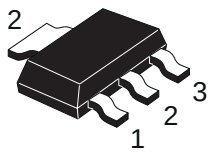
STN790A

MEDIUM CURRENT, HIGH PERFORMANCE, LOW VOLTAGE PNP TRANSISTOR

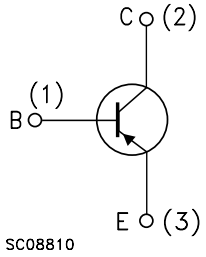
Type	Marking
STN790A	N790A

- VERY LOW COLLECTOR TO EMITTER SATURATION VOLTAGE
- DC CURRENT GAIN, h_{FE} > 100
- 3 A CONTINUOUS COLLECTOR CURRENT
- 60 V BREAKDOWN VOLTAGE ($V_{(BR)CER}$)
- SOT-223 PLASTIC PACKAGE FOR SURFACE MOUNTING CIRCUITS
- AVAILABLE IN TAPE AND REEL PACKING



SOT-223

INTERNAL SCHEMATIC DIAGRAM



APPLICATIONS

- SWITCHING REGULATOR IN BATTERY CHARGER APPLICATIONS
- SUITABLE FOR AUTOMOTIVE APPLICATIONS ($V_{(BR)CER}$ > 60V)
- VOLTAGE REGULATION IN BIAS SUPPLY CIRCUITS
- 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.

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage (I_E = 0)	-60	V
V_{CER}	Collector-Emitter Voltage (R_{BE} = 47Ω)	-60	V
V_{EBO}	Emitter-Base Voltage (I_C = 0)	-5	V
I_C	Collector Current	-3	A
I_{CM}	Collector Peak Current (t_p < 5 ms)	-6	A
P_{tot}	Total Dissipation at T_{amb} = 25 °C	1.6	W
T_{stg}	Storage Temperature	-65 to 150	°C
T_j	Max. Operating Junction Temperature	150	°C

THERMAL DATA

$R_{thj\text{-}amb}$ •	Thermal Resistance Junction-Ambient	Max	78	°C/W

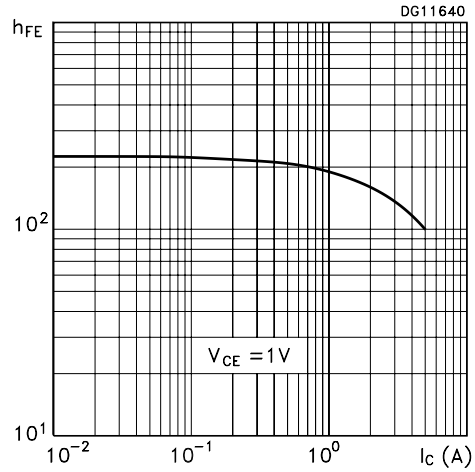
• Device mounted on a PCB area of 1 cm^2 .

ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

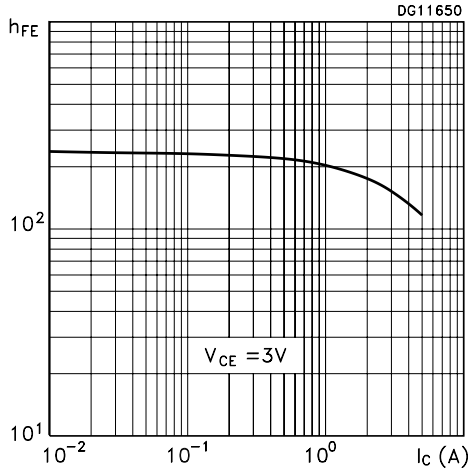
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current (I_E = 0)	V_{CB} = -30 V V_{CB} = -30 V T_j = 100 °C			-0.1 -10	µA µA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = -4 V			-1	µA
$V_{(BR)CER}$*	Collector-Emitter Breakdown Voltage (R_{BE} = 47Ω)	I_C = -10 mA	-60			V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage (I_E = 0)	I_C = -100 µA	-60			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage (I_C = 0)	I_E = -100 µA	-5			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = -0.5A I_B = -5mA I_C = -1A I_B = -10mA I_C = -2A I_B = -20mA I_C = -3A I_B = -30mA I_C = -3A I_B = -30mA T_j = 100 °C			-0.15 -0.3 -0.5 -0.7 -0.9	V V V V V
$V_{BE(sat)}$*	Base-Emitter Saturation Voltage	I_C = -1 A I_B = -10 mA		-0.8	-1.0	V
$V_{BE(on)}$	Base-Emitter Turn-On Voltage	I_C = -1 A V_{CE} = -2 V		-0.8	-1	V
h_{FE}*	DC Current Gain	I_C = -10 mA V_{CE} = -2 V I_C = -500 mA V_{CE} = -2 V I_C = -1 A V_{CE} = -2 V I_C = -2 A V_{CE} = -1 V I_C = -3 A V_{CE} = -1V	100 100 100 100 90	200 200 160 130	300 300	
f_T	Transition Frequency	I_C = -50 mA V_{CE} = -5V f = 50MHz	100			MHz
 t_d t_r t_s t_f	RESISTIVE LOAD Delay Time RiseTime StorageTime Fall Time	I_C = -3 A I_{B1} = - I_{B2} = -60 mA V_{CC} = -20 V (see figure 1)		 180 160 250 80	 220 210 300 100	 ns ns ns ns

* Pulsed: Pulse duration = 300 µs, duty cycle ≤ 1.5 %

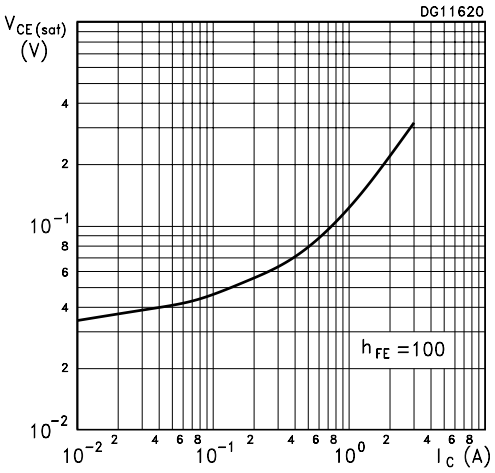
DC Current Gain



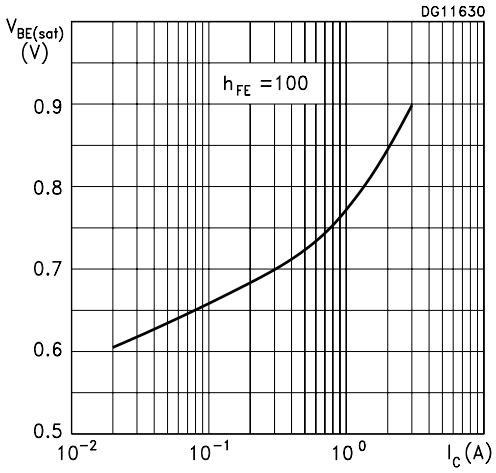
DC Current Gain



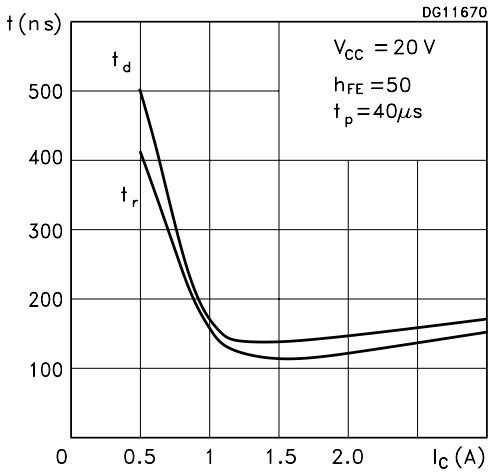
Collector-Emitter Saturation Voltage



Base-Emitter Saturation Voltage



Switching Times Resistive Load



Switching Times Resistive Load

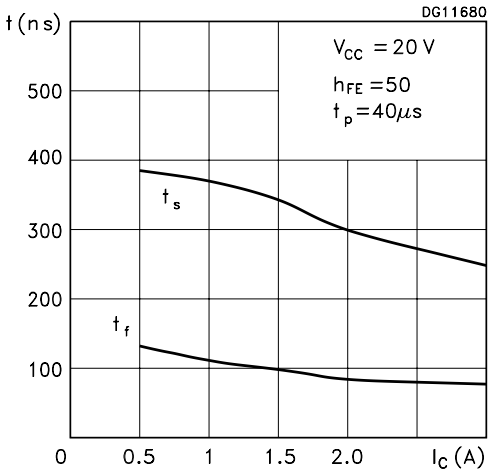
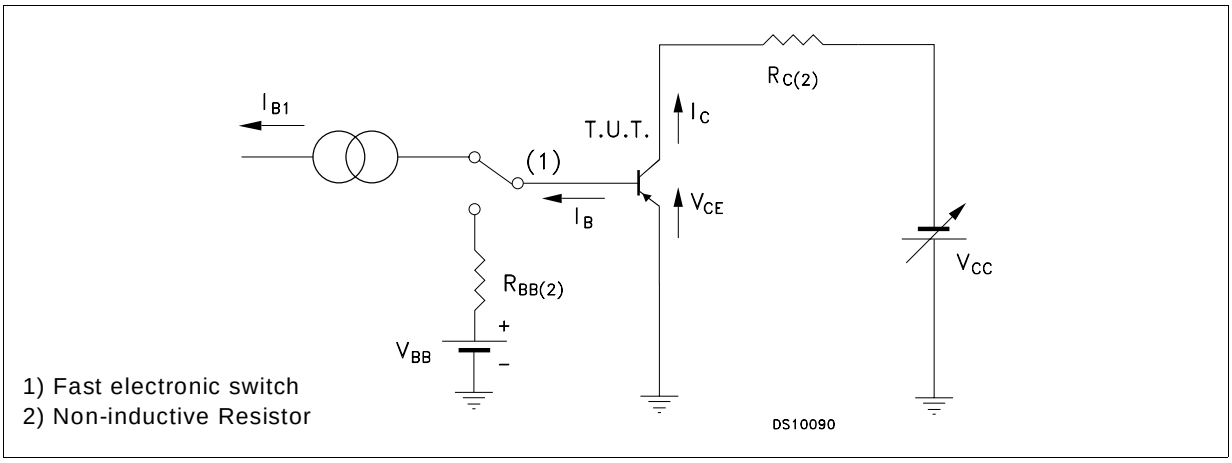
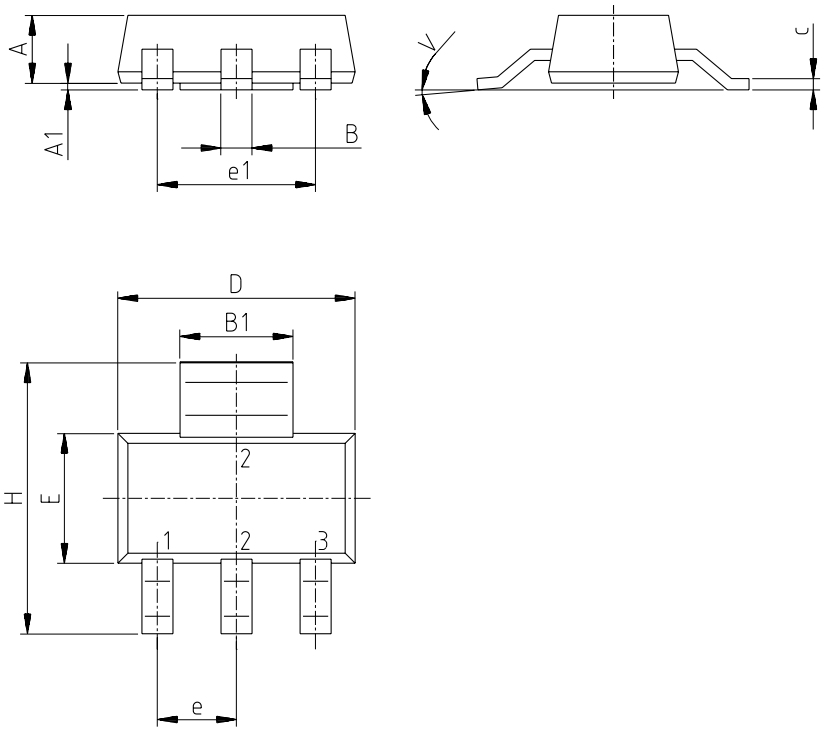


Figure 1: Resistive Load Switching Test Circuit.



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^o			10^o
A1		0.02				



P008B