



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

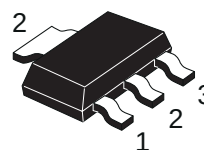
APPLICATIONS

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

DESCRIPTION

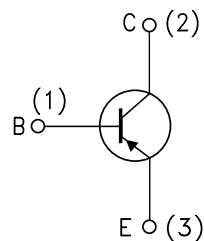
The device is manufactured in low voltage PNP Planar Technology by using a "Base Island" layout.

The resulting Transistor shows exceptional high gain performance coupled with very low saturation voltage.



SOT-223

INTERNAL SCHEMATIC DIAGRAM



SC08810

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage ($I_E = 0$)	-60	V
V_{CER}	Collector-Emitter Voltage ($R_{BE} = 47\Omega$)	-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

$R_{thj-amb}$ •	Thermal Resistance Junction-Ambient	Max	78	$^{\circ}\text{C}/\text{W}$
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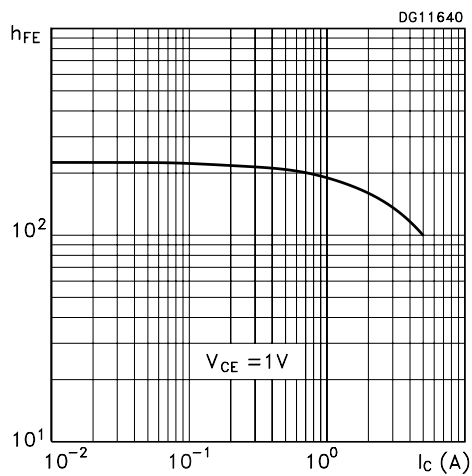
• Device mounted on a PCB area of 1 cm^2 .

ELECTRICAL CHARACTERISTICS ($T_{\text{case}} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified)

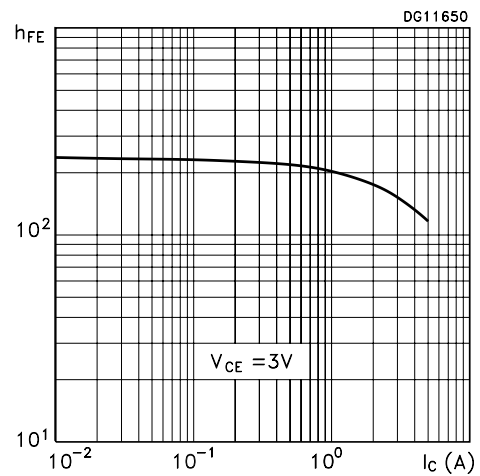
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current ($I_E = 0$)	$V_{CB} = -30\text{ V}$ $V_{CB} = -30\text{ V}$ $T_j = 100\text{ }^{\circ}\text{C}$			-0.1 -10	μA μA
I_{EBO}	Emitter Cut-off Current ($I_C = 0$)	$V_{EB} = -4\text{ V}$			-1	μA
$V_{(BR)CER*}$	Collector-Emitter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

* Pulsed: Pulse duration = $300\text{ }\mu\text{s}$, duty cycle $\leq 1.5\%$

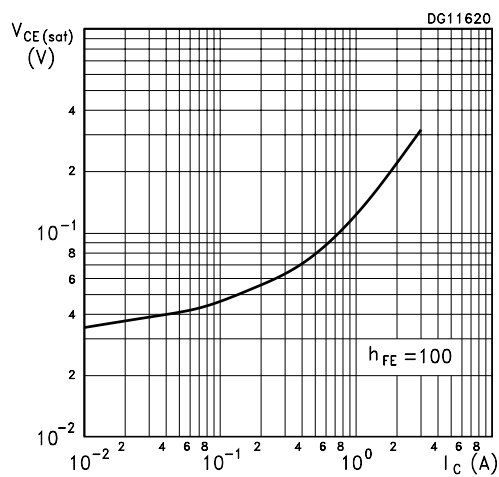
DC Current Gain



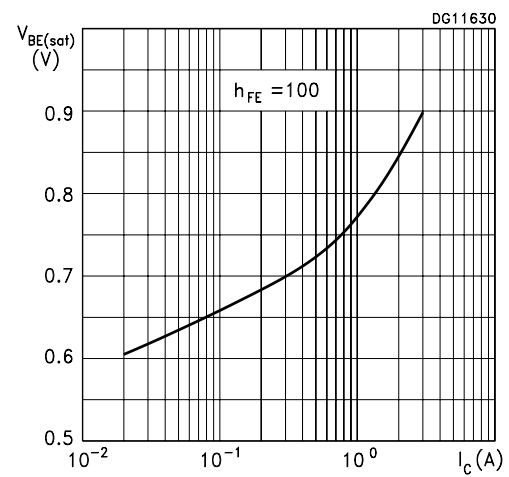
DC Current Gain



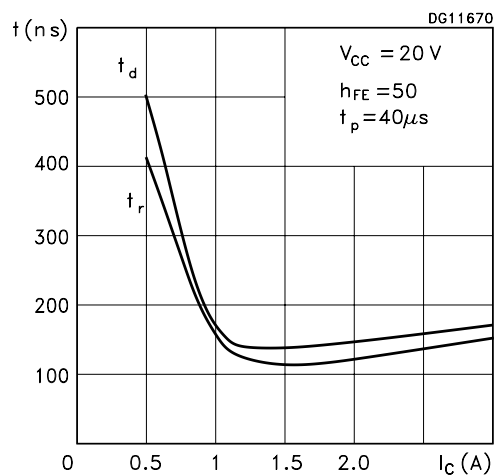
Collector-Emitter Saturation Voltage



Base-Emitter Saturation Voltage



Switching Times Resistive Load



Switching Times Resistive Load

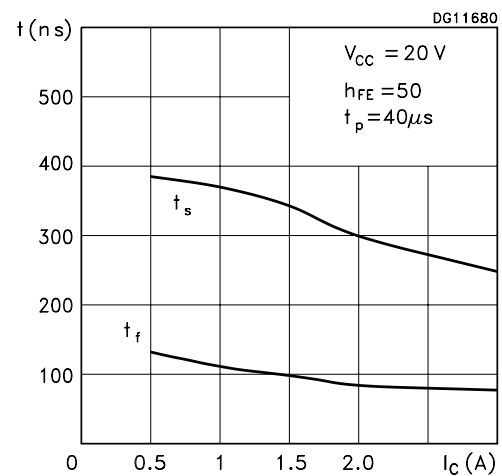
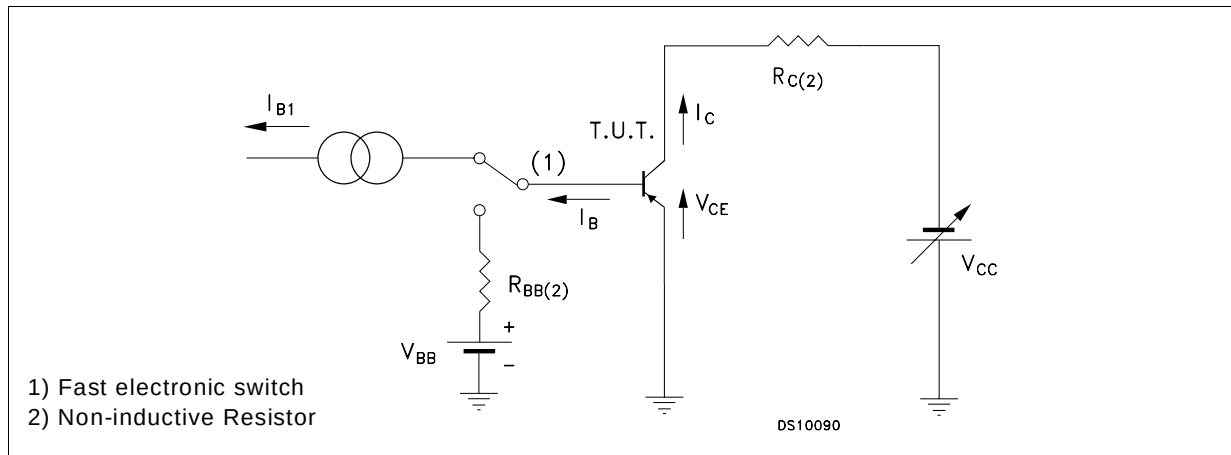
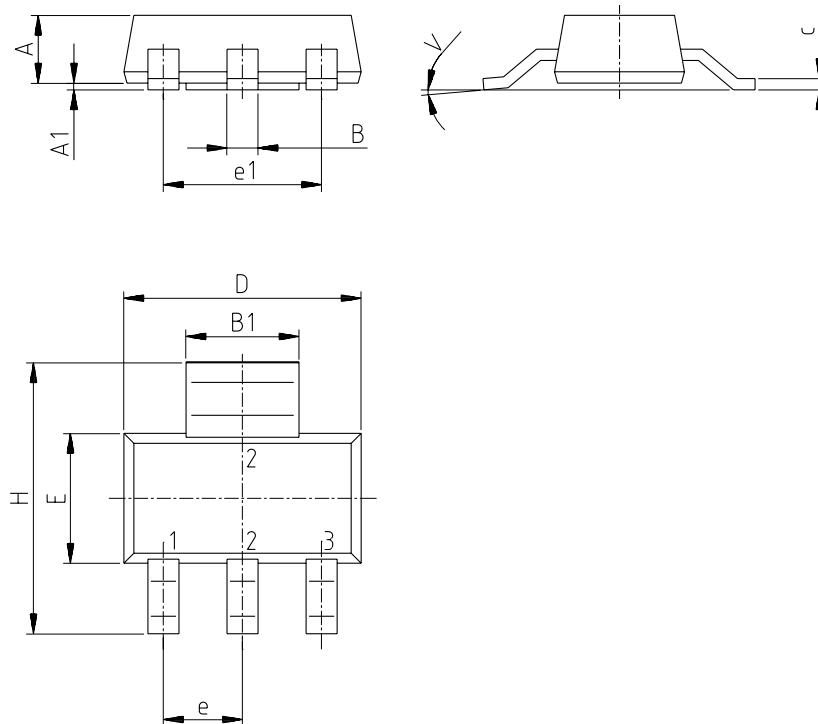


Figure 1: Resistive Load Switching Test Circuit.



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°			10°
A1		0.02				



P008B

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