

NPN MEDIUM POWER TRANSISTORS

Features

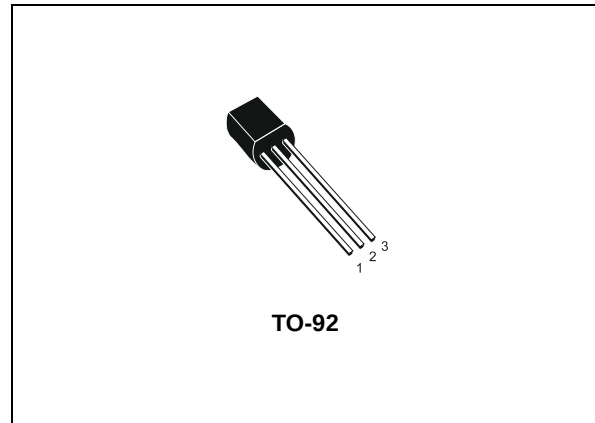
- TO-92 PACKAGE SUITABLE FOR THROUGH-HOLE PCB ASSEMBLY
- IN COMPLIANCE WITH THE 2002/93/EC EUROPEAN DIRECTIVE

Applications

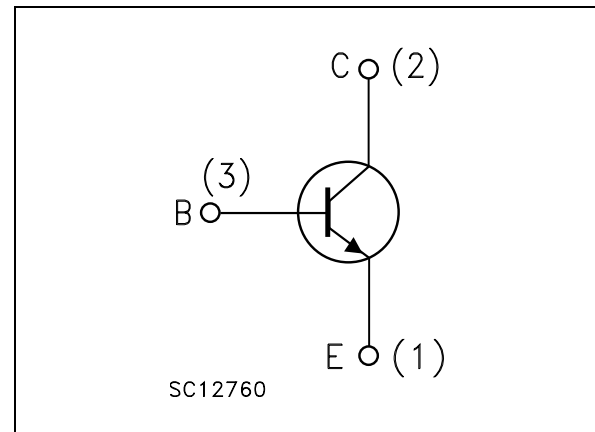
- VOLTAGE REGULATION
- RELAY DRIVER
- GENERIC SWITCH

Description

The STX724 is a NPN transistor manufactured using planar Technology resulting in rugged high performance devices.



Internal Schematic Diagram



Order codes

Part Number	Marking	Package	Packing
STX724	X724	TO-92	BULK

1 Electrical Ratings

Table 1. Absolute Maximum Rating

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 ($t_P < 5\text{ms}$)	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 $T_c = 25^\circ\text{C}$	0.9	W
T_{STG}	Storage Temperature	-65 to 150 150	$^\circ\text{C}$
T_J	Max. Operating Junction Temperature		

Table 2. Thermal Data

Symbol	Parameter	Value	Unit
$R_{thj-case}$	Thermal Resistance Junction-Case Max	44.6	$^\circ\text{C/W}$
$R_{thj-amb}$	Thermal Resistance Junction-Amb Max	139	$^\circ\text{C/W}$

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 1</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 1</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 1</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

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

2.1 Electrical characteristics (curve)

Figure 1. DC Current Gain

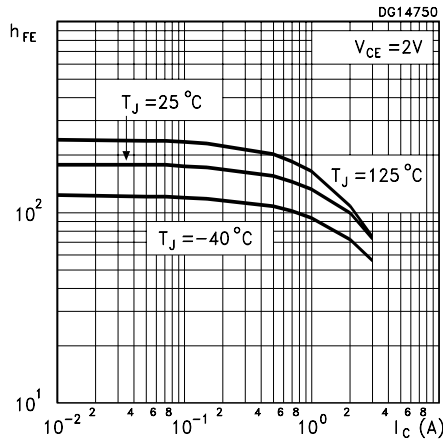


Figure 2. DC Current Gain

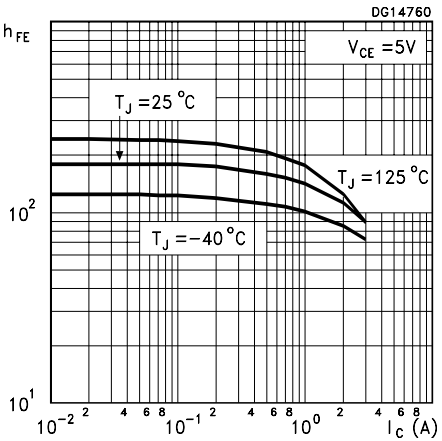


Figure 3. Collector-emitter saturation voltage

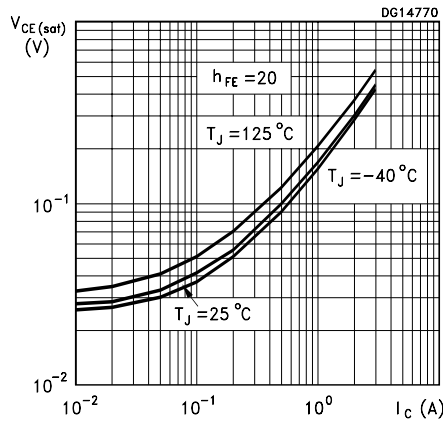


Figure 4. Base-emitter saturation voltage

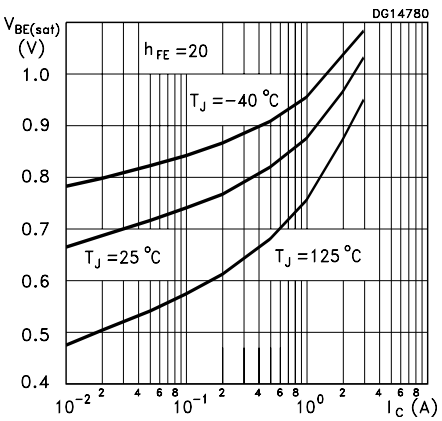


Figure 5. Switching times on resistive load

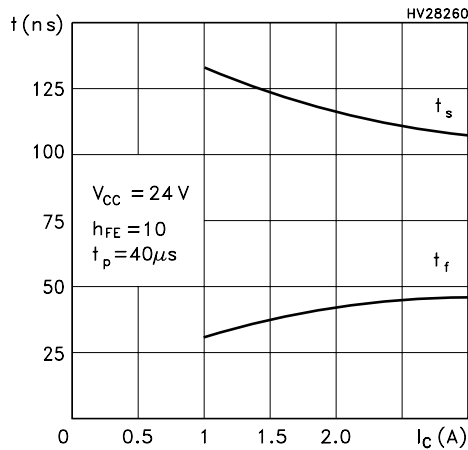


Figure 6. Switching times resistive on load

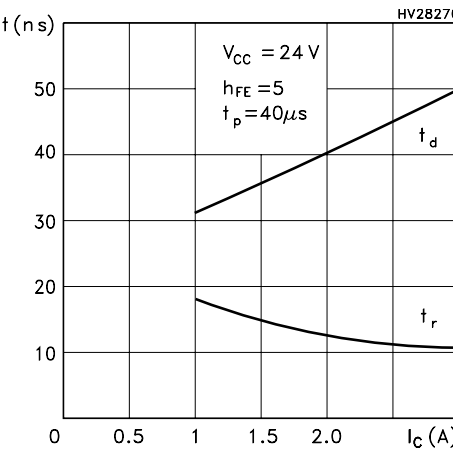
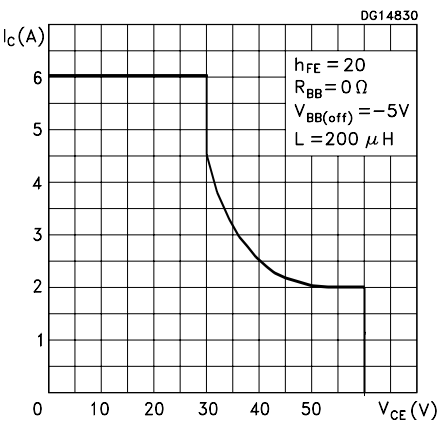


Figure 7. Reverse biased area

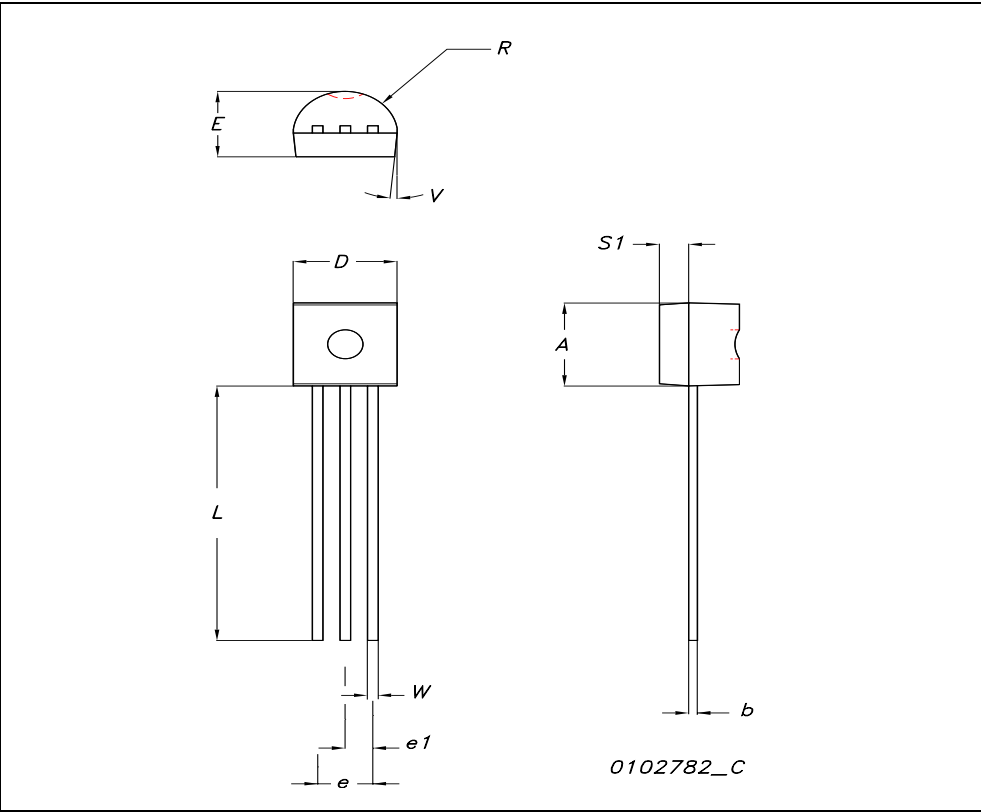


3 Package Mechanical Data

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

TO-92 MECHANICAL DATA

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	4.32		4.95	0.170		0.194
b	0.36		0.51	0.014		0.020
D	4.45		4.95	0.175		0.194
E	3.30		3.94	0.130		0.155
e	2.41		2.67	0.094		0.105
e1	1.14		1.40	0.044		0.055
L	12.70		15.49	0.50		0.610
R	2.16		2.41	0.085		0.094
S1	0.92		1.52	0.036		0.060
W	0.41		0.56	0.016		0.022
V		5°			5°	



4 Revision History

Date	Revision	Changes
17-Oct-2005	1	First release

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