



# STN9260

## High voltage fast-switching PNP power transistor

### Features

- High voltage capability
- Fast switching speed

### Applications

- Lighting
- Switch mode power supply

### Description

This device is a high voltage fast-switching PNP power transistor. It is manufactured using high voltage multi epitaxial planar technology for high switching speeds and medium voltage capability. It uses a cellular emitter structure with planar edge termination to enhance switching speeds while maintaining a wide RBSOA. The device is designed for use in lighting applications and low cost switch-mode power supplies.

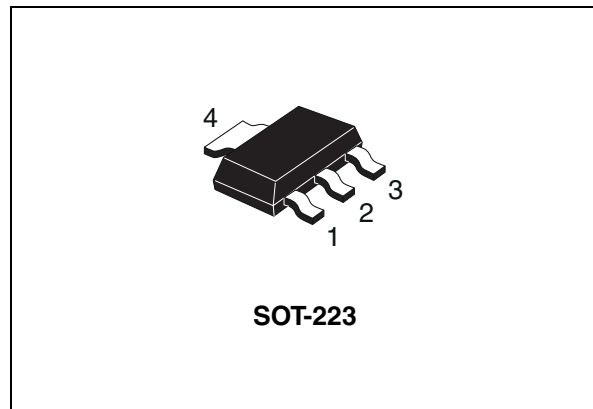


Figure 1. Internal schematic diagram

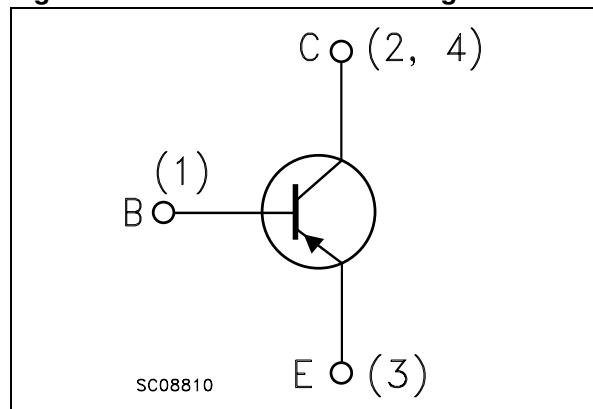


Table 1. Device summary

Part number	Marking	Package	Packaging
STN9260	N9260	SOT-223	Tape and reel

# 1 Electrical ratings

**Table 2. Absolute maximum ratings**

Symbol	Parameter	Value	Unit
$V_{CES}$	Collector-emitter voltage ( $V_{BE} = 0$ )	-600	V
$V_{CEO}$	Collector-emitter voltage ( $I_B = 0$ )	-600	V
$V_{EBO}$	Emitter-base voltage ( $I_C = 0$ )	-7	V
$I_C$	Collector current	-0.5	A
$I_{CM}$	Collector peak current ( $t_P < 5$ ms)	-1	A
$I_B$	Base current	-0.25	A
$I_{BM}$	Base peak current ( $t_P < 5$ ms)	-0.5	A
$P_{TOT}$	Total dissipation at $T_a = 25$ °C	1.6	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
$R_{thJA}$	Thermal resistance junction-ambient <sup>(1)</sup> max	78	°C/W

1. Device mounted on PCB area of 1 cm<sup>2</sup>.

## 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
$I_{\text{CES}}$	Collector cut-off current ( $V_{\text{BE}} = 0$ )	$V_{\text{CE}} = -600\text{ V}$			-10	$\mu\text{A}$
$I_{\text{EBO}}$	Emitter cut-off current ( $I_{\text{C}} = 0$ )	$V_{\text{EB}} = -7\text{ V}$			-1	$\mu\text{A}$
$V_{\text{CE(sus)}}^{(1)}$	Collector-emitter sustaining voltage ( $I_{\text{B}} = 0$ )	$I_{\text{C}} = -10\text{ mA}$	-600			V
$V_{\text{CE(sat)}}^{(1)}$	Collector-emitter saturation voltage	$I_{\text{C}} = -100\text{ mA}$ $I_{\text{B}} = -10\text{ mA}$			-1	V
$V_{\text{BE(sat)}}^{(1)}$	Base-emitter saturation voltage	$I_{\text{C}} = -100\text{ mA}$ $I_{\text{B}} = -10\text{ mA}$			-1	V
$h_{\text{FE}}$	DC current gain	$I_{\text{C}} = -10\text{ mA}$ $V_{\text{CE}} = -5\text{ V}$ $I_{\text{C}} = -20\text{ mA}$ $V_{\text{CE}} = -5\text{ V}$	50	140		
$t_{\text{r}}$	Resistive load Rise time	$V_{\text{CC}} = -200\text{ V}$ , $I_{\text{C}} = -0.1\text{ A}$		200		ns
$t_{\text{s}}$	Storage time	$I_{\text{B1}} = -10\text{ mA}$ , $I_{\text{B2}} = 20\text{ mA}$		3.2		$\mu\text{s}$
$t_{\text{f}}$	Fall time	$T_{\text{p}} = 30\text{ }\mu\text{s}$		150		ns

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

## 2.1 Electrical characteristics (curves)

Figure 2. Safe operating area

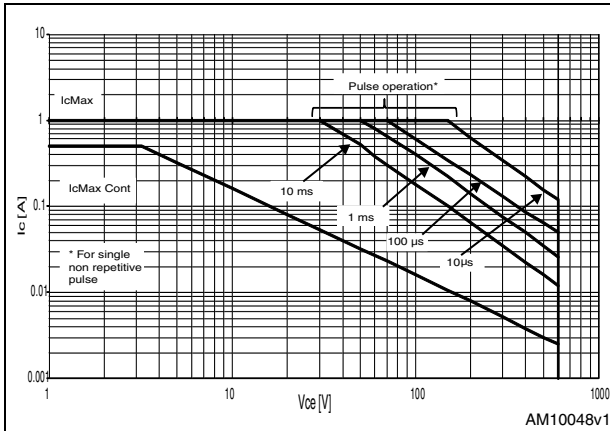


Figure 3. Derating curve

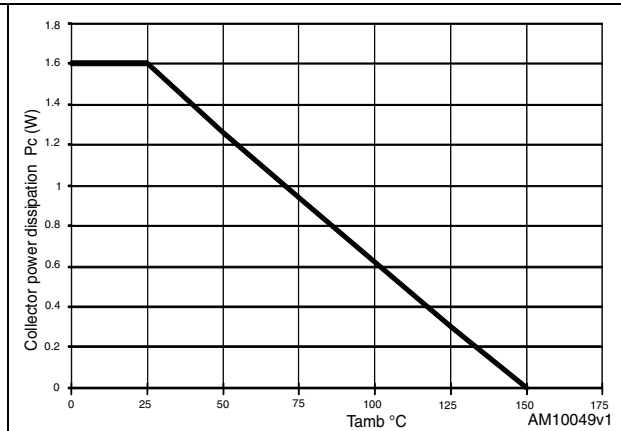


Figure 4. Output curves up to  $V_{CE} = -1$  V

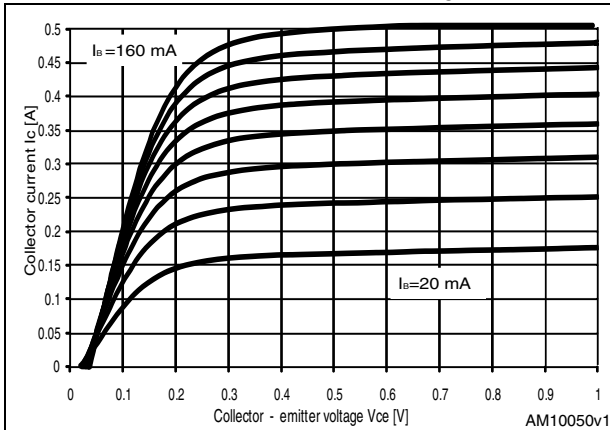


Figure 5. Output curves up to  $V_{CE} = -2$  V

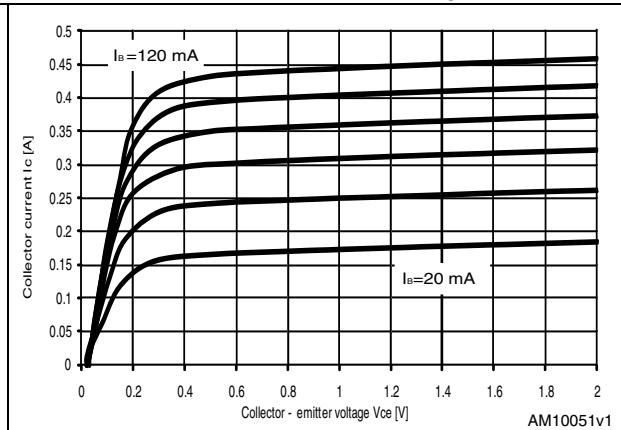


Figure 6. DC current gain ( $V_{CE} = -1$  V)

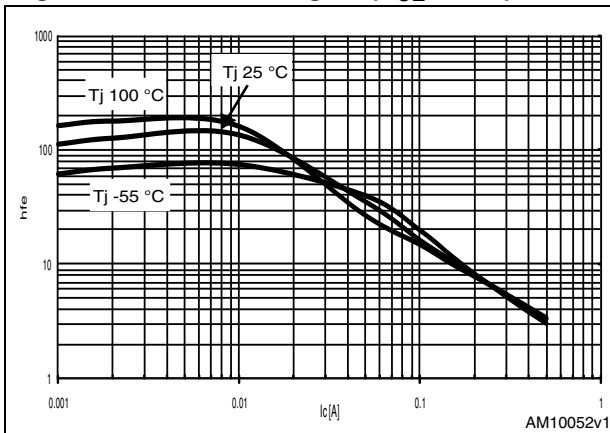


Figure 7. DC current gain ( $V_{CE} = -5$  V)

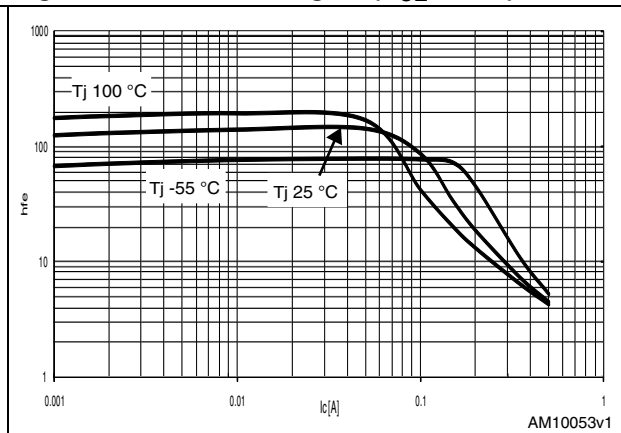


Figure 8. Collector-emitter saturation voltage Figure 9. Base-emitter saturation voltage

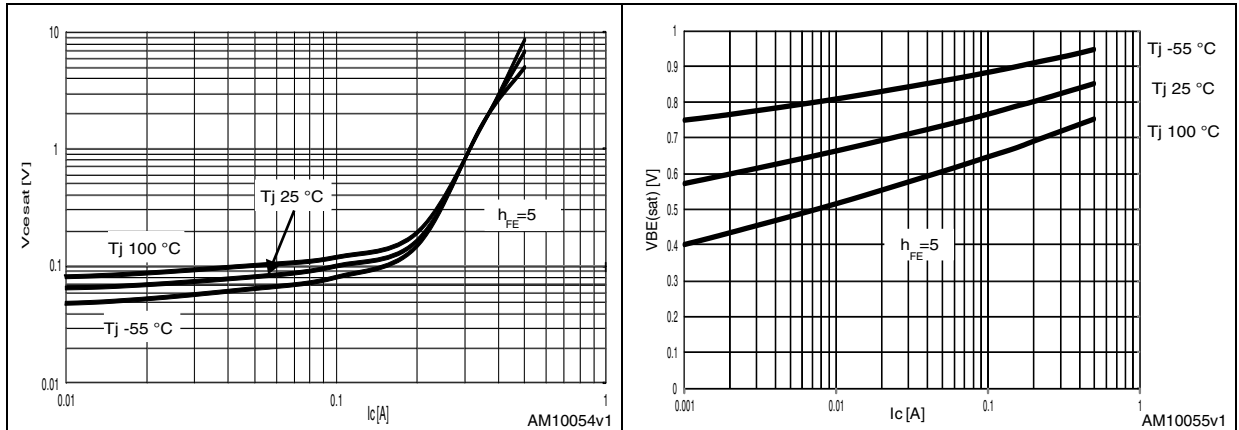


Figure 10. Base-emitter on voltage

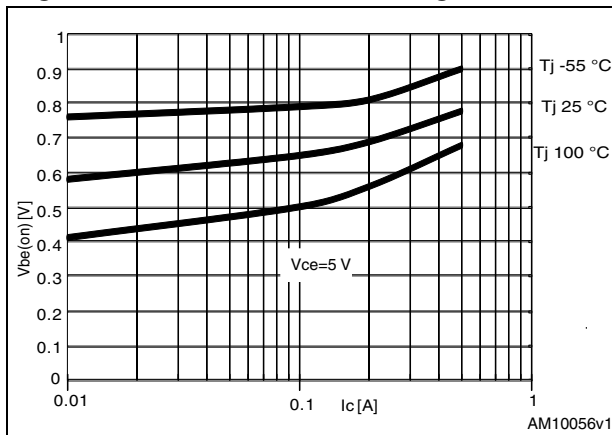


Figure 11. Capacitance variation

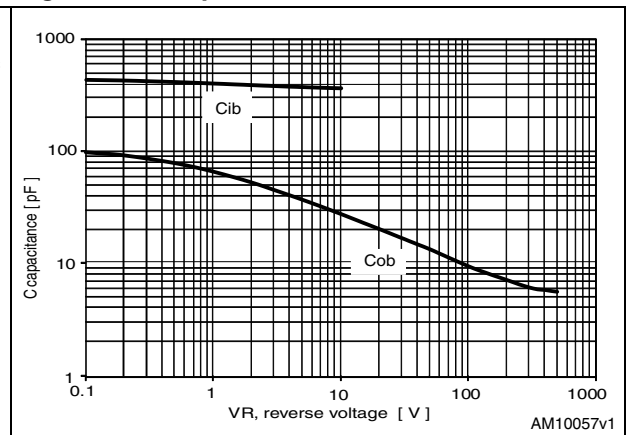
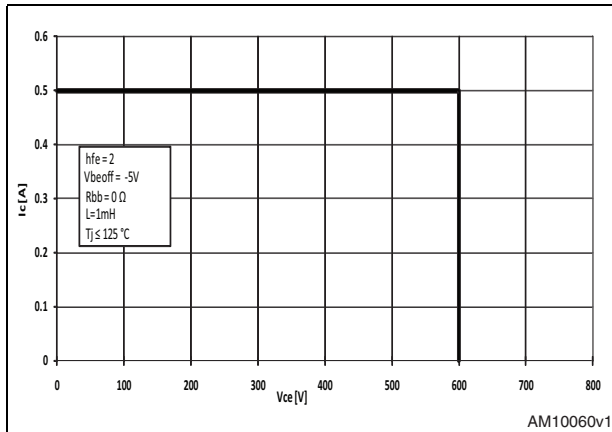
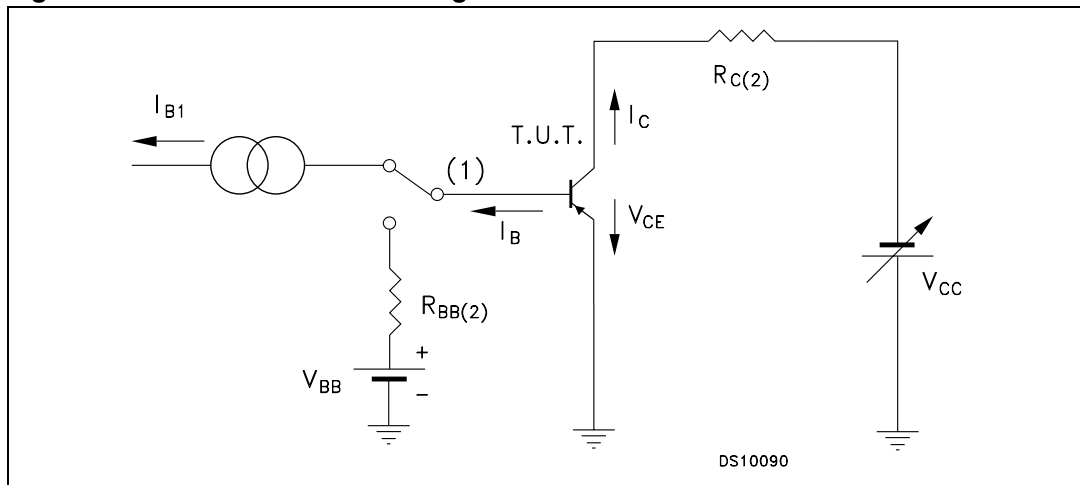


Figure 12. Reverse biased safe operating area



## 2.2 Test circuits

Figure 13. Resistive load switching test circuit

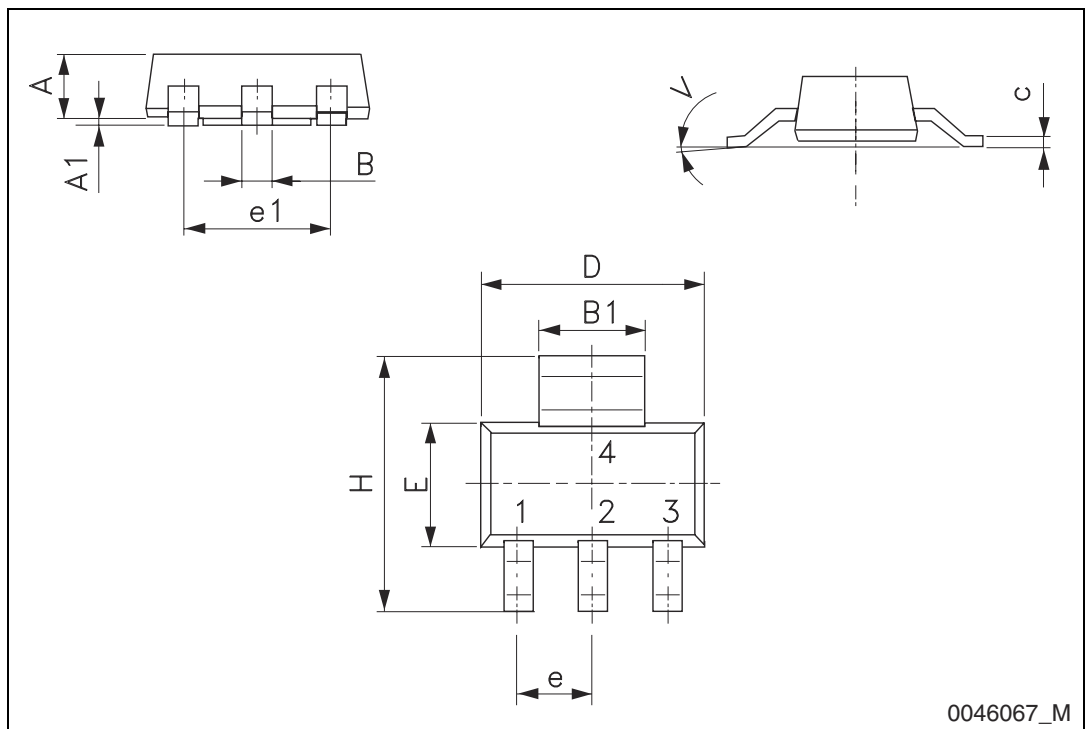


1. Fast electronic switching
2. Non-inductive resistor

### 3 Package mechanical data

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK<sup>®</sup> packages, depending on their level of environmental compliance. ECOPACK<sup>®</sup> specifications, grade definitions and product status are available at: [www.st.com](http://www.st.com). ECOPACK<sup>®</sup> is an ST trademark.

Dim.	mm		
	Min.	Typ.	Max.
A			1.80
A1	0.02		0.1
B	0.60	0.70	0.85
B1	2.90	3.00	3.15
c	0.24	0.26	0.35
D	6.30	6.50	6.70
e		2.30	
e1		4.60	
E	3.30	3.50	3.70
H	6.70	7.00	7.30
V			10°





## 4 Revision history

**Table 6. Document revision history**

Date	Revision	Changes
13-Dec-2010	1	Initial release.
03-Aug-2011	2	– Curves inserted – Minor text changes

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