



SD1728 (TH430)

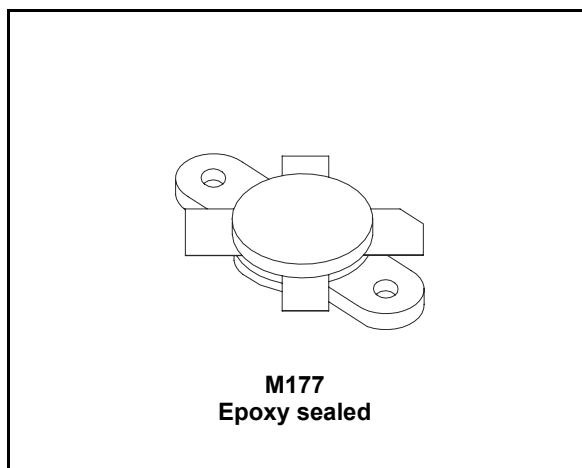
RF & Microwave transistors
HF SSB application

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

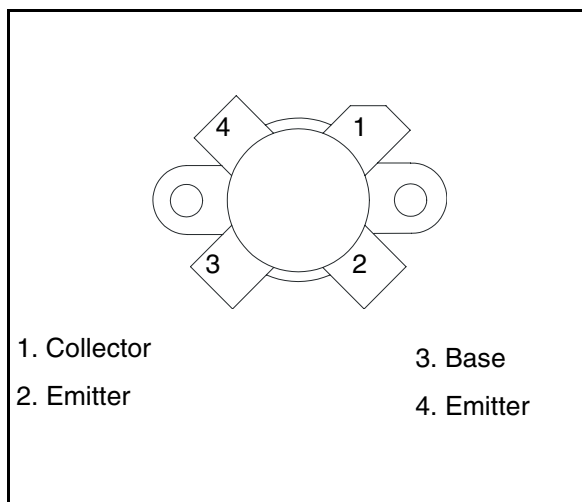


Table 1. Device summary

Part number	Package	Marking
SD1728	M177	TH430

Contents

1 Electrical data 3

 1.1 Maximum ratings 3

 1.2 Thermal data 3

2 Electrical characteristics 4

 2.1 Static 4

 2.2 Dynamic 4

3 Typical performance (Classe C) 5

4 Package mechanical data 7

5 Revision history 9

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

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

2.1 Static

Table 4. Static

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

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

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

3 Typical performance (Class C)

Figure 1. Output power vs input power

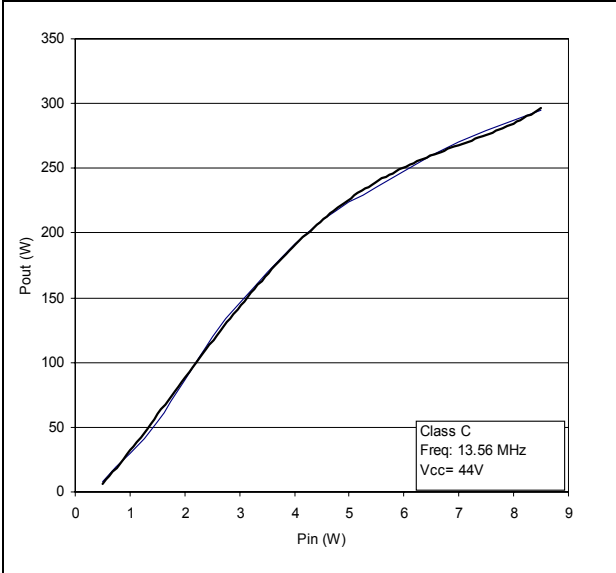


Figure 2. Collector base capacitance vs Collector base voltage (f = 1MHz)

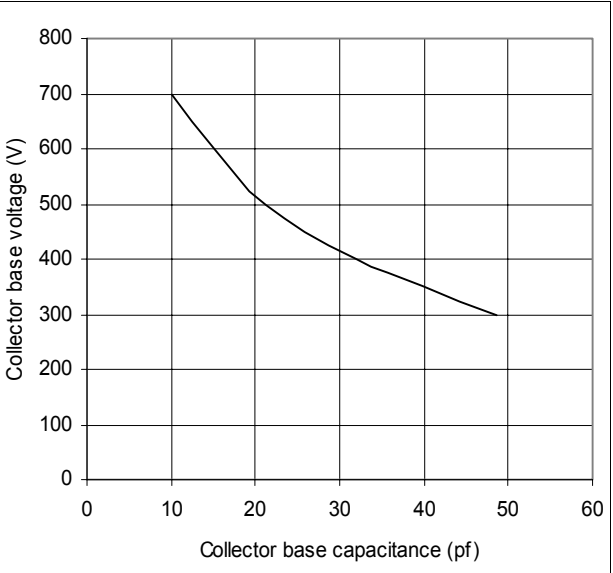


Figure 3. Power gain vs POUT

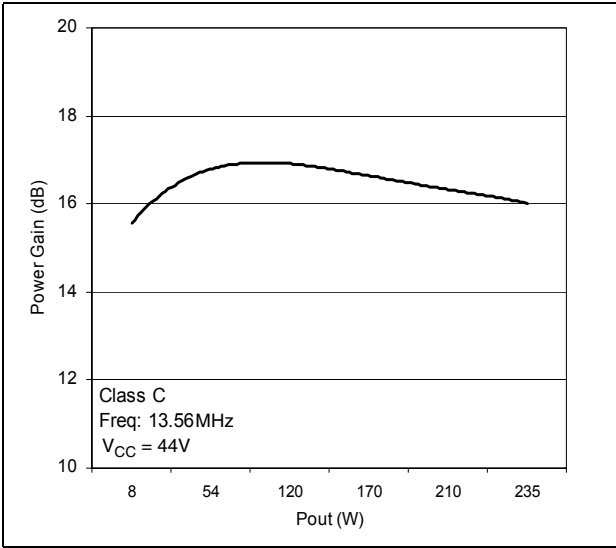
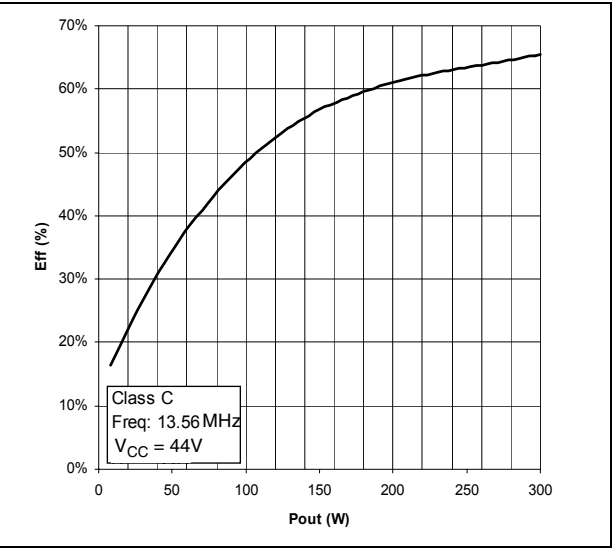


Figure 4. Efficiency vs POUT

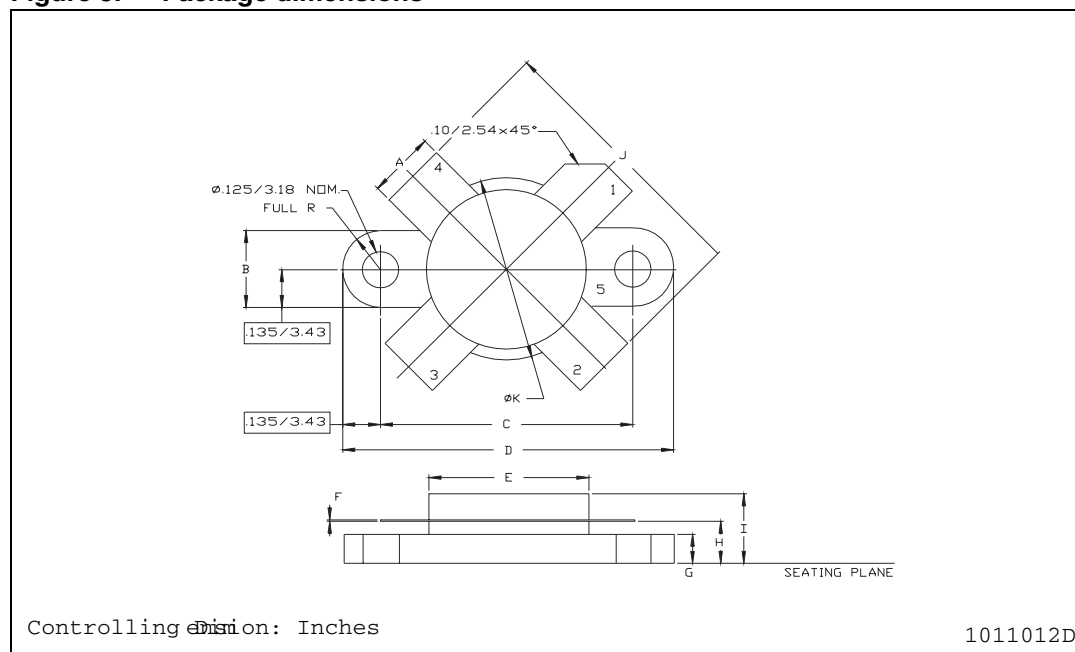


4 Package mechanical data

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 .

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

UNLESS EXPRESSLY APPROVED IN WRITING BY AN AUTHORIZED ST REPRESENTATIVE, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER'S OWN RISK.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2007 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com