



STX790A

MEDIUM CURRENT, HIGH PERFORMANCE, LOW VOLTAGE PNP TRANSISTOR

Type	Marking
STX790A	X790A

- VERY LOW COLLECTOR TO EMITTER SATURATION VOLTAGE
- DC CURRENT GAIN, $h_{FE} > 100$
- 3 A CONTINUOUS COLLECTOR CURRENT
- 60 V BREAKDOWN VOLTAGE ($V_{(BR)CER}$)
- TO-92 PACKAGE SUITABLE FOR THROUGH-HOLE PCB ASSEMBLY

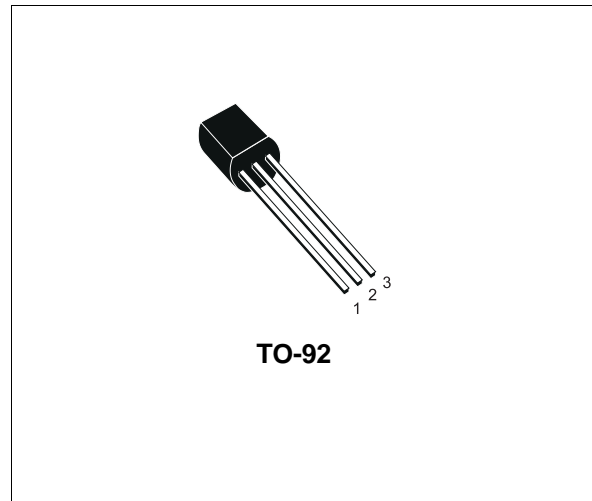
APPLICATIONS

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

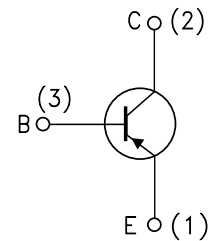
DESCRIPTION

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.



INTERNAL SCHEMATIC DIAGRAM



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	0.9	W
T_{stg}	Storage Temperature	-65 to 150	°C
T_j	Max. Operating Junction Temperature	150	°C

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THERMAL DATA

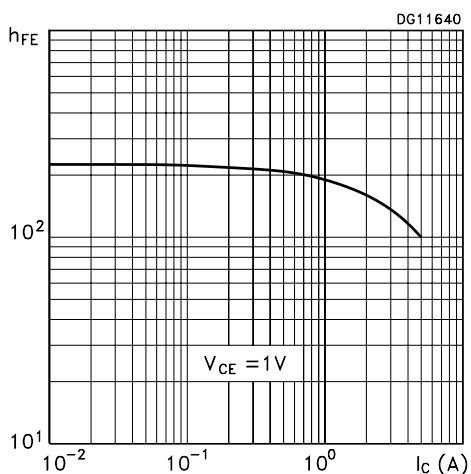
R _{thj-case}	Thermal Resistance Junction-Case	Max	44.6	°C/W
R _{thj-amb}	Thermal Resistance Junction-Ambient	Max	139	°C/W

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

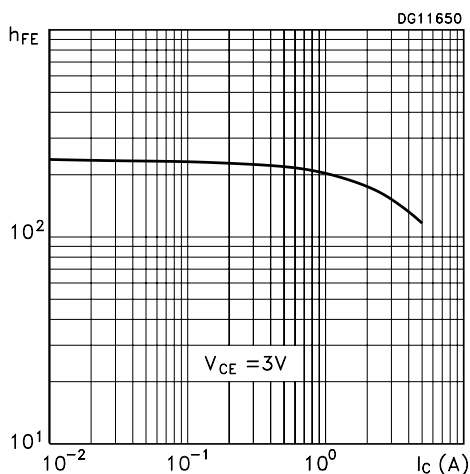
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I _{CBO}	Collector Cut-off Current (I _E = 0)	V _{CB} = -30 V V _{CB} = -30 V T _j = 100 °C			-0.1 -10	μA μA
I _{EBO}	Emitter Cut-off Current (I _C = 0)	V _{EB} = -4 V			-1	μA
V _{(BR)CER*}	Collector-Emitter Breakdown Voltage (R _{BE} = 47Ω)	I _C = -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 %

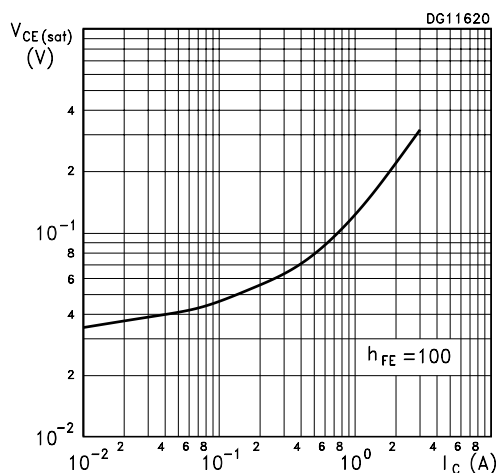
DC Current Gain



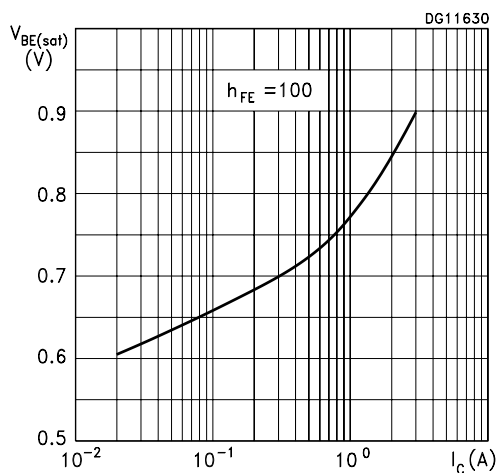
DC Current Gain



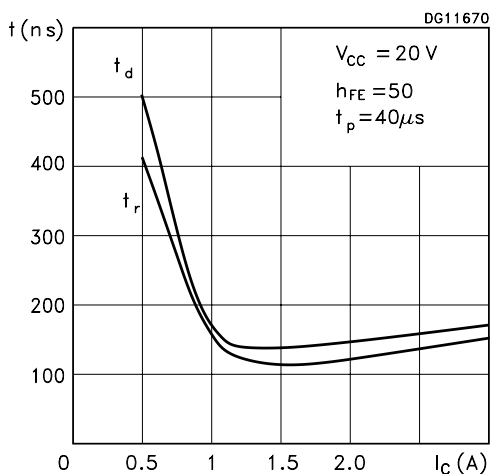
Collector-Emitter Saturation Voltage



Base-Emitter Saturation Voltage



Switching Times Resistive Load



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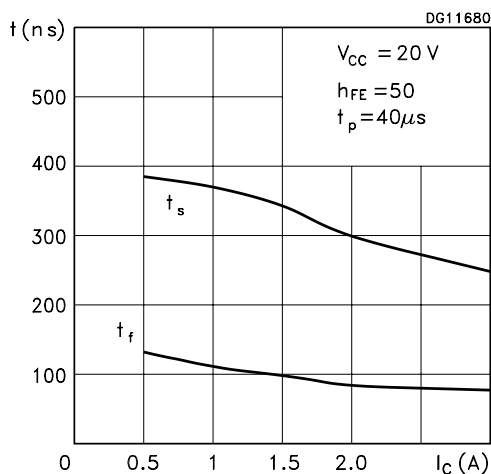
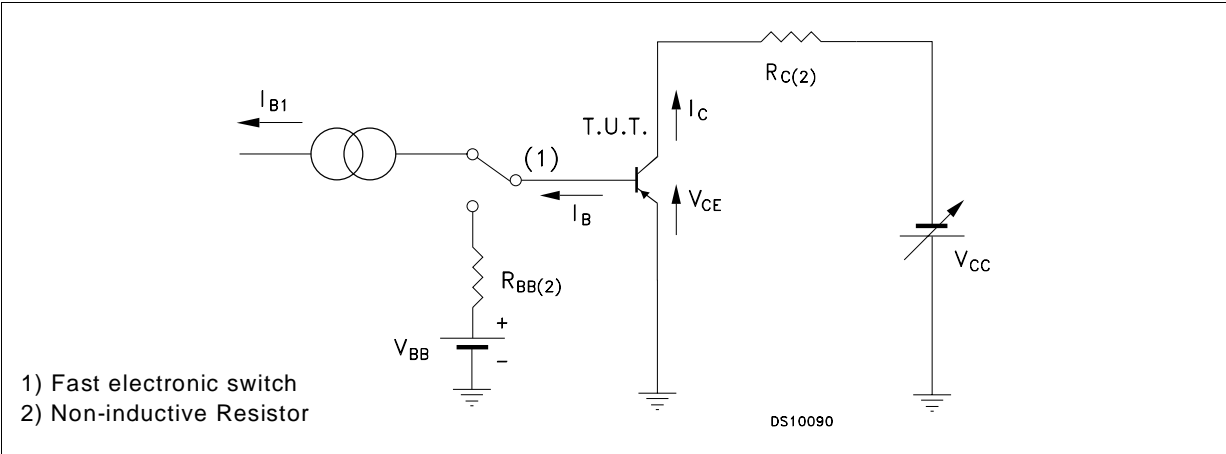
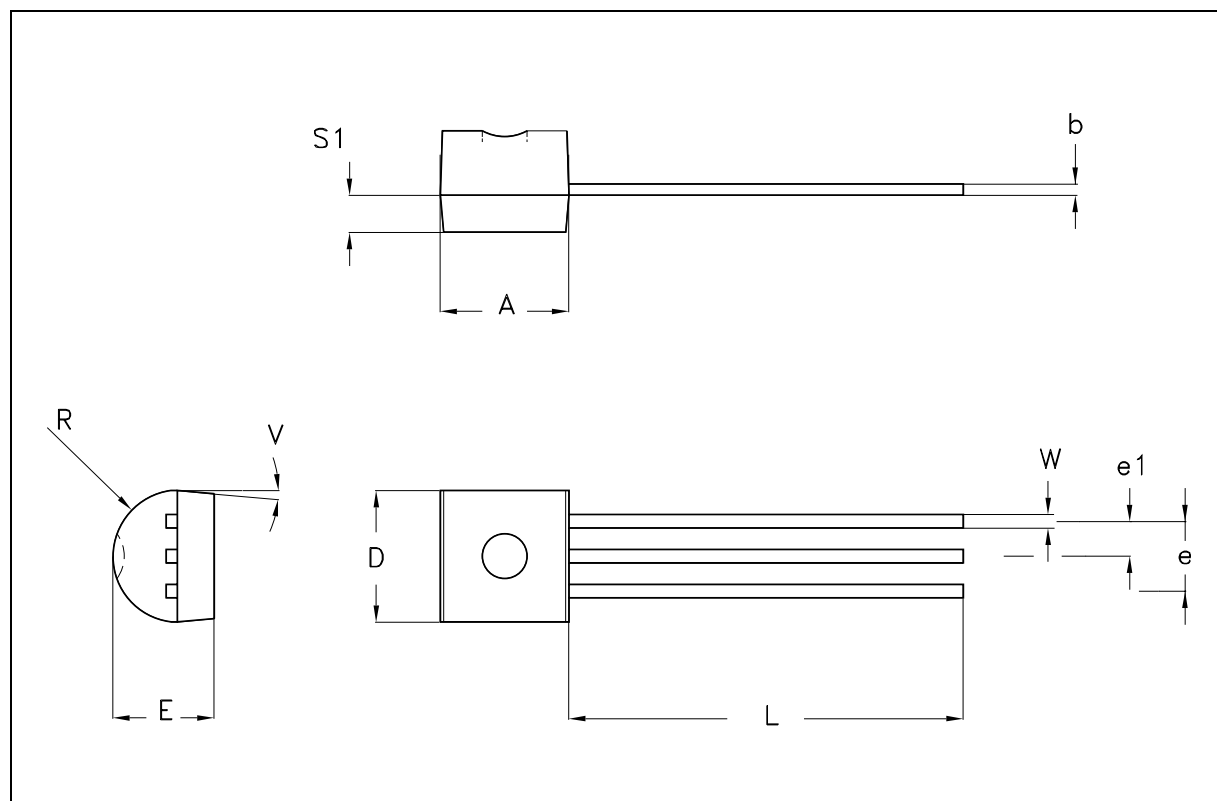


Figure 1: Resistive Load Switching Test Circuit.



TO-92 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.32		4.95	0.170		0.195
b	0.36		0.51	0.014		0.020
D	4.45		4.95	0.175		0.194
E	3.30		3.94	0.130		0.155
e	2.41		2.67	0.095		0.105
e1	1.14		1.40	0.045		0.055
L	12.70		15.49	0.500		0.609
R	2.16		2.41	0.085		0.094
S1	1.14		1.52	0.045		0.059
W	0.41		0.56	0.016		0.022
V	4 degree		6 degree	4 degree		6 degree



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