SD1728 (TH430)

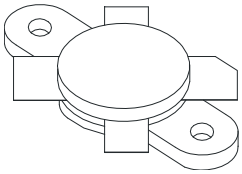
RF & Microwave transistors
HF SSB application

Features

- 13.56MHz
- 44V
- Gold metallization
- Common emitter
- P_{OUT} = 200W with 15dB gain

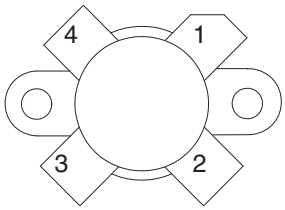
Description

The SD1728 is a 50V epitaxial silicon NPN planar transistor designed primarily for SSB and Industrial HF pplications. This device utilizes emitter ballasting for improved ruggedness and reliability.



M177
Epoxy sealed

Pin connection



1. Collector
2. Emitter
3. Base
4. Emitter

Table 1. Device summary

Part number	Package	Marking
SD1728	M177	TH430

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1 Electrical data

1.1 Maximum ratings

Table 2. Absolute maximum ratings (T_{CASE} = 25°C)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base voltage	110	V
V_{CEO}	Collector-emitter voltage	55	V
V_{EBO}	Emitter-base voltage	4.0	V
I_C	Device current	40	A
P_{DISS}	Power dissipation	330	W
T_J	Maximum operating junction temperature	200	°C
T_{STG}	Storage temperature	-65 to +150	°C

1.2 Thermal data

Table 3. Thermal data

Symbol	Parameter	Value	Unit
R_{thJC}	Junction - case thermal resistance	0.4	°C/W

2 Electrical characteristics

T_{CASE} = +25 °C

2.1 Static

Table 4. Static

Symbol	Test conditions	Values			Unit
		Min	Typ	Max	
BV_{CES}	I_C = 200mA, V_{BE} = 0V	110			V
BV_{CEO}	I_C = 200mA, I_B = 0mA	55			V
BV_{EBO}	I_E = 20mA, I_C = 0mA	4.0			V
I_{CEO}	V_{CE} = 30V, I_E = 0mA			500	µA
I_{CES}	V_{CE} = 60V, I_E = 0mA			500	µA
I_{EBO}	V_{BE} = 4.2V			500	µA
h_{FE}	V_{CE} = 6V, I_C = 10A	23		45	

Table 5. h_{FE} ranking (V_{CE} = 6V; I_C = 10A)

C	23 - 27
D	27 - 32
E	32 - 38
F	38 - 45

2.2 Dynamic

Table 6. Dynamic

Symbol	Test conditions	Values			Unit
		Min	Typ	Max	
P_{OUT}	V_{CC} = 44V, f = 13.56MHz	200	250		W
G_P	V_{CC} = 44V, P_{OUT} = 200W	15	17		dB
η_C	V_{CC} = 44V, P_{OUT} = 200W	56			%
C_{OB}	V_{CB} = 50V, f = 1MHz		250	360	pF

3 Typical performance (Class C)

Figure 1. Output power vs input power

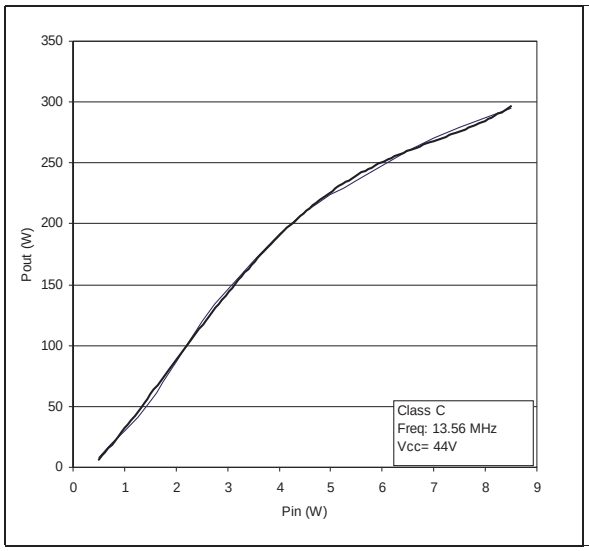


Figure 2. Collector base capacitance vs Collector base voltage (f = 1MHz)

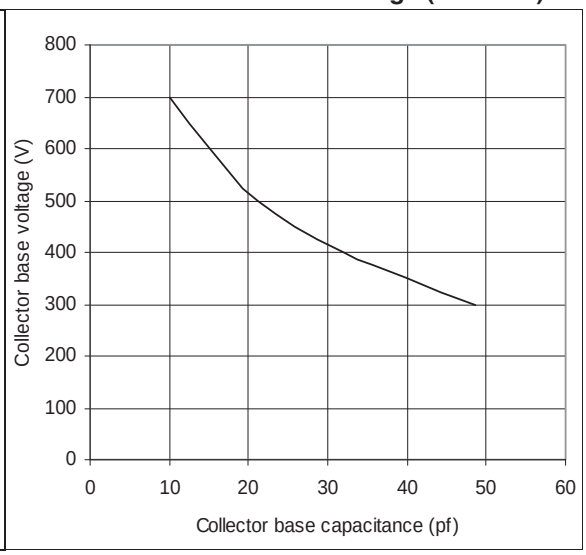


Figure 3. Power gain vs P_{OUT}

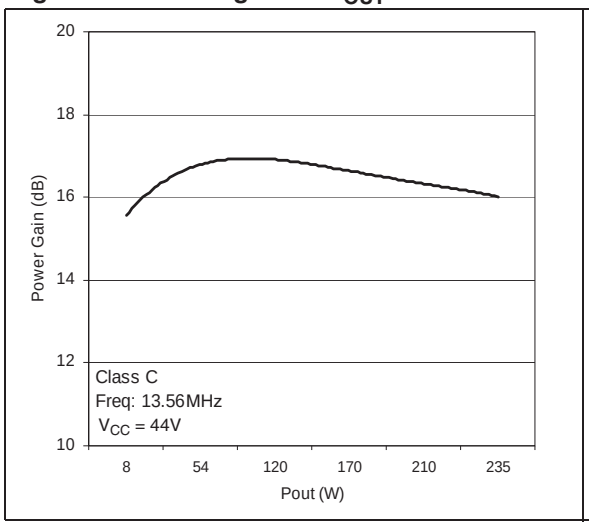
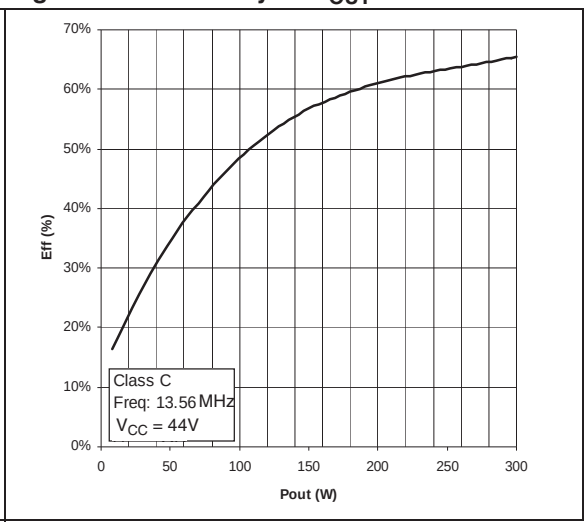


Figure 4. Efficiency vs P_{OUT}



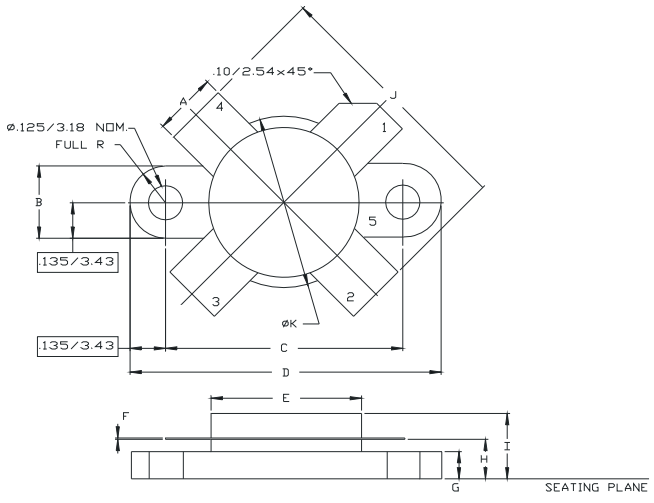
4 Package mechanical data

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

Table 7. M177 (.550 DIA 4/L N/HERM W/FLG) mechanical data

Dim.	mm.			Inch		
	Min	Typ	Max	Min	Typ	Max
A	5.72		5.97	0.225		0.235
B	6.73		6.96	0.265		0.275
C	21.84		22.10	0.860		0.870
D	28.70		28.96	1.130		1.140
E	13.84		14.10	0.545		0.555
F	0.08		0.18	0.003		0.007
G	2.49		2.74	0.098		0.108
H	3.81		4.32	0.150		0.170
I			7.11			0.280
J	27.43		28.45	1.080		1.120
K	15.88		16.13	0.625		0.635

Figure 5. Package dimensions



5 Revision history

Table 8. Revision history

Date	Revision	Changes
1-Jul-2003	1	First release
24-Apr-2007	2	Document reformatted, updated *Table 2.*

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