



## SD1728 (TH430)

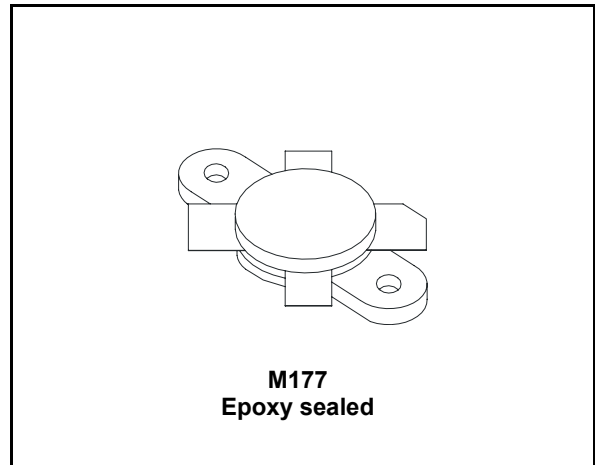
RF & Microwave transistors  
HF SSB application

### 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 applications. This device utilizes emitter ballasting for improved ruggedness and reliability.



### Pin connection

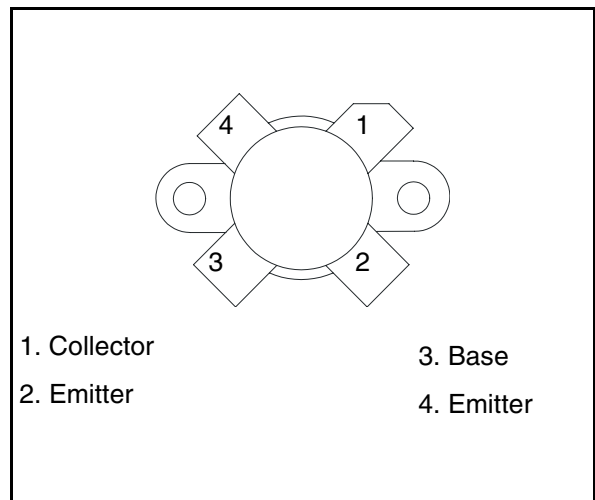


Table 1. Device summary

Part number	Package	Marking
SD1728	M177	TH430

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# 1 Electrical data

## 1.1 Maximum ratings

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

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	$^{\circ}C$
$T_{STG}$	Storage temperature	-65 to +150	$^{\circ}C$

## 1.2 Thermal data

**Table 3. Thermal data**

Symbol	Parameter	Value	Unit
$R_{thJC}$	Junction - case thermal resistance	0.4	$^{\circ}C/W$

## 2 Electrical characteristics

$$T_{CASE} = +25\text{ }^{\circ}\text{C}$$

### 2.1 Static

Table 4. Static

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

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

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	
$P_{OUT}$	$V_{CC} = 44\text{V}, f = 13.56\text{MHz}$	200	250		W
$G_P$	$V_{CC} = 44\text{V}, P_{OUT} = 200\text{W}$	15	17		dB
$\eta_C$	$V_{CC} = 44\text{V}, P_{OUT} = 200\text{W}$	56			%
$C_{OB}$	$V_{CB} = 50\text{V}, f = 1\text{MHz}$		250	360	pF

### 3 Typical performance (Class C)

Figure 1. Output power vs input power

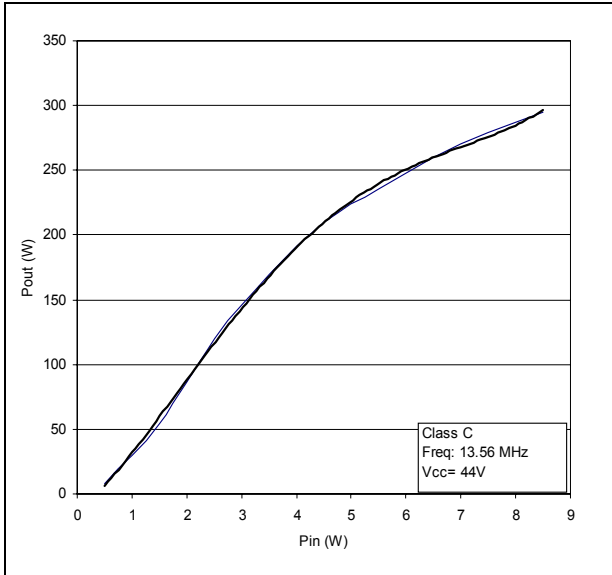


Figure 2. Collector base capacitance vs Collector base voltage (f = 1MHz)

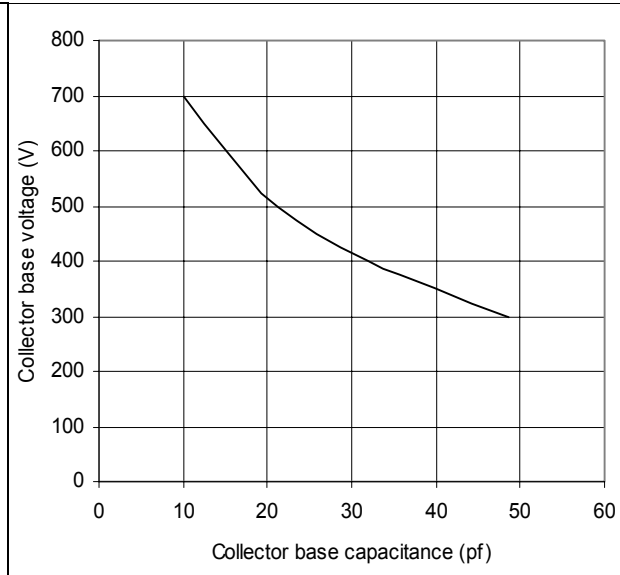


Figure 3. Power gain vs P<sub>OUT</sub>

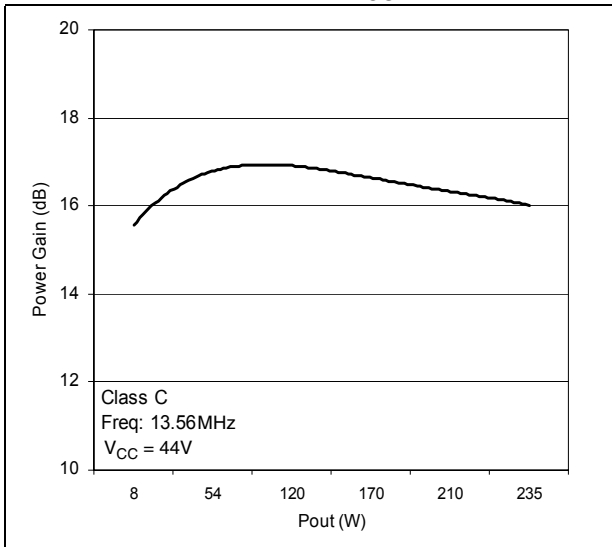
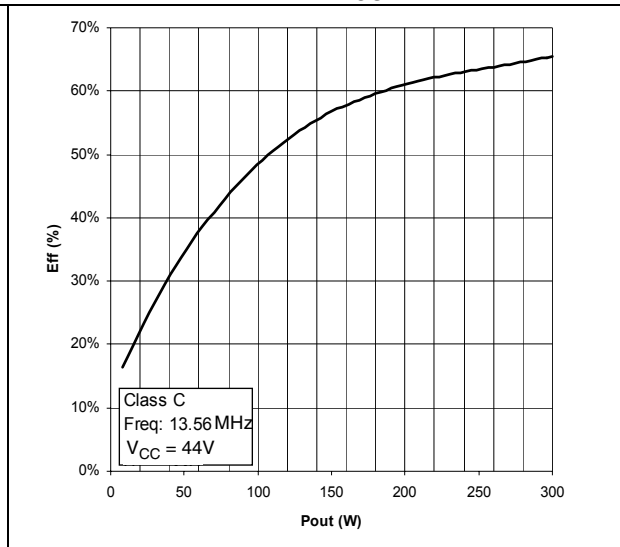


Figure 4. Efficiency vs P<sub>OUT</sub>



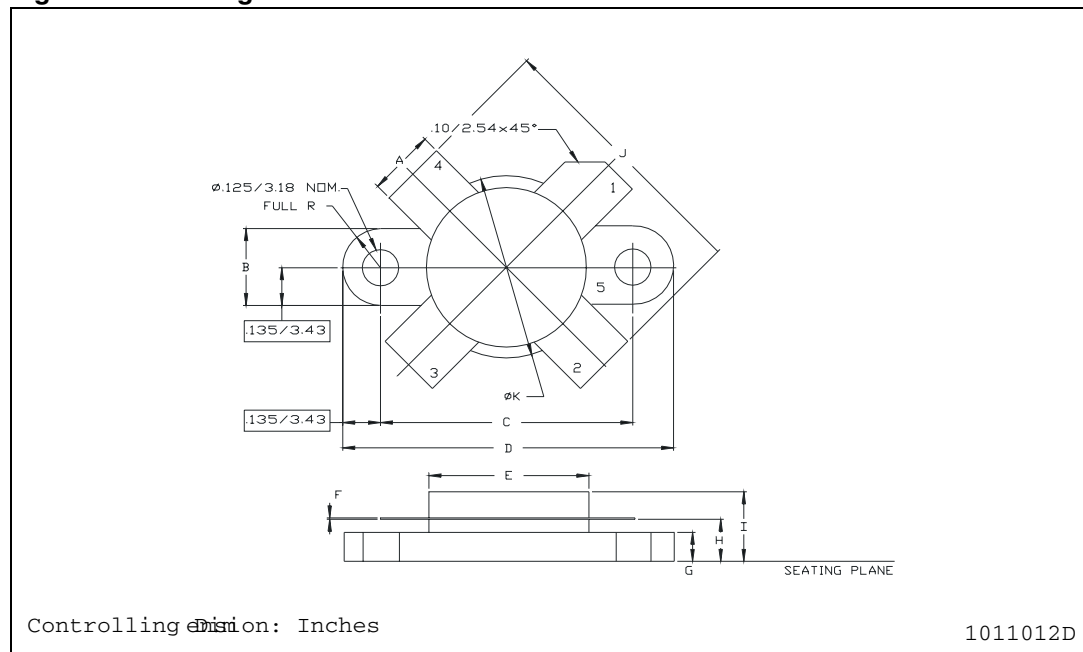
## 4 Package mechanical data

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](http://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 <a href="#">Table 2</a> .



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