

# SD1728 (TH430)

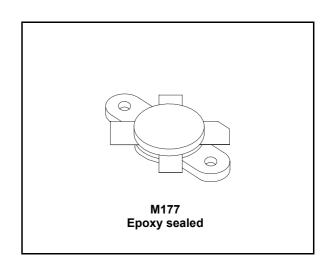
RF & Microwave transistors
HF SSB application

#### **Features**

- 13.56MHz
- 44V
- Gold metallization
- Common emitter
- P<sub>OUT</sub> = 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.



#### Pin connection

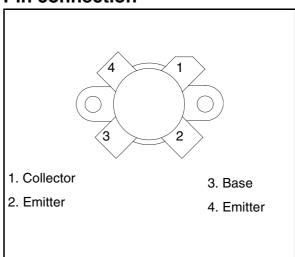


Table 1. Device summary

Part number	Package	Marking
SD1728	M177	TH430

Contents SD1728 (TH430)

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SD1728 (TH430) Electrical data

## 1 Electrical data

## 1.1 Maximum ratings

**Table 2.** Absolute maximum ratings  $(T_{CASE} = 25^{\circ}C)$ 

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-base voltage	110	V
V <sub>CEO</sub>	Collector-emitter voltage	55	V
V <sub>EBO</sub>	Emitter-base voltage	4.0	V
I <sub>C</sub>	Device current	40	Α
P <sub>DISS</sub>	Power dissipation	330	W
T <sub>J</sub>	Maximum operating junction temperature	200	°C
T <sub>STG</sub>	Storage temperature	-65 to +150	°C

#### 1.2 Thermal data

Table 3. Thermal data

Symbol	Parameter	Value	Unit
R <sub>thJC</sub>	Junction - case thermal resistance	0.4	°C/W

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Electrical characteristics SD1728 (TH430)

## 2 Electrical characteristics

$$T_{CASE} = +25$$
 °C

#### 2.1 Static

Table 4. Static

Symbol	Test conditions	Values			Unit
	rest conditions		Тур	Max	Oilit
BV <sub>CES</sub>	$I_C = 200 \text{mA}, V_{BE} = 0 \text{V}$	110			V
BV <sub>CEO</sub>	I <sub>C</sub> = 200mA, I <sub>B</sub> = 0mA	55			V
BV <sub>EBO</sub>	$I_E = 20$ mA, $I_C = 0$ mA	4.0			٧
I <sub>CEO</sub>	$V_{CE} = 30V$ , $I_{E} = 0mA$			500	μΑ
I <sub>CES</sub>	$V_{CE} = 60V$ , $I_E = 0mA$			500	μΑ
I <sub>EBO</sub>	V <sub>BE</sub> = 4.2V			500	μΑ
h <sub>FE</sub>	$V_{CE} = 6V, I_{C} = 10A$	23		45	

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

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

## 2.2 Dynamic

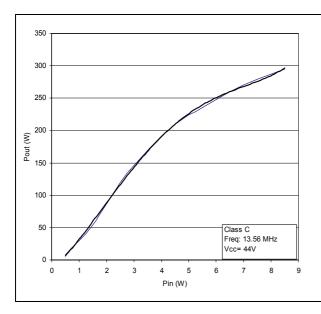
Table 6. Dynamic

Symbol	Test conditions		Values		
Symbol	rest conditions	Min	Тур	Max	Unit
P <sub>OUT</sub>	V <sub>CC</sub> = 44V, f = 13.56MHz	200	250		W
G <sub>P</sub>	V <sub>CC</sub> = 44V, P <sub>OUT</sub> = 200W	15	17		dB
η <sub>c</sub>	V <sub>CC</sub> = 44V, P <sub>OUT</sub> = 200W	56			%
C <sub>OB</sub>	V <sub>CB</sub> = 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)



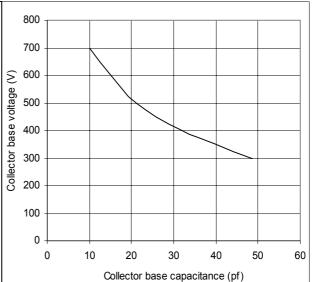
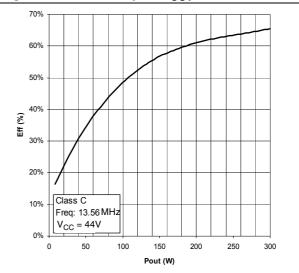


Figure 3. Power gain vs P<sub>OUT</sub>

20
18
18
10
11
12
Class C
Freq: 13.56MHz
V<sub>CC</sub> = 44V
8 54 120 170 210 235
Pout (W)

Figure 4. Efficiency vs P<sub>OUT</sub>



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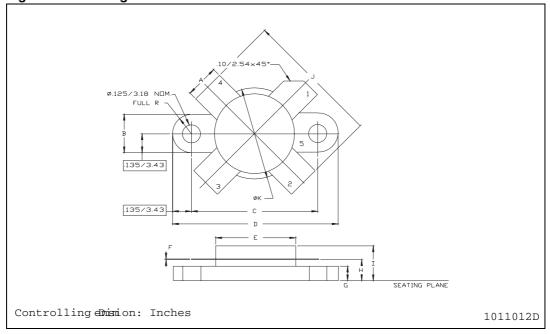
## 4 Package mechanical data

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			
Dilli.	Min	Тур	Max	Min	Тур	Max
Α	5.72		5.97	0.225		0.235
В	6.73		6.96	0.265		0.275
С	21.84		22.10	0.860		0.870
D	28.70		28.96	1.130		1.140
Е	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
Н	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



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Revision history SD1728 (TH430)

# 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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