

Low voltage PNP power transistor

Features

- Low saturation voltage
- PNP transistor

Application

- Audio, power linear and switching equipment

Description

The device is manufactured in planar technology with "base island" layout. The resulting transistor shows exceptional high gain performance coupled with very low saturation voltage. The NPN type is the 2N5192.

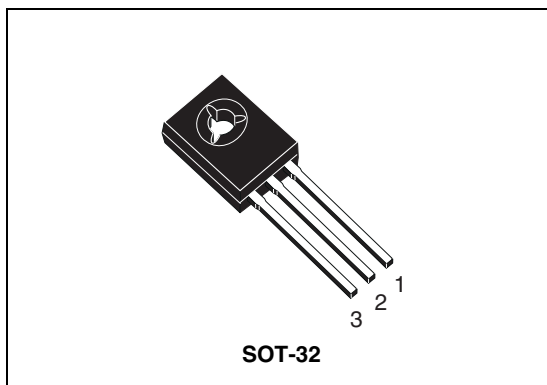


Figure 1. Internal schematic diagram

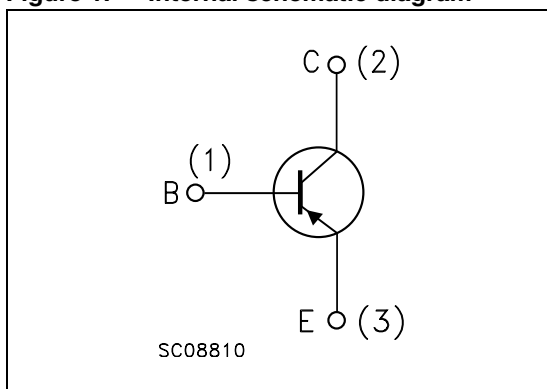


Table 1. Devices summary

Order code	Marking	Package	Packaging
2N5195	2N5195	SOT-32	Tube

1 Electrical ratings

Table 2. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base voltage ($I_E = 0$)	-80	V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)	-80	V
V_{EBO}	Emitter-base voltage ($I_C = 0$)	-5	V
I_C	Collector current	-4	A
I_{CM}	Collector peak current	-7	A
I_B	Base current	-1	A
P_{TOT}	Total dissipation at $T_{case} = 25\text{ °C}$	40	W
T_{STG}	Storage temperature	-65 to 150	°C
T_J	Max. operating junction temperature	150	°C

Table 3. Thermal data

Symbol	Parameter	Value	Unit
R_{thJC}	Thermal resistance junction-case	Max 3.12	°C/W
R_{thJA}	Thermal resistance junction-ambient	Max 100	°C/W

2 Electrical characteristics

$T_{\text{case}} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified.

Table 4. Electrical characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cut-off current ($I_{\text{E}} = 0$)	$V_{\text{CB}} = 80\text{ V}$			-0.1	mA
I_{CEX}	Collector cut-off current ($V_{\text{BE}} = -1.5\text{ V}$)	$V_{\text{CE}} = 80\text{ V}$ $V_{\text{CE}} = 80\text{ V}$ $T_{\text{c}} = 125\text{ }^{\circ}\text{C}$			-0.1 -2	mA mA
I_{CEO}	Collector cut-off current ($I_{\text{B}} = 0$)	$V_{\text{CE}} = 80\text{ V}$			-1	mA
I_{EBO}	Emitter cut-off current ($I_{\text{C}} = 0$)	$V_{\text{EB}} = -5\text{ V}$			-1	mA
$V_{\text{CEO(sus)}}^{(1)}$	Collector-emitter sustaining voltage ($I_{\text{B}} = 0$)	$I_{\text{C}} = -100\text{ mA}$	-80			V
$V_{\text{CE(sat)}}^{(1)}$	Collector-emitter saturation voltage	$I_{\text{C}} = -1.5\text{ A}$ $I_{\text{B}} = -0.15\text{ A}$ $I_{\text{C}} = -4\text{ A}$ $I_{\text{B}} = -1\text{ A}$			-0.6 -1.2	V V
$V_{\text{BE(on)}}^{(1)}$	Base-emitter on voltage	$I_{\text{C}} = -1.5\text{ A}$ $V_{\text{CE}} = -2\text{ V}$			-1.2	V
h_{FE}	DC current gain	$I_{\text{C}} = -1.5\text{ A}$ $V_{\text{CE}} = -2\text{ V}$ $I_{\text{C}} = -4\text{ A}$ $V_{\text{CE}} = -2\text{ V}$	20 7		80	
f_{T}	Transition frequency	$I_{\text{C}} = -1\text{ A}$ $V_{\text{CE}} = -10\text{ V}$	2			MHz

1. Pulse test: pulse duration $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

2.1 Electrical characteristic (curves)

Figure 2. DC current gain ($V_{\text{CE}} = -2\text{ V}$) **Figure 3. DC current gain ($V_{\text{CE}} = -4\text{ V}$)**

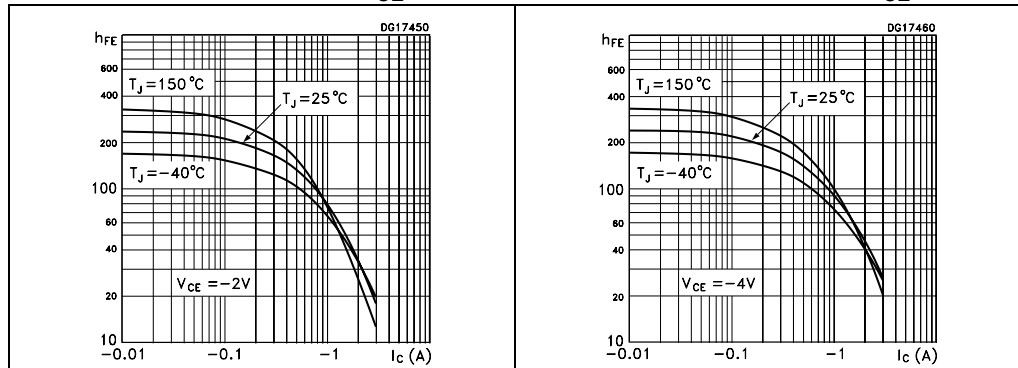


Figure 4. Collector-emitter saturation voltage

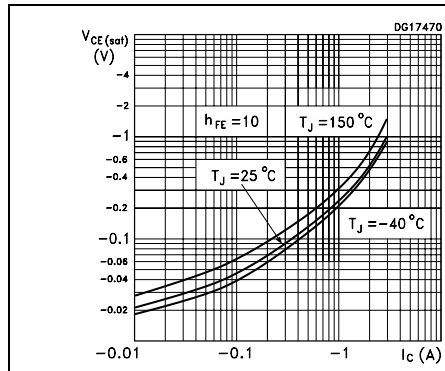


Figure 5. Base-emitter saturation voltage

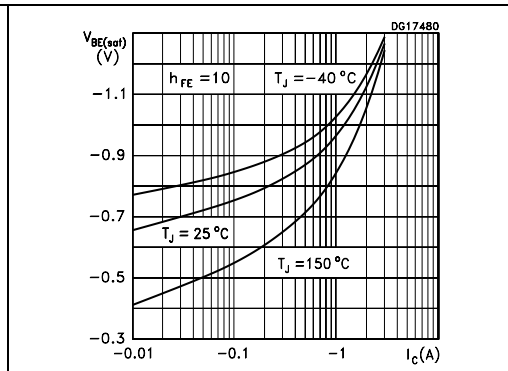


Figure 6. Base-emitter on voltage

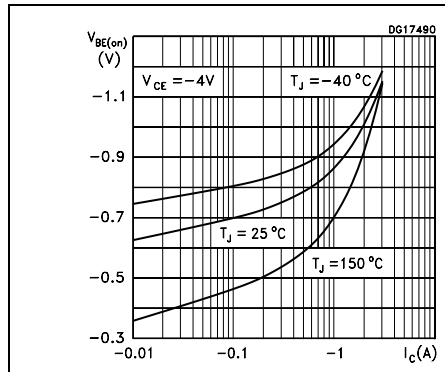


Figure 7. Resistive load switching time (on)

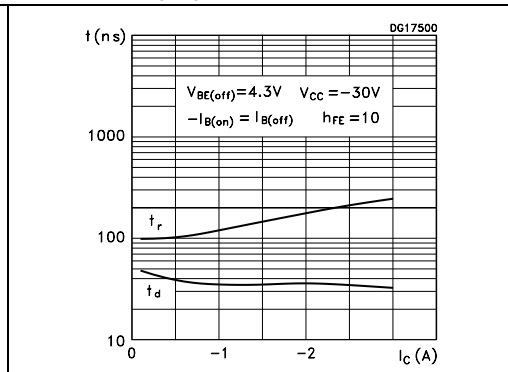
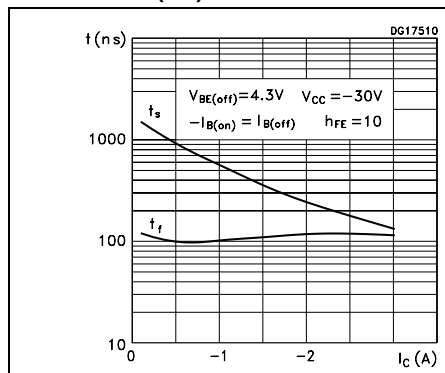
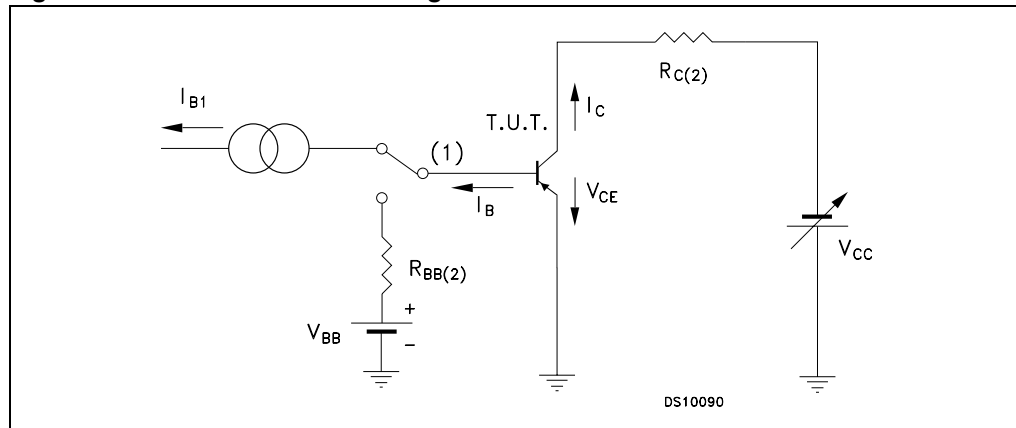


Figure 8. Resistive load switching time (off)



2.2 Test circuit

Figure 9. Resistive load switching test circuit



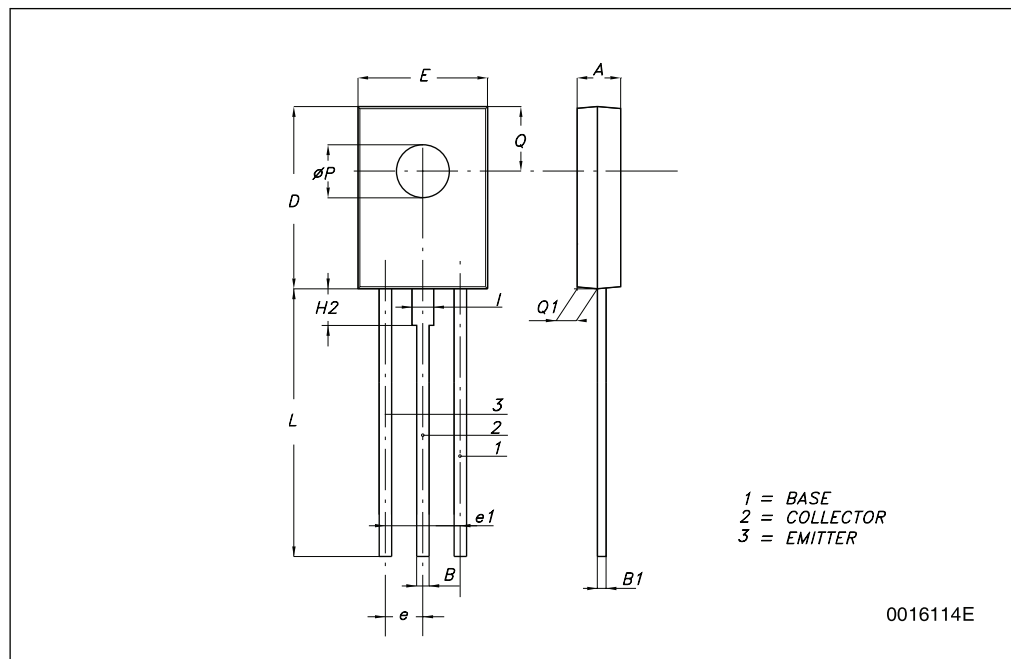
1. Fast electronic switch
2. Non-inductive resistor

3 Package mechanical data

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SOT-32 (TO-126) MECHANICAL DATA			
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DIM.	mm.		
	MIN.	TYP	MAX.
A	2.4		2.9
B	0.64		0.88
B1	0.39		0.63
D	10.5		11.05
E	7.4		7.8
e	2.04	2.29	2.54
e1	4.07	4.58	5.08
L	15.3		16
P	2.9		3.2
Q		3.8	
Q1	1		1.52
H2		2.15	
I		1.27	



4 Revision history

Table 5. Document revision history

Date	Revision	Changes
21-Jun-2004	3	Document migration, no content change.
02-Nov-2009	4	Updated SOT-32 package mechanical data.

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