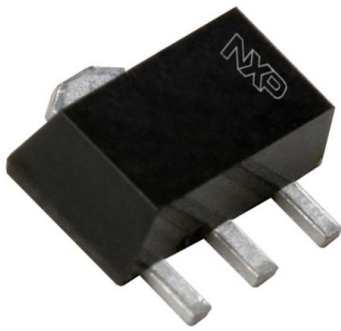


# BST61,115 Datasheet

[www.digi-electronics.com](http://www.digi-electronics.com)



<https://www.DiGi-Electronics.com>

DiGi Electronics Part Number	BST61,115-DG
Manufacturer	<a href="#">Nexperia USA Inc.</a>
Manufacturer Product Number	BST61,115
Description	TRANS PNP DARL 60V 1A SOT89
Detailed Description	Bipolar (BJT) Transistor PNP - Darlington 60 V 1 A 200MHz 1.3 W Surface Mount SOT-89



Tel: +00 852-30501935

RFQ Email: [Info@DiGi-Electronics.com](mailto:Info@DiGi-Electronics.com)

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## Purchase and inquiry

**Manufacturer Product Number:**

BST61,115

**Series:**

-

**Transistor Type:**

PNP - Darlington

**Voltage - Collector Emitter Breakdown (Max):**

60 V

**Current - Collector Cutoff (Max):**

50nA

**Power - Max:**

1.3 W

**Operating Temperature:**

150°C (TJ)

**Qualification:**

AEC-Q101

**Package / Case:**

TO-243AA

**Base Product Number:**

BST61

**Manufacturer:**

Nexperia USA Inc.

**Product Status:**

Active

**Current - Collector (Ic) (Max):**

1 A

**Vce Saturation (Max) @ Ib, Ic:**

1.3V @ 500µA, 500mA

**DC Current Gain (hFE) (Min) @ Ic, Vce:**

2000 @ 500mA, 10V

**Frequency - Transition:**

200MHz

**Grade:**

Automotive

**Mounting Type:**

Surface Mount

**Supplier Device Package:**

SOT-89

## Environmental & Export classification

**RoHS Status:**

ROHS3 Compliant

**REACH Status:**

REACH Unaffected

**HTSUS:**

8541.29.0075

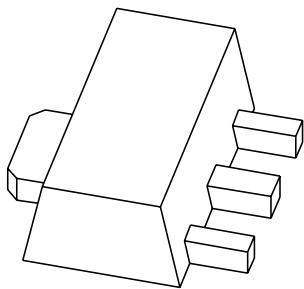
**Moisture Sensitivity Level (MSL):**

1 (Unlimited)

**ECCN:**

EAR99

# DATA SHEET



## **BST60; BST61; BST62** PNP Darlington transistors

Product specification  
Supersedes data of 2001 Feb 20

2004 Dec 09

# PNP Darlington transistors

# BST60; BST61; BST62

### FEATURES

- High current (max. 0.5 A)
- Low voltage (max. 80 V)
- Integrated diode and resistor.

### APPLICATIONS

- Industrial switching applications such as:
  - Print hammer
  - Solenoid
  - Relay and lamp driving.

### DESCRIPTION

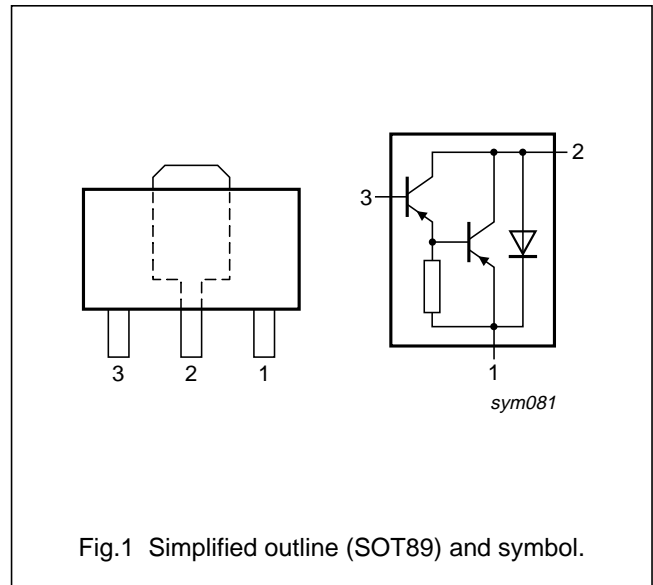
PNP Darlington transistor in a SOT89 plastic package.  
NPN complements: BST50, BST51 and BST52.

### MARKING

TYPE NUMBER	MARKING CODE
BST60	BS1
BST61	BS2
BST62	BS3

### PINNING

PIN	DESCRIPTION
1	emitter
2	collector
3	base



### ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
BST60	SC-62	plastic surface mounted package; collector pad for good heat transfer; 3 leads	SOT89
BST61			
BST62			

## PNP Darlington transistors

## BST60; BST61; BST62

**LIMITING VALUES**

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage	open emitter			
	BST60		–	–60	V
	BST61		–	–80	V
	BST62		–	–90	V
V <sub>CES</sub>	collector-emitter voltage	V <sub>BE</sub> = 0 V			
	BST60		–	–45	V
	BST61		–	–60	V
	BST62		–	–80	V
V <sub>EBO</sub>	emitter-base voltage	open collector	–	–5	V
I <sub>C</sub>	collector current (DC)		–	–1	A
I <sub>CM</sub>	peak collector current		–	–2	A
I <sub>B</sub>	base current (DC)		–	–100	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C; note 1	–	1.3	W
T <sub>stg</sub>	storage temperature		–65	+150	°C
T <sub>j</sub>	junction temperature		–	150	°C
T <sub>amb</sub>	ambient temperature		–65	+150	°C

**Note**

- Device mounted on a printed-circuit board, single-sided copper, tin-plated, mounting pad for collector 6 cm<sup>2</sup>.  
For other mounting conditions, see “*Thermal considerations for SOT89 in the General Part of associated Handbook*”.

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R <sub>th(j-a)</sub>	thermal resistance from junction to ambient	note 1	96	K/W
R <sub>th(j-s)</sub>	thermal resistance from junction to soldering point		16	K/W

**Note**

- Device mounted on a printed-circuit board, single-sided copper, tin-plated, mounting pad for collector 6 cm<sup>2</sup>.  
For other mounting conditions, see “*Thermal considerations for SOT89 in the General Part of associated Handbook*”.

## PNP Darlington transistors

## BST60; BST61; BST62

**CHARACTERISTICS**

$T_{amb} = 25\text{ °C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CES}$	collector-emitter cut-off current					
	BST60	$V_{BE} = 0\text{ V}; V_{CE} = -45\text{ V}$	–	–	–50	nA
	BST61	$V_{BE} = 0\text{ V}; V_{CE} = -60\text{ V}$	–	–	–50	nA
	BST62	$V_{BE} = 0\text{ V}; V_{CE} = -80\text{ V}$	–	–	–50	nA
$I_{EBO}$	emitter-base cut-off current	$I_C = 0\text{ A}; V_{EB} = -4\text{ V}$	–	–	–50	nA
$h_{FE}$	DC current gain	$V_{CE} = -10\text{ V}$ ; note 1; see Fig.2				
		$I_C = -150\text{ mA}$	1000	–	–	
		$I_C = -500\text{ mA}$	2000	–	–	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = -500\text{ mA}; I_B = -0.5\text{ mA}$	–	–	–1.3	V
		$I_C = -500\text{ mA}; I_B = -0.5\text{ mA}; T_j = 150\text{ °C}$	–	–	–1.3	V
$V_{BEsat}$	base-emitter saturation voltage	$I_C = -500\text{ mA}; I_B = -0.5\text{ mA}$	–	–	–1.9	V
$f_T$	transition frequency	$I_C = -500\text{ mA}; V_{CE} = -5\text{ V}; f = 100\text{ MHz}$	–	200	–	MHz
<b>Switching times (between 10% and 90% levels); (see Fig.3)</b>						
$t_{on}$	turn-on time	$I_{Con} = -500\text{ mA}; I_{Bon} = -0.5\text{ mA}; I_{Boff} = 0.5\text{ mA}$	–	500	–	ns
$t_{off}$	turn-off time		–	700	–	ns

**Note**

1. Pulse test:  $t_p \leq 300\text{ }\mu\text{s}$ ;  $\delta \leq 0.02$ .

PNP Darlington transistors

BST60; BST61; BST62

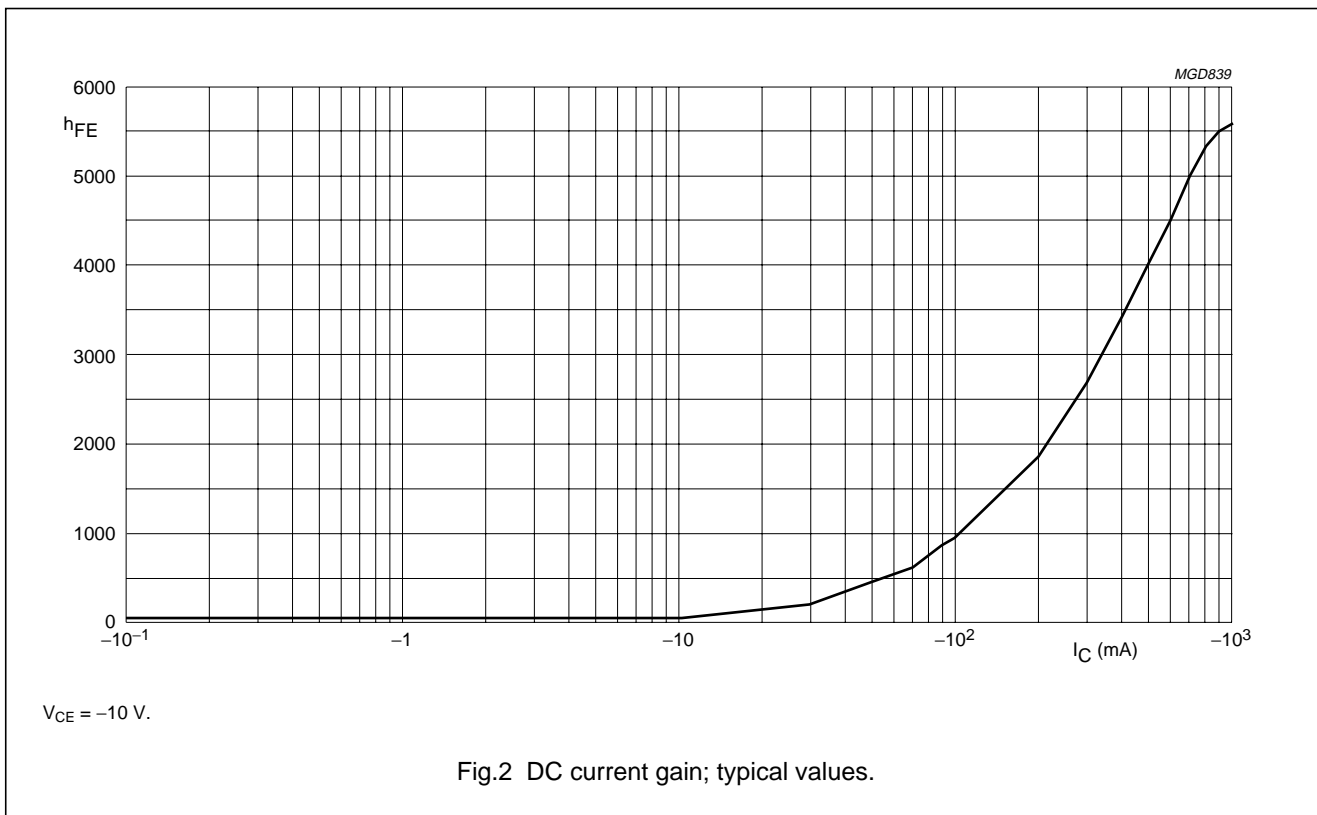
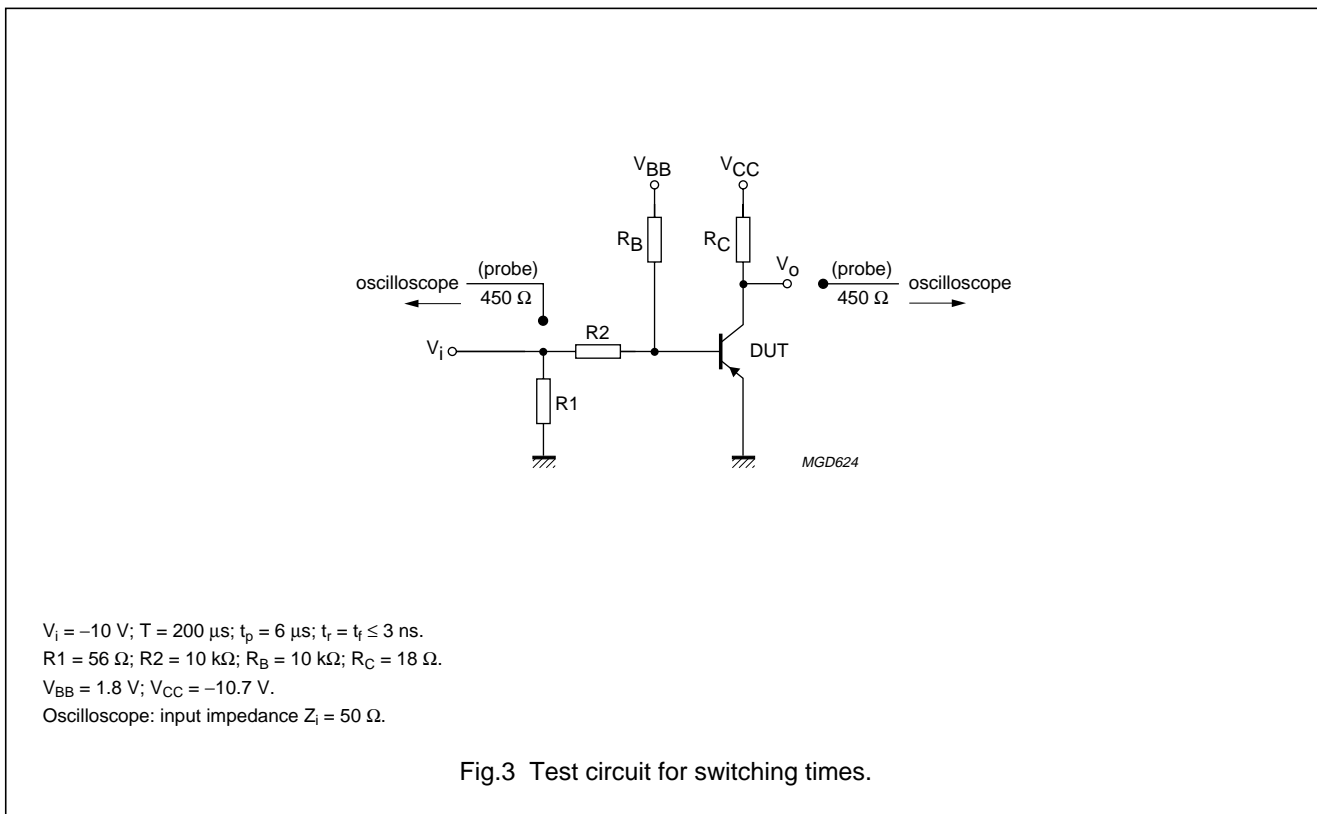


Fig.2 DC current gain; typical values.



$V_i = -10$  V;  $T = 200$   $\mu$ s;  $t_p = 6$   $\mu$ s;  $t_r = t_f \leq 3$  ns.  
 $R_1 = 56$   $\Omega$ ;  $R_2 = 10$  k $\Omega$ ;  $R_B = 10$  k $\Omega$ ;  $R_C = 18$   $\Omega$ .  
 $V_{BB} = 1.8$  V;  $V_{CC} = -10.7$  V.  
 Oscilloscope: input impedance  $Z_i = 50$   $\Omega$ .

Fig.3 Test circuit for switching times.

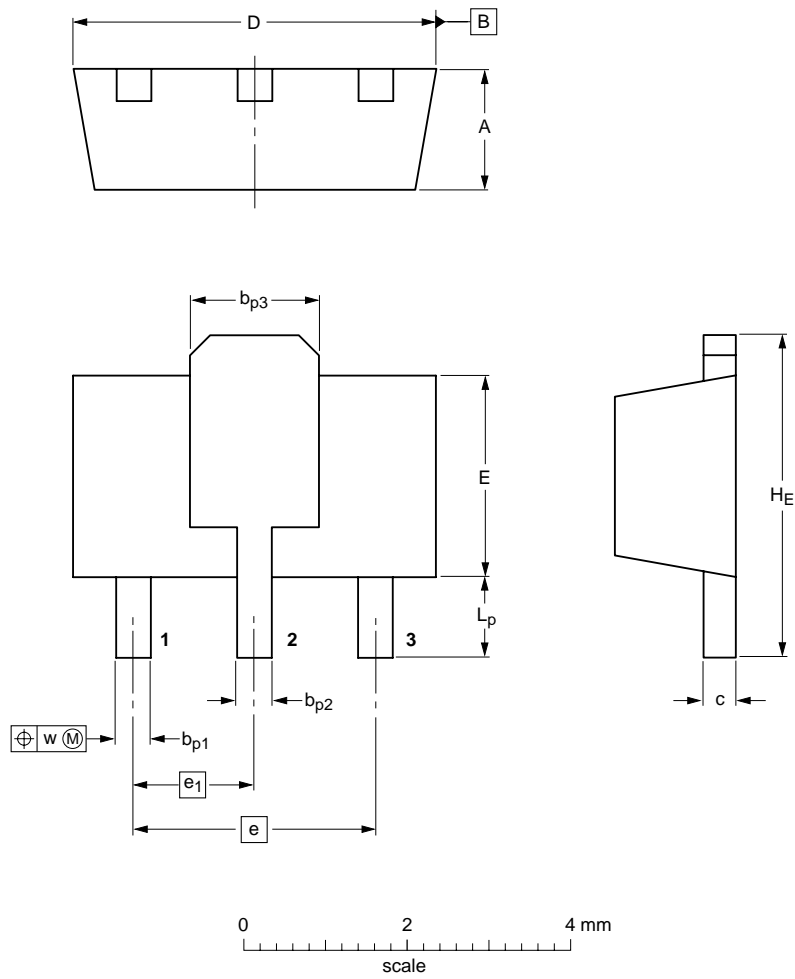
PNP Darlington transistors

BST60; BST61; BST62

PACKAGE OUTLINE

Plastic surface mounted package; collector pad for good heat transfer; 3 leads

SOT89



DIMENSIONS (mm are the original dimensions)

UNIT	A	b <sub>p1</sub>	b <sub>p2</sub>	b <sub>p3</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	w
mm	1.6 1.4	0.48 0.35	0.53 0.40	1.8 1.4	0.44 0.23	4.6 4.4	2.6 2.4	3.0	1.5	4.25 3.75	1.2 0.8	0.13

OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
SOT89		TO-243	SC-62		99-09-13 04-08-03



## PNP Darlington transistors

## BST60; BST61; BST62

## DATA SHEET STATUS

LEVEL	DATA SHEET STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)(3)</sup>	DEFINITION
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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