



## DB-54003L-470

RF POWER amplifier using 1 x PD54003L-E  
N-channel enhancement-mode lateral MOSFETs

### Features

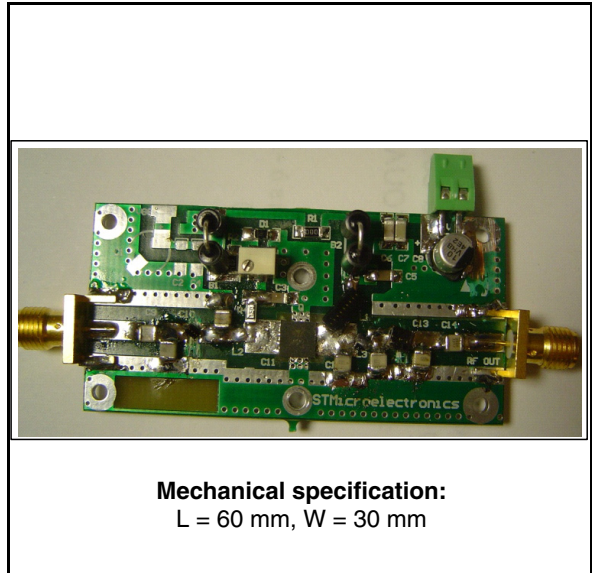
- Excellent thermal stability
- Frequency: 400 - 470MHz
- Supply voltage: 7.5V
- Output power: 5W
- Efficiency: 57% - 61%
- Load mismatch: 20:1
- Beo free amplifier

### Description

The DB-54003L-470 is a common source N-Channel Enhancement-Mode Lateral Field Effect RF power amplifier designed for 2 Ways Comms UHF portable.

### Order code

- DB-54003L-470



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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	1.6	A
$T_{CASE}$	Operating case temperature	-20 to +85	°C
$T_A$	Max. ambient temperature	55	°C

## 2 Electrical characteristics

$T_A = +25\text{ °C}$ ,  $V_{DD} = 7.5\text{ V}$ ,  $I_{dq} = 100\text{ mA}$

Table 2. Electrical specification

Symbol	Test conditions	Min.	Typ.	Max.	Unit
FREQ	Frequency range	400		470	MHz
$P_{OUT}$		4	5		W
Gain	@ $P_{OUT} = 5\text{ W}$	13 +/- 0.5dB			dB
ND	@ $P_{OUT} = 5\text{ W}$	57% - 61%			%
H2	2 <sup>ND</sup> Harmonic @ $P_{OUT} = 5\text{ W}$		-58	-55	dBc
H3	3 <sup>RD</sup> Harmonic @ $P_{OUT} = 5\text{ W}$		-60	-55	dBc
VSWR	Load Mismatch all phases @ $P_{OUT} = 5\text{ W}$			20:1	

### 3 Impedance

**Table 3. Impedance data**

F(MHz)	$Z_{GS}$	$Z_{DL}$
380	$2.4 + j3.6$	$3.9 + j2.1$
400	$2.5 + j4.4$	$4.4 + j2.0$
420	$2.7 + j5.1$	$4.5 + j1.6$
440	$3.2 + j5.7$	$4.1 + j1.3$
460	$3.7 + j6.0$	$3.4 + j1.3$
480	$4.0 + j5.7$	$2.8 + j1.8$
500	$3.6 + j5.0$	$2.6 + j2.4$

# 4 Typical performances

Figure 1. Output power vs input power

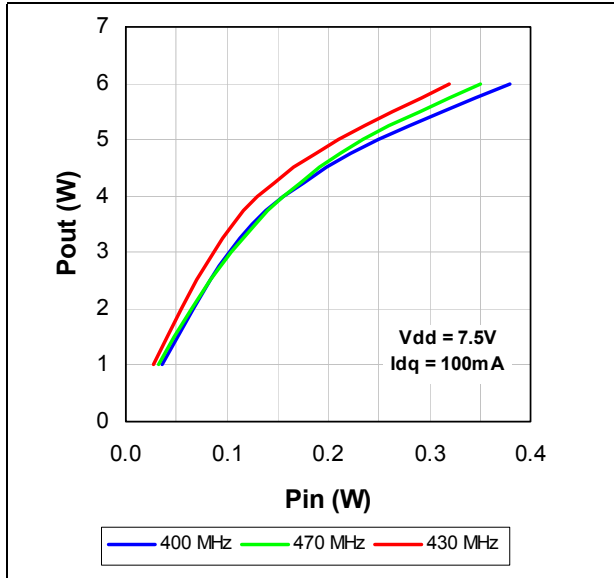


Figure 2. Gain & efficiency vs output power

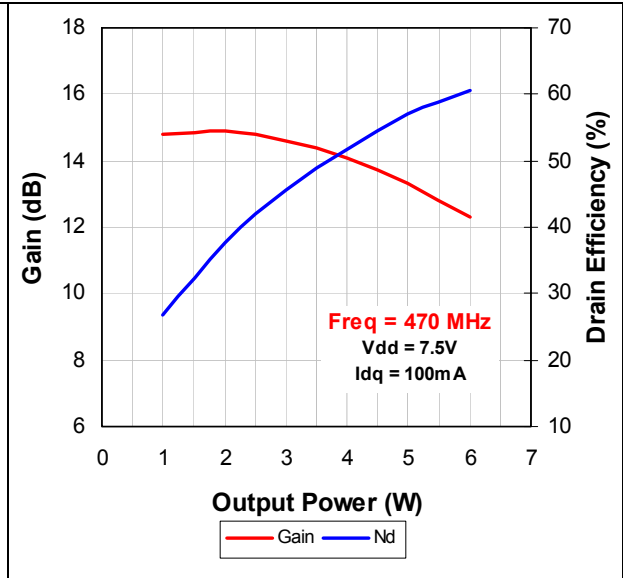


Figure 3. Gain & efficiency vs output power

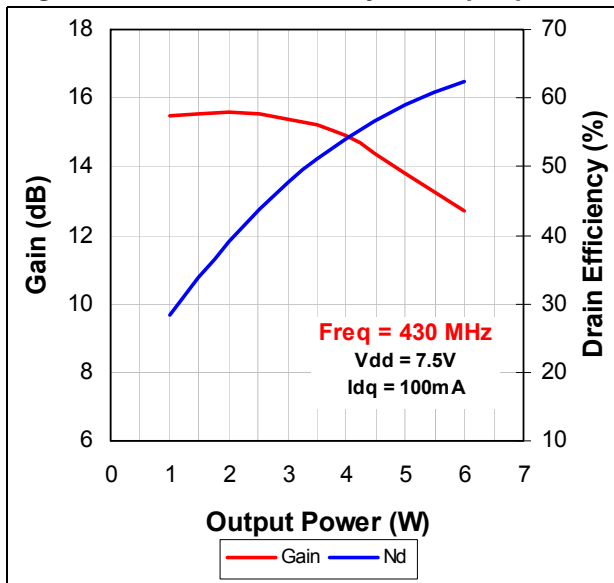


Figure 4. Gain & efficiency vs output power

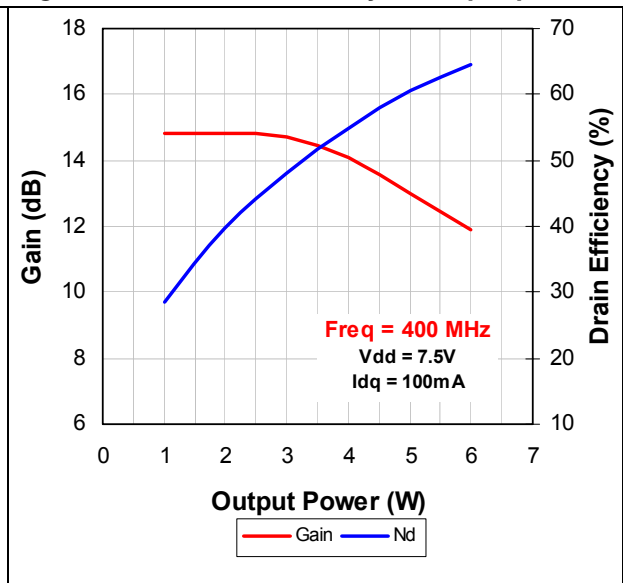


Figure 5. Power gain & efficiency vs frequency

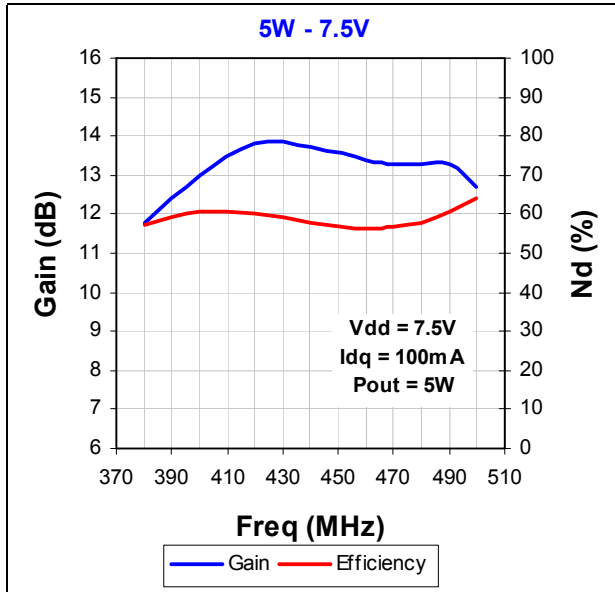


Figure 6. Power gain & efficiency vs frequency

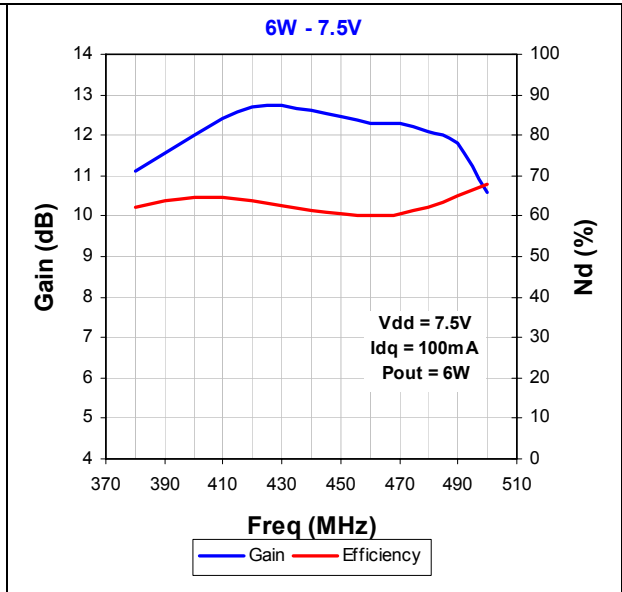


Figure 7. Input return loss vs frequency

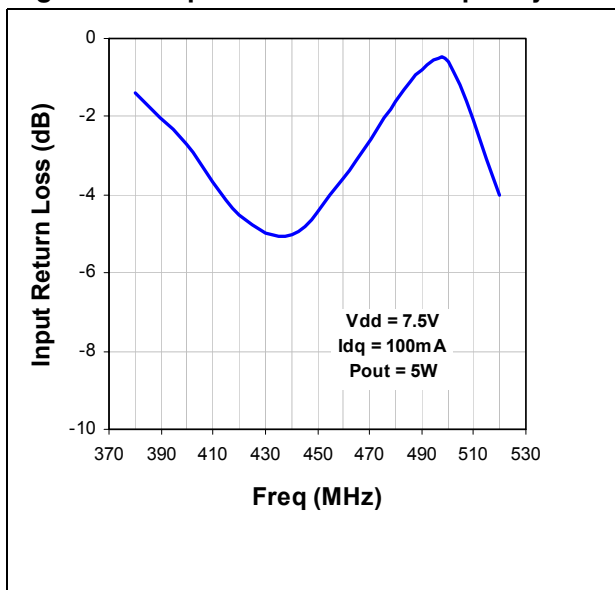


Figure 8. Harmonics vs frequency

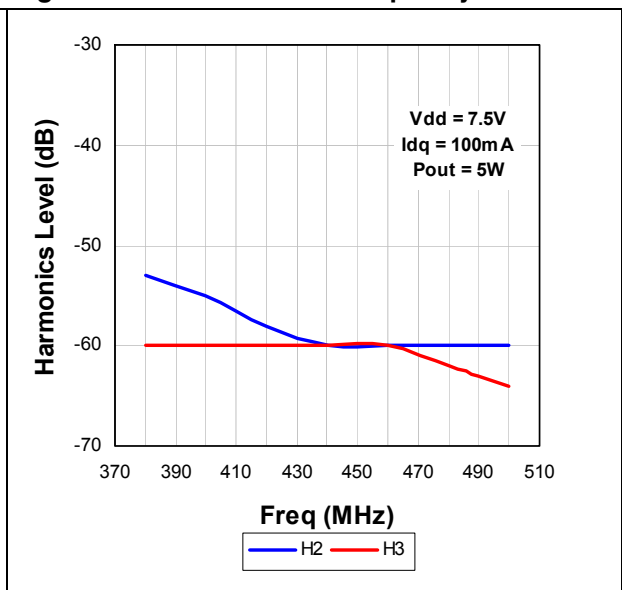
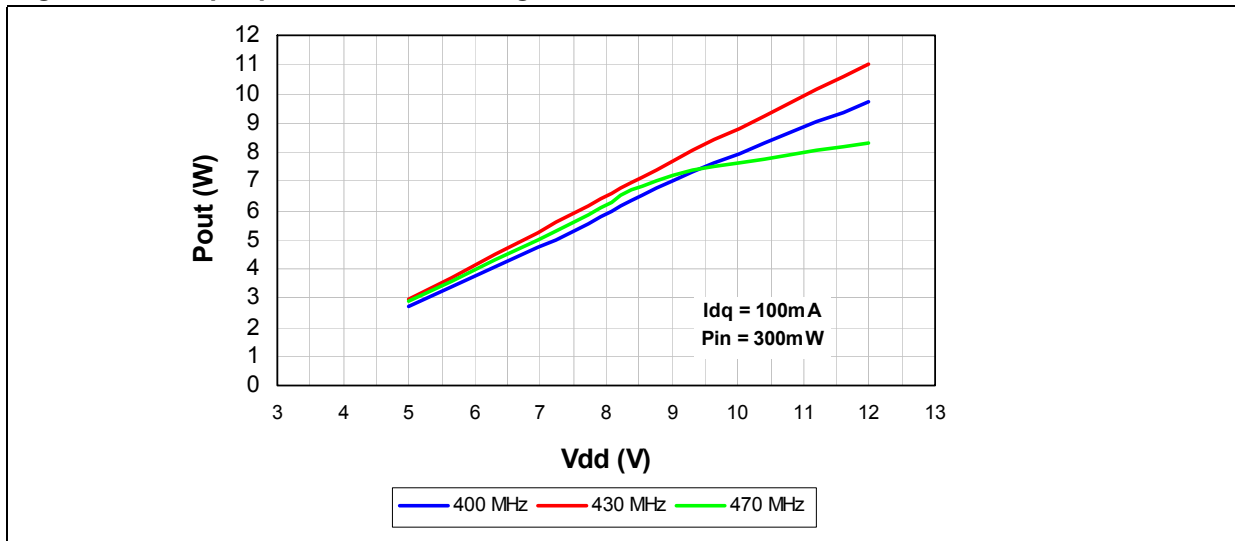
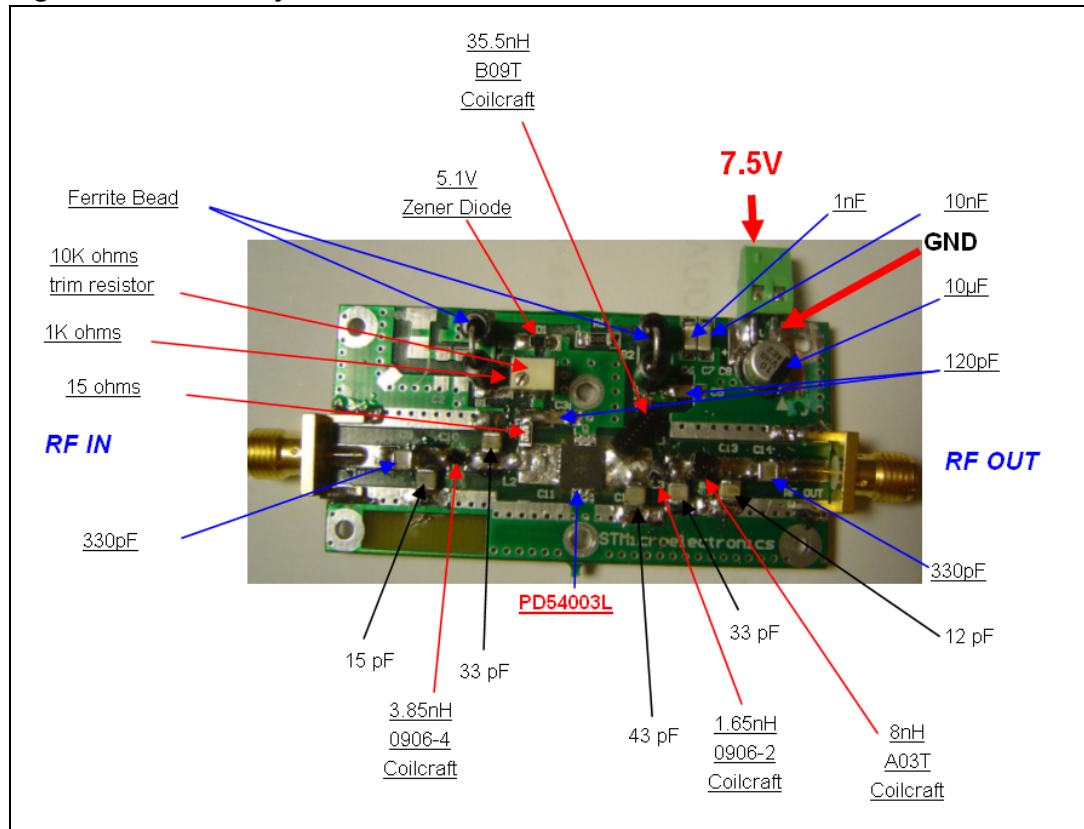


Figure 9. Output power vs drain voltage



# 5 Circuit layout

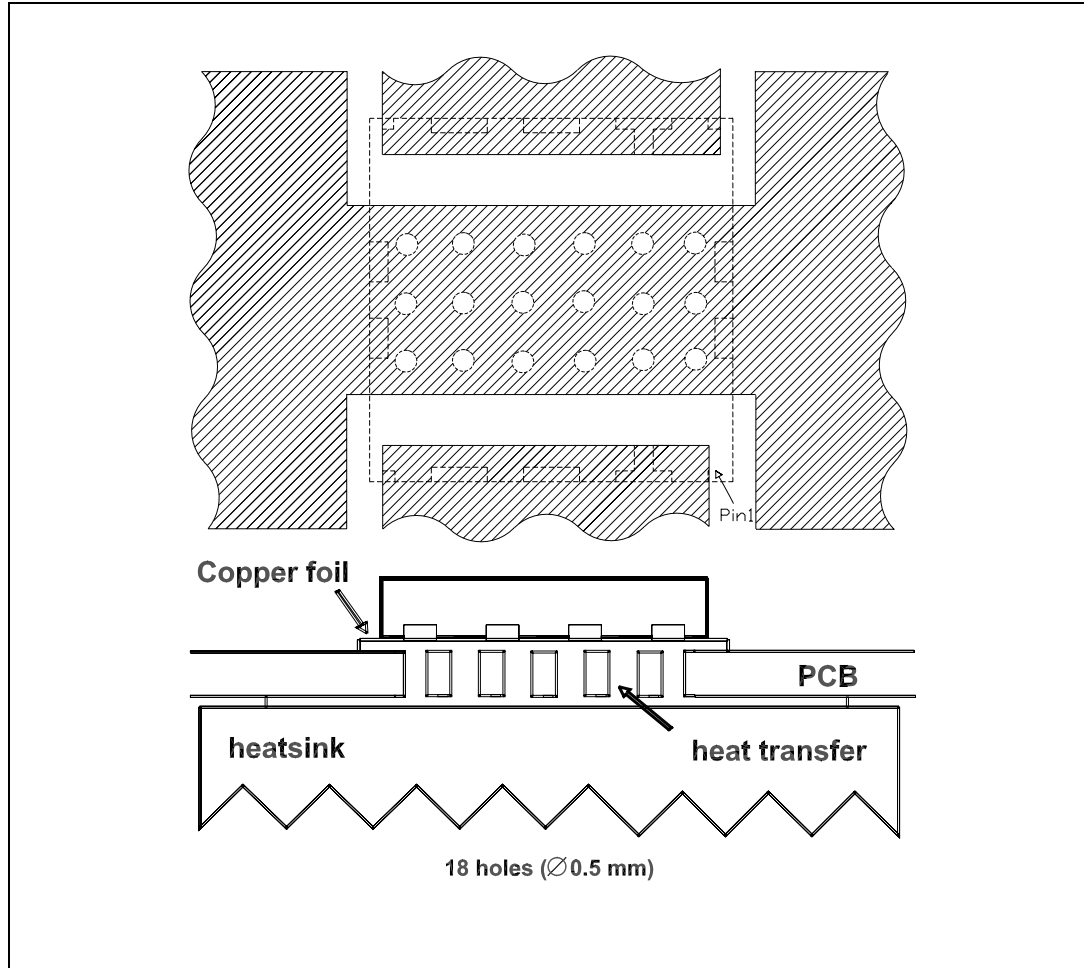
Figure 10. Circuit layout





## 6 Mounting indications

Figure 11. Standard SMD Mounting



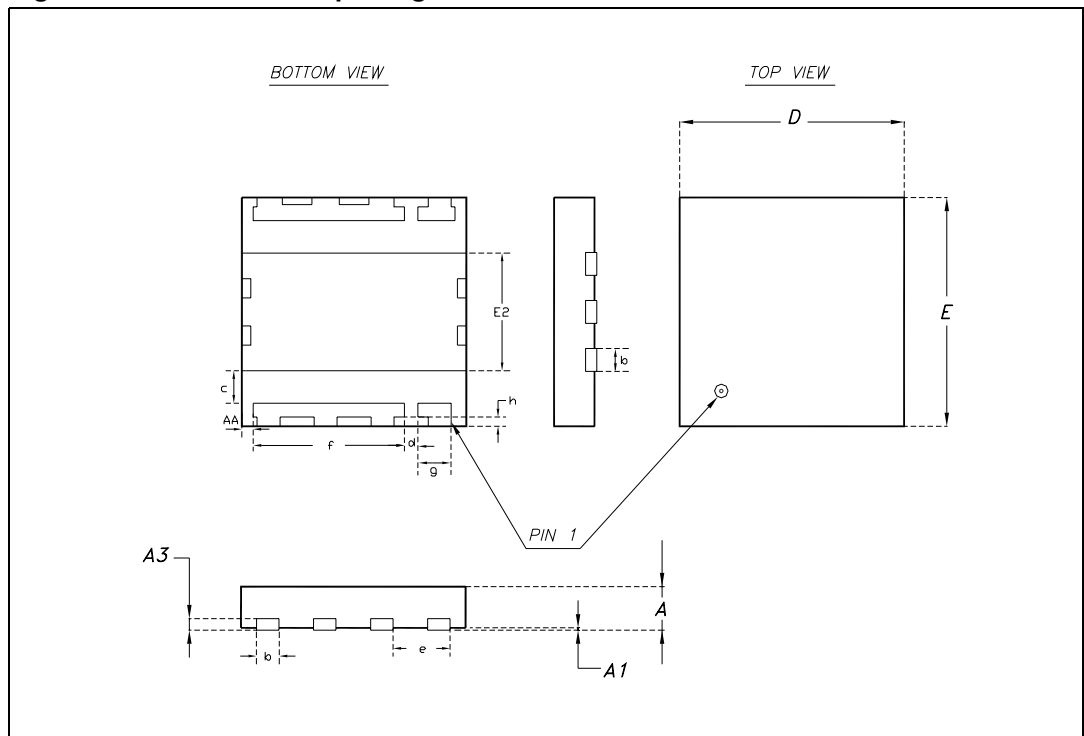
## 7 Package mechanical data

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 4. 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	

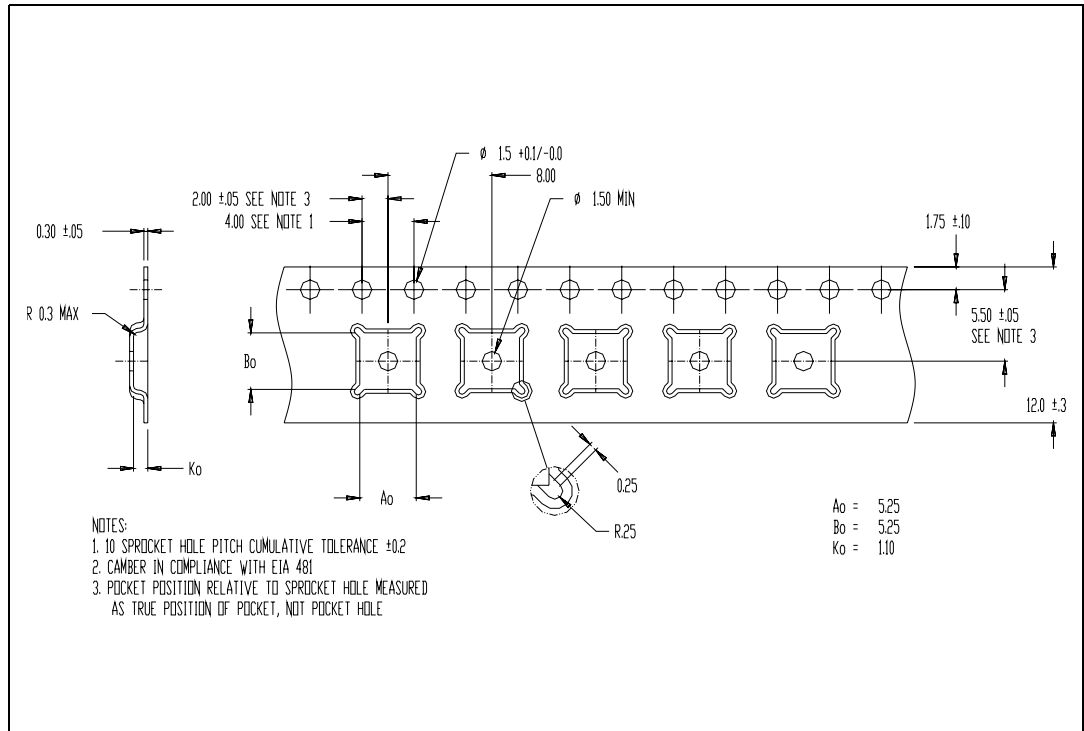
**Figure 12. PowerFLAT™ package dimensions**



**Table 5. 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 13. PowerFLAT™ tape & reel**



## 8 Revision history

Table 6. Revision history

Date	Revision	Changes
19-Feb-2007	1	Initial release

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