

## PNP MEDIUM POWER TRANSISTORS

### Features

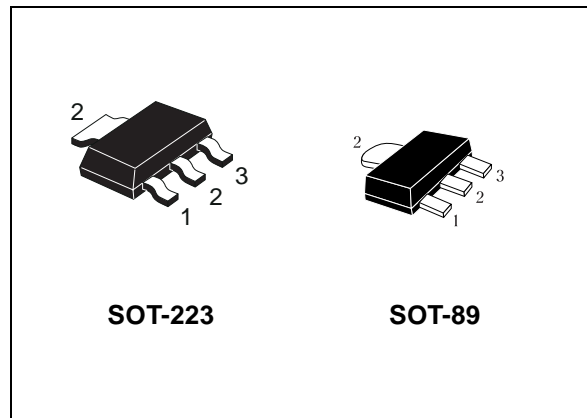
- SURFACE MOUNTING DEVICES IN MEDIUM POWER SOT-223 AND SOT-89 PACKAGES
- AVAILABLE IN TAPE & REEL PACKING
- IN COMPLIANCE WITH THE 2002/93/EC EUROPEAN DIRECTIVE

### Applications

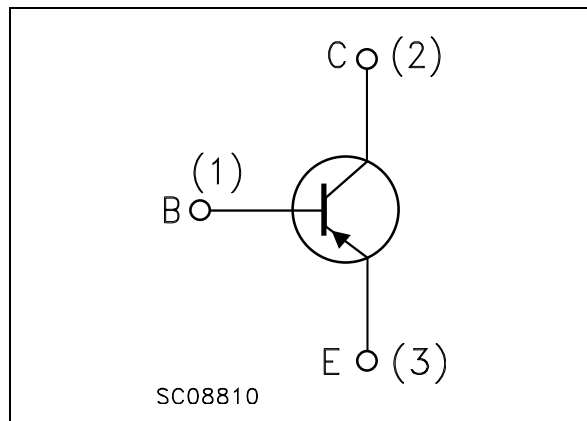
- VOLTAGE REGULATION
- RELAY DRIVER
- GENERIC SWITCH

### Description

The STF826 and STN826 are PNP transistors manufactured using planar Technology resulting in rugged high performance devices.



### Internal Schematic Diagram



### Order codes

Part Number	Marking	Package	Packing
STF826	826	SOT-89	Tape & reel
STN826	N826	SOT-223	Tape & reel

# 1 Absolute Maximum Ratings

**Table 1. Absolute Maximum Rating**

Symbol	Parameter	Value		Unit
		STF826	STN826	
$V_{CBO}$	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 ( $t_p < 5\text{ms}$ )	-6		A
$I_B$	Base Current	-1		A
$I_{BM}$	Base Peak Current ( $t_p < 5\text{ms}$ )	-2		A
$P_{TOT}$	Total dissipation at $T_C = 25^\circ\text{C}$	1.4	1.6	W
$T_{STG}$	Storage Temperature	-65 to 150		°C
$T_J$	Max. Operating Junction Temperature	150		

**Table 2. Thermal Data**

Symbol	Parameter		Value		Unit
			SOT-89	SOT-223	
$R_{thj-amb}$ <i>Note: 1</i>	Thermal Resistance Junction-Amb	Max	89	78	°C/W

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

## 2 Electrical Characteristics

**Table 3. Electrical Characteristics** ( $T_{CASE} = 25^{\circ}C$ ; unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CES}$	Collector Cut-off Current ( $V_{BE} = 0$ )	$V_{CE} = -60V$			-10	$\mu A$
$I_{CEO}$	Collector Cut-off Current ( $I_B = 0$ )	$V_{CE} = -30V$			-100	$\mu A$
$I_{EBO}$	Emitter Cut-off Current ( $I_C = 0$ )	$V_{EB} = -5V$			-10	$\mu A$
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ( $I_E = 0$ )	$I_C = -100\mu A$	-60			V
$V_{(BR)CEO}$ <i>Note 2</i>	Collector-Emitter Breakdown Voltage ( $I_B = 0$ )	$I_C = -10\text{ mA}$	-30			V
$V_{(BR)EBO}$	Collector-Emitter Breakdown Voltage ( $I_C = 0$ )	$I_E = -100\ \mu A$	-5			V
$V_{CE(sat)}$ <i>Note 2</i>	Collector-Emitter Saturation Voltage	$I_C = -1\text{ A}$ $I_B = -50\text{ mA}$ $I_C = -2\text{ A}$ $I_B = -100\text{ mA}$ $I_C = -3\text{ A}$ $I_B = -150\text{ mA}$			-0.4 -0.7 -1.1	V V V
$V_{BE(sat)}$ <i>Note 2</i>	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

2 Pulsed duration = 300  $\mu s$ , duty cycle  $\leq 1.5\%$ .

## 2.1 Electrical characteristics (curve)

Figure 1. DC Current Gain

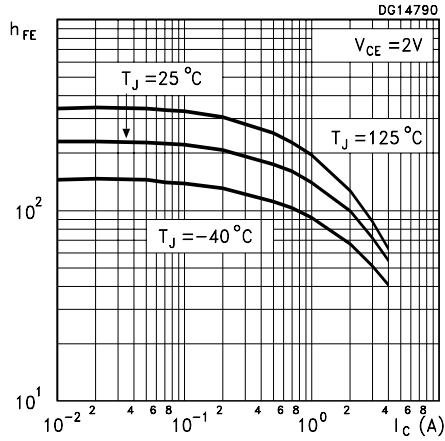


Figure 2. DC Current Gain

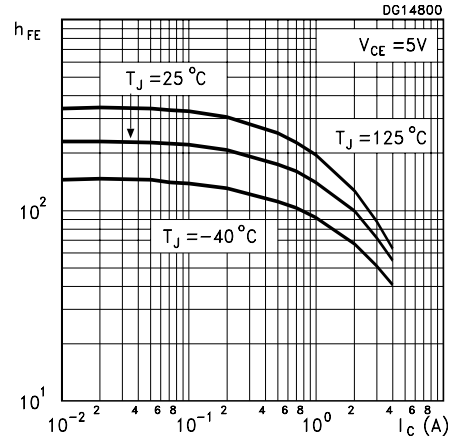


Figure 3. Collector-emitter saturation voltage Figure 4. Base-emitter saturation voltage

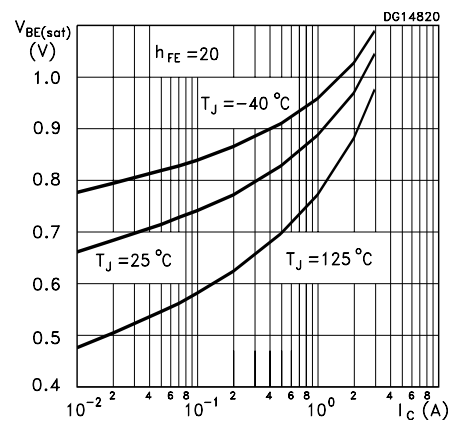
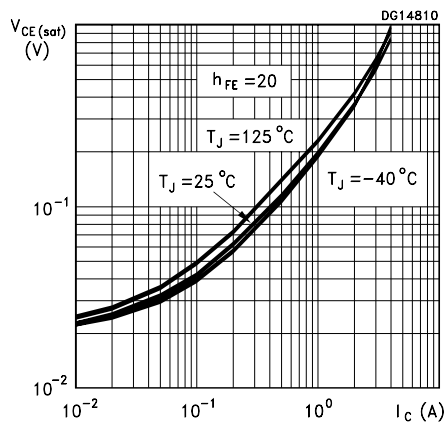


Figure 5. Switching times on resistive load

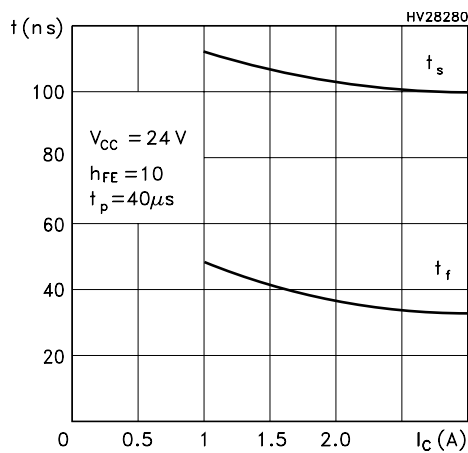


Figure 6. Switching times resistive on load

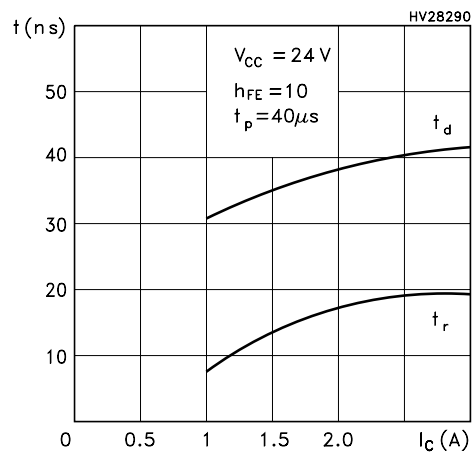
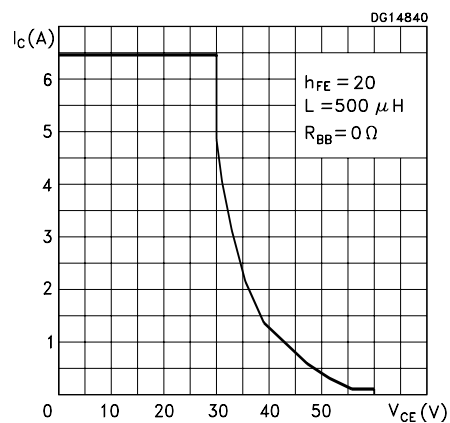


Figure 7. Reverse biased area

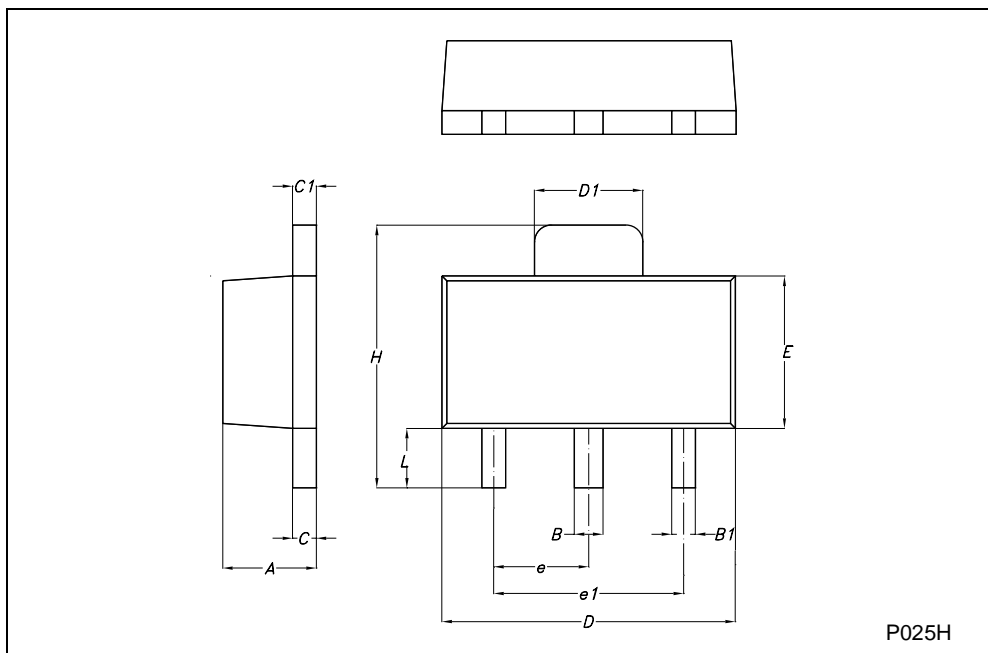


### 3 Package Mechanical Data

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)

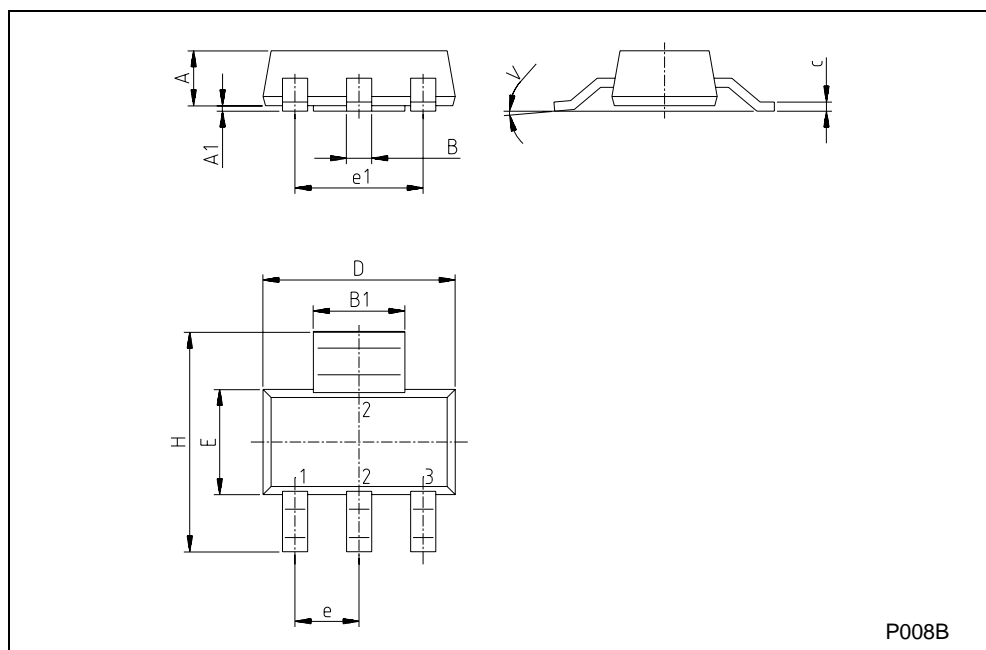
**SOT-89 MECHANICAL DATA**

DIM.	mm			mils		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	1.4		1.6	55.1		63.0
B	0.44		0.56	17.3		22.0
B1	0.36		0.48	14.2		18.9
C	0.35		0.44	13.8		17.3
C1	0.35		0.44	13.8		17.3
D	4.4		4.6	173.2		181.1
D1	1.62		1.83	63.8		72.0
E	2.29		2.6	90.2		102.4
e	1.42		1.57	55.9		61.8
e1	2.92		3.07	115.0		120.9
H	3.94		4.25	155.1		167.3
L	0.89		1.2	35.0		47.2



**SOT-223 MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			1.80			0.071
B	0.60	0.70	0.80	0.024	0.027	0.031
B1	2.90	3.00	3.10	0.114	0.118	0.122
c	0.24	0.26	0.32	0.009	0.010	0.013
D	6.30	6.50	6.70	0.248	0.256	0.264
e		2.30			0.090	
e1		4.60			0.181	
E	3.30	3.50	3.70	0.130	0.138	0.146
H	6.70	7.00	7.30	0.264	0.276	0.287
V			10°			10°
A1		0.02				





## 4 Revision History

Date	Revision	Changes
03-Aug-2005	1	Initial release.

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

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

© 2005 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](http://www.st.com)