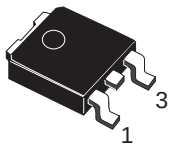
STD790A

MEDIUM CURRENT, HIGH PERFORMANCE, LOW VOLTAGE PNP TRANSISTOR

Type	Marking
STD790A	D790A

- VERY LOW COLLECTOR TO EMITTER SATURATION VOLTAGE
- DC CURRENT GAIN, h_{FE} > 100
- 3 A CONTINUOUS COLLECTOR CURRENT
- 60 V BREAKDOWN VOLTAGE ($V_{(BR)CER}$)
- SURFACE MOUNTING DPAK (TO-252) POWER PACKAGE IN TAPE & REEL (Suffix "T4")



DPAK
(TO-252)
(Suffix "T4")

APPLICATIONS

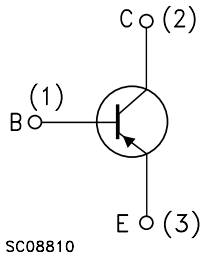
- SWITCHING REGULATOR IN BATTERY CHARGER APPLICATIONS
- SUITABLE FOR AUTOMOTIVE APPLICATIONS ($V_{(BR)CER}$ > 60V)
- VOLTAGE REGULATION IN BIAS SUPPLY CIRCUITS
- HEAVY LOAD DRIVER

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} = 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_C = 25 °C	15	W
T_{stg}	Storage Temperature	-65 to 150	°C
T_j	Max. Operating Junction Temperature	150	°C

THERMAL DATA

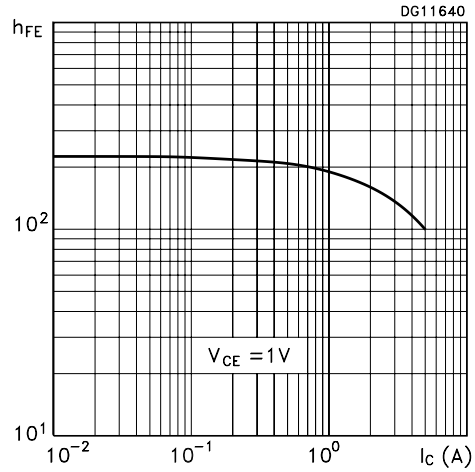
$R_{thj\text{-}case}$ •	Thermal Resistance Junction-Case	Max	8.33	°C/W

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

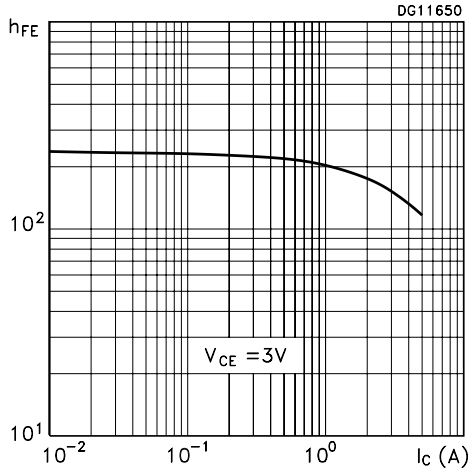
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current (I_E = 0)	V_{CB} = -30 V V_{CB} = -30 V T_j = 100 °C			-0.1 -10	µA µA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = -4 V			-1	µA
$V_{(BR)CER}$*	Collector-Emitter Breakdown Voltage (R_{BE} = 47Ω)	I_C = -10 mA	-60			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 %

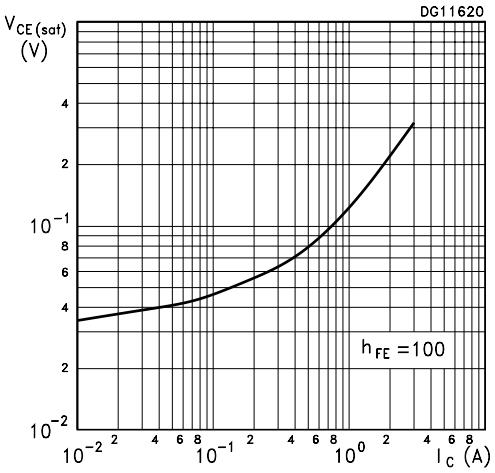
DC Current Gain



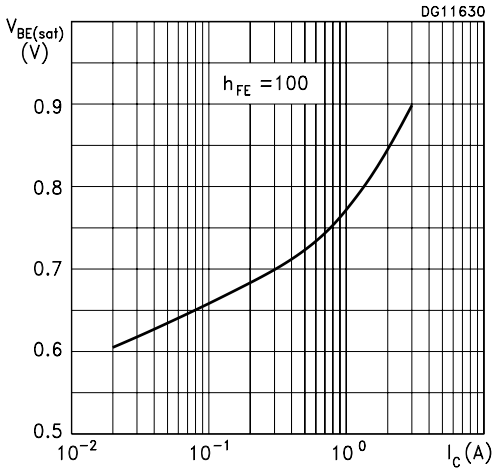
DC Current Gain



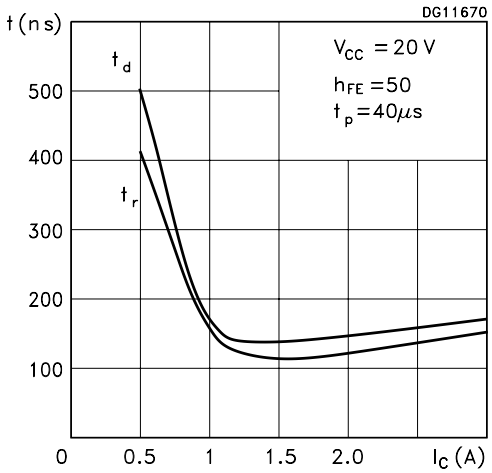
Collector-Emitter Saturation Voltage



Base-Emitter Saturation Voltage



Switching Times Resistive Load



Switching Times Resistive Load

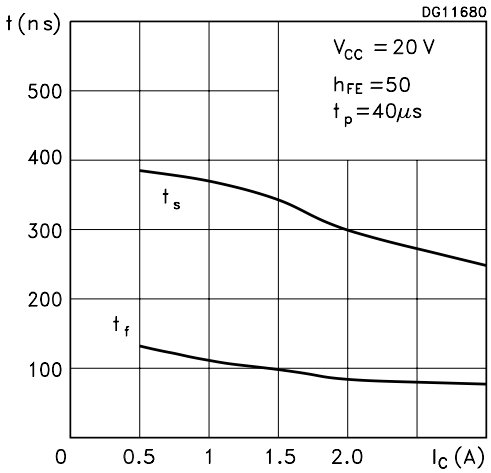
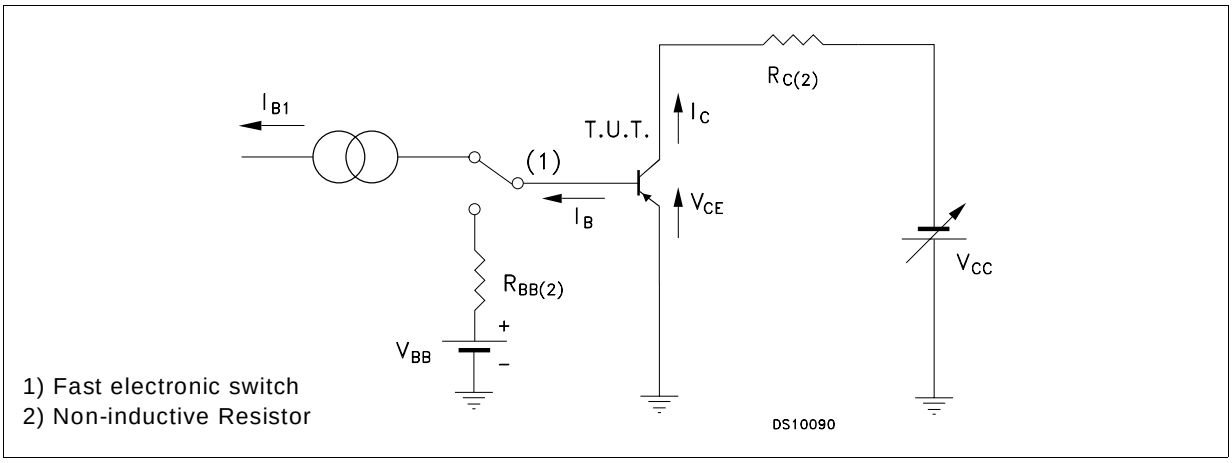


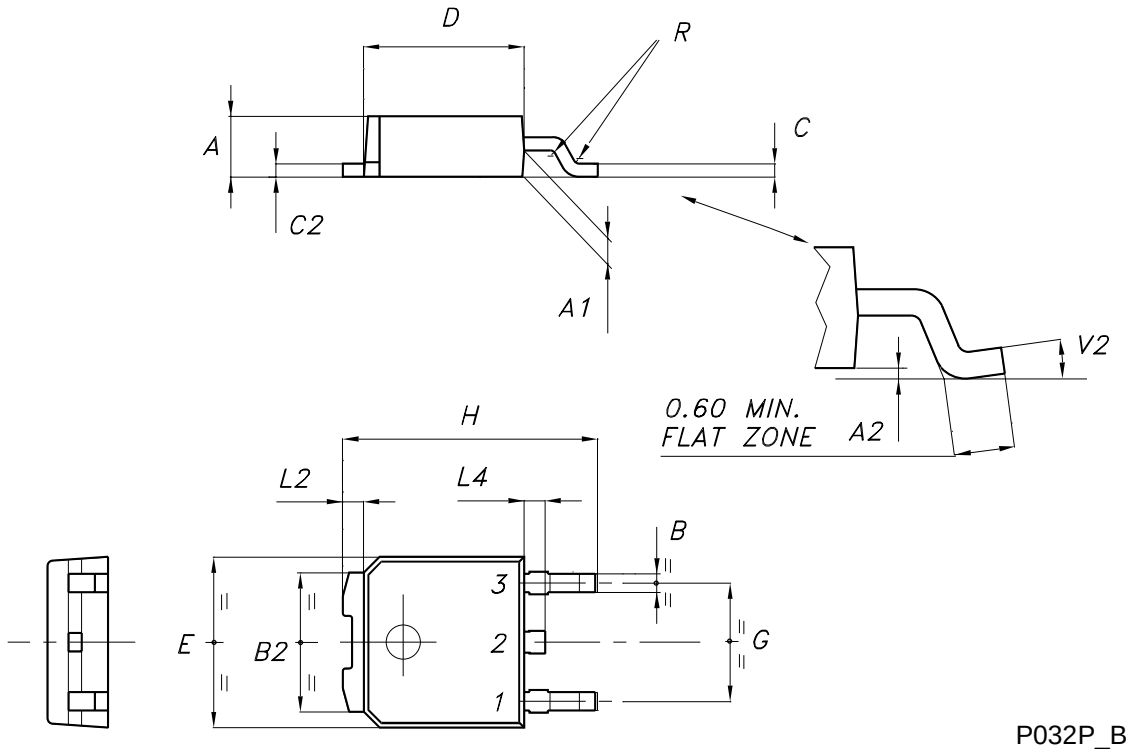
Figure 1: Resistive Load Switching Test Circuit.



1) Fast electronic switch
2) Non-inductive Resistor

TO-252 (DPAK) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	2.20		2.40	0.087		0.094
A1	0.90		1.10	0.035		0.043
A2	0.03		0.23	0.001		0.009
B	0.64		0.90	0.025		0.035
B2	5.20		5.40	0.204		0.213
C	0.45		0.60	0.018		0.024
C2	0.48		0.60	0.019		0.024
D	6.00		6.20	0.236		0.244
E	6.40		6.60	0.252		0.260
G	4.40		4.60	0.173		0.181
H	9.35		10.10	0.368		0.398
L2		0.8			0.031	
L4	0.60		1.00	0.024		0.039
V2	0^o		8^o	0^o		0^o



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