2STX2360

Low voltage fast-switching PNP power transistor

Features

- Very low collector-emitter saturation voltage
- High current gain characteristic
- Fast-switching speed

Applications

- Emergency lighting
- LED
- Voltage regulation
- Relay drive

Description

The device is a PNP transistor manufactured using new “PB-HDC” (power bipolar high density current) technology. The resulting transistor shows exceptional high gain performances coupled with very low saturation voltage.

The complementary NPN type is the 2STX1360.

TO-92

Figure 1. Internal schematic diagram

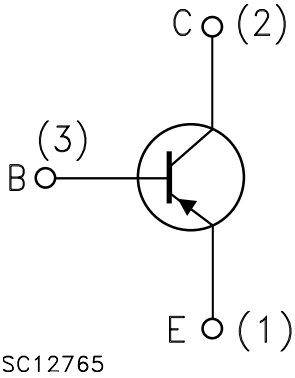


Table 1. Device summary

Order code	Marking	Package	Packaging
2STX2360	X2360	TO-92	BAG

1 Absolute maximum ratings

Table 2. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base voltage (I_E = 0)	-60	V
V_{CEO}	Collector-emitter voltage (I_B = 0)	-60	V
V_{EBO}	Emitter-base voltage (I_C = 0)	-6	V
I_C	Collector current	-3	A
I_{CM}	Collector peak current (t_P < 5 ms)	-5	A
I_B	Base current	-0.2	A
I_{BM}	Base peak current (t_P < 5 ms)	-0.4	A
P_{TOT}	Total dissipation at T_{amb} = 25 °C	1	W
T_{STG}	Storage temperature	-65 to 150	°C
T_J	Max. operating junction temperature	150	°C

Table 3. Thermal data

Symbol	Parameter	Value	Unit
R_{thJA}	Thermal resistance junction-ambient Max	125	°C/W

2 Electrical characteristics

T_{CASE} = 25 °C; unless otherwise specified.

Table 4. Electrical characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cut-off current (I_E = 0)	V_{CB} = - 60 V			-100	nA
I_{EBO}	Emitter cut-off current (I_C = 0)	V_{EB} = - 6 V			-100	nA
$V_{BE(on)}$	Base-emitter on voltage	V_{CE} = - 2 V I_C = - 100 mA	-630	-650	-730	mV
$V_{CE(sat)}$ (1)	Collector-emitter saturation voltage	I_C = - 2 A I_B = - 100 mA I_C = - 3 A I_B = - 150 mA		-200 -300	-320 -500	mV mV
$V_{BE(sat)}$ (1)	Base-emitter saturation voltage	I_C = - 2 A I_B = -100 mA		-0.9	-1.2	V
h_{FE} (1)	DC current gain	I_C = - 100 mA V_{CE} = - 2 V I_C = - 1 A V_{CE} = - 2 V	80 160		 400	
t_d t_r t_s t_f	Resistive load Delay time Rise time Storage time Fall time	I_C = - 3 A V_{CC} = - 10 V $I_{B(on)}$ = - $I_{B(off)}$ = - 300 mA $V_{BE(off)}$ = 5 V		 10 75 250 35	 15 100 350 50	 ns ns ns ns
f_T	Transition frequency	I_C = - 0.1 A V_{CE} = - 10 V		130		MHz

1. Pulse test: pulse duration ≤ 300 µs, duty cycle ≤ 2 %

2.1 Typical characteristics (curves)

Figure 2. DC current gain (V_{CE} = - 2 V)

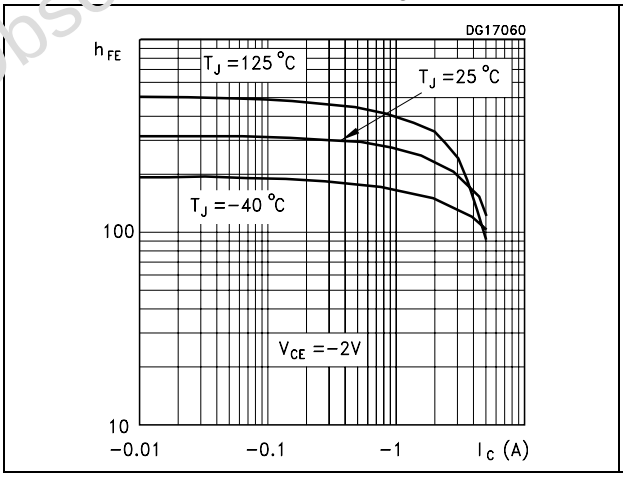


Figure 3. DC current gain (V_{CE} = - 5 V)

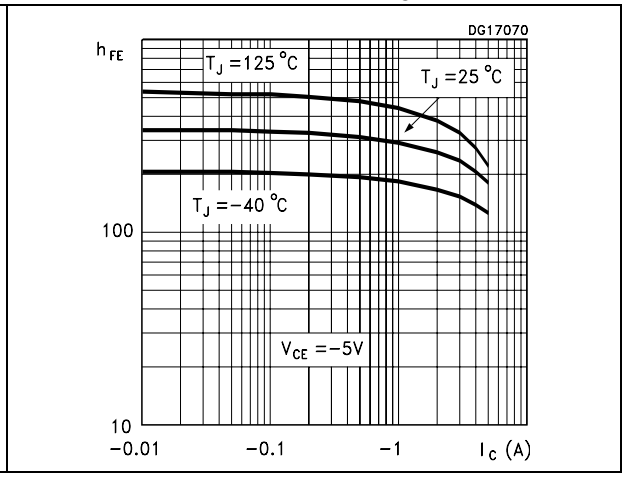


Figure 4. Collector emitter saturation voltage

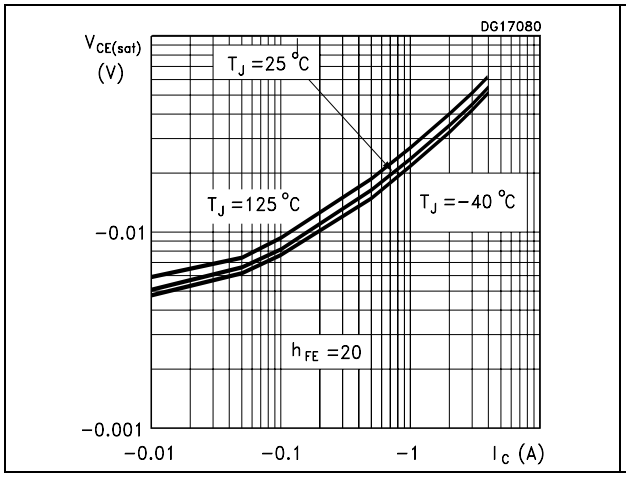


Figure 5. Base emitter saturation voltage

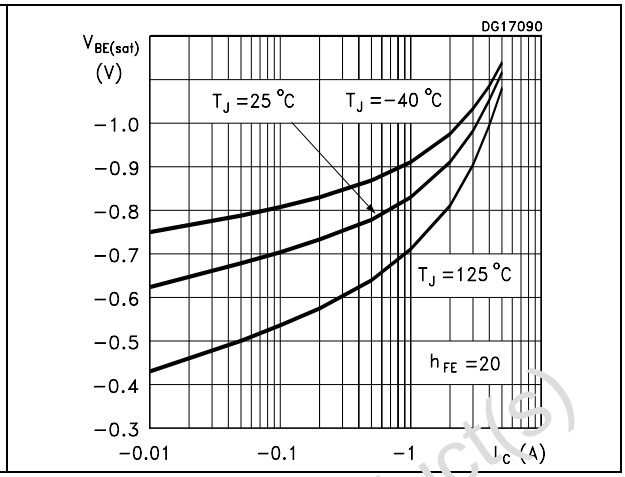


Figure 6. Resistive load switching on

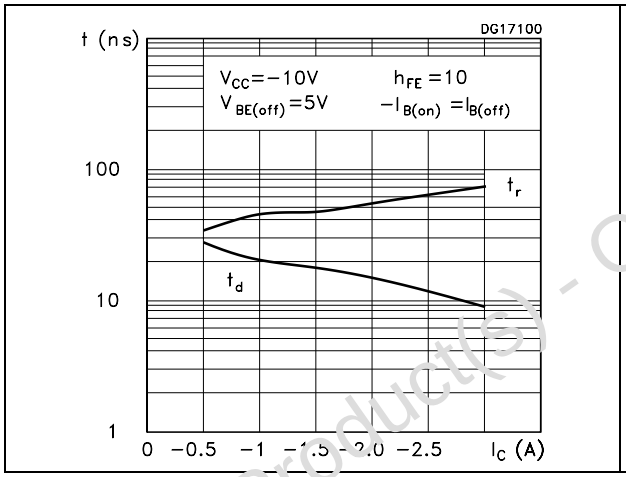


Figure 7. Resistive load switching off

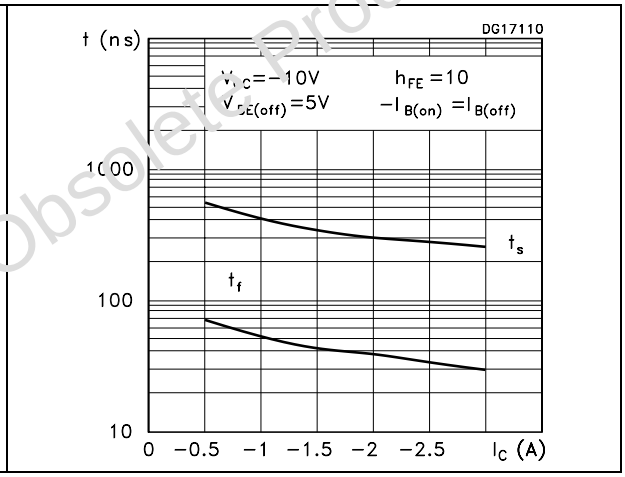
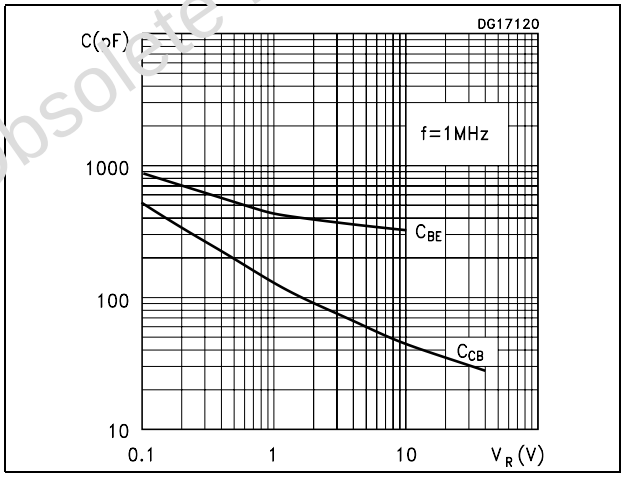
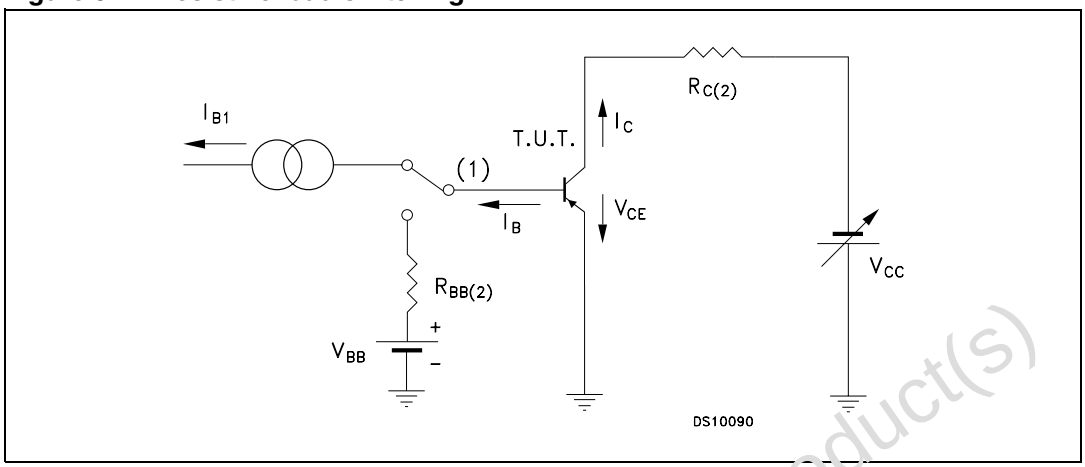


Figure 8. Capacitances



2.2 Test circuits

Figure 9. Resistive load switching



1. Fast electronic switch
2. Non-inductive resistor

3 Package mechanical data

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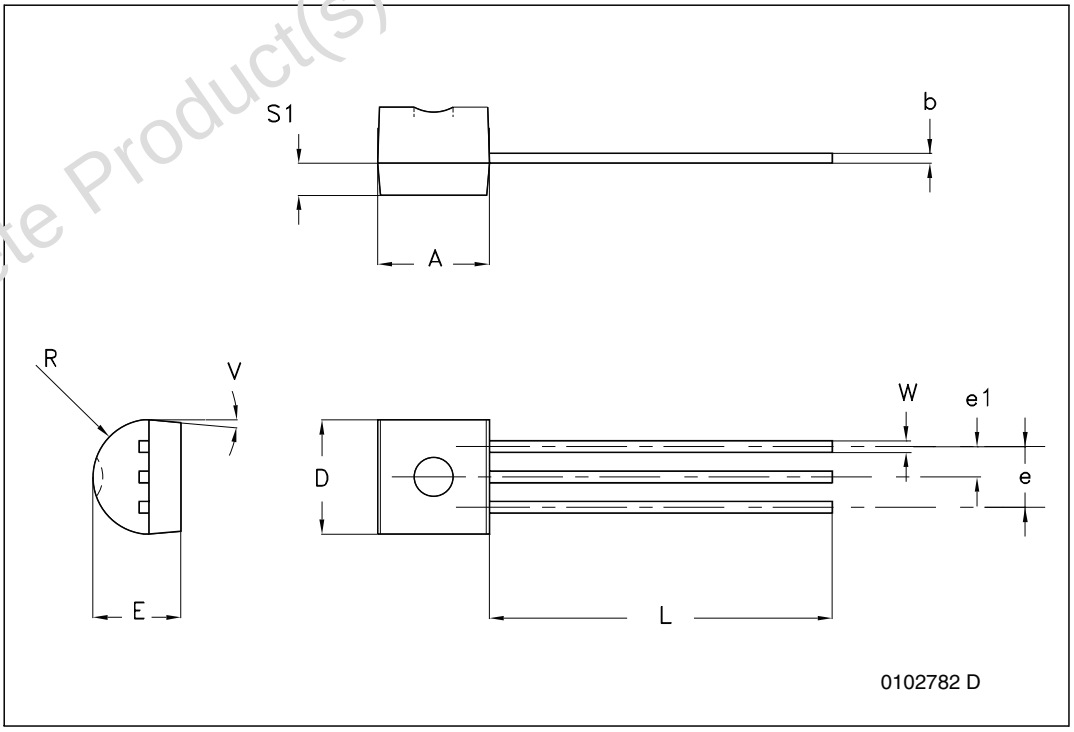
TO-92 bulk shipment mechanical data

Dim.	mm.		
	Min.	Typ.	Max.
A	4.32		4.95
b	0.36		0.51
D	4.45		4.95
E	3.30		3.94
e	2.41		2.67
e1	1.14		1.40
L	12.70		15.49
R	2.16		2.41
S1	0.92		1.52
W	0.41		0.56
V		5°	



4 Revision history

Table 5. Document revision history

Date	Revision	Changes
04-Mar-2010	1	Initial release.

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