

## Low voltage PNP power transistor

### Features

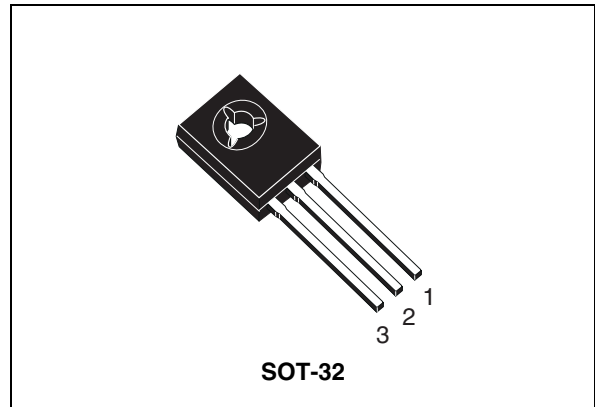
- Low saturation voltage
- PNP transistor

### Application

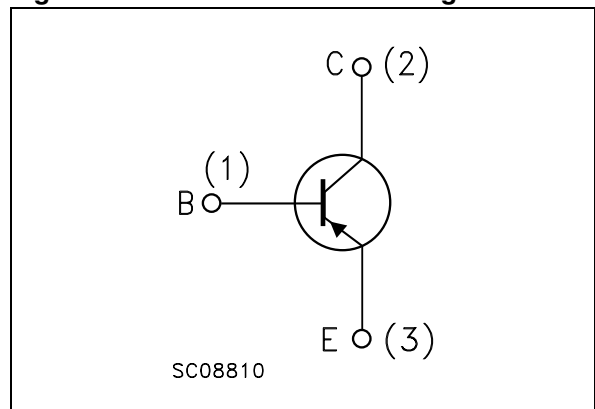
- Audio, power linear and switching equipment

### 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
$I_{\text{CBO}}$	Collector cut-off current ( $I_{\text{E}} = 0$ )	$V_{\text{CB}} = 80\text{ V}$			-0.1	mA
$I_{\text{CEX}}$	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
$I_{\text{CEO}}$	Collector cut-off current ( $I_{\text{B}} = 0$ )	$V_{\text{CE}} = 80\text{ V}$			-1	mA
$I_{\text{EBO}}$	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
$h_{\text{FE}}$	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	
$f_{\text{T}}$	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 ( $V_{\text{CE}} = -4\text{ V}$ )**

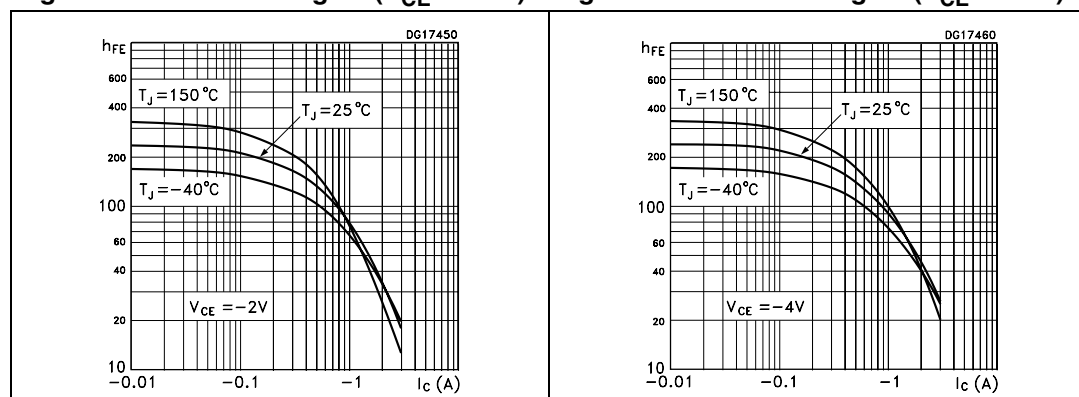


Figure 4. Collector-emitter saturation voltage

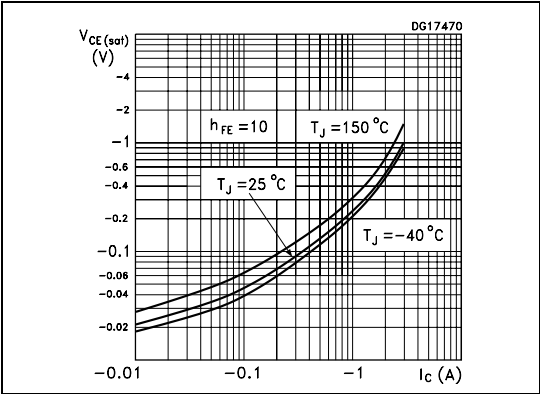


Figure 5. Base-emitter saturation voltage

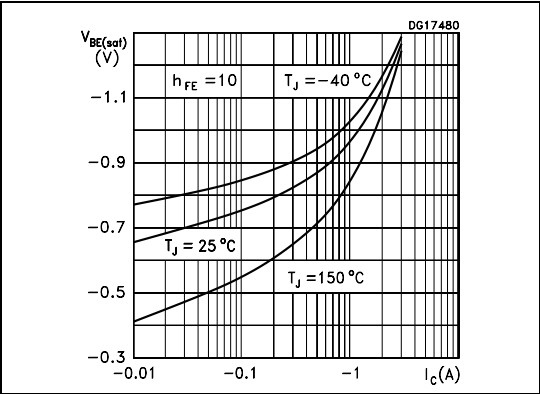


Figure 6. Base-emitter on voltage

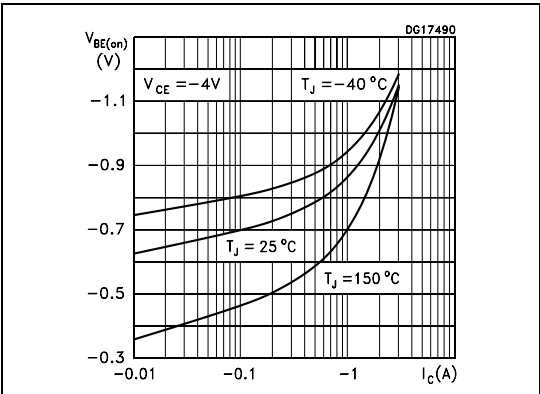


Figure 7. Resistive load switching time (on)

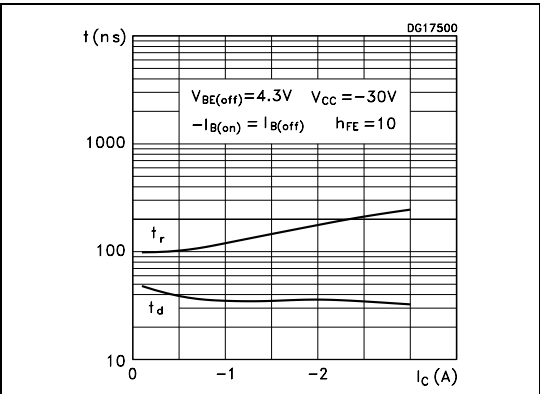
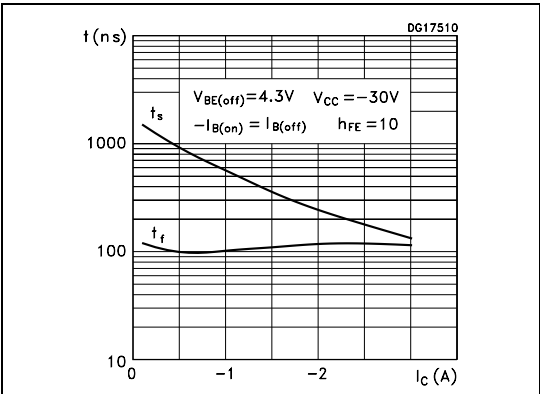
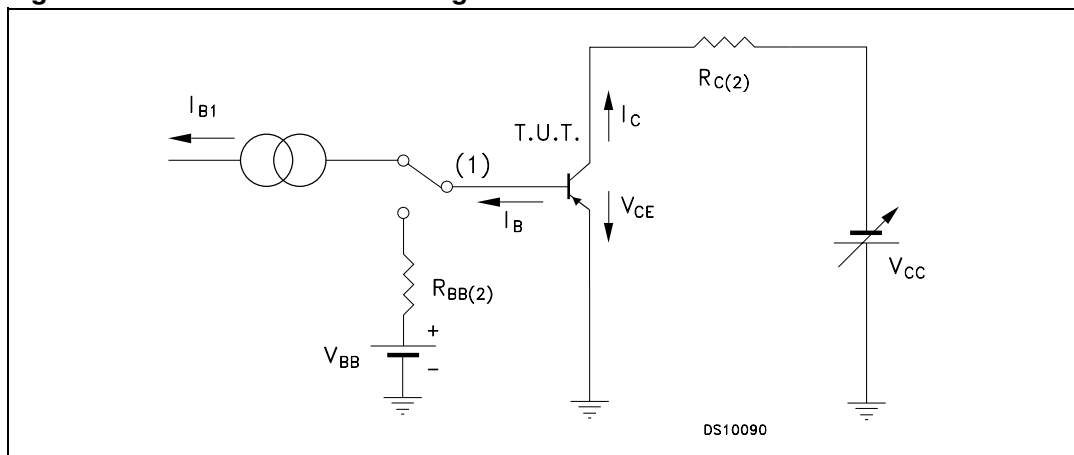


Figure 8. Resistive load switching time (off)



## 2.2 Test circuit

Figure 9. Resistive load switching test circuit

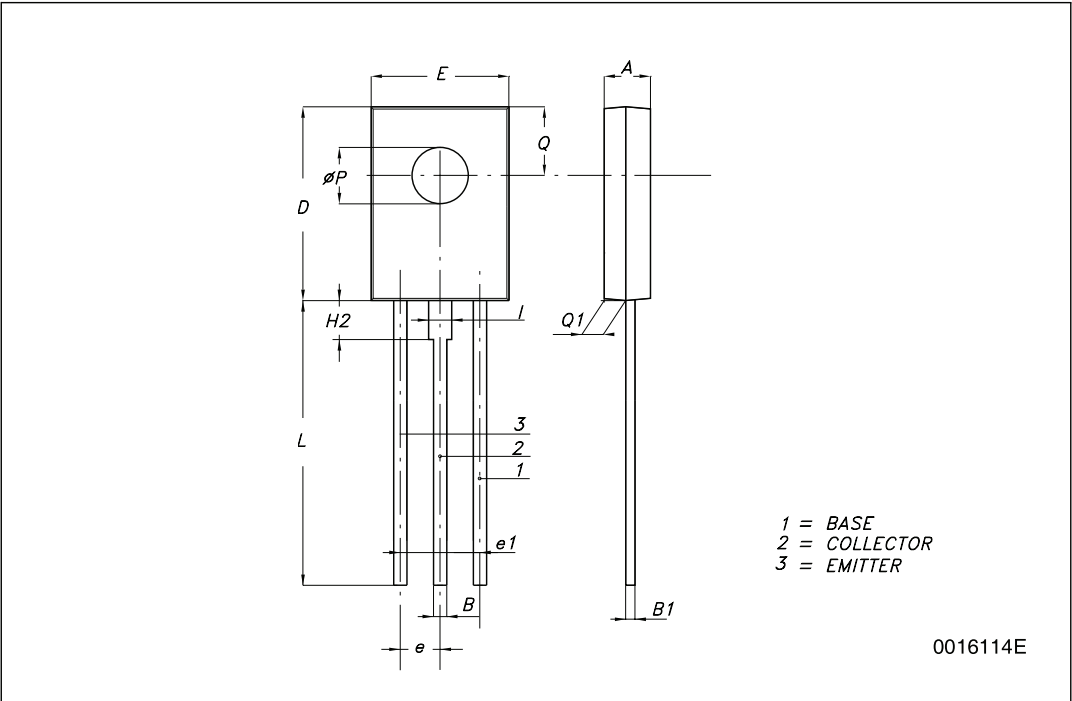


1. Fast electronic switch
2. Non-inductive resistor

### 3      **Package mechanical data**

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SOT-32 (TO-126) MECHANICAL DATA			
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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