

**STF724**
STN724

NPN MEDIUM POWER TRANSISTORS

Features

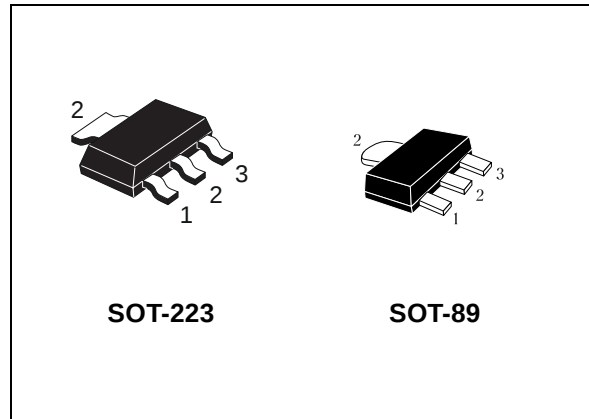
- SURFACE MOUNTING DEVICES IN MEDIUM POWER SOT-223 AND SOT-89 PACKAGE
- AVAILABLE IN TAPE & REEL PACKING
- IN COMPLIANCE WITH THE 2002/93/EC EUROPEAN DIRECTIVE

Applications

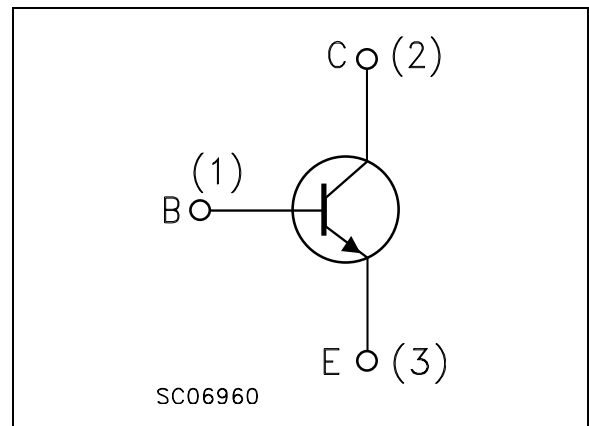
- VOLTAGE REGULATION
- RELAY DRIVER
- GENERIC SWITCH

Description

The STF724 and STN724 are PNP transistors manufactured using planar Technology resulting in rugged high performance devices.



Internal Schematic Diagram



Order codes

Part Number	Marking	Package	Packing
STF724	724	SOT-89	Tape & reel
STN724	N724	SOT-223	Tape & reel

1 Absolute Maximum Ratings

Table 1. Absolute Maximum Rating

Symbol	Parameter	Value		Unit
		STF724	STN724	
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 < 5ms)	6		A
I _B	Base Current	1		A
I _{BM}	Base Peak Current (t _p < 5ms)	2		A
P _{TOT}	Total dissipation at T _c = 25°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	$^\circ C/W$

Note: 1 Device mounted on a PCB area of 1 cm².

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	μA
I_{CEO}	Collector Cut-off Current ($I_B = 0$)	$V_{CE} = 30V$			100	μA
I_{EBO}	Emitter Cut-off Current ($I_C = 0$)	$V_{EB} = 5V$			10	μA
$V_{(BR)CBO}$	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	$I_C = 1\text{ A}$ $I_C = 2\text{ A}$ $I_C = 3\text{ A}$	$I_B = 50\text{ mA}$ $I_B = 100\text{ mA}$ $I_B = 150\text{ mA}$		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	$I_C = 100\text{ mA}$ $I_C = 1\text{ A}$ $I_C = 3\text{ A}$	$V_{CE} = 2\text{ V}$ $V_{CE} = 2\text{ V}$ $V_{CE} = 2\text{ V}$	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 μs , duty cycle $\leq 1.5\%$.

2.1 Electrical characteristics (curve)

Figure 1. DC Current Gain

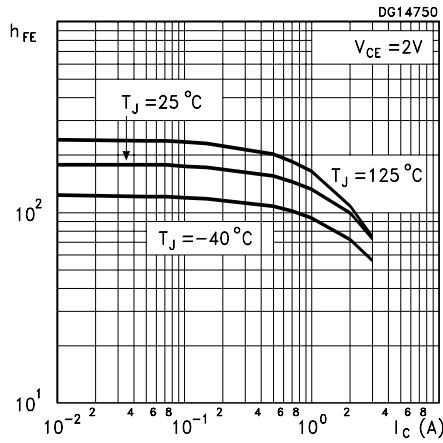


Figure 2. DC Current Gain

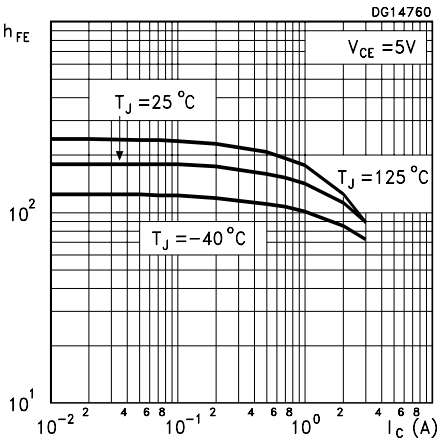


Figure 3. Collector-emitter saturation voltage

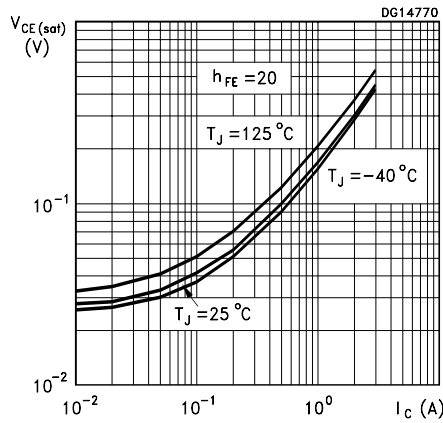


Figure 4. Base-emitter saturation voltage

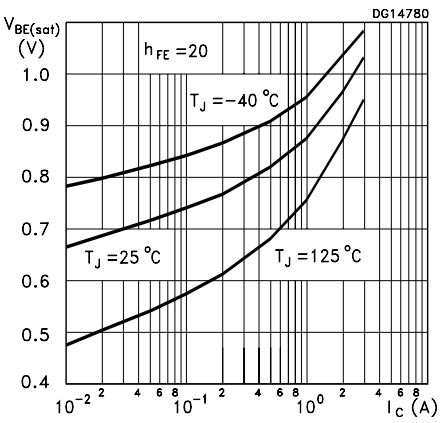


Figure 5. Switching times on resistive load

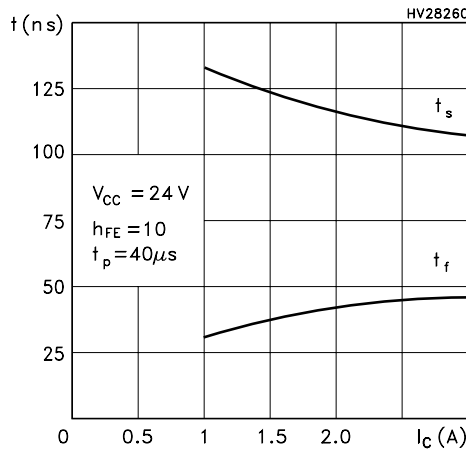


Figure 6. Switching times resistive on load

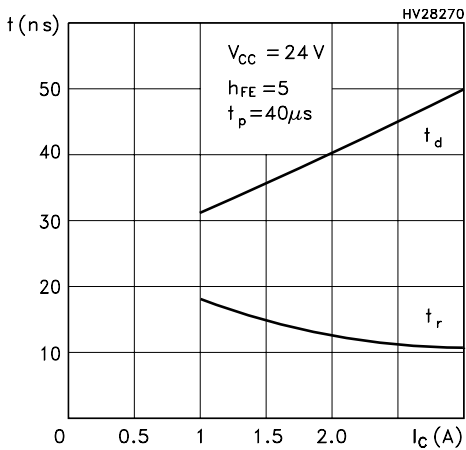
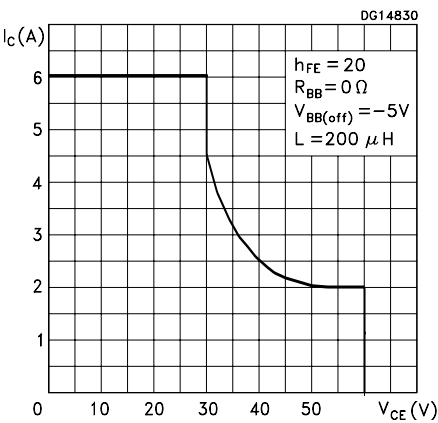


Figure 7. Reverse biased area

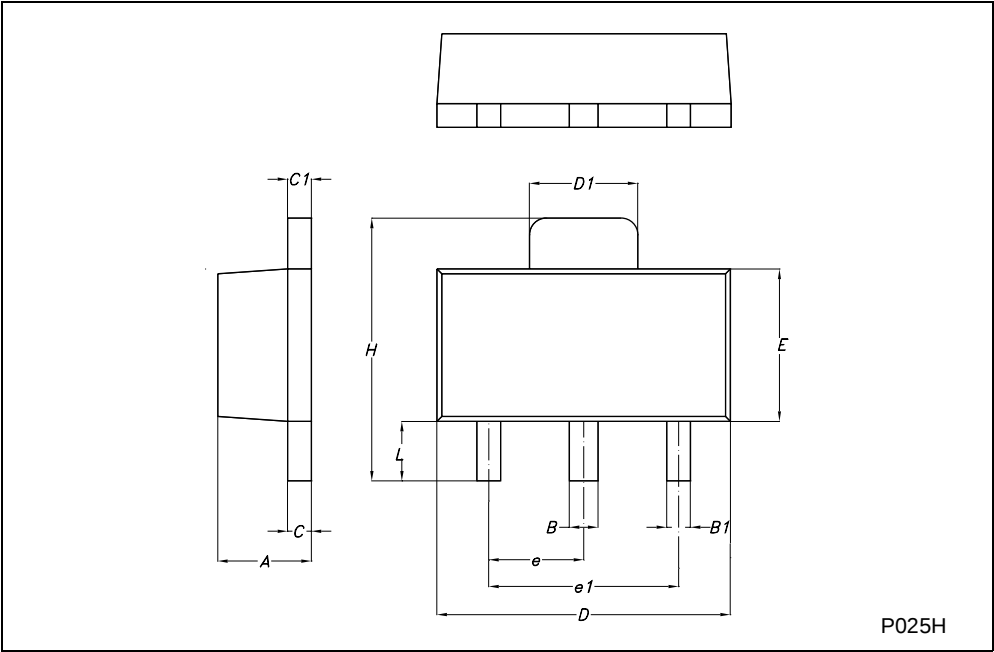


3 Package Mechanical Data

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

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				

The image contains three mechanical drawings of the SOT-223 package. The top-left drawing is a top view showing dimensions A (lead length), A1 (lead thickness), B (lead width), B1 (body width), c (pitch), D (body length), and e1 (body width). The top-right drawing is a side view showing the lead profile and dimension V (lead angle). The bottom drawing is a front view showing dimensions D (body length), B1 (body width), E (body height), H (total height), e (pitch), and three mounting pins labeled 1, 2, and 3.

P008B

4 Revision History

Date	Revision	Changes
12-Oct-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