28.0 ± 0.1 (1.10 ± .004)	330 (13)	250	R3

(continued)

RF Power Tape and Reel Information (continued)

RF EMBOSSED TAPE AND REEL ORDERING INFORMATION (continued)

Package	Tape Width (mm)	Pitch mm (inch)	Reel Size mm (inch)	Devices Per Reel and Minimum Order Quantity	Device Suffix
OM-780-4L2L	32	28.0 ± 0.1 (1.10 ± .004)	330 (13)	250	R3
OM-880X-2L2L	56	28.0 ± 0.1 (1.10 ± .004)	330 (13)	250	R3
OM-1230-4L2L	56	32.0 ± 0.1 (1.26 ± .004)	330 (13)	150	R6
OM-1230-4L2S	56	32.0 ± 0.1 (1.26 ± .004)	330 (13)	150	R6
OM-1230-4L	56	32.0 ± 0.1 (1.26 ± .004)	330 (13)	150	R6
OM-1230G-4L	56	32.0 ± 0.1 (1.26 ± .004)	330 (13)	150	R6
PLD-1.5	16 16	8.0 ± 0.1 (.315 ± .004) 8.0 ± 0.1 (.315 ± .004)	330 (7) 330 (7)	1,000 100	T1 R4
PLD-1.5W	16 16	8.0 ± 0.1 (.315 ± .004) 8.0 ± 0.1 (.315 ± .004)	330 (7) 330 (7)	1,000 100	T1 R4
PQFN 5 × 5	16	8.0 ± 0.1 (.315 ± .004)	330 (13)	1,000	T1
PQFN 8 × 8	16	12.0 ± 0.1 (.472 ± .004)	330 (13)	1,000	T1
QFN 3 × 3	12	8.0 ± 0.1 (.315 ± .004)	178 (7)	1,000	T1
QFN 4 × 4	12	8.0 ± 0.1 (.315 ± .004)	330 (13)	1,000	T1
QFN 6 × 6	16	12.0 ± 0.1 (.472 ± .004)	178 (7)	1,000	R1
SOT-89(1)	12	8.0 ± 0.1 (.315 ± .004)	178 (7)	1,000	T1
SOT-89(2)	12	8.0 ± 0.1 (.315 ± .004)	180 (7)	1,000	T1
TO-270-2	24	16.0 ± 0.1 (.631 ± .004)	330 (13)	500	R1
TO-270G-2	24	12.0 ± 0.1 (.471 ± .004)	330 (13)	500	R1
TO-270WB-4	44	24.0 ± 0.1 (.945 ± .004)	330 (13)	500	R1
TO-270WBL-4	44	24.0 ± 0.1 (.945 ± .004)	330 (13)	500	R1
TO-270WBG-4	44	24.0 ± 0.1 (.945 ± .004)	330 (13)	500	R1
TO-270WB-6A	44	24.0 ± 0.1 (.945 ± .004)	330 (13)	500	R1
TO-270WB-14	44	24.0 ± 0.1 (.945 ± .004)	330 (13)	500	R1
TO-270WBG-14	44	24.0 ± 0.1 (.945 ± .004)	330 (13)	500	R1
TO-270WB-15	44	24.0 ± 0.1 (.945 ± .004)	330 (13)	500	R1
TO-270WBG-15	44	24.0 ± 0.1 (.945 ± .004)	330 (13)	500	R1
TO-270WB-16	44	24.0 ± 0.1 (.945 ± .004)	330 (13)	500	R1
TO-270WBG-16	44	24.0 ± 0.1 (.945 ± .004)	330 (13)	500	R1
TO-270WBL-16	44	24.0 ± 0.1 (.945 ± .004)	330 (13)	500	R1
TO-270WBLG-16	44	24.0 ± 0.1 (.945 ± .004)	330 (13)	500	R1
TO-270WB-17	44	24.0 ± 0.1 (.945 ± .004)	330 (13)	500	R1
TO-270WBG-17	44	24.0 ± 0.1 (.945 ± .004)	330 (13)	500	R1
TO-272-2	44	20.0 ± 0.1 (.631 ± .004)	330 (13)	500	R1
TO-272WB-4	44	20.0 ± 0.1 (.788 ± .004)	330 (13)	500	R1
TO-272WB-14	44	20.0 ± 0.1 (.788 ± .004)	330 (13)	500	R1
TO-272WB-16	44	20.0 ± 0.1 (.788 ± .004)	330 (13)	500	R1
TO-272WBLG-16	44	24.0 ± 0.1 (.945 ± .004)	330 (13)	500	R1

1. 98ASA10586D
2. 98ASA00241D

Applications and Product Literature

Application Notes of special interest to designers of RF equipment are listed below. This technical documentation is available on the NXP web site.

Application Notes

AN211A	Field Effect Transistors in Theory and Practice
AN419	UHF Amplifier Design Using Data Sheet Design Curves
AN423	Field Effect Transistor RF Amplifier Design Techniques
AN548A	Microstrip Design Techniques for UHF Amplifiers
AN721	Impedance Matching Networks Applied to RF Power Transistors
AN923	800 MHz Test Fixture Design
AN1032	How Load VSWR Affects Non-Linear Circuits
AN1033	Match Impedances in Microwave Amplifiers
AN1034	Three Balun Designs for Push-Pull Amplifiers
AN1526	RF Power Device Impedances: Practical Considerations
AN1530	Advanced Amplifier Concept Package
AN1617	Mounting Recommendations for Copper Tungsten Flanged Transistors
AN1643	RF LDMOS Power Modules for GSM Base Station Application: Optimum Biasing Circuit
AN1670	60 Watts, GSM 900 MHz, LDMOS Two-Stage Amplifier
AN1696	Broadband Intermodulation Performance Development Using the Rohde & Schwarz Vector Network Analyzer ZVR
AN1907	Solder Reflow Attach Method for High Power RF Devices in Over-Molded Plastic Packages
AN1908	Solder Reflow Attach Method for High Power RF Devices in Air Cavity Packages
AN1923	Mounting Method with Mechanical Fasteners for the MRF19090 and Similar Packages
AN1938	Sensitivity of High Power RF Transistors to Source and Output Loads
AN1949	Mounting Method for the MHVIC910HR2 (PFP-16) and Similar Surface Mount Packages
AN1955	Thermal Measurement Methodology of RF Power Amplifiers
AN1977	Quiescent Current Thermal Tracking Circuit in the RF Integrated Circuit Family
AN1987	Quiescent Current Control for the RF Integrated Circuit Device Family
AN3100	General Purpose Amplifier and MMIC Biasing
AN3263	Bolt Down Mounting Method for High Power RF Transistors and RFICs in Over-Molded Plastic Packages
AN3778	PCB Layout Guidelines for PQFN/QFN Style Packages Requiring Thermal Vias for Heat Dissipation
AN3789	Clamping of High Power RF Transistors and RFICs in Over-Molded Plastic Packages
AN4005	Thermal Management and Mounting Method for the PLD 1.5 RF Power Surface Mount Package
AN5296	Effective Small Cell Solutions for MIMO Radios

Product Literature

BR1611	RF Aerospace and Defense Solutions Brochure
AIRFASTWBFWP	Advances in Freescale Airfast RFICs White Paper
RFLNAWP	Practical Considerations for Low Noise Amplifier Design White Paper
RFPLASTICWP	Designing with Plastic RF Power Transistors White Paper
SG46	RF Power Products Selector Guide
SMCELLRFWP	Small Cells Call for Scalable Architecture White Paper
50VRFLDMOSWP	50 V RF LDMOS White Paper

SELECTOR GUIDE PRODUCT INDEX

Selector Guide Product Index (continued)

Selector Guide Product Index (continued)

Selector Guide Product Index (continued)

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