

## PNP medium power transistor

Datasheet - production data

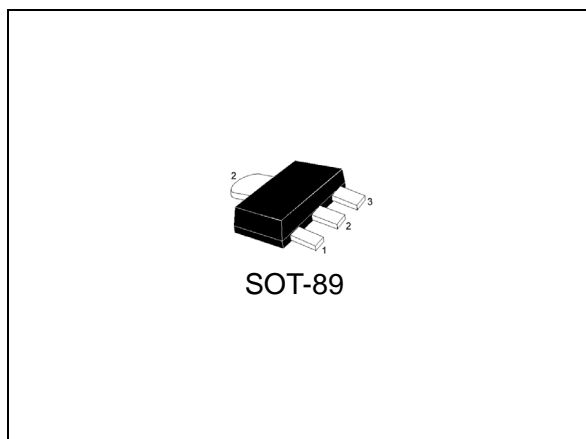
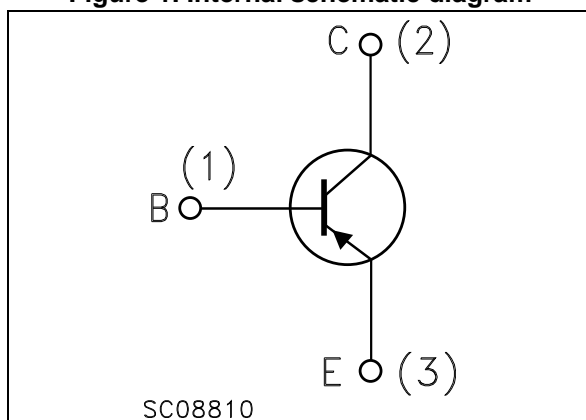


Figure 1. Internal schematic diagram



### Features

- In compliance with the 2002/93/EC European directive
- Available in tape & reel packing
- Surface mounting devices in medium power SOT-223 and SOT-89 packages

### Applications

- Voltage regulation
- Relay driver
- Generic switch

### Description

The STF826 is a PNP transistor manufactured using planar Technology resulting in rugged high performance devices.

Table 1. Device summary

Order code	Marking	Package	Packaging
STF826	826	SOT-89	Tape and reel

Contents

1      **Absolute maximum ratings** ..... 3

2      **Electrical characteristics** ..... 4

      2.1      Electrical characteristics (curves) ..... 5

3      **Package mechanical data** ..... 7

4      **Packaging mechanical data** ..... 9

5      **Revision history** ..... 11



# 1 Absolute maximum ratings

**Table 2. Absolute maximum ratings**

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-base voltage ( $I_E = 0$ )	-60	V
$V_{CEO}$	Collector-emitter voltage ( $I_B = 0$ )	-30	V
$V_{EBO}$	Collector-base voltage ( $I_C = 0$ )	-5	V
$I_C$	Collector current	-3	A
$I_{CM}$	Collector peak current ( $t_P < 5$ ms)	-6	A
$I_B$	Base current	-1	A
$I_{BM}$	Base peak current ( $t_P < 5$ ms)	-2	A
$P_{TOT}$	Total dissipation at $T_C = 25$ °C	1.4	W
$T_{STG}$	Storage temperature	-65 to 150	°C
$T_J$	Max. operating junction temperature	150	°C

**Table 3. Thermal data**

Symbol	Parameter	Value	Unit
$R_{thj-amb}^{(1)}$	Thermal Resistance Junction-Amb max.	89	°C/W

1. Device mounted on a PCB area of 1 cm<sup>2</sup>.

## 2 Electrical characteristics

( $T_{CASE} = 25\text{ }^{\circ}\text{C}$ ; unless otherwise specified)

**Table 4. Electrical characteristics**

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$I_{CES}$	Collector cut-off current ( $V_{BE} = 0$ )	$V_{CE} = -60\text{ V}$			-10	$\mu\text{A}$
$I_{CEO}$	Collector cut-off current ( $I_B = 0$ )	$V_{CE} = -30\text{ V}$			-100	$\mu\text{A}$
$I_{EBO}$	Emitter cut-off current ( $I_C = 0$ )	$V_{EB} = -5\text{ V}$			-10	$\mu\text{A}$
$V_{(BR)CBO}$	Collector-base breakdown voltage ( $I_E = 0$ )	$I_C = -100\text{ }\mu\text{A}$	-60			V
$V_{(BR)CEO}^{(1)}$	Collector-emitter breakdown voltage ( $I_B = 0$ )	$I_C = -10\text{ mA}$	-30			V
$V_{(BR)EBO}$	Collector-emitter breakdown voltage ( $I_C = 0$ )	$I_E = -100\text{ }\mu\text{A}$	-5			V
$V_{CE(sat)}^{(1)}$	Collector-emitter saturation voltage	$I_C = -1\text{ A}, I_B = -50\text{ mA}$			-0.4	V
		$I_C = -2\text{ A}, I_B = -100\text{ mA}$			-0.7	V
		$I_C = -3\text{ A}, I_B = -150\text{ mA}$			-1.1	V
$V_{BE(sat)}^{(1)}$	Base-emitter saturation voltage	$I_C = -2\text{ A}, I_B = -100\text{ mA}$			-1.2	V
$h_{FE}$	DC current gain	$I_C = -100\text{ mA}, V_{CE} = -2\text{ V}$ $I_C = -1\text{ A}, V_{CE} = -2\text{ V}$ $I_C = -3\text{ A}, V_{CE} = -2\text{ V}$	100 80 30		300	
$f_T$	Transistor frequency	$V_{CE} = -10\text{ V}, I_C = -0.1\text{ A}$		100		MHz

1. Pulsed duration = 300 ms, duty cycle  $\leq 1.5\%$ .

# 2.1 Electrical characteristics (curves)

Figure 2. DC current gain  $V_{CE} = 2\text{ V}$

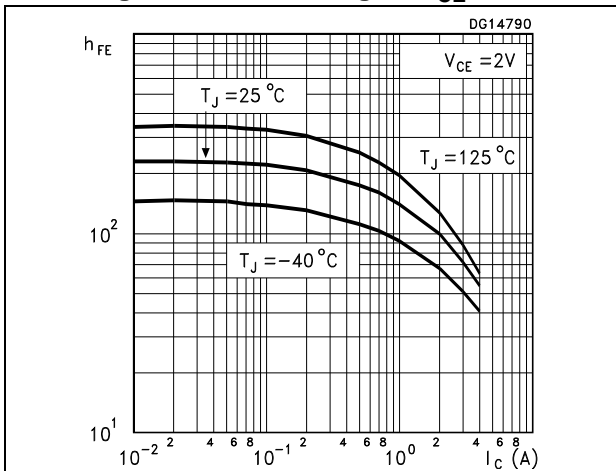


Figure 3. DC current gain  $V_{CE} = 5\text{ V}$

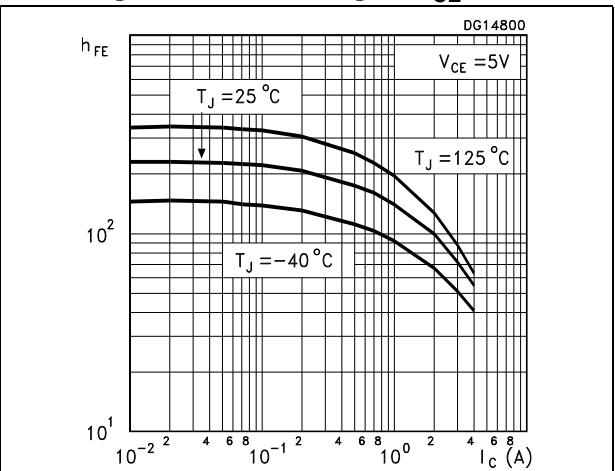


Figure 4. Collector-emitter saturation voltage

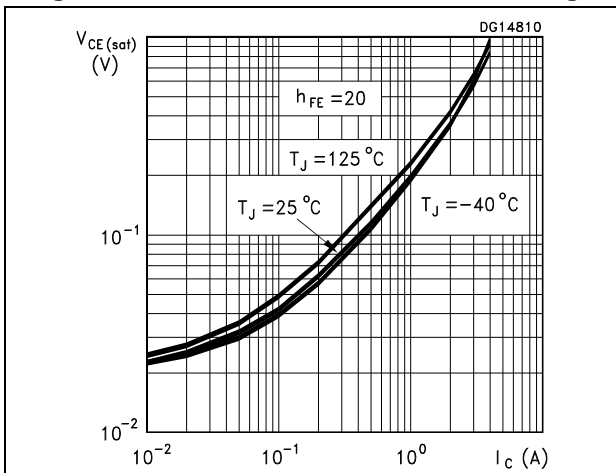


Figure 5. Base-emitter saturation voltage

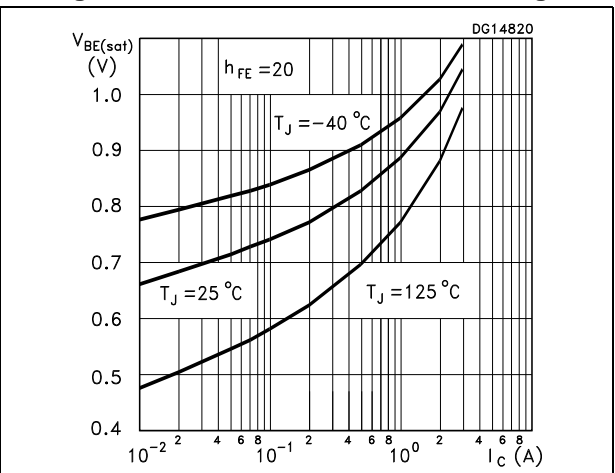


Figure 6. Switching times on resistive load OFF

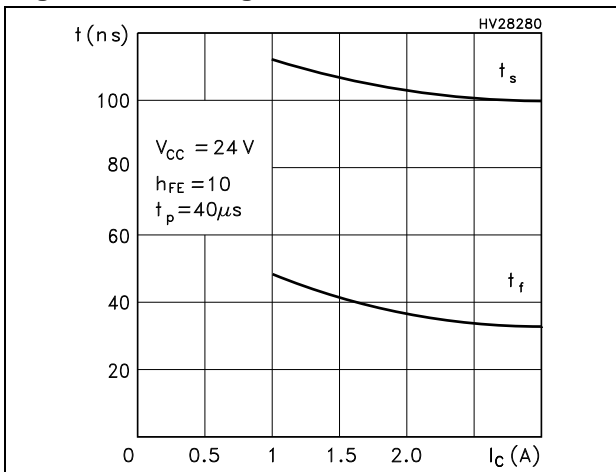


Figure 7. Switching times resistive on load ON

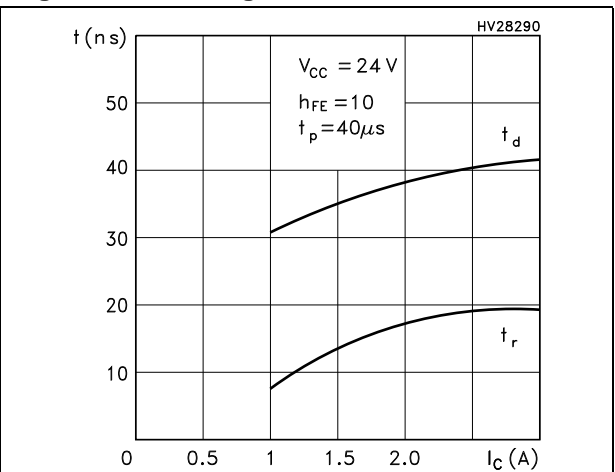
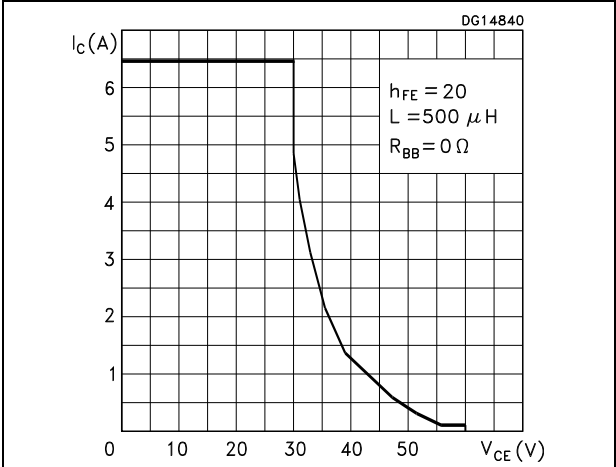


Figure 8. Reverse biased area



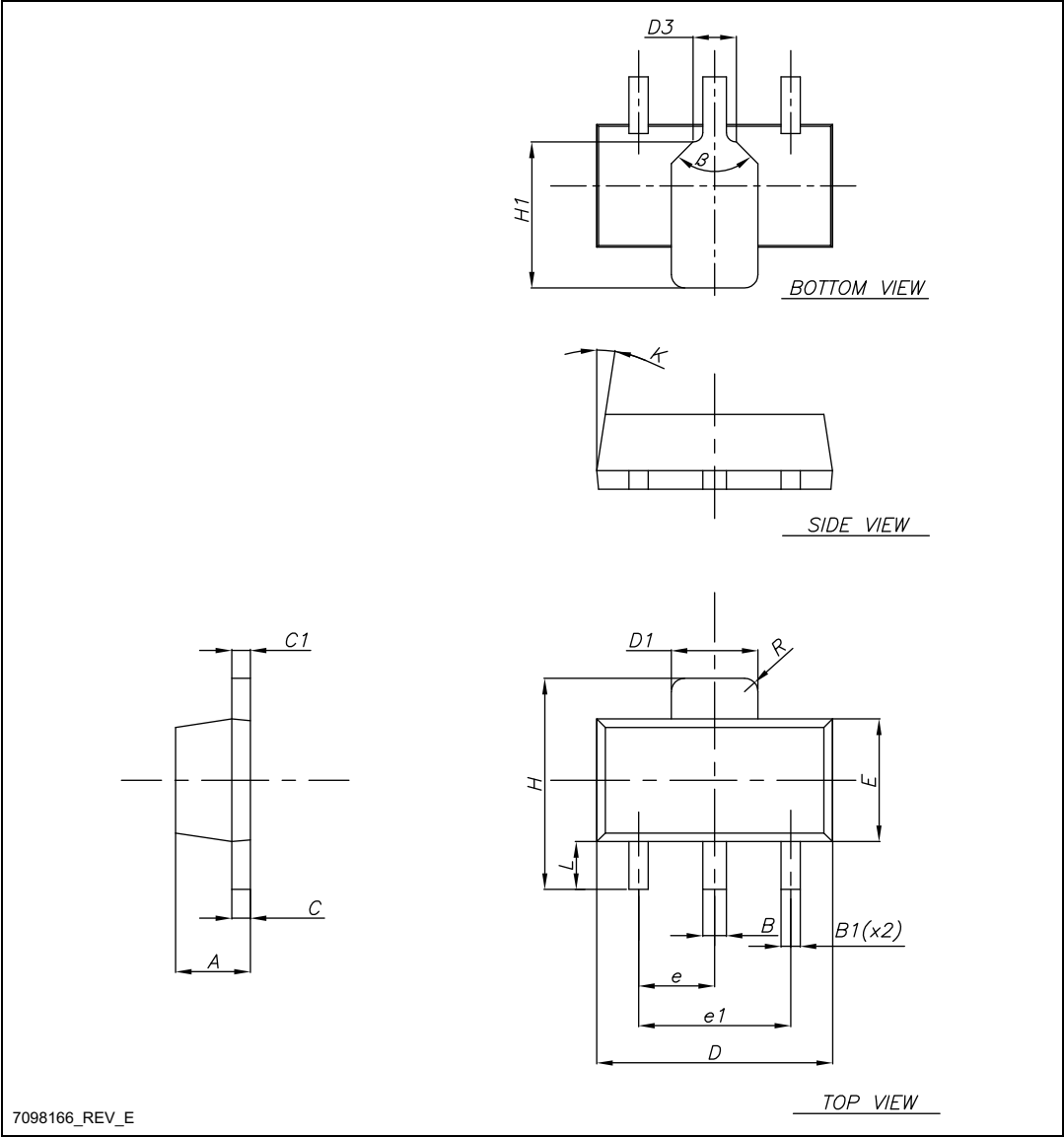
### 3 Package mechanical data

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK<sup>®</sup> packages, depending on their level of environmental compliance. ECOPACK<sup>®</sup> specifications, grade definitions and product status are available at: [www.st.com](http://www.st.com). ECOPACK<sup>®</sup> is an ST trademark.

**Table 5. SOT-89 mechanical data**

Dim.	mm		
	Min.	Typ.	Max.
A	1.40		1.60
B	0.44		0.56
B1	0.36		0.48
C	0.35		0.44
C1	0.35		0.44
D	4.40		4.60
D1	1.62		1.83
D3		0.90	
E	2.29		2.60
e	1.42		1.57
e1	2.92		3.07
H	3.94		4.25
H1	2.70		3.10
K	1°		8°
L	0.89		1.20
R		0.25	
β		90°	

Figure 9. SOT-89 drawings



## 4 Packaging mechanical data

Table 6. SOT-89 carrier tape dimensions

Dim.	mm.	
	Values	Tolerance
Ao	4.91	$\pm 0.10$
Bo	4.52	$\pm 0.10$
Ko	1.90	$\pm 0.10$
F	5.50	$\pm 0.10$
E	1.75	$\pm 0.10$
W	12	$\pm 0.30$
P2	2	$\pm 0.10$
Po	4	$\pm 0.10$
P1	8	$\pm 0.10$
T	0.30	$\pm 0.10$
D	$\varnothing 1.55$	$\pm 0.05$
D1	$\varnothing 1.60$	$\pm 0.10$

Figure 10. SOT-89 carrier tape drawing

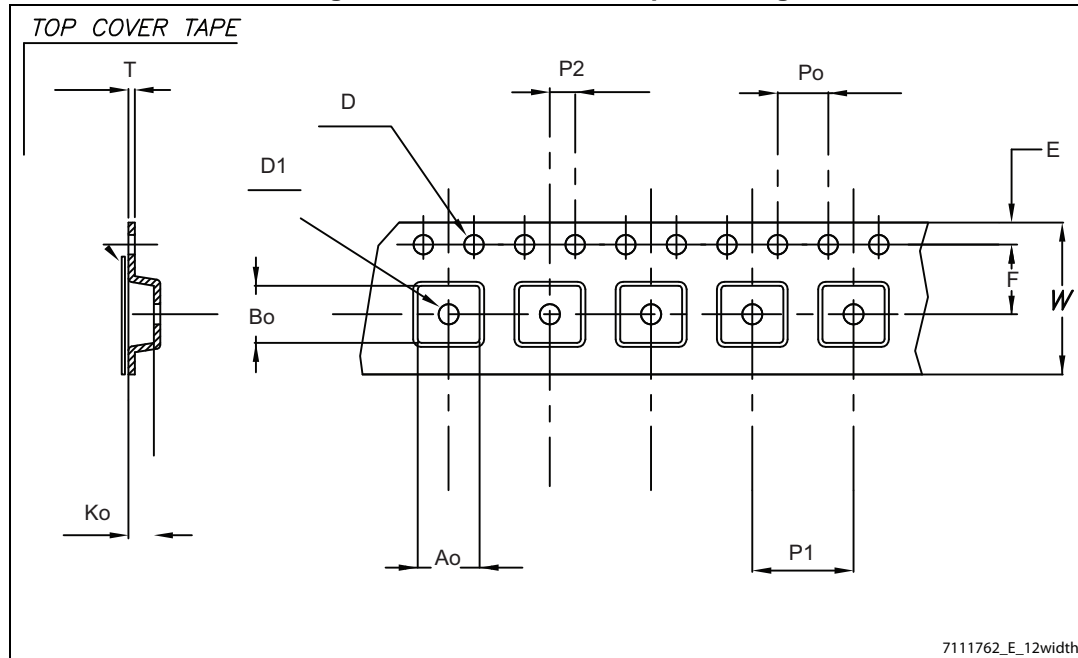
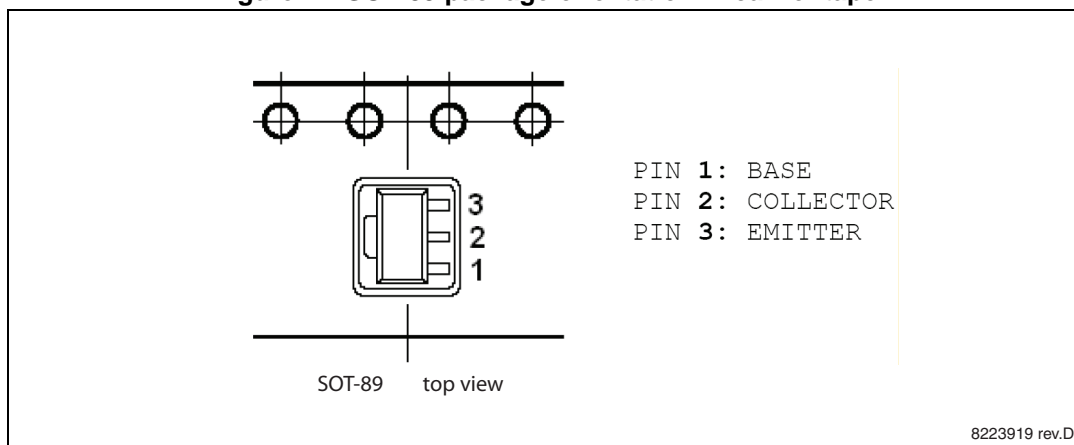


Figure 11. SOT-89 package orientation in carrier tape



## 5 Revision history

**Table 7. Document revision history**

Date	Revision	Changes
03-Aug-2005	1	Initial release.
25-Feb-2013	2	Removed part number STF826 in SOT-223 package.

**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.**

**ST PRODUCTS ARE NOT AUTHORIZED FOR USE IN WEAPONS. NOR ARE ST PRODUCTS DESIGNED OR AUTHORIZED FOR USE IN: (A) SAFETY CRITICAL APPLICATIONS SUCH AS LIFE SUPPORTING, ACTIVE IMPLANTED DEVICES OR SYSTEMS WITH PRODUCT FUNCTIONAL SAFETY REQUIREMENTS; (B) AERONAUTIC APPLICATIONS; (C) AUTOMOTIVE APPLICATIONS OR ENVIRONMENTS, AND/OR (D) AEROSPACE APPLICATIONS OR ENVIRONMENTS. WHERE ST PRODUCTS ARE NOT DESIGNED FOR SUCH USE, THE PURCHASER SHALL USE PRODUCTS AT PURCHASER'S SOLE RISK, EVEN IF ST HAS BEEN INFORMED IN WRITING OF SUCH USAGE, UNLESS A PRODUCT IS EXPRESSLY DESIGNATED BY ST AS BEING INTENDED FOR "AUTOMOTIVE, AUTOMOTIVE SAFETY OR MEDICAL" INDUSTRY DOMAINS ACCORDING TO ST PRODUCT DESIGN SPECIFICATIONS. PRODUCTS FORMALLY ESCC, QML OR JAN QUALIFIED ARE DEEMED SUITABLE FOR USE IN AEROSPACE BY THE CORRESPONDING GOVERNMENTAL AGENCY.**

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.

© 2013 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 - Philippines - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

[www.st.com](http://www.st.com)