

## NPN MEDIUM POWER TRANSISTORS

### Features

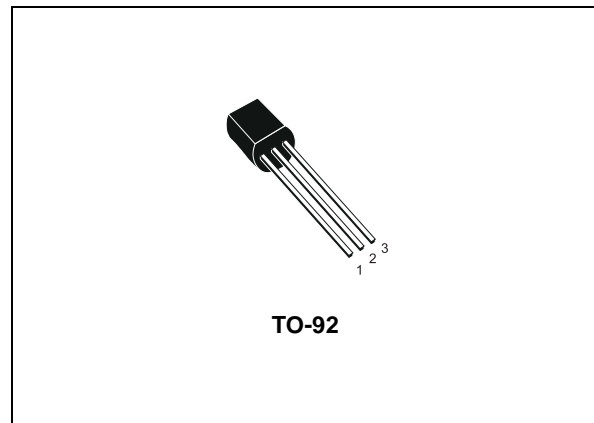
- TO-92 PACKAGE SUITABLE FOR THROUGH-HOLE PCB ASSEMBLY
- IN COMPLIANCE WITH THE 2002/93/EC EUROPEAN DIRECTIVE

### Applications

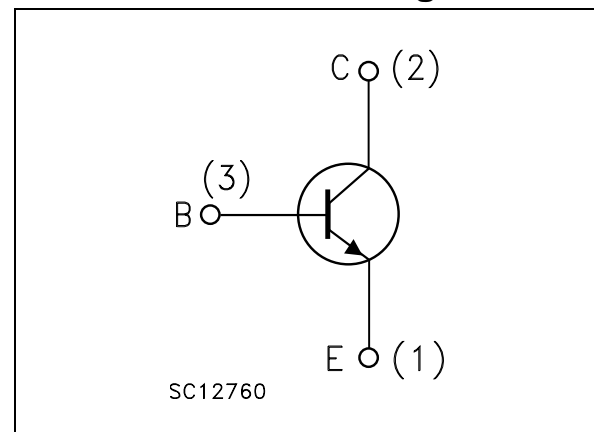
- VOLTAGE REGULATION
- RELAY DRIVER
- GENERIC SWITCH

### 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 ( $t_p < 5ms$ )	6	A
$I_B$	Base Current	1	A
$I_{BM}$	Base Peak Current ( $t_p < 5ms$ )	2	A
$P_{TOT}$	Total dissipation at $T_c = 25^\circ C$	0.9	W
$T_{STG}$	Storage Temperature	-65 to 150 150	°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	°C/W
$R_{thj-amb}$	Thermal Resistance Junction-Amb Max	139	°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	$\mu A$
$I_{CEO}$	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 1</i>	Collector-Emitter Breakdown Voltage ( $I_B = 0$ )	$I_C = 10 mA$	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	$I_C = 1 A$ $I_C = 2 A$ $I_C = 3 A$	$I_B = 50 mA$ $I_B = 100 mA$ $I_B = 150 mA$		0.4 0.7 1.1	V V V
$V_{BE(sat)}$ <i>Note 1</i>	Base-Emitter Saturation Voltage	$I_C = 2 A$	$I_B = 100 mA$		1.2	V
$h_{FE}$	DC Current Gain	$I_C = 100 mA$ $I_C = 1 A$ $I_C = 3 A$	$V_{CE} = 2 V$ $V_{CE} = 2 V$ $V_{CE} = 2 V$	100 80 30	300	
$f_T$	Transistor Frequency	$V_{CE} = 10 V$	$I_C = 0.1 A$		100	MHz

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

## 2.1 Electrical characteristics (curve)

Figure 1. DC Current Gain

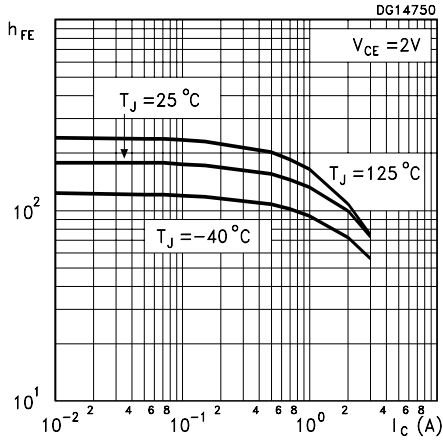


Figure 2. DC Current Gain

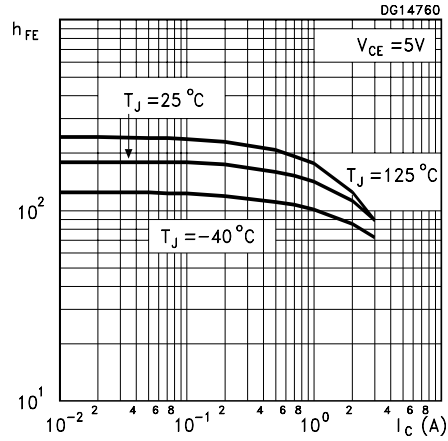


Figure 3. Collector-emitter saturation voltage Figure 4. Base-emitter saturation voltage

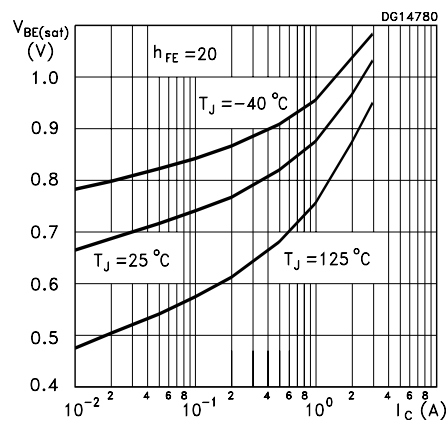
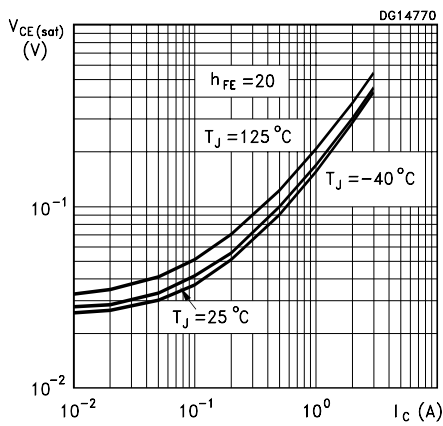


Figure 5. Switching times on resistive load

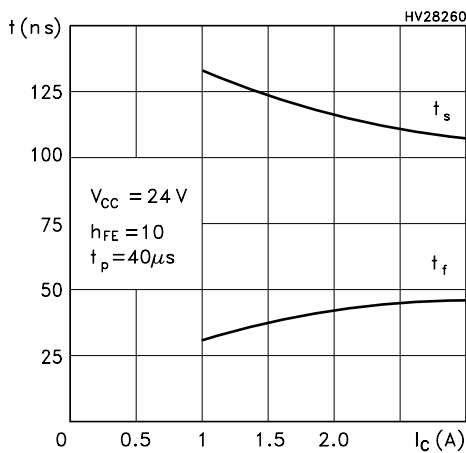


Figure 6. Switching times resistive on load

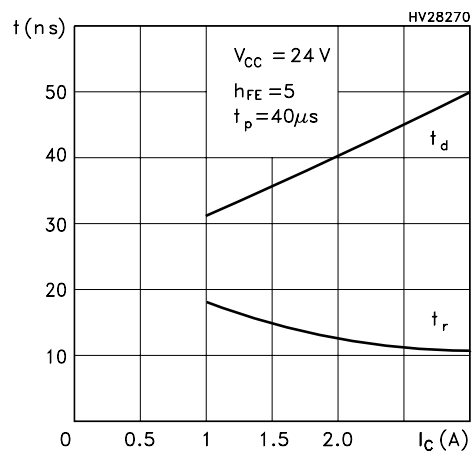
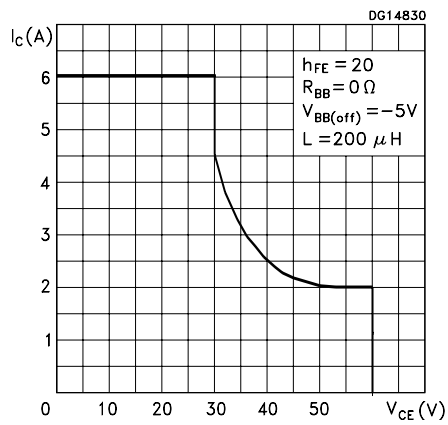


Figure 7. Reverse biased area

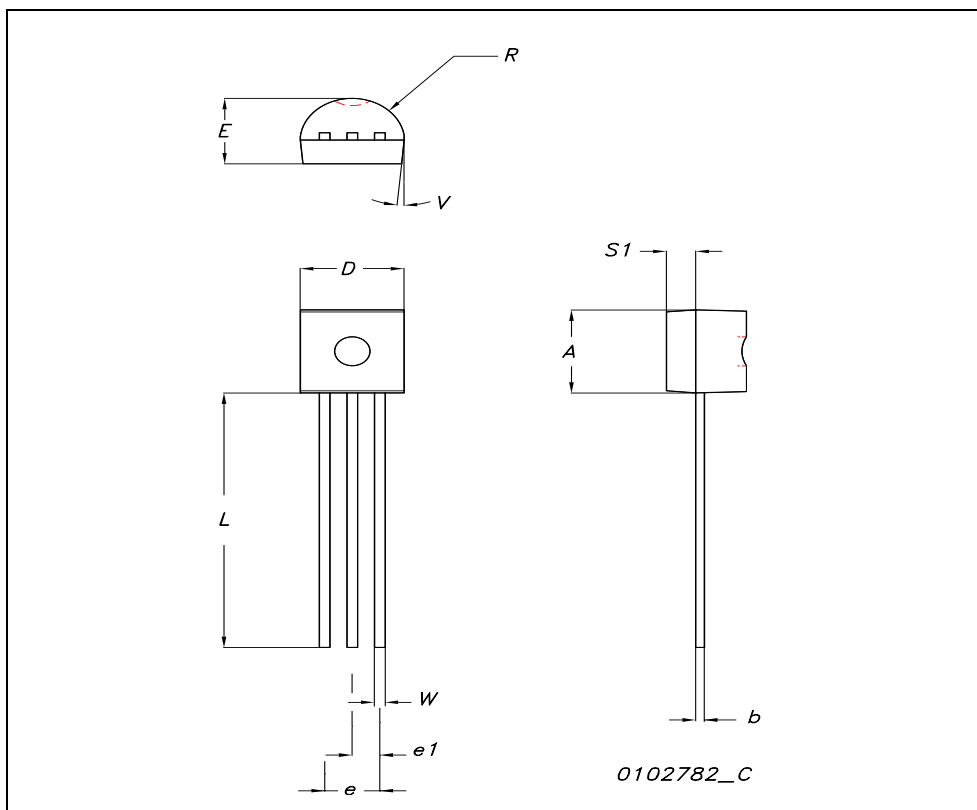


### 3 Package Mechanical Data

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)

**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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