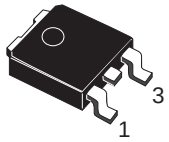
STD724

NPN MEDIUM POWER TRANSISTORS

Features

- SURFACE MOUNTING DEVICE IN MEDIUM POWER DPAK POWER PACKAGE
- AVAILABLE IN TAPE & REEL PACKING
- IN COMPLIANCE WITH THE 2002/93/EC EUROPEAN DIRECTIVE



DPAK

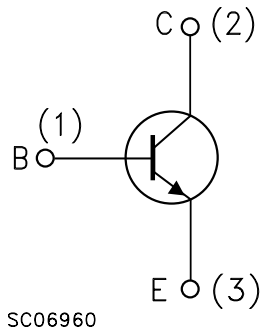
Applications

- VOLTAGE REGULATION
- RELAY DRIVER
- GENERIC SWITCH

Description

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

Internal Schematic Diagram



Order codes

Part Number	Marking	Package	Packing
STD724T4	D724	DPAK	Tape & reel

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°C	15	W
T_{STG}	Storage Temperature	-65 to 150	°C
T_J	Max. Operating Junction Temperature	150	

Table 2. Thermal Data

Symbol	Parameter		Value	Unit
$R_{thj\text{-}amb}$	Thermal Resistance Junction-Amb	Max	8.33	°C/W

2 Electrical Characteristics

Table 3. Electrical Characteristics (T_{CASE} = 25°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 = 100µA	60			V
$V_{(BR)CEO}$ *Note 1*	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 µA	5			V
$V_{CE(sat)}$ *Note 1*	Collector-Emitter Saturation Voltage	I_C = 1 A I_B = 50 mA I_C = 2 A I_B = 100 mA I_C = 3 A I_B = 150 mA			0.4 0.7 1.1	V V V
$V_{BE(sat)}$ *Note 1*	Base-Emitter Saturation Voltage	I_C = 2 A I_B = 100 mA			1.2	V
h_{FE}	DC Current Gain	I_C = 100 mA V_{CE} = 2 V I_C = 1 A V_{CE} = 2 V I_C = 3 A 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 µs, duty cycle ≤1.5%.

2.1 Electrical characteristics (curve)

Figure 1. DC Current Gain

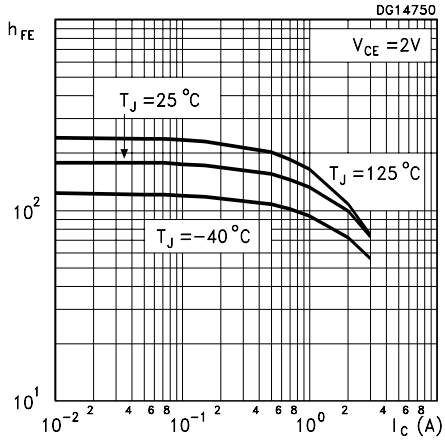


Figure 2. DC Current Gain

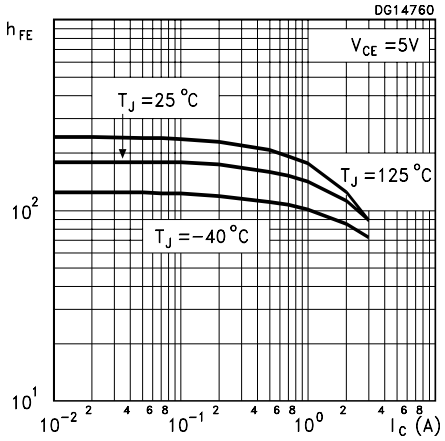


Figure 3. Collector-emitter saturation voltage

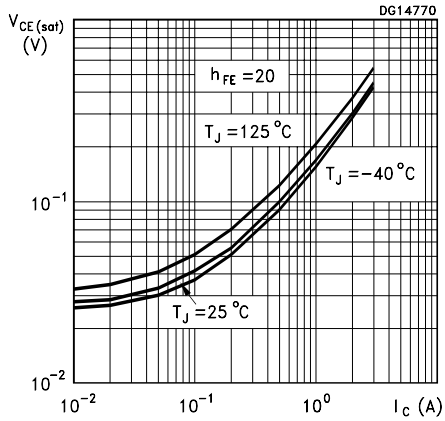


Figure 4. Base-emitter saturation voltage

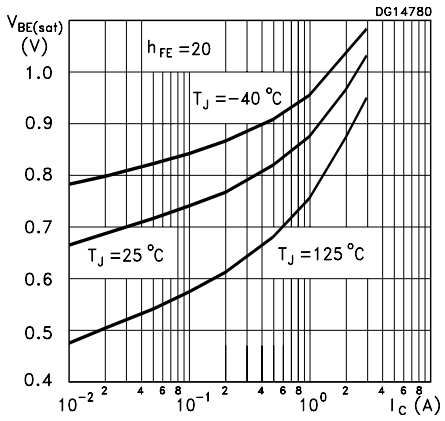


Figure 5. Switching times on resistive load

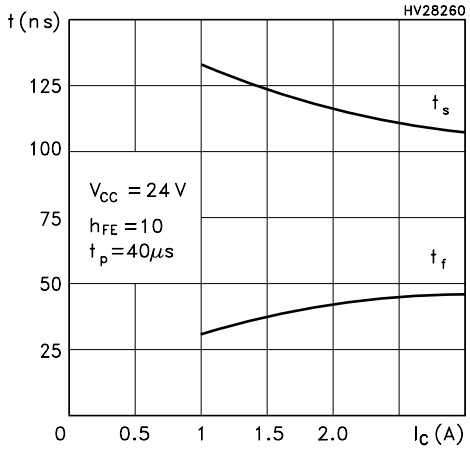


Figure 6. Switching times resistive on load

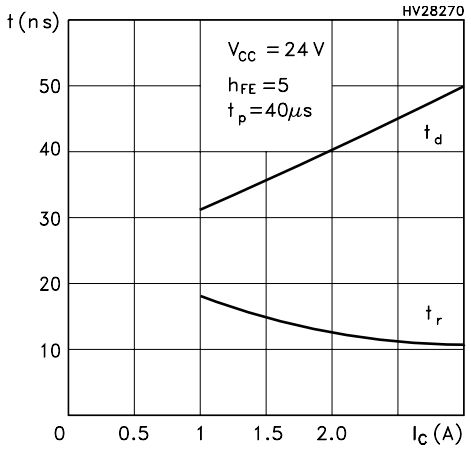
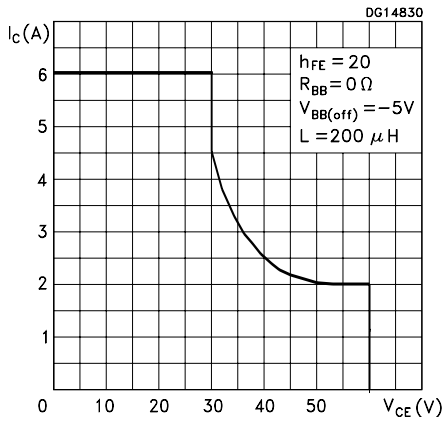


Figure 7. Reverse biased area

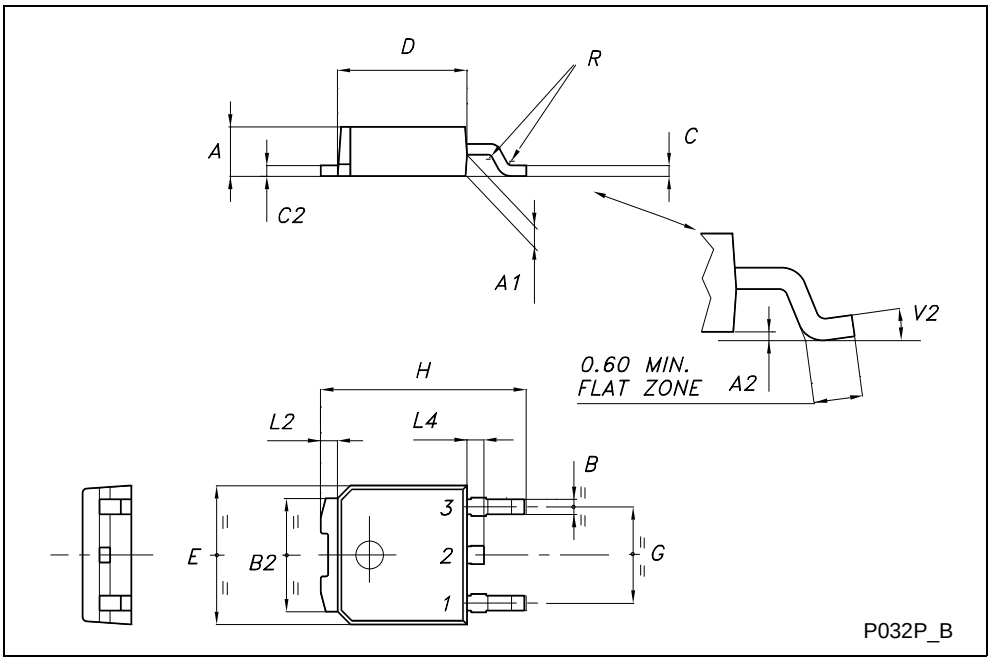


3 Package Mechanical Data

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

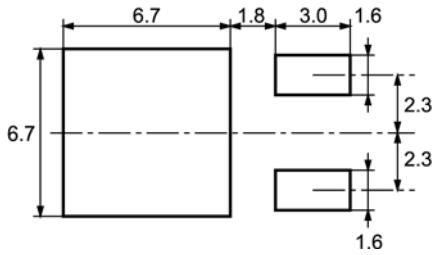
TO-252 (DPAK) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	2.20		2.40	0.087		0.094
A1	0.90		1.10	0.035		0.043
A2	0.03		0.23	0.001		0.009
B	0.64		0.90	0.025		0.035
B2	5.20		5.40	0.204		0.213
C	0.45		0.60	0.018		0.024
C2	0.48		0.60	0.019		0.024
D	6.00		6.20	0.236		0.244
E	6.40		6.60	0.252		0.260
G	4.40		4.60	0.173		0.181
H	9.35		10.10	0.368		0.398
L2		0.8			0.031	
L4	0.60		1.00	0.024		0.039
V2	0^o		8^o	0^o		0^o



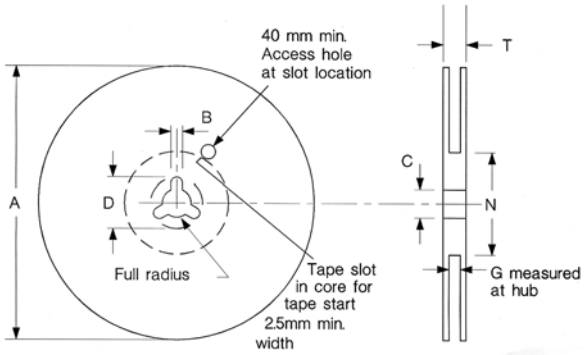
4 Packing Mechanical Data

DPAK FOOTPRINT



All dimensions are in millimeters

TAPE AND REEL SHIPMENT



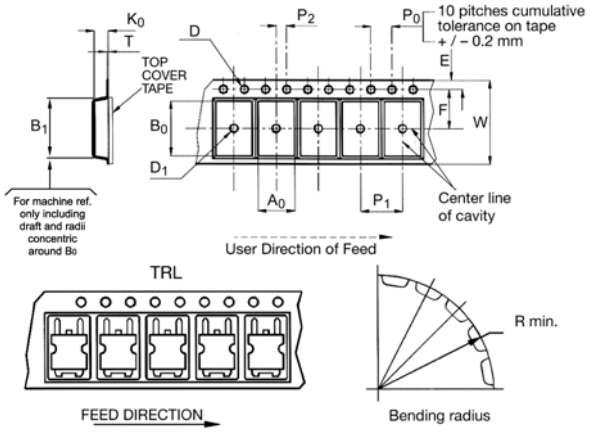
REEL MECHANICAL DATA

DIM.	mm		inch	
	MIN.	MAX.	MIN.	MAX.
A		330		12.992
B	1.5		0.059	
C	12.8	13.2	0.504	0.520
D	20.2		0.795	
G	16.4	18.4	0.645	0.724
N	50		1.968	
T		22.4		0.881

BASE QTY	BULK QTY
2500	2500

TAPE MECHANICAL DATA

DIM.	mm		inch	
	MIN.	MAX.	MIN.	MAX.
A0	6.8	7	0.267	0.275
B0	10.4	10.6	0.409	0.417
B1		12.1		0.476
D	1.5	1.6	0.059	0.063
D1	1.5		0.059	
E	1.65	1.85	0.065	0.073
F	7.4	7.6	0.291	0.299
K0	2.55	2.75	0.100	0.108
P0	3.9	4.1	0.153	0.161
P1	7.9	8.1	0.311	0.319
P2	1.9	2.1	0.075	0.082
R	40		1.574	
W	15.7	16.3	0.618	0.641



5 Revision History

Date	Revision	Changes
17-Oct-2005	2	Inserted curves