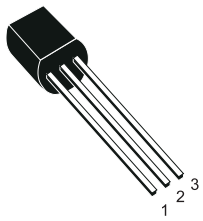
2STX1360

LOW VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

Features

- VERY LOW COLLECTOR-EMITTER SATUARATION VOLTAGE
- HIGH CURRENT GAIN CHARACTERISTIC
- FAST-SWITCHING SPEED
- IN COMPLANCE WITH THE 2002/93/EC EUROPEAN DIRECTIVE

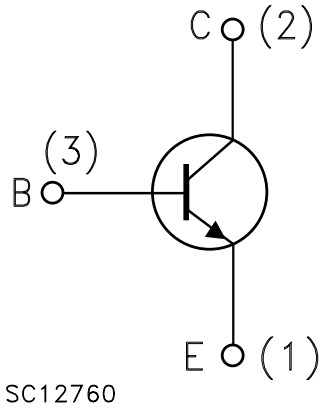


TO-92

Applications

- EMERGENCY LIGHTING
- LED
- CCFL DRIVERS (BACK LIGHTING)
- VOLTAGE REGULATION
- RELAY DRIVER

Internal Schematic Diagram



Description

The 2STX1360 is a NPN 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.

Order Codes

Part Number	Marking	Package	Packing
2STX1360	X1360	TO-92	Bulk

1 Absolute Maximum Ratings

Table 1. Absolute Maximum Rating

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage (I_E = 0)	80	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 < 5ms)	5	A
I_B	Base Current	0.2	A
I_{BM}	Base Peak Current (t_P < 5ms)	0.4	A
P_{TOT}	Total dissipation at T_c = 25°C	1	W
T_{stg}	Storage Temperature	-65 to 150	°C
T_J	Max. Operating Junction Temperature	150	°C

Table 2. Thermal Data

Symbol	Parameter		Value	Unit
$R_{thJ\text{-}case}$	Thermal Resistance Junction-Case	Max	44.6	°C/W
$R_{thJ\text{-}amb}$	Thermal Resistance Junction-Ambient	Max	125	°C/W

2 Electrical Characteristics

Table 3. 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} = 80 V			100	nA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 6 V			100	nA
V_{BE}	Base-Emitter Voltage	V_{CE} = 2 V I_C = 100 mA	630	670	730	mV
$V_{CE(sat)}$ *Note: 1*	Collector-Emitter Saturation Voltage	I_C = 2 A I_B = 100 mA I_C = 3 A I_B = 150 mA		150 210	300 500	mV mV
$V_{BE(sat)}$ *Note: 1*	Base-Emitter Saturation Voltage	I_C = 2 A I_B = 100 mA		0.89	1.2	V
h_{FE} *Note: 1*	DC Current Gain	I_C = 100 mA V_{CE} = 2 V I_C = 1 A V_{CE} = 2 V	80 160	280	400	
t_d t_r t_s t_f	RESISTIVE LOAD Delay Time Rise Time Storage Time Fall Time	V_{CC} = 10 V I_C = 3 A I_{B1} = - I_{B2} = 300 mA (see figure 8)		17 81 620 54	20 100 720 65	ns ns ns ns
f_T	Transition Frequency	I_C = 0.1 A V_{CE} = 10 V		130		MHz

Note: 1 Pulsed duration = 300 µs, duty cycle ≤1.5%.

2.1 Typical Characteristics

Figure 1. DC Current Gain

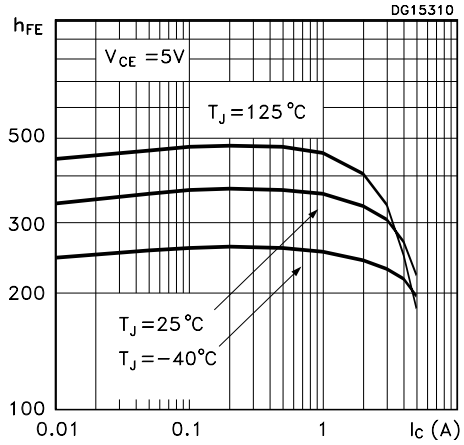


Figure 2. DC Current Gain

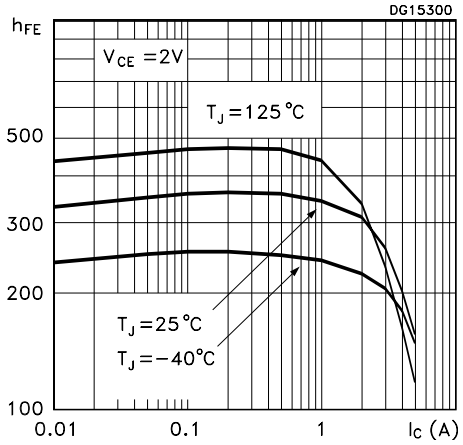


Figure 3. Collector Emitter Saturation Voltage

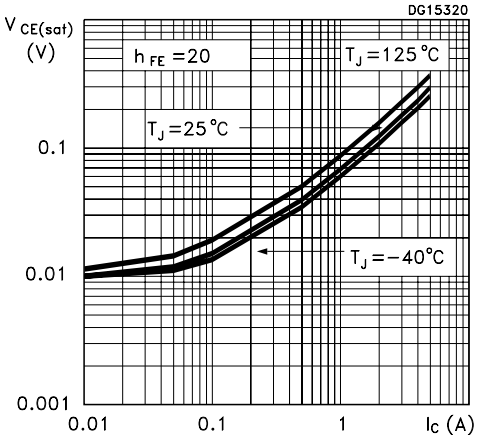


Figure 4. Base Emitter Saturation Voltage

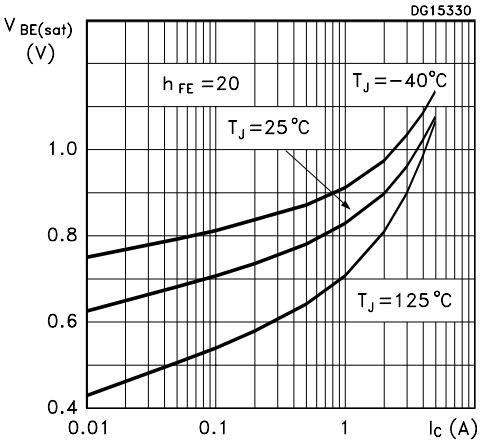


Figure 5. Resistive Load Switching Times

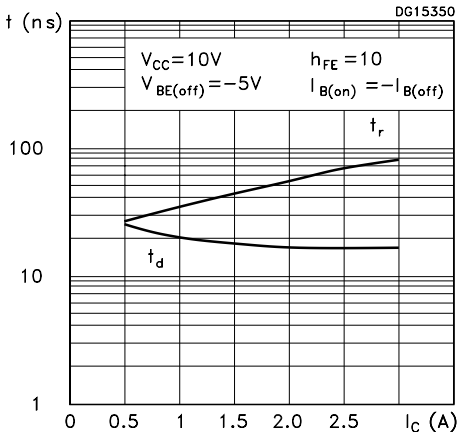


Figure 6. Resistive LoadSwitching Times

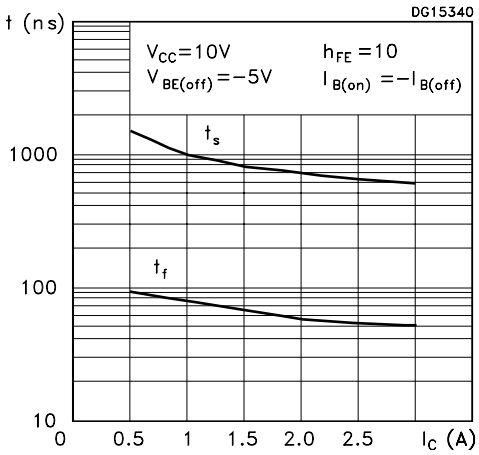
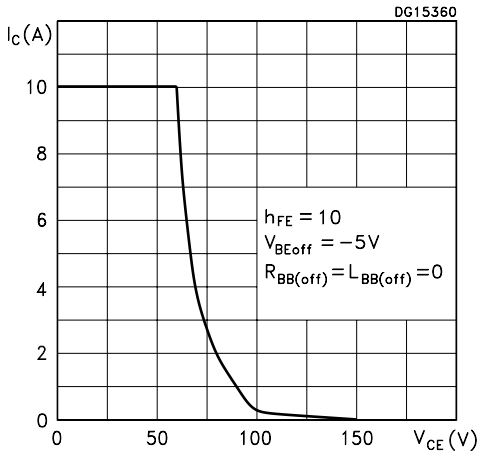
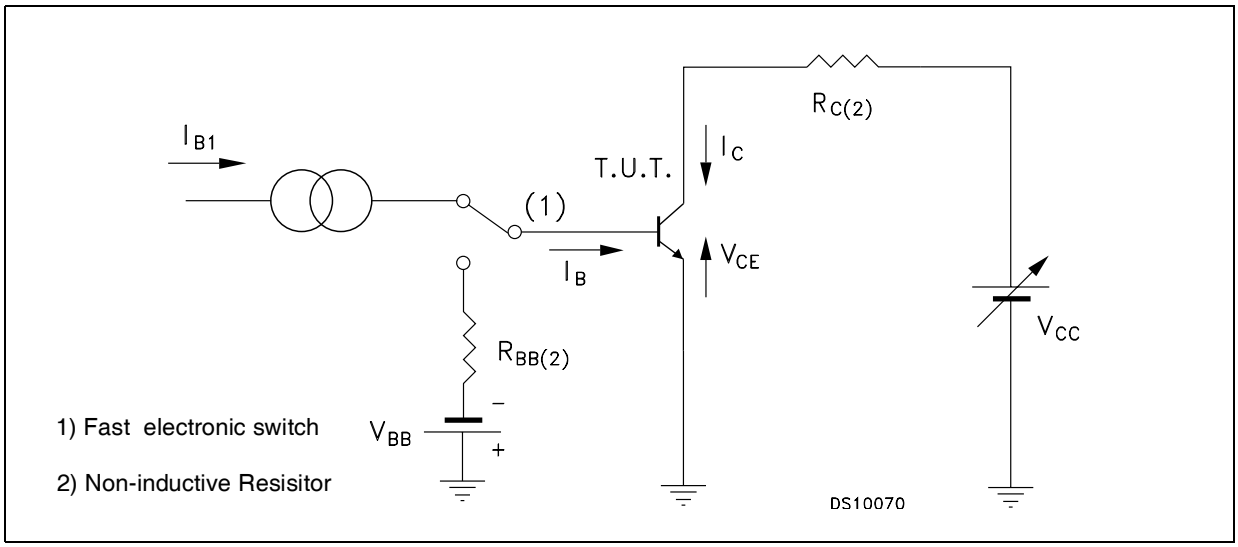


Figure 7. Reverse Bised SOA



3 Test Circuits

Figure 8. Resistive Load Switching Test Circuit

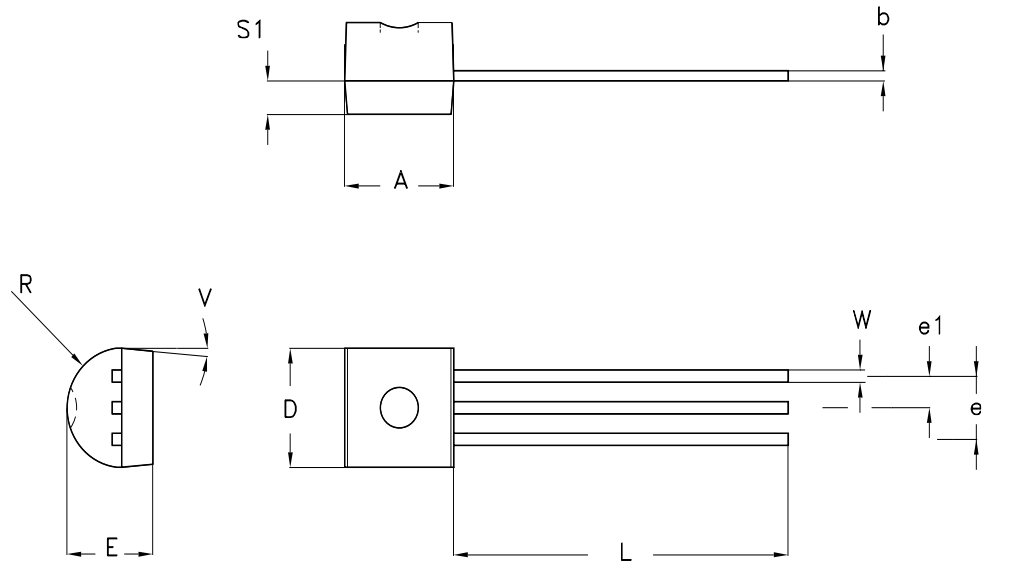


4 Package Mechanical Data

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect . The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com

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 ^{O}	



5 Revision History

Date	Revision	Changes
17-Nov-2005	1	Initial Release