

# **BC859CW/ZLX Datasheet**



DiGi Electronics Part Number	
Manufacturer	
Manufacturer Product Number	
Description	
Detailed Description	

BC859CW/ZLX-DG Nexperia USA Inc. BC859CW/ZLX TRANS SOT323 Bipolar (BJT) Transistor Surface Mount SOT-323

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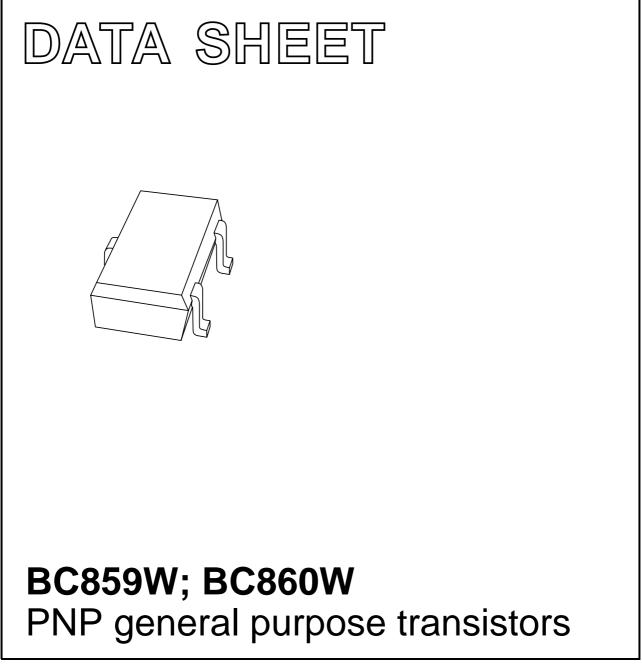
## Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
BC859CW/ZLX	Nexperia USA Inc.
Series:	Product Status:
-	Obsolete
Mounting Type:	Package / Case:
Surface Mount	SC-70, SOT-323
Supplier Device Package:	
SOT-323	

## **Environmental & Export classification**

RoHS Status:	Moisture Sensitivity Level (MSL):
ROHS3 Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8541.21.0075	

DISCRETE SEMICONDUCTORS



Product data sheet Supersedes data of 1997 Sep 03 1999 Apr 12



#### FEATURES

- Low current (max. 100 mA)
- Low voltage (max. 45 V).

### APPLICATIONS

• Low noise stages in tape recorders, hi-fi amplifiers and other audio-frequency equipment.

#### DESCRIPTION

PNP transistor in a SOT323 plastic package. NPN complements: BC849W and BC850W.

#### MARKING

TYPE NUMBER	MARKING CODE	TYPE NUMBER	MARKING CODE
BC859W	4D*	BC860W	4H*
BC859BW	4B*	BC860BW	4F*
BC859CW	4C*	BC860CW	4G*

#### Note

- 1. \* = : Made in Hong Kong.
  - \* = t : Made in Malaysia.

#### LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage	open emitter			
	BC859W		_	-30	V
	BC860W		-	-50	V
V <sub>CEO</sub>	collector-emitter voltage	open base			
	BC859W		_	-30	V
	BC860W		-	-45	V
V <sub>EBO</sub>	emitter-base voltage	open collector	-	-5	V
I <sub>C</sub>	collector current (DC)		-	-100	mA
I <sub>CM</sub>	peak collector current		-	-200	mA
I <sub>BM</sub>	peak base current		-	-200	mA
P <sub>tot</sub>	total power dissipation	$T_{amb} \le 25 \ ^{\circ}C$ ; note 1	-	200	mW
T <sub>stg</sub>	storage temperature		-65	+150	°C
Tj	junction temperature		-	150	°C
T <sub>amb</sub>	operating ambient temperature		-65	+150	°C

#### Note

1. Transistor mounted on an FR4 printed-circuit board.

# BC859W; BC860W

### PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector

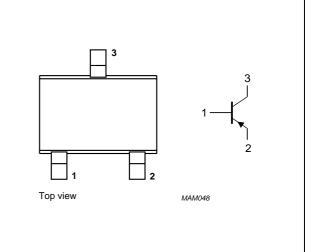


Fig.1 Simplified outline (SOT323) and symbol.

## BC859W; BC860W

### THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R <sub>th j-a</sub>	thermal resistance from junction to ambient	note 1	625	K/W

#### Note

1. Transistor mounted on an FR4 printed-circuit board.

### CHARACTERISTICS

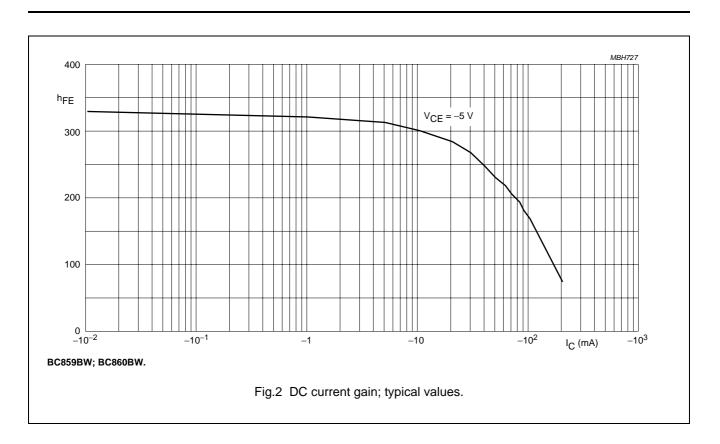
 $T_{amb}$  = 25 °C unless otherwise specified.

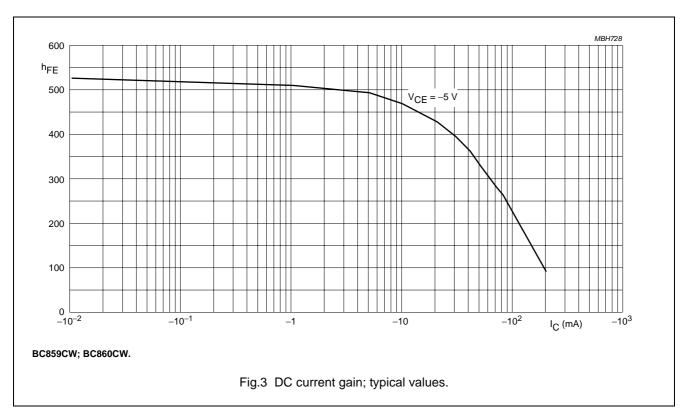
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I <sub>CBO</sub>	collector cut-off current	$I_E = 0; V_{CB} = -30 V$	-	-	-15	nA
		I <sub>E</sub> = 0; V <sub>CB</sub> = -30 V; T <sub>j</sub> = 150 °C	-	_	-4	μA
I <sub>EBO</sub>	emitter cut-off current	$I_{C} = 0; V_{EB} = -5 V$	-	_	-100	nA
h <sub>FE</sub>	DC current gain BC859W; BC860W	$I_{C} = -2 \text{ mA}; V_{CE} = -5 \text{ V};$ see Figs 2 and 3	220	_	800	
	BC859BW; BC860BW BC859CW; BC860CW		220 420	-	475 800	
V <sub>CEsat</sub>	collector-emitter saturation	$I_{\rm C} = -10$ mA; $I_{\rm B} = -0.5$ mA	-	_	-300	mV
	voltage	$I_{C} = -100 \text{ mA}; I_{B} = -5 \text{ mA}; \text{ note } 1$	-	-	-650	mV
V <sub>BE</sub>	base-emitter voltage	$I_{C} = -2 \text{ mA}; V_{CE} = -5 \text{ V}$	600	-	750	mV
		$I_{C} = -10 \text{ mA}; V_{CE} = -5 \text{ V}$	-	-	820	mV
Cc	collector capacitance	$I_E = i_e = 0; V_{CB} = -10 V; f = 1 MHz$	-	-	5	pF
C <sub>e</sub>	emitter capacitance	$I_{C} = i_{c} = 0; V_{EB} = -500 \text{ mV}; f = 1 \text{ MHz}$	-	10	-	pF
f <sub>T</sub>	transition frequency	$I_{C} = -10 \text{ mA}; V_{CE} = -5 \text{ V}; f = 100 \text{ MHz}$	100	-	-	MHz
F	noise figure; BC859W; BC860W;	$\label{eq:lc} \begin{array}{l} I_C = -200 \ \mu\text{A}; \ V_{CE} = -5 \ V; \ R_S = 2 \ k\Omega; \\ f = 10 \ Hz \ to \ 15.7 \ kHz \end{array}$	-	-	4	dB
	BC859BW; BC860BW; BC859CW; BC860CW	$\label{eq:lc} \begin{array}{l} I_{C}=-200 \ \mu \text{A}; \ V_{CE}=-5 \ \text{V}; \ \text{R}_{S}=2 \ \text{k}\Omega; \\ f=1 \ \text{kHz}; \ \text{B}=200 \ \text{Hz} \end{array}$	-	-	4	dB

### Note

1. Pulse test:  $t_p \leq 300~\mu s;~\delta \leq 0.02.$ 

## BC859W; BC860W



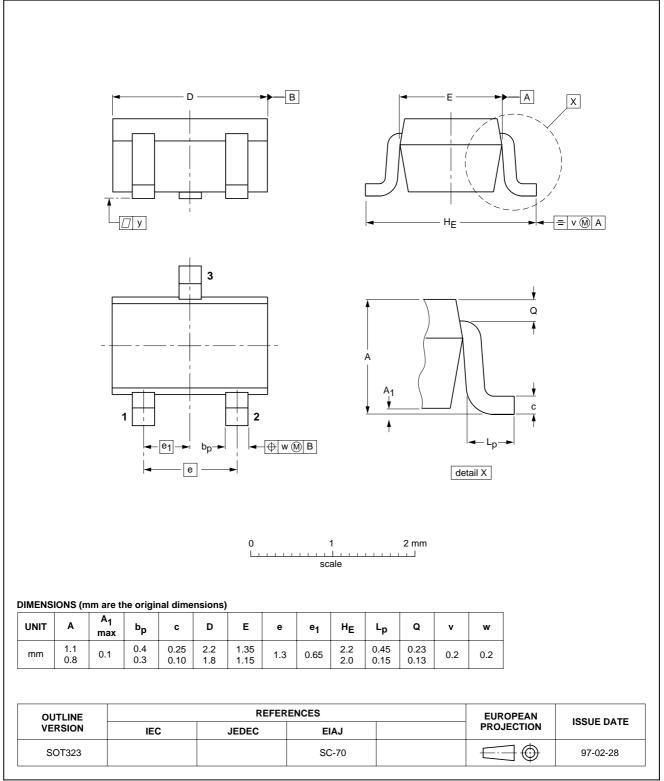


BC859W; BC860W

# PNP general purpose transistors

#### PACKAGE OUTLINE





### BC859W; BC860W

#### DATA SHEET STATUS

DOCUMENT STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)</sup>	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

#### Notes

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#### **Customer notification**

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#### **Contact information**

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