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# RF & Microwave Power Transistors and RF Power Modules

## Selection guide

### RF POWER TRANSISTORS FOR HF AND VHF

#### 1.6 to 30 MHz Bipolar RF power transistors

TYPE NUMBER	PACKAGE	LOAD POWER $P_L$ (PEP) (W)	POWER GAIN $G_p$ (dB)	SUPPLY VOLTAGE $V_{CE}$ (V)	PAGE
<b>Class-A intermodulation distortion: <math>d_3, d_5 &lt; -40</math> dB</b>					
BLV10	SOT123A	1	18	12	
BLY87C	SOT120A	1	18	12	
BLV11	SOT123A	2	18	13.5	
BLW87	SOT123A	6	18	13.5	
BLV20	SOT123A	1.3	20	26	
BLV21	SOT123A	2.5	20	26	
BLW83	SOT123A	10	20	26	
BLW86	SOT123A	17	22	26	
BLW96	SOT121B	50	19	40	
BLW50F	SOT123A	16	19.5	45	

#### 1.6 to 30 MHz Bipolar RF power transistors

TYPE NUMBER	PACKAGE	LOAD POWER $P_L$ (PEP) (W)	POWER GAIN $G_p$ (dB)	EFFICIENCY (SSB) (%)	SUPPLY VOLTAGE $V_{CE}$ (V)	PAGE
<b>Class-AB intermodulation distortion <math>d_3, d_5 &lt; -30</math> dB</b>						
BLW85	SOT123A	30	19.5	30	12.5	
BLV11	SOT123A	10	18	–	13.5	
BLW87	SOT123A	15	18	–	13.5	
BLV21	SOT123A	10	20	–	28	
BLW83	SOT123A	25	20	40	28	
BLW86	SOT123A	42.5	19	45	28	
BLW76	SOT121B	80	13	>35	28	
BLW77	SOT121B	130	12	>37.5	28	
BLW97	SOT121B	175	11.5	>40	28	
BLW50F	SOT123A	65	18	45	50	
BLW96	SOT121B	200	13.5	>40	50	

# RF & Microwave Power Transistors and RF Power Modules

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### 1.6 to 30 MHz MOS RF power transistors

TYPE NUMBER	PACKAGE	P <sub>L</sub> (PEP) (W)	V <sub>DS</sub> (V)	G <sub>p</sub> (dB)	EFFICIENCY (SSB) (%)	PAGE
<b>HF SSB class-AB (28 MHz, d3, d5 &lt; -30 dB, 28 V &amp; 50 V supply)</b>						
BLF145	SOT123A	30	28	typ. 20	40	
BLF246	SOT121B	80	28	typ. 20	-	
BLF246B	SOT161A	60	28	>14	-	
BLF147	SOT121B	150	28	17	>35	
BLF175	SOT123A	30	50	23	40	
BLF177	SOT121B	150	50	20	>35	
<b>HF SSB class-A (1.6 to 30 MHz, d3, d5 &lt; -40 dB, 28 V &amp; 50 V supply)</b>						
BLF242	SOT123A	2	28	typ. 23	-	
BLF244	SOT123A	4	28	typ. 23	-	
BLF145	SOT123A	8	28	24	-	
BLF246	SOT121B	20	28	typ. 23	-	
BLF175	SOT123A	8	50	>24	-	

### 25 to 175 MHz bipolar RF power transistors

TYPE NUMBER	PACKAGE	LOAD POWER @ 175 MHz (W)	POWER GAIN @ 175 MHz (dB)	EFFICIENCY (CW) (%)	SUPPLY VOLTAGE V <sub>CE</sub> (V)	PAGE
<b>Class-B; 12 to 13.5 V supply voltage (car mobile)</b>						
BLW85	SOT123A	45	4.5	>75	12.5	
BLV10	SOT123A	8	9	>70	13.5	
BLY87C	SOT120A	8	12	>60	13.5	
BLV11	SOT123A	15	8	>60	13.5	
BLW87	SOT123A	25	6	>70	13.5	
<b>Class-B; 28 V base stations</b>						
BLV20	SOT123A	8	12	>65	28	
BLV21	SOT123A	15	10	>65	28	
BLW86	SOT123A	45	7.5	>70	28	
BLW77 <sup>(1)</sup>	SOT121B	130	7.5	75	28	

#### Note

1. Load power and power gain measured at 87.5 MHz.

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### 25 to 175 MHz MOS RF transistors

TYPE NUMBER	PACKAGE	P <sub>L</sub> (W)	V <sub>DS</sub> (V)	f (MHz)	G <sub>p</sub> (dB)	EFFICIENCY (CW) (%)	PAGE
<b>VHF base stations (Class-B operation, 28 V &amp; 50 V supply)</b>							
BLF242	SOT123A	5	28	175	13	60	
BLF244	SOT123A	15	28	175	13	65	
BLF245	SOT123A	30	28	175	13	67	
BLF245B	SOT279A	30	28	175	14	65	
BLF246	SOT121B	80	28	108	16	55	
BLF147	SOT121B	150	28	108	typ. 14	70	
BLF248	SOT262A	300	28	175	typ. 13	67	
BLF175	SOT123A	30	50	108	typ. 20	65	
BLF177	SOT121B	150	50	108	typ. 19	70	
BLF277	SOT119A	150	50	175	14	58	
BLF278	SOT262A	300	50	108	20	70	
<b>VHF mobile transmitters (Class-B operation, 12.5 V supply)</b>							
BLF244	SOT123A	6	12.5	175	typ. 15	60	
BLF245	SOT123A	12	12.5	175	typ. 12	66	

### 87 to 108 MHz FM broadcast bipolar RF power transistors

TYPE NUMBER	PACKAGE	LOAD POWER @ 108 MHz (W)	POWER GAIN @ 108 MHz (dB)	EFFICIENCY (CW) (%)	SUPPLY VOLTAGE V <sub>CE</sub> (V)	PAGE
<b>Class-B</b>						
BLV21	SOT123A	15	10	>65	28	y
BLW86 <sup>(1)</sup>	SOT123A	45	7.5	>70	28	y
BLW76	SOT121B	80	8	70	28	y
BLV25	SOT119A	175	10	70	28	y

#### Note

1. Load power and power gain measured at 175 MHz.

# RF & Microwave Power Transistors and RF Power Modules

## Selection guide

### Bipolar RF power transistors for TV transposers and transmitters

TYPE NUMBER	PACKAGE	OUTPUT POWER $P_{o\ sync}$ (W)	$d_{im}$ (dB)	LOAD POWER (W)	POWER GAIN @ 860 MHz (dB)	EFFICIENCY (CW) (%)	SUPPLY VOLTAGE $V_{CE}$ (V)	PAGE
<b>Class-A bands I (41 to 68 MHz) &amp; III (174 to 230 MHz)</b>								
BLV33F	SOT119A	22	-55	-	14.8	-	25	
BLV33	SOT147A	26	-55	-	9.7	-	25	
<b>Class-AB bands I (41 to 68 MHz) &amp; III (174 to 230 MHz)</b>								
BLV33F	SOT119A	-	-	85	10.5	71	28	
BLV33	SOT147A	-	-	90	6.5	72	28	
<b>Class-A bands IV &amp; V 470 to 860 MHz</b>								
BLW32	SOT122A	0.63	-60	-	11	-	25	
BLW33	SOT122A	1.15	-60	-	10	-	25	
BLW34	SOT122A	2.15	-60	-	9	-	25	
BLW898	SOT171A	3	-60	-	8.5	-	25	
BLW98	SOT122A	4.4	-60	-	6.5	-	25	
BLV857	SOT324B	10	-51	-	>10	-	25	
BLV57	SOT161A	12	-60	-	9	-	25	
BLV859	SOT262B	20	-51	-	10	-	25	
BLV58	SOT289A	25	-45	-	10	-	25	
<b>Class-AB bands IV &amp; V 470 to 860 MHz</b>								
BLV59	SOT171A	-	-	30	7	55	25	
BLV57	SOT161A	-	-	38	7	55	25	
BLV861	SOT289A	-	-	100	8.5	55	28	
BLV862	SOT262B	-	-	150	9	52	28	

### LDMOS transistors for TV transmitters

TYPE NUMBER	PACKAGE	$P_L$ (W)	$V_{DS}$ (V)	f (MHz)	$G_p$ (dB)	EFFICIENCY (CW) (%)	PAGE
<b>Class-AB bands IV &amp; V 470 to 860 MHz</b>							
BLF861	SOT540A	150	32	860	>14	>50	

# RF & Microwave Power Transistors and RF Power Modules

## Selection guide

### MOS RF power transistors for TV transposers and transmitters

TYPE NUMBER	PACKAGE	$P_{O\ sync}$ (W)	$V_{DS}$ (V)	f (MHz)	$G_p$ (dB)	$d_{im}$ (dB)	$I_D$ (mA)	EFFICIENCY (CW) (%)	PAGE
<b>TV transposers Class-A band III (174 to 230 MHz)</b>									
BLF346	SOT119A	25 <sup>(1)</sup>	28	225	14	-52	3000	-	
BLF348	SOT262A	67 <sup>(1)</sup>	28	225	11	-52	2 × 4600	-	
<b>TV transmitters Class-AB band III (174 to 230 MHz)</b>									
BLF248	SOT262A	300	28	225	10	-	2 × 250	65	
BLF368	SOT262A	300 <sup>(2)</sup>	32	225	12	-	2 × 250	62	
BLF378	SOT262A	250 <sup>(2)</sup>	50	225	14	-	2 × 500	55	
BLF278	SOT262A	250	50	225	14	-	2 × 500	55	

#### Notes

1. Typical value at heatsink temperature of 70 °C.
2. At 1 dB power gain compression.

### RF POWER TRANSISTORS AND BASE STATION HYBRID AMPLIFIERS

#### 100 to 960 MHz MOS RF power transistors

TYPE NUMBER	PACKAGE	$P_L$ (W)	$V_{DS}$ (V)	f (MHz)	$G_p$ (dB)	EFFICIENCY (CW) (%)	PAGE
<b>UHF base stations, Class-B (225 to 400 MHz)</b>							
BLF242	SOT123A	5	28	400	typ. 13	60	
BLF244	SOT123A	15	28	400	typ. 11	65	
BLF245	SOT123A	30	28	400	typ. 10	67	
<b>UHF base stations, Class-B (100 to 500 MHz)</b>							
BLF202	SOT409A	2	12.5	175	10	>50	
BLF521	SOT172D	2	12.5	500	10	60	
BLF404	SOT409A	4	12.5	500	10	50	
BLF542	SOT171A	5	28	500	10	59	
BLF543	SOT171A	10	28	500	12	60	
BLF544	SOT171A	20	28	500	11	60	
BLF545	SOT268A	40	28	500	11	60	
BLF546	SOT268A	80	28	500	11	60	
BLF547	SOT262A	100	28	500	10	55	
BLF548	SOT262A	150	28	500	9	55	

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### 400 to 512 MHz bipolar RF power transistors

TYPE NUMBER	PACKAGE	LOAD POWER @ 470 MHz (W)	POWER GAIN @ 470 MHz (dB)	EFFICIENCY (CW) (%)	SUPPLY VOLTAGE $V_{CE}$ (V)	PAGE
<b>Class-B 7.5 V supply; portable mobile</b>						
BLT53	SOT122D	8	6	65	7.5	
<b>Class-B 12.5 V supply; car mobile</b>						
BLU99/SL	SOT122D	5	10.5	66	12.5	
BLU30/12	SOT119A	30	6	66	12.5	

### 900 MHz bipolar RF power transistors

TYPE NUMBER	PACKAGE	LOAD POWER @ 900 MHz (W)	POWER GAIN @ 900 MHz (dB)	EFFICIENCY (CW) (%)	SUPPLY VOLTAGE $V_{CE}$ (V)	PAGE
<b>Class-B 12.5 V car mobile</b>						
BLU99/SL	SOT122D	4	7	60	12.5	
BLV193	SOT171A	12	6.5	60	12.5	
BLV194	SOT171A	16	6	57	12.5	

### 900 to 960 MHz bipolar RF power transistors

TYPE NUMBER	PACKAGE	LOAD POWER @ 900 MHz (W)	POWER GAIN @ 900 MHz (dB)	EFFICIENCY (CW) (%)	SUPPLY VOLTAGE $V_{CE}$ (V)	PAGE
<b>Class-AB and class-B 24 to 26 V base stations</b>						
BLV99/SL	SOT172D	2	8	63 (class-B)	24	
BLV103	SOT171A	4 <sup>(1)</sup>	11.5	48	24	
BLV904	SOT409B	5 <sup>(1)</sup>	11	>50	26	
BLV909	SOT409B	9 <sup>(1)</sup>	9	57	26	
BLV910	SOT171A	10 <sup>(1)</sup>	11	>55	26	
BLV920	SOT171A	20 <sup>(1)</sup>	10	>55	26	
BLV946	SOT273A	40 <sup>(1)</sup>	9	60	26	
BLV958	SOT391A	75 <sup>(1)</sup>	8.5	55	26	
BLV958FL	SOT391B	75 <sup>(1)</sup>	8.5	55	26	
<b>UHF base stations, Class-B (860 to 960 MHz)</b>						
BLF543	SOT171A	10 <sup>(1)</sup>	typ. 8	50	28	
BLF544	SOT171A	20 <sup>(1)</sup>	typ. 7	50	28	

#### Note

1. Load power and power gain measured at 960 MHz.

# RF & Microwave Power Transistors and RF Power Modules

## Selection guide

### 900 to 960 MHz LDMOS RF power transistors

TYPE NUMBER	PACKAGE	LOAD POWER @ 900 MHz (W)	POWER GAIN @ 900 MHz (dB)	$d_{im}$ (dB)	EFFICIENCY (CW) (%)	SUPPLY VOLTAGE $V_{DS}$ (V)	PAGE
<b>Class-AB 26 V base stations</b>							
BLF1043	SOT538A	10	>16	$\geq -30$	>45	26	
BLF1046	SOT467A	45	>14	$\leq -28$	>45	26	
BLF1047	SOT541A	70	>14	$\leq -26$	>45	26	
BLF1048	SOT502A	90	>14	$\leq -26$	>45	26	

### 1800 to 2000 MHz bipolar RF power transistors

TYPE NUMBER	PACKAGE	LOAD POWER @ 1950 MHz (W)	POWER GAIN @ 1950 MHz (dB)	EFFICIENCY (CW) (%)	SUPPLY VOLTAGE $V_{CE}$ (V)	PAGE
<b>Class-AB 26 V base stations</b>						
LBE2009S	SOT441A	>0.7	8	–	26	
BLV2042	SOT409B	4	8	45	26	
LVE21050R	SOT445A	5.5	8	–	26	
BLV2044	SOT437A	15	8	45	26	
BLV2045N	SOT390A	30	$\geq 10$	$\geq 40$	26	
BLV2046	SOT460A	50	$\geq 7.5$	$\geq 40$	26	
BLV2047	SOT468A	60	8.5	40	26	

### 1800 to 2210 MHz LDMOS RF power transistors

TYPE NUMBER	PACKAGE	$P_L$ (W)	$V_{CE}$ (V)	$G_p$ (dB)	EFFICIENCY (CW) (%)	PAGE
<b>Class-AB 26 V base stations</b>						
BLF2047	SOT502A	65	26	>10	$\geq 40$	
BLF2043	SOT538A	10	26	>12	$\geq 40$	
BLF2045	SOT467A	30	26	>10	$\geq 40$	
BLF2047L <sup>(1)</sup>	SOT502A	65	26	>10.5	$\geq 40$	
BLF2047L/90 <sup>(1)</sup>	SOT502A	90	26	>10.5	$\geq 40$	
BLF2048	SOT539A	120	26	>10	$\geq 40$	

#### Note

- 1800 to 2000 MHz with optimized gain.



# RF & Microwave Power Transistors and RF Power Modules

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### 920 to 960 MHz RF amplifier modules

TYPE NUMBER	PACKAGE	LOAD POWER (W)	POWER GAIN (dB)	SUPPLY VOLTAGE $V_{CE}$ (V)	EFFICIENCY (%)	PAGE
<b>26 V base stations</b>						
BGY916	SOT365A	16	≥28	26	≥35	
BGY916/5	SOT365A	16	≥28	26	≥35	
BGY925	SOT365A	23	≥28	26	≥30	
BGY925/5	SOT365A	23	>28	26	≥30	

### 1805 to 1880 MHz RF amplifier modules

TYPE NUMBER	PACKAGE	LOAD POWER (W)	POWER GAIN (dB)	SUPPLY VOLTAGE $V_{CE}$ (V)	EFFICIENCY (%)	PAGE
<b>26 V base stations</b>						
BGY1816	SOT365A	16	>24	26	≥30	
BGY1816S	SOT501A	>16	>29	26	≥30	

### 1930 to 1990 MHz RF amplifier modules

TYPE NUMBER	PACKAGE	LOAD POWER (W)	POWER GAIN (dB)	SUPPLY VOLTAGE $V_{CE}$ (V)	EFFICIENCY (%)	PAGE
<b>26 V base stations</b>						
BGY1916	SOT365	16	>24	26	>30	

### 1800 to 2000 MHz RF amplifier modules

TYPE NUMBER	PACKAGE	LOAD POWER (W)	POWER GAIN (dB)	SUPPLY VOLTAGE $V_{CE}$ (V)	EFFICIENCY (%)	PAGE
<b>26 V base stations</b>						
BGY2016	SOT36A5	≥16	≥28	26	≥30	

# RF & Microwave Power Transistors and RF Power Modules

## Selection guide

### MICROWAVE TRANSISTORS

#### Class-A Linear power transistors

TYPE NUMBER	PACKAGE	f (GHz)	V <sub>CE</sub> (V)	I <sub>C</sub> (mA)	P <sub>L1</sub> <sup>(1)</sup> (W)	G <sub>po</sub> <sup>(2)</sup> (dB)	G <sub>p</sub> (dB)	PAGE
LBE2003S	SOT441A	2	18	30	>0.2	>10	–	
LBE2009S	SOT441A	2	18	110	>0.7	>9	–	
LTE21009R	SOT440A	2.1	16	150	>0.6	>10	–	
LVE21050R	SOT445A	2.1	16	1100	5.5	8	–	
LTE42005S	SOT440A	4.2	18	110	>0.45	>6.6	–	
LTE42012R	SOT440A	4.2	16	400	>1	>6	–	

#### Notes

1. Load power for 1 dB compressed power gain.
2. Low level power gain associated with P<sub>L1</sub>.

#### CW power transistors

TYPE NUMBER	PACKAGE	CLASS	f (GHz)	V <sub>CC</sub> (V)	P <sub>L</sub> <sup>(1)</sup> (W)	G <sub>p</sub> <sup>(2)</sup> (dB)	η <sub>c</sub> (%)	PAGE
PTB23006U	SOT440A	C	2	28	>5	>9	>40	
PTB32005X	SOT440A	B	3	24	≥4.5	>8	>35	

#### Notes

1. Load power for 1 dB compressed power gain.
2. Low level power gain associated with P<sub>L1</sub>.

#### Pulsed power transistors for avionics

TYPE NUMBER	PACKAGE	f (GHz)	V <sub>CC</sub> (V)	t <sub>p</sub> (μS)	at δ (%)	P <sub>L</sub> (W)	G <sub>p</sub> (dB)	η <sub>c</sub> (%)	PAGE
MZ0912B50Y	SOT443A	0.96 to 1.215	50	10	10	>50	>7	>42	
MX0912B100Y	SOT439A	0.96 to 1.215	50	10	10	>100	>7	>42	
MX0912B251Y	SOT439A	0.96 to 1.215	50	10	10	>235	>7	>42	
MX0912B351Y	SOT439A	0.96 to 1.215	50	10	10	>325	>7	>40	
MTB10010U	SOT440A	1.03	24	1	1	>9.5	>9.5	>50	
MX1011B200Y	SOT439A	1.09	50	10	1	200	≥7.5	>45	
MX1011B700Y	SOT439A	1.09	50	10	1	650	≥6	>48	
MF1011B900Y	SOT448A	1.09	50	10	1	800	≥6	>40	

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### L and S-band pulsed power transistors for radar

TYPE NUMBER	PACKAGE	f (GHz)	V <sub>CC</sub> (V)	t <sub>p</sub> (μS)	at δ (%)	P <sub>L</sub> (W)	G <sub>p</sub> (dB)	η <sub>c</sub> (%)	PAGE
<b>L-band</b>									
RZ1214B35Y	SOT443A	1.2 to 1.4	50	150	5	≥35	≥7	>30	
RZ1214B65Y	SOT443A	1.2 to 1.4	50	150	5	≥70	≥7	>35	
RX1214B130Y	SOT439A	1.2 to 1.4	50	150	5	≥130	≥7	>35	
RX1214B170W	SOT439A	1.2 to 1.4	42	500	10	≥170	≥6	>40	
RX1214B300Y	SOT439A	1.2 to 1.4	50	150	5	≥250	≥7	>35	
RX1214B350Y	SOT439A	1.2 to 1.4	50	130	6	280	≥7	>40	
<b>S-band</b>									
BLS2731-10	SOT445C	2.7 to 3.1	40	100	10	≥10	typ. 9	typ. 45	
BLS2731-20	SOT445C	2.7 to 3.1	40	100	10	≥20	typ. 8	typ. 40	
BLS2731-50	SOT422A	2.7 to 3.1	40	100	10	>50	typ. 9	typ. 40	
BLS2731-110	SOT423A	2.7 to 3.1	40	100	10	>110	typ. 7.5	typ. 40	
<b>S-band 50 Ω in/out matched transistor</b>									
BLS3135-10	SOT422A	3.1 to 3.5	40	100	10	>10	typ. 9	typ. 40	
BLS3135-20	SOT422A	3.1 to 3.5	40	100	10	>20	typ. 8	typ. 40	
BLS3135-50	SOT422A	3.1 to 3.5	40	100	10	>50	typ. 8	typ. 40	
BLS3135-65	SOT422A	3.1 to 3.5	40	100	10	65	≥7	typ. 40	