



## DB-54008L-406

RF POWER amplifier using 1 x PD54008L  
N-Channel enhancement-mode lateral MOSFETs

### General feature

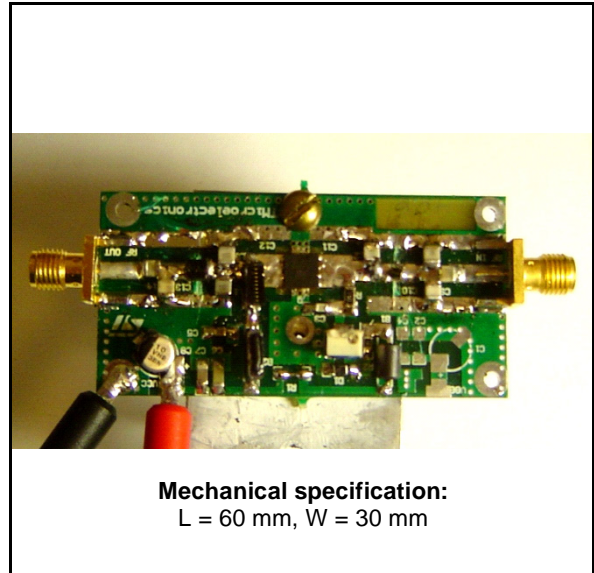
- Excellent thermal stability
- Frequency: 406 MHz
- Supply voltage: 7.5V
- Output power: 7W
- Power gain: 13dB
- Efficiency: 60%
- Load mismatch: 20:1
- Beo free amplifier

### Description

The DB-54008L-406 is a common source N-Channel Enhancement-Mode Lateral Field Effect RF power amplifier designed for Marine applications such as EPIRB

### Order Code

- DB-54008L-406



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# 1 Electrical data

## 1.1 Maximum ratings

Table 1. Absolute maximum ratings

Symbol	Parameter	Value	Unit
$V_{DD}$	Supply voltage	16	V
$I_D$	Drain current	2.5	A
$P_{DISS}$	Power dissipation	8	W
$T_{CASE}$	Operating case temperature	-20 to +85	°C
$T_A$	Max. ambient temperature	+55	°C

## 2 Electrical characteristics

$$T_A = +25\text{ }^{\circ}\text{C}, V_{DD} = 7.5\text{ V}, I_{DQ} = 100\text{ mA}$$

**Table 2. Electrical Specification**

Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Freq	Frequency range	400	406	420	MHz
P <sub>OUT</sub>		7			W
Gain	@ P <sub>OUT</sub> = 7W		13		dB
ND	@ P <sub>OUT</sub> = 7W		60		%
Gain Flatness	@ P <sub>OUT</sub> = 7W			± 0.2	dB
H2	2 <sup>ND</sup> Harmonic @ P <sub>OUT</sub> = 7W		-57	-50	dBc
H3	3 <sup>RD</sup> Harmonic @ P <sub>OUT</sub> = 7W		-65	-60	dBc
VSWR	Load mismatch all phases @ P <sub>OUT</sub> = 7W			20:1	

### 3 Typical performance

Figure 1.  $P_{OUT}$  vs.  $P_{in}$  & frequency

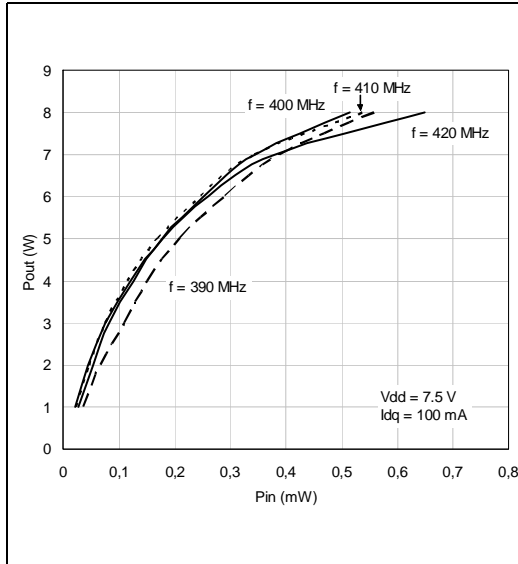


Figure 2. Efficiency vs.  $P_{OUT}$  & frequency

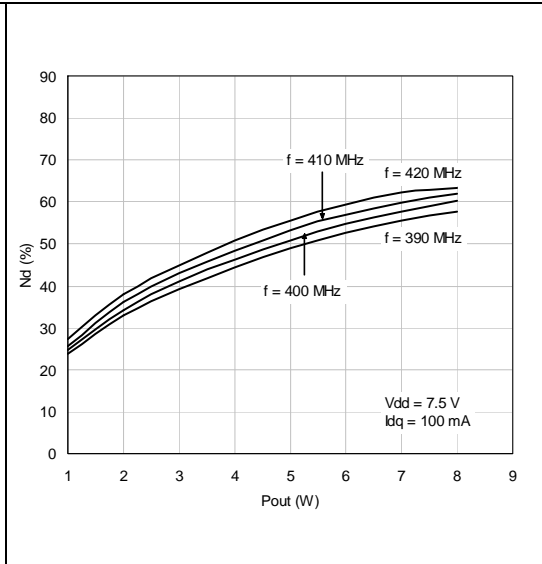


Figure 3. Output power & efficiency vs. frequency

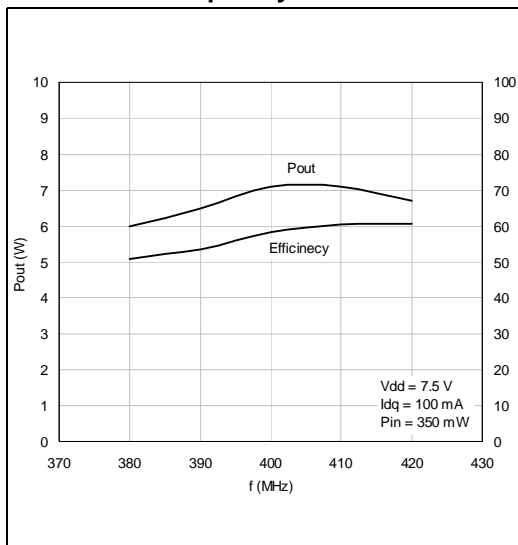


Figure 4. Output power & Efficiency vs. frequency

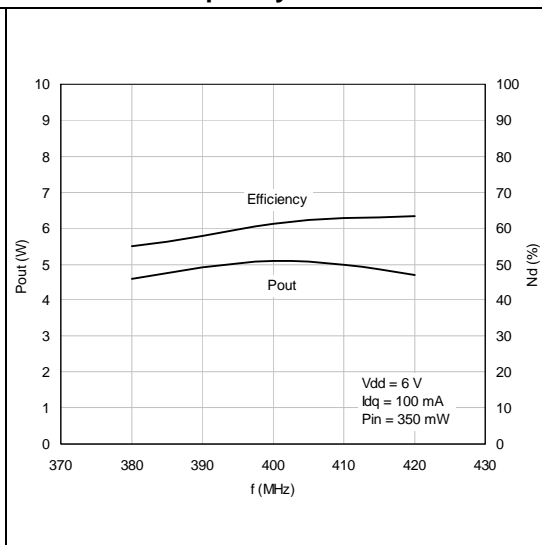


Figure 5. Input return loss vs. frequency

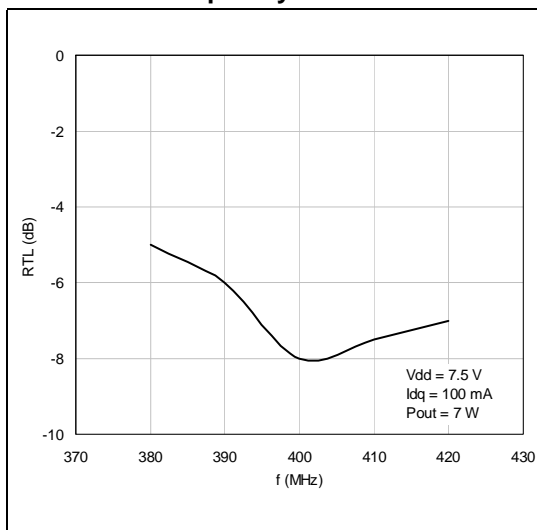
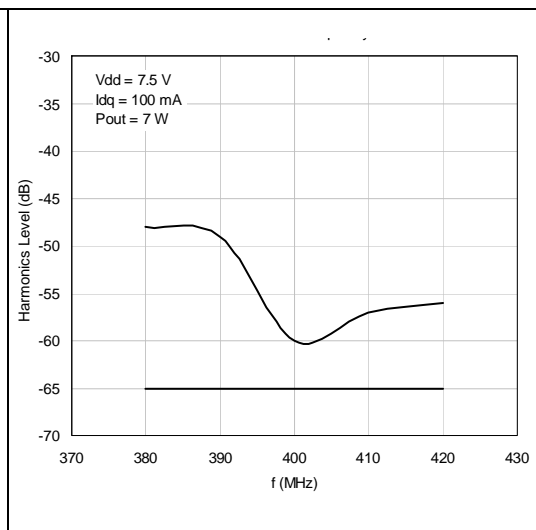


Figure 6. Harmonics vs. frequency



# 4 Circuit layout

Figure 7. Circuit layout

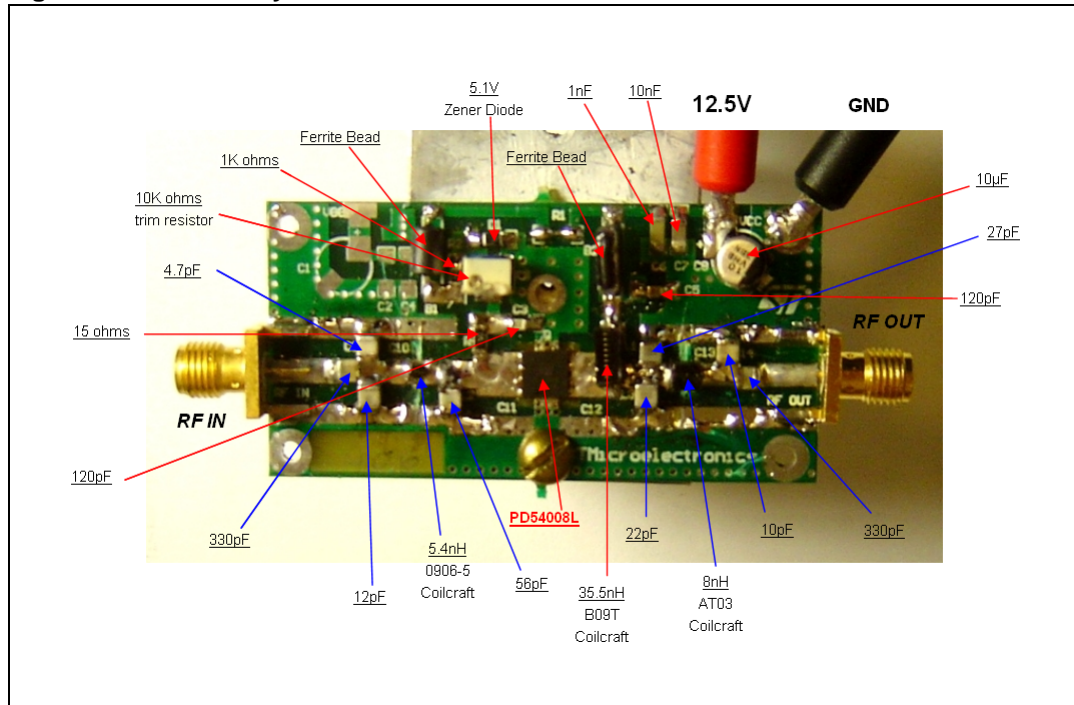
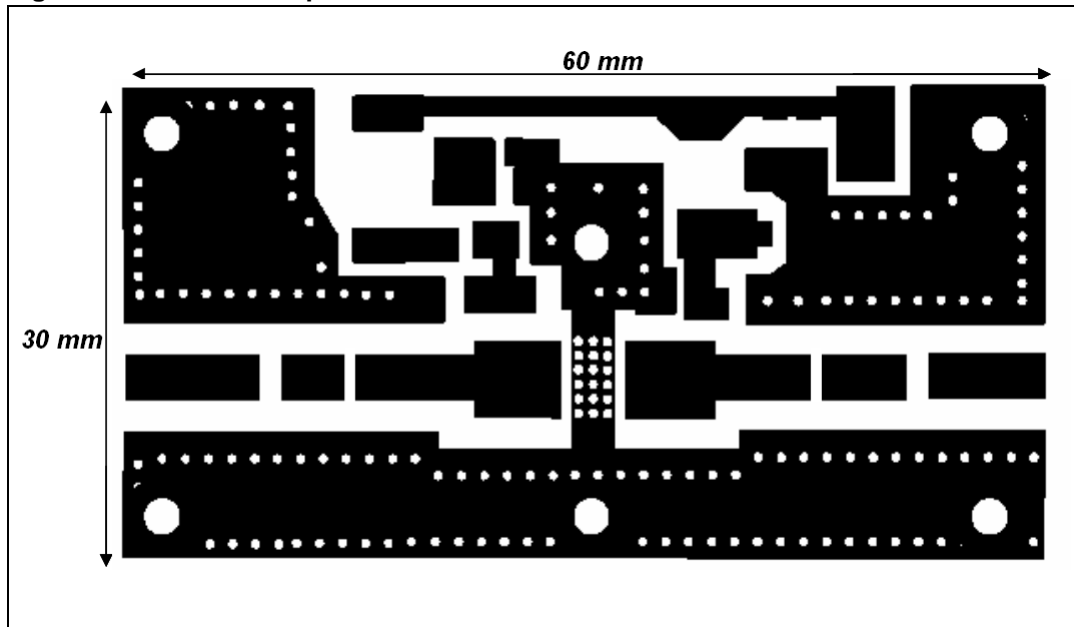
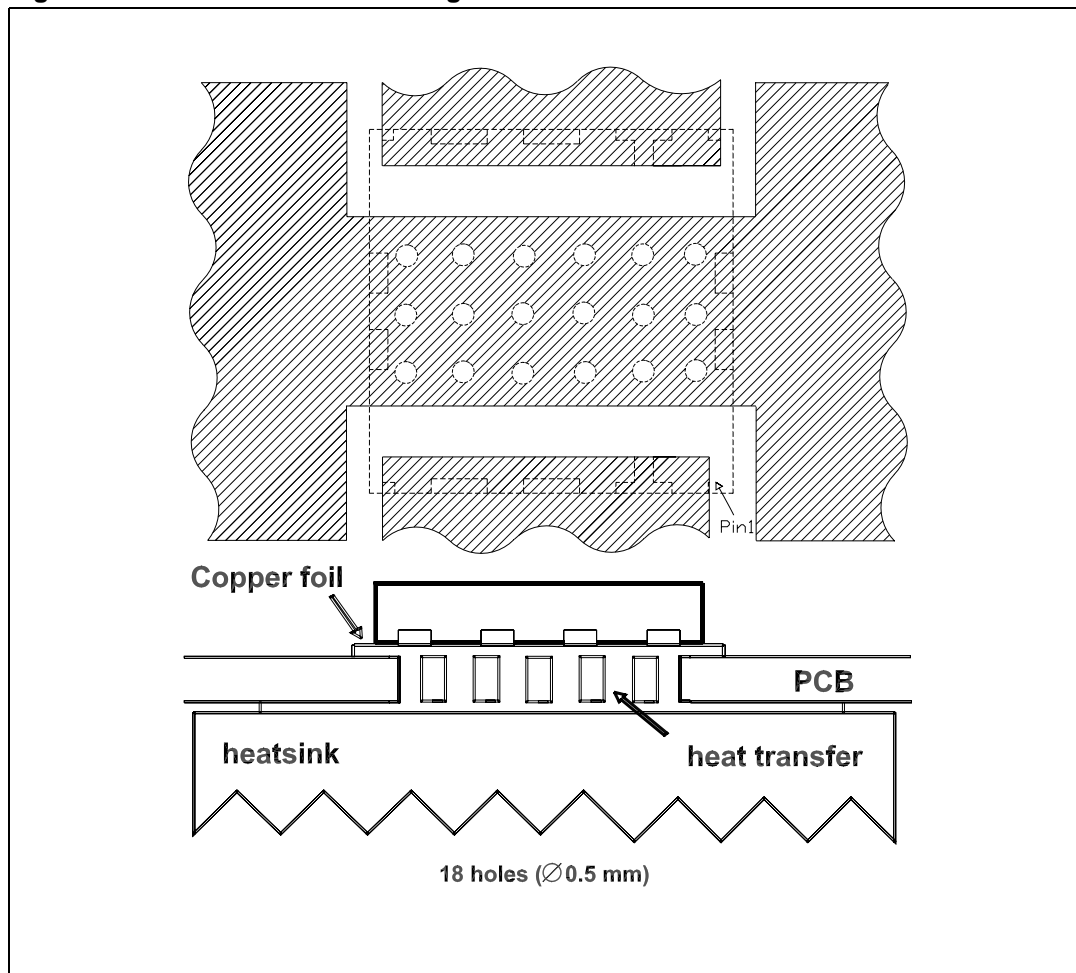


Figure 8. Test circuit photomaster



## 5 Mounting indications

Figure 9. Standard SMD mounting





## 6 Mechanical data

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect . The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: [www.st.com](http://www.st.com)

Table 3. PowerFLAT™ Mechanical data

Dim.	mm			inch		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A		0.90	1.00		0.035	0.039
A1		0.02	0.05		0.001	0.002
A3		0.24			0.009	
AA	0.15	0.25	0.35	0.006	0.01	0.014
b	0.43	0.51	0.58	0.017	0.020	0.023
c	0.64	0.71	0.79	0.025	0.028	0.031
D		5.00			0.197	
d		0.30			0.011	
E		5.00			0.197	
E2	2.49	2.57	2.64	0.098	0.101	0.104
e		1.27			0.050	
f		3.37			0.132	
g		0.74			0.03	
h		0.21			0.008	

Figure 10. PowerFLAT™ Package dimensions

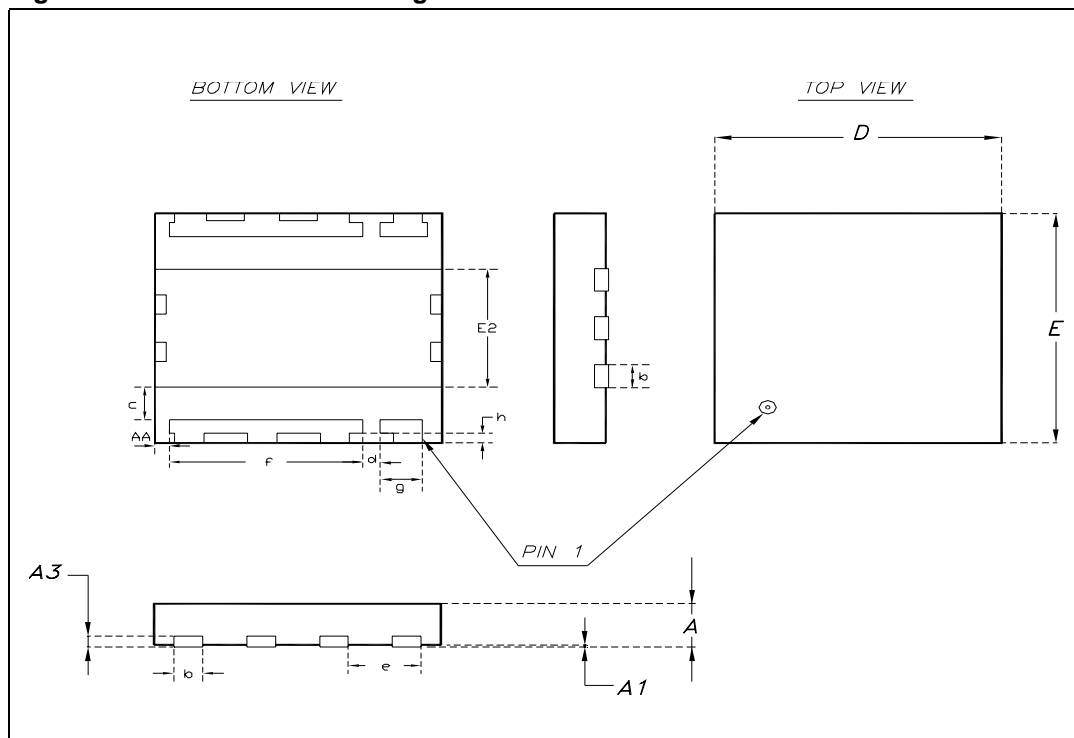
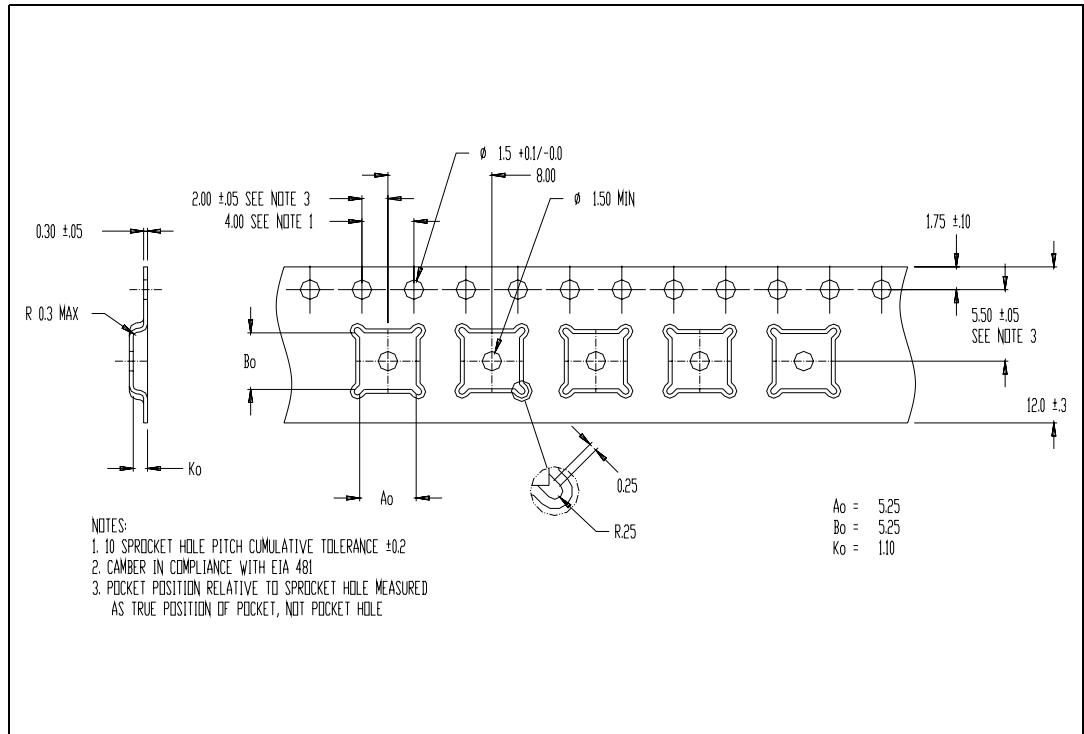


Table 4. PowerFLAT™ Tape & reel dimensions

Dim.	mm.			inch		
	Min.	Typ	Max.	Min.	Typ	Max.
Ao	5.15	5.25	5.35	0.12	0.13	0.13
Bo	5.15	5.25	5.35	0.12	0.13	0.13
Ko	1.0	1.1	1.2	0.02	0.02	0.02

Figure 11. PowerFLAT™ Tape & reel



## 7 Revision history

**Table 5. Revision history**

Date	Revision	Changes
8-Mar-2006	1	Initial release.

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