N-P-N SILICON PLANAR DARLINGTON TRANSISTORS

Silicon n-p-n planar Darlington transistors for industrial switching applications, e.g. print hammer, solenoid, relay and lamp driving. Encapsulated in a microminiature SOT-89 package.

P-N-P complements are BST60, 61, 62 respectively.

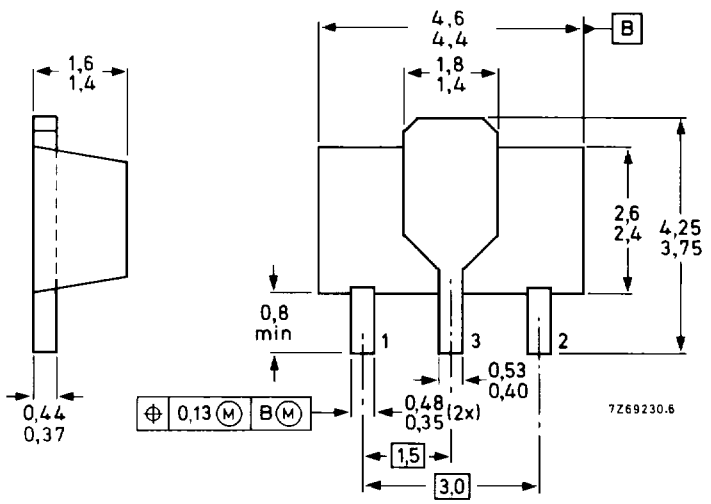
QUICK REFERENCE DATA

			BST50	BST51	BST52	
Collector-base voltage (open emitter)	V_{CBO}	max.	60	80	90	V
Collector-emitter voltage	V_{CER}	max.	45	60	80	V
Collector current	I_C	max.	0,5	0,5	0,5	A
Total power dissipation up to T_{amb} = 25 °C	P_{tot}	max.		1		W
D.C. current gain I_C = 500 mA; V_{CE} = 10 V	h_{FE}	>		2000		
Collector-emitter saturation voltage I_C = 500 mA; I_B = 0,5 mA	V_{CEsat}	<		1,3		V
Turn-off time I_C = 500 mA; $I_{Bon} = -I_{Boff}$ = 0,5 mA	t_{off}	typ.		1500		ns

MECHANICAL DATA

Dimensions in mm

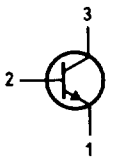
Fig. 1 SOT-89.



BOTTOM VIEW

Marking code

BST50 = AS1
BST51 = AS2
BST52 = AS3



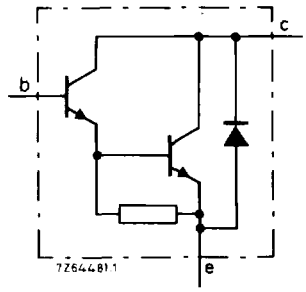


Fig. 2 Circuit diagram.

RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)

			BST50	BST51	BST52	
Collector-base voltage (open emitter)	V_{CBO}	max.	60	80	90	V
Collector-emitter voltage	V_{CEO}	max.	45	60	80	V
Emitter-base voltage (open collector)	V_{EBO}	max.		5		V
Collector current (d.c.)	I_C	max.		0,5		A
Collector current (peak)	I_{CM}	max.		1,5		A
Base current (d.c.)	I_B	max.		0,1		A
Total power dissipation ▲ up to T_{amb} = 25 °C	P_{tot}	max.		1		W
Storage temperature	T_{stg}			−65 to + 150		°C
Junction temperature *	T_j	max.		150		°C

THERMAL RESISTANCE *

From junction to ambient▲	$R_{th\ j\text{-}a}$	=	125	K/W
From junction to tab	$R_{th\ j\text{-}tab}$	=	10	K/W

* Based on maximum average junction temperature in line with common industrial practice. The resulting higher junction temperature of the output transistor part is taken into account.

▲ Device mounted on a ceramic substrate; area = 2,5 cm^2, thickness = 0,7 mm.

CHARACTERISTICS

T_j = 25 °C unless otherwise specified

Collector cut-off current			
V_{BE} = 0; V_{CE} = V_{CER}max	I_{CES}	<	10 μA
Emitter cut-off current			
I_C = 0; V_{EB} = 4 V	I_{EBO}	<	10 μA
D.C. current gain*			
I_C = 150 mA; V_{CE} = 10 V	h_{FE}	>	1000
I_C = 500 mA; V_{CE} = 10 V	h_{FE}	>	2000
Collector-emitter saturation voltage			
I_C = 500 mA; I_B = 0,5 mA	V_{CEsat}	<	1,3 V
I_C = 500 mA; I_B = 0,5 mA; T_j = 150 °C	V_{CEsat}	<	1,3 V
Base-emitter saturation voltage			
I_C = 500 mA; I_B = 0,5 mA	V_{BEsat}	<	1,9 V
Switching times (see also Fig. 3 and Fig. 4)			
I_C = 500 mA; I_{Bon} = $-I_{Boff}$ = 0,5 mA			
Turn-on time	t_{on}	typ.	400 ns
Turn-off time	t_{off}	typ.	1500 ns

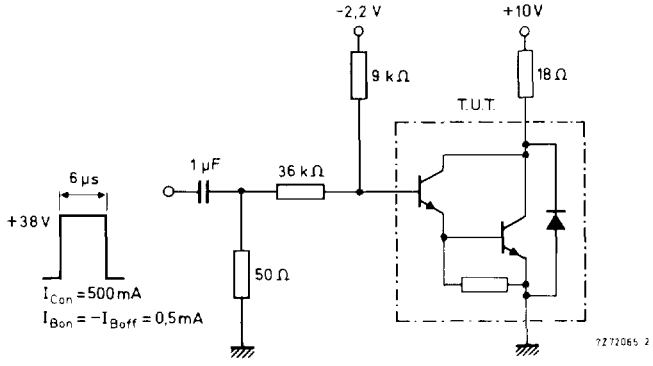


Fig. 3 Switching times test circuit.

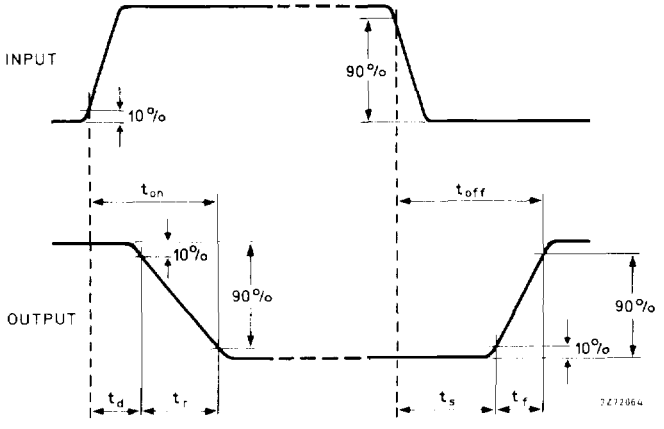


Fig. 4 Switching times waveform.

* Measured under pulsed conditions.