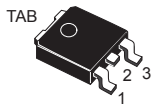
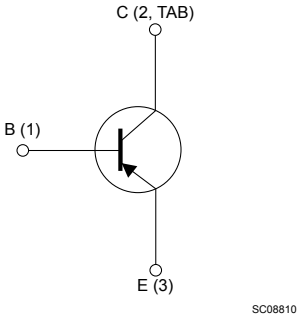
STD2805T4

Datasheet

Low voltage fast-switching PNP power transistor



DPAK



Features

- Very low collector-emitter saturation voltage
- High current gain characteristic
- Fast-switching speed

Applications

- CCFL drivers
- Voltage regulators
- Relay drivers
- High efficiency low voltage switching applications

Description

The device is manufactured in PNP planar technology using a “Base Island” layout. The resulting transistor shows exceptional high gain performance coupled with very low saturation voltage.

Product status link
STD2805T4

Product summary	
Order code	STD2805T4
Marking	D2805
Package	DPAK
Packing	Tape and reel

1 Electrical ratings

Table 1. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base voltage (I_E = 0 A)	-60	V
V_{CEO}	Collector-emitter voltage (I_B = 0 A)	-60	A
V_{EBO}	Emitter-base voltage (I_C = 0 A)	-6	A
I_C	Collector current	-5	A
I_{CM}	Collector peak current (t_p < 5 ms)	-10	A
I_B	Base current	-2	A
P_{TOT}	Total power dissipation at T_C = 25 °C	15	W
T_{stg}	Storage temperature range	-65 to 150	°C
T_J	Operating junction temperature range		°C

Table 2. Thermal data

Symbol	Parameter	Value	Unit
R_{thJC}	Thermal resistance, junction-to-case	8.33	°C/W
R_{thJA}	Thermal resistance, junction-to-ambient	100	°C/W

2 Electrical characteristics

T_C = 25 °C unless otherwise specified.

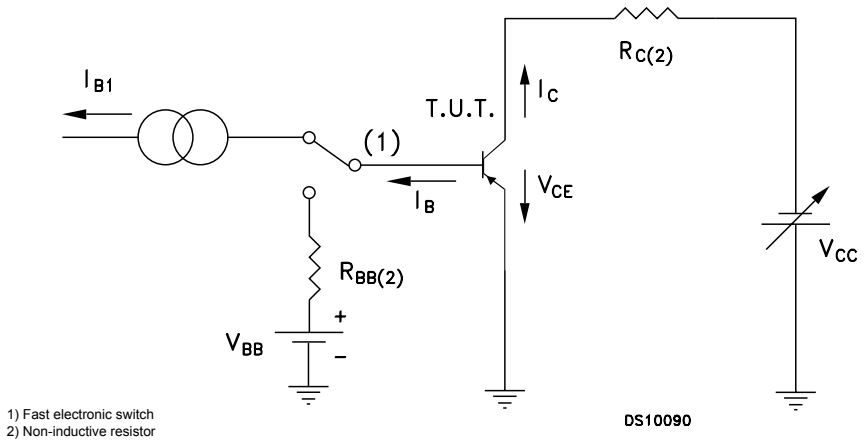
Table 3. Electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
I_{CBO}	Collector cut-off current	I_E = 0 A, V_{CB} = -60 V				-0.1	µA
I_{EBO}	Emitter cut-off current	I_C = 0 A, V_{EB} = -5 V				-0.1	µA
$V_{(BR)CBO}$	Collector-base breakdown voltage	I_E = 0 A, I_C = -100 µA		-60			V
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	I_B = 0 A, I_C = -1 mA		-60			V
$V_{(BR)EBO}$	Emitter-base breakdown voltage	I_C = 0 A, I_E = -100 µA		-6			V
$V_{CE(sat)}$ (1)	Collector-emitter saturation voltage	I_C = -100 mA	I_B = -5 mA			-50	mV
		I_C = -2 A	I_B = -50 mA		-150	-300	
		I_C = -3 A	I_B = -150 mA		-200	-400	
		I_C = -5 A	I_B = -200 mA			-600	
$V_{BE(sat)}$ (1)	Base-emitter saturation voltage	I_C = -2 A	I_B = -50 mA		-0.9	-1.2	V
h_{FE} (1)	DC current gain	I_C = -100 mA	V_{CE} = -2 V	200		400	
		I_C = -5 A	V_{CE} = -2 V	85			
		I_C = -10 A	V_{CE} = -2 V	20			
f_t	Transition frequency	V_{CE} = -10 V	I_C = -50 mA		150		MHz
C_{CBO}	Collector-base capacitance	V_{CB} = -10V	f = 1 MHz		60		pF
t_{on}	Turn-on time	Resistive load: V_{CC} = -30 V, I_C = -1 A, I_{B1} = -I_{B2} = -0.1 A			80		ns
t_s	Storage time				600		ns
t_f	Fall time				70		ns

1. *Pulsed duration = 300 µs, duty cycle ≤1.5%*

3 Test circuits

Figure 1. **Resistive load switching test circuit**



1) Fast electronic switch
2) Non-inductive resistor

4 Package information

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK packages, depending on their level of environmental compliance. ECOPACK specifications, grade definitions and product status are available at: www.st.com. ECOPACK is an ST trademark.

4.1 DPAK (TO-252) package information

Figure 2. DPAK (TO-252) type A package outline

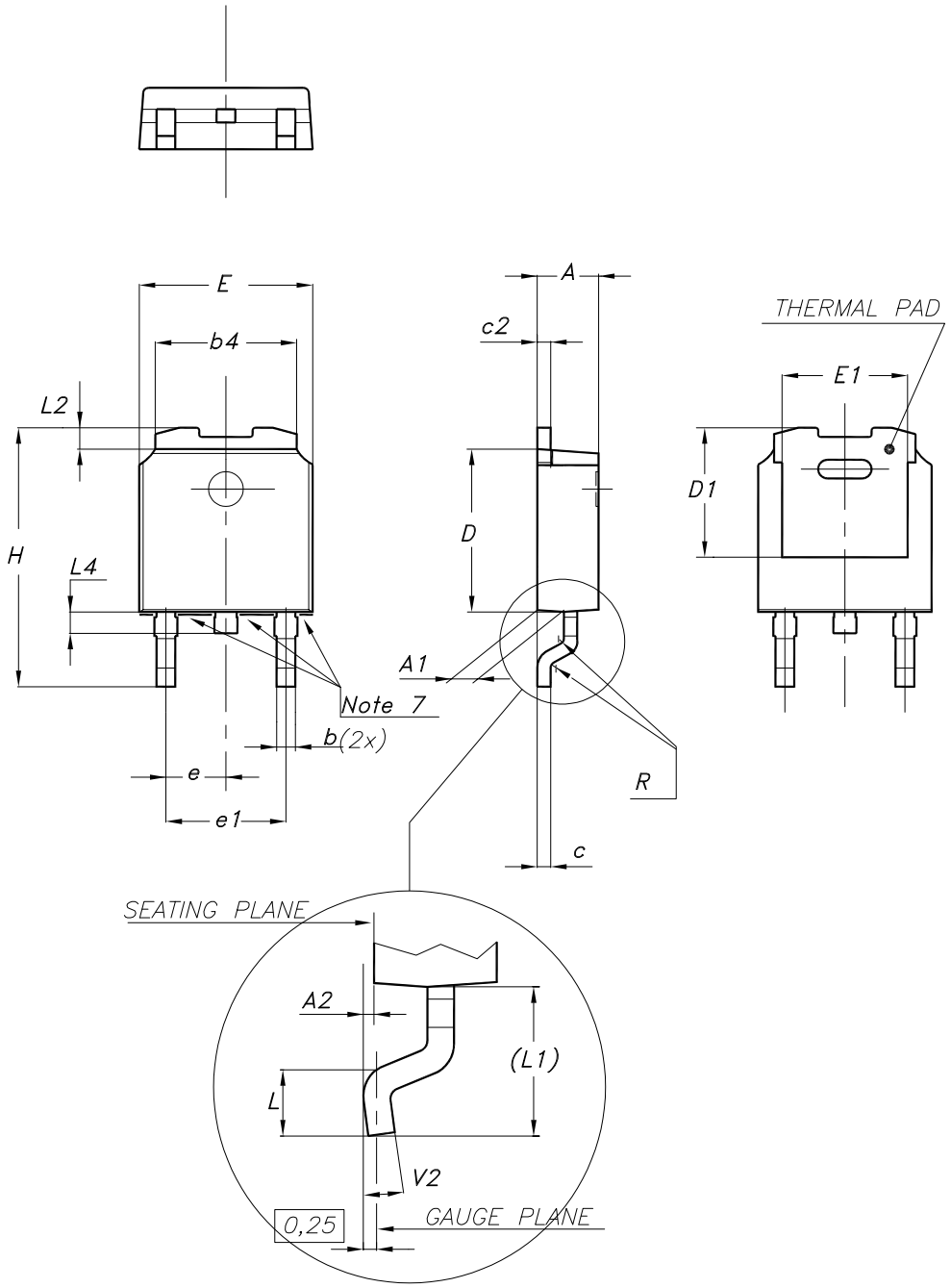


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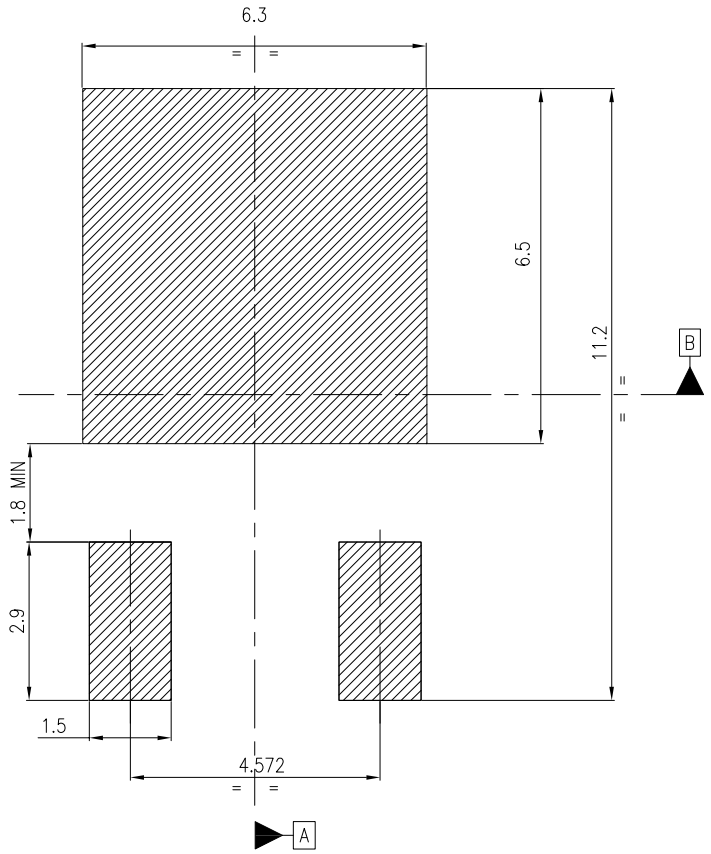
Table 4. **DPAK (TO-252) type A mechanical data**

Dim.	mm		
	Min.	Typ.	Max.
A	2.20		2.40
A1	0.90		1.10
A2	0.03		0.23
b	0.64		0.90
b4	5.20		5.40
c	0.45		0.60
c2	0.48		0.60
D	6.00		6.20
D1	4.95	5.10	5.25
E	6.40		6.60
E1	4.60	4.70	4.80
e	2.159	2.286	2.413
e1	4.445	4.572	4.699
H	9.35		10.10
L	1.00		1.50
(L1)	2.60	2.80	3.00
L2	0.65	0.80	0.95
L4	0.60		1.00
R		0.20	
V2	0°		8°

Figure 3. DPAK (TO-252) recommended footprint (dimensions are in mm)



Notes:

1) This footprint is able to ensure insulation up to 630 Vrms (according to CEI IEC 664−1)

2) The device must be positioned within ⌖ 0.05 A B

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4.2 DPAK (TO-252) packing information

Figure 4. **DPAK (TO-252) tape outline**

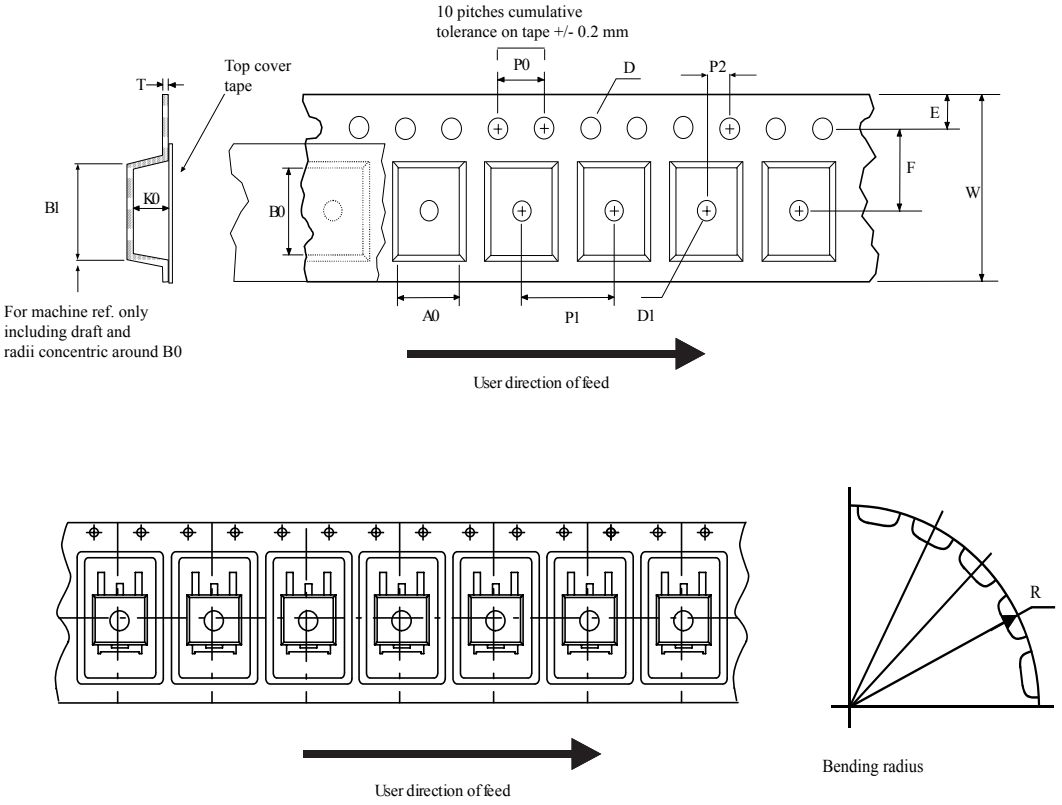

Figure 5. **DPAK (TO-252) reel outline**

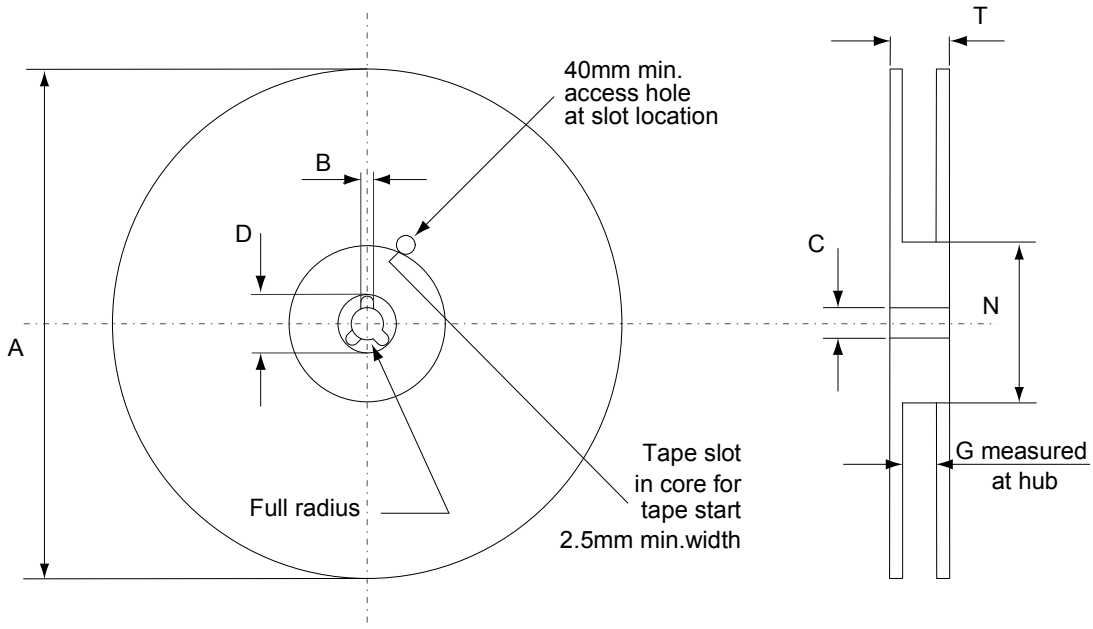

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Table 5. **DPAK (TO-252) tape and reel mechanical data**

Tape			Reel		
Dim.	mm		Dim.	mm	
	Min.	Max.		Min.	Max.
A0	6.8	7	A		330
B0	10.4	10.6	B	1.5	
B1		12.1	C	12.8	13.2
D	1.5	1.6	D	20.2	
D1	1.5		G	16.4	18.4
E	1.65	1.85	N	50	
F	7.4	7.6	T		22.4
K0	2.55	2.75			
P0	3.9	4.1	Base qty.		2500
P1	7.9	8.1	Bulk qty.		2500
P2	1.9	2.1			
R	40				
T	0.25	0.35			
W	15.7	16.3			

Revision history

Table 6. **Document revision history**

Date	Revision	Changes
10-Jan-2024	1	First release.

Contents