



STN888

HIGH CURRENT, HIGH PERFORMANCE, LOW VOLTAGE PNP TRANSISTOR

Features

- VERY LOW COLLECTOR TO EMITTER SATURATION VOLTAGE
- D.C. CURRENT GAIN, $h_{FE} > 100$
- 5 A CONTINUOUS COLLECTOR CURRENT
- SOT-223 PLASTIC PACKAGE FOR SURFACE MOUNTING CIRCUITS
- AVAILABLE IN TAPE & REEL PACKING
- IN COMPLIANCE WITH THE 2002/93/EC EUROPEAN DIRECTIVE

Applications

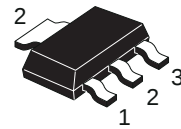
- POWER MANAGEMENT IN PORTABLE EQUIPMENT
- VOLTAGE REGULATION IN BIAS SUPPLY CIRCUITS
- SWITCHING REGULATOR IN BATTERY CHARGER APPLICATIONS
- HEAVY LOAD DRIVER

Description

The device is manufactured in low voltage PNP Planar Technology by using a "Base Island" layout. The resulting transistor shows exceptional high gain performance coupled with very low saturation voltage.

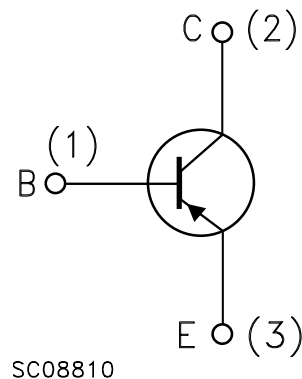
Order Codes

Part Number	Marking	Package	Packing
STN888	N888	SOT-223	Tape & Reel



SOT-223

Internal Schematic Diagram



1 Absolute Maximum Ratings

Table 1. Absolute Maximum Rating

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage ($I_E = 0$)	-45	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	-30	V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	-6	V
I_C	Collector Current	-5	A
I_{CM}	Collector Peak Current ($t_P < 5ms$)	-10	A
P_{TOT}	Total dissipation at $T_C = 25^\circ C$	1.6	W
T_{stg}	Storage Temperature	-65 to 150	$^\circ C$
T_J	Max. Operating Junction Temperature	150	$^\circ C$

Table 2. Thermal Data

Symbol	Parameter	Value	Unit
$R_{thj-amb}$	Thermal Resistance Junction-Ambient Max	78	$^\circ C/W$

2 Electrical Characteristics

($T_{CASE} = 25^{\circ}\text{C}$; unless otherwise specified)

Table 3. Electrical Characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current ($I_E = 0$)	$V_{CB} = -30\text{V}$ $V_{CB} = -30\text{V}$ $T_C = 100^{\circ}\text{C}$			-10 -100	μA μA
I_{EBO}	Emitter Cut-off Current ($I_C = 0$)	$V_{EB} = -6\text{V}$			-10	μA
$V_{(BR)CEO}$ <i>Note: 1</i>	Collector-Emitter Breakdown Voltage ($I_B = 0$)	$I_C = -10\text{mA}$	-30			V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ($I_E = 0$)	$I_C = -100\mu\text{A}$	-45			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ($I_C = 0$)	$I_E = -100\mu\text{A}$	-6			V
$V_{CE(sat)}$ <i>Note: 1</i>	Collector-Emitter Saturation Voltage	$I_C = -500\text{mA}$ $I_B = -5\text{mA}$ $I_C = -2\text{A}$ $I_B = -50\text{mA}$ $I_C = -5\text{A}$ $I_B = -250\text{mA}$ $I_C = -6\text{A}$ $I_B = -250\text{mA}$ $I_C = -8\text{A}$ $I_B = -400\text{mA}$ $I_C = -10\text{A}$ $I_B = -500\text{mA}$		-0.7 -1.0 -1.2	-0.15 -0.35 -0.70	V V V V V V
$V_{BE(sat)}$ <i>Note: 1</i>	Base-Emitter Saturation Voltage	$I_C = -2\text{A}$ $I_B = -50\text{mA}$ $I_C = -6\text{A}$ $I_B = -250\text{mA}$		-1.2	-1.1	V V
h_{FE} <i>Note: 1</i>	DC Current Gain	$I_C = -10\text{mA}$ $V_{CE} = -1\text{V}$ $I_C = -500\text{mA}$ $V_{CE} = -1\text{V}$ $I_C = -5\text{A}$ $V_{CE} = -1\text{V}$ $I_C = -5\text{A}$ $V_{CE} = -1\text{V}$ $t_j = 100^{\circ}\text{C}$ $I_C = -8\text{A}$ $V_{CE} = -1\text{V}$ $I_C = -10\text{A}$ $V_{CE} = -1\text{V}$	120 100 70 55 35	200 200 100 100 55 35	 300 	
t_d t_r t_s t_f	INDUCTIVE LOAD Delay Time Rise Time Storage Time Fall Time	$I_C = -3\text{A}$ $V_{CC} = -20\text{V}$ $I_{B1} = -I_{B2} = -60\text{mA}$ (see Figure 7)		180 160 250 80	220 210 300 100	ns ns ns ns

Note: 1 Pulsed duration = 300 μs , duty cycle $\leq 1.5\%$.

2.1 Typical Characteristics

Figure 1. DC Current Gain

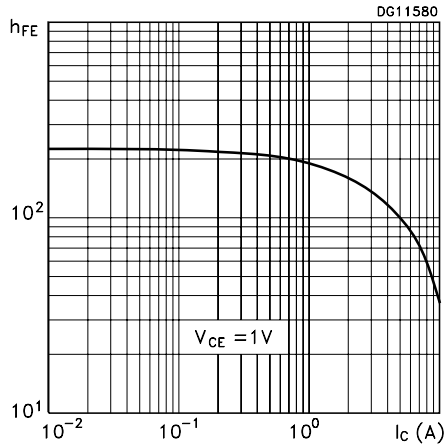


Figure 2. DC Current Gain

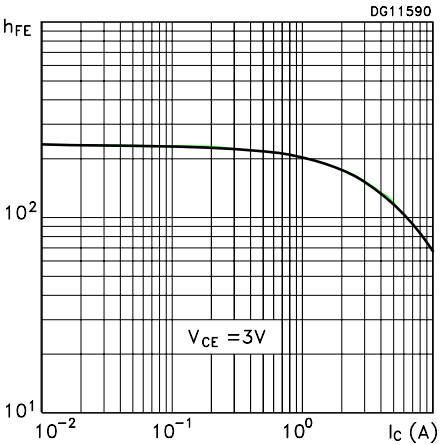


Figure 3. Collector-Emitter Saturation Voltage Figure 4. Base-Emitter Saturation Voltage

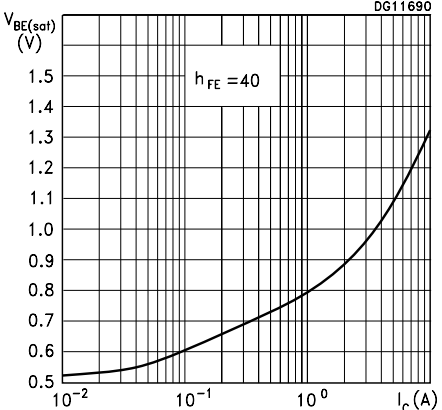
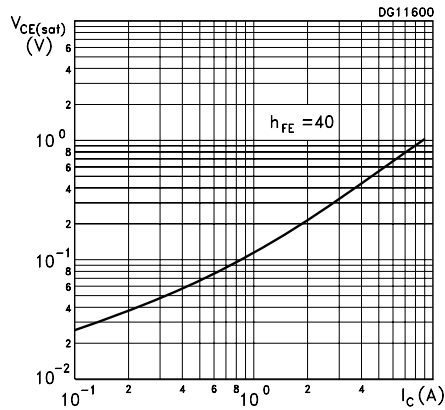


Figure 5. Switching Times Resistive Load

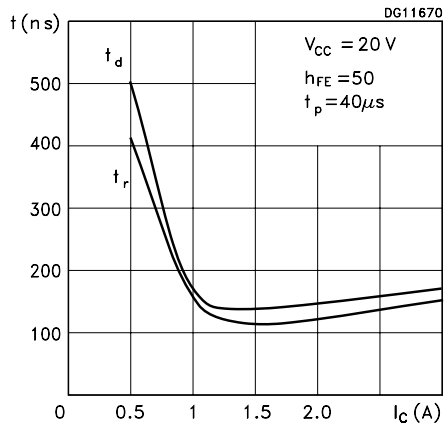
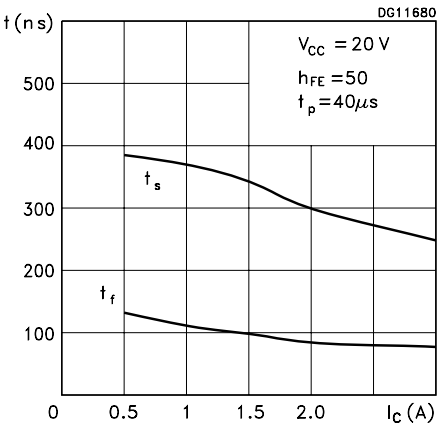
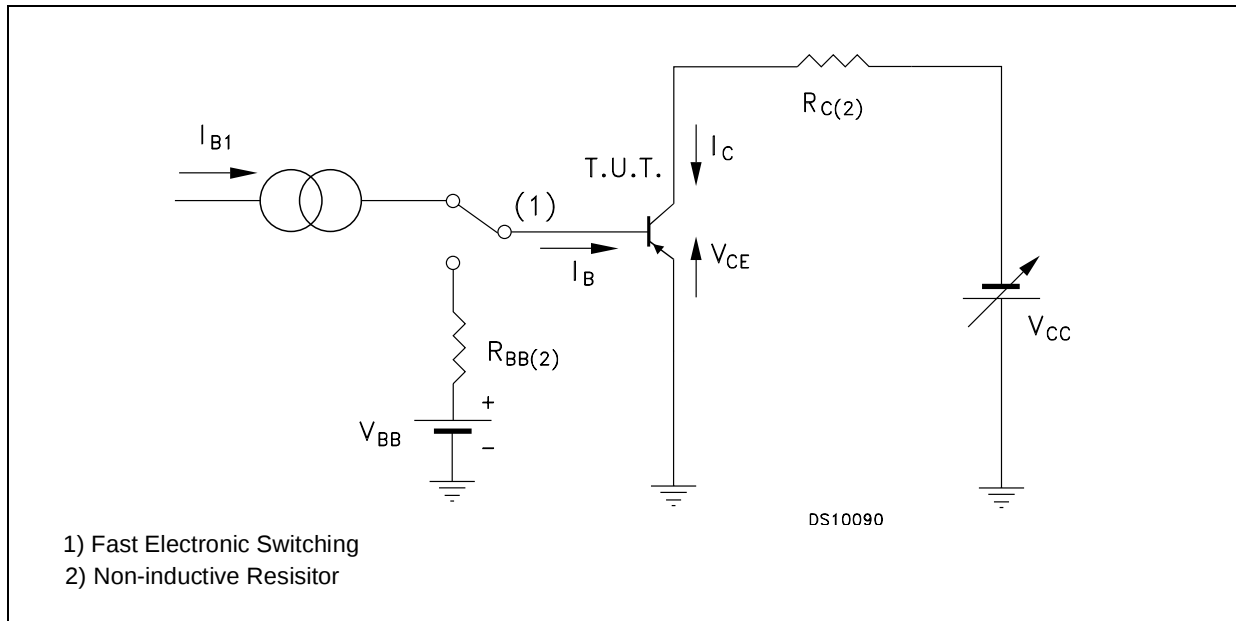


Figure 6. Switching Times Resistive Load



3 Test Circuits

Figure 7. Resistive Load Switching Test Circuit



4 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

SOT-223 MECHANICAL DATA						
DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			1.80			0.071
B	0.60	0.70	0.80	0.024	0.027	0.031
B1	2.90	3.00	3.10	0.114	0.118	0.122
c	0.24	0.26	0.32	0.009	0.010	0.013
D	6.30	6.50	6.70	0.248	0.256	0.264
e		2.30			0.090	
e1		4.60			0.181	
E	3.30	3.50	3.70	0.130	0.138	0.146
H	6.70	7.00	7.30	0.264	0.276	0.287
V			10°			10°
A1		0.02				

The image contains three mechanical drawings of an SOT-223 package. The top-left drawing is a top view showing dimensions A (total width), A1 (lead width), B (lead spacing), B1 (lead width), c (lead thickness), and e1 (pitch). The top-right drawing is a side view showing the package height and lead angle V. The bottom drawing is a bottom view showing dimensions D (total length), B1 (lead width), E (package length), H (total height), and e (pitch). The package is labeled with '1', '2', and '3' on the bottom view.

P008B

5 Revision History

Date	Revision	Changes
03-Aug-2005	1	Initial release.

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