



BCV49-Q

NPN Darlington transistor

13 April 2023

Product data sheet

1. General description

NPN small-signal Darlington transistor in a SOT89 (SC-62) flat lead Surface-Mounted Device (SMD) plastic package.

PNP complement: BCV48-Q

2. Features and benefits

- High current (max. 500 mA)
- Low voltage (max. 60 V)
- High DC current gain (min. 10000)
- Qualified according to AEC-Q101 and recommended for use in automotive applications

3. Applications

- Preamplifier input applications

4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I_C	collector current		-	-	500	mA
h_{FE}	DC current gain	$V_{CE} = 5 \text{ V}$; $I_C = 1 \text{ mA}$; $T_{amb} = 25 \text{ }^\circ\text{C}$	2000	-	-	

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	E	emitter	 SOT89	 sym087
2	C	collector		
3	B	base		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BCV49-Q	SOT89	plastic, surface-mounted package; 3 leads; 1.5 mm pitch; 4.5 mm x 2.5 mm x 1.5 mm body	SOT89

7. Marking

Table 4. Marking codes

Type number	Marking code
BCV49-Q	EG

8. Limiting values

Table 5. Limiting values

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

Symbol	Parameter	Conditions		Min	Max	Unit
V _{CBO}	collector-base voltage	open emitter		-	80	V
V _{CES}	collector-emitter voltage	V _{BE} = 0 V		-	60	V
V _{EBO}	emitter-base voltage	open collector		-	10	V
I _C	collector current			-	500	mA
I _{CM}	peak collector current			-	1	A
I _{BM}	peak base current	single pulse; t _p ≤ 1 ms		-	200	mA
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C	[1]	-	1.3	W
T _j	junction temperature			-	150	°C
T _{amb}	ambient temperature			-65	150	°C
T _{stg}	storage temperature			-65	150	°C

[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated, mounting pad for collector 1 cm².

9. Thermal characteristics

Table 6. Thermal characteristics

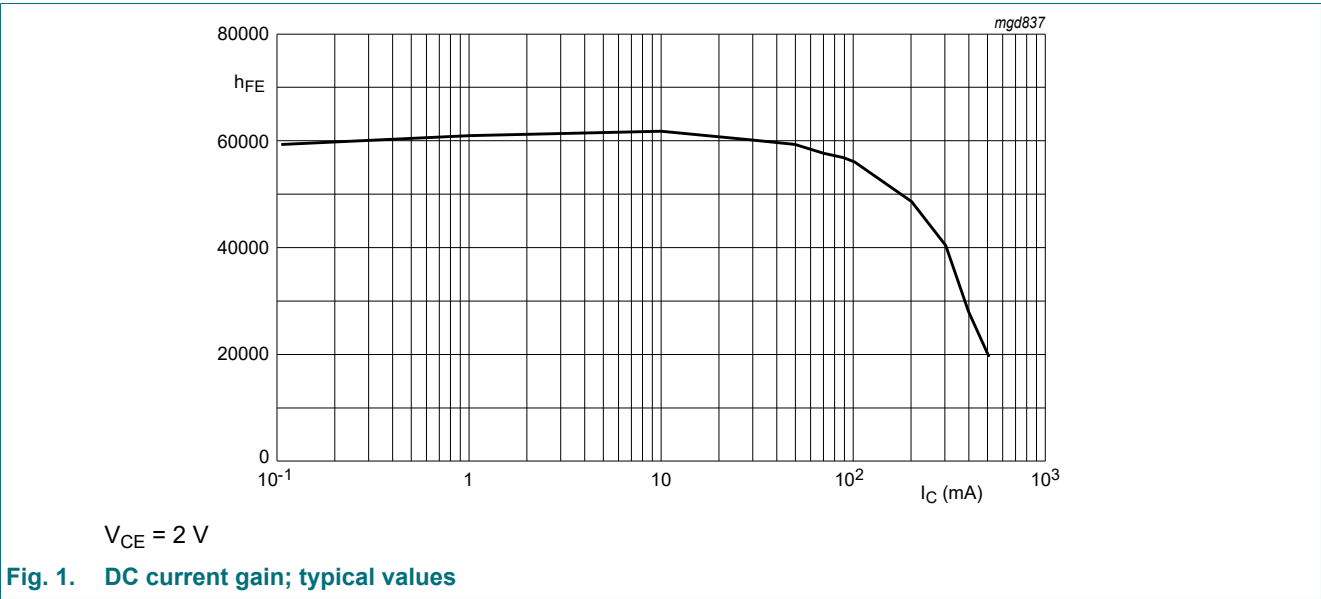
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
R _{th(j-a)}	thermal resistance from junction to ambient	in free air	[1]	-	-	96	K/W
R _{th(j-sp)}	thermal resistance from junction to solder point			-	-	16	K/W

[1] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for collector 1 cm².

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
I _{CBO}	collector-base cut-off current	V _{CB} = 60 V; I _E = 0 A; T _{amb} = 25 °C		-	-	100	nA
I _{EBO}	emitter-base cut-off current	V _{EB} = 10 V; I _C = 0 A; T _{amb} = 25 °C		-	-	100	nA
h _{FE}	DC current gain	V _{CE} = 5 V; I _C = 1 mA; T _{amb} = 25 °C		2000	-	-	
		V _{CE} = 5 V; I _C = 10 mA; T _{amb} = 25 °C		4000	-	-	
		V _{CE} = 5 V; I _C = 100 mA; T _{amb} = 25 °C		10000	-	-	
		V _{CE} = 5 V; I _C = 500 mA; T _{amb} = 25 °C		2000	-	-	
V _{CEsat}	collector-emitter saturation voltage	I _C = 100 mA; I _B = 0.1 mA; T _{amb} = 25 °C		-	-	1	V
V _{BEsat}	base-emitter saturation voltage			-	-	1.5	V
V _{BEon}	base-emitter turn-on voltage	I _C = 10 mA; V _{CE} = 5 V; T _{amb} = 25 °C		-	-	1.4	V
f _T	transition frequency	V _{CE} = 5 V; I _C = 30 mA; f = 100 MHz; T _{amb} = 25 °C		-	220	-	MHz

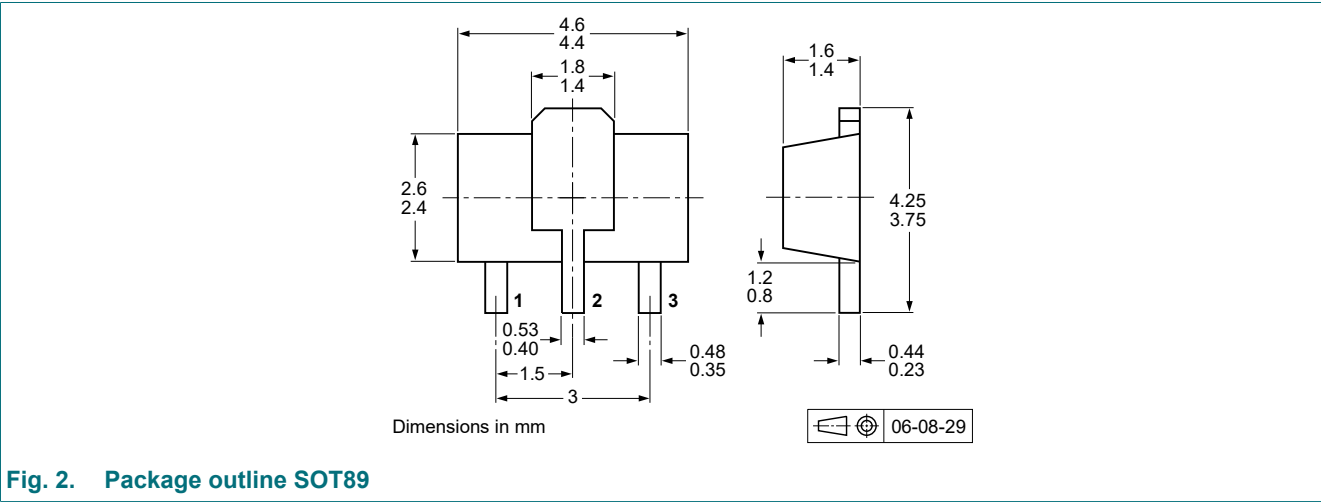


11. Test information

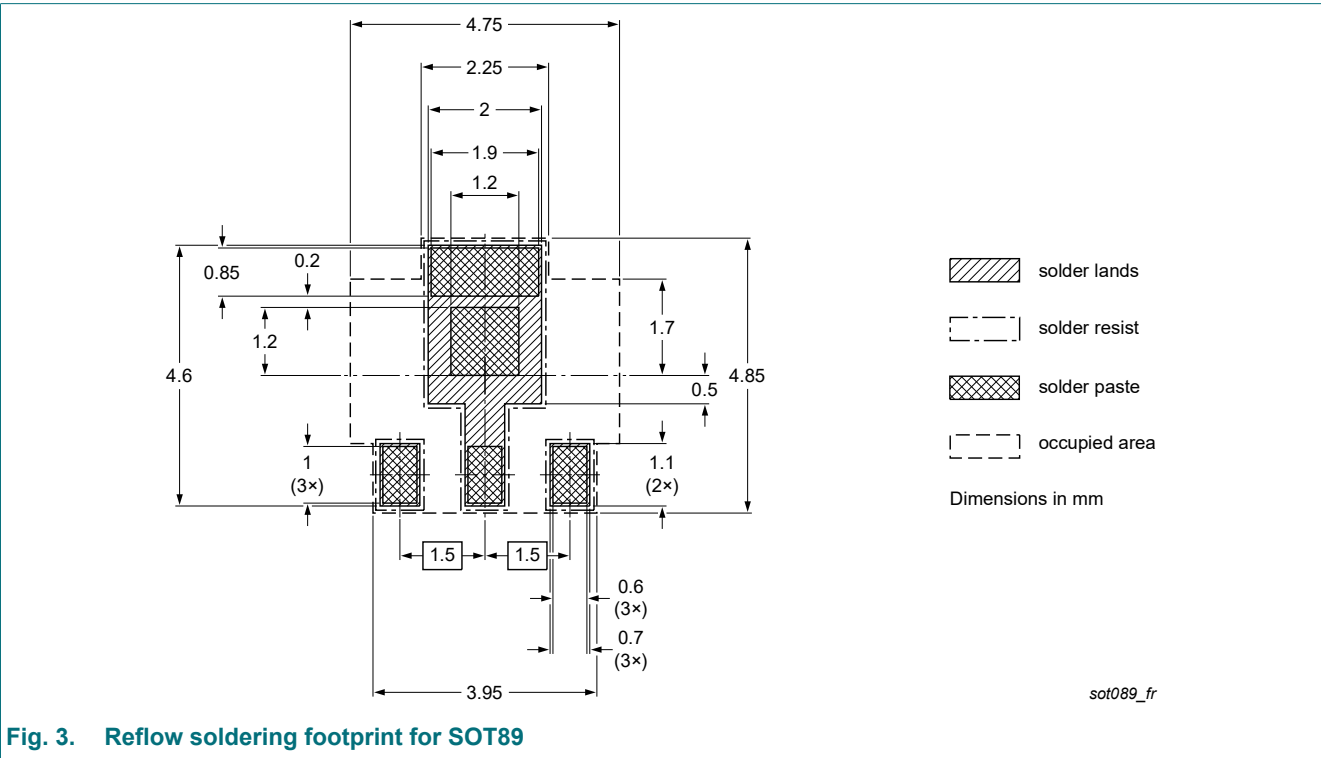
Quality information

This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard Q101 - *Stress test qualification for discrete semiconductors*, and is suitable for use in automotive applications.

12. Package outline



13. Soldering



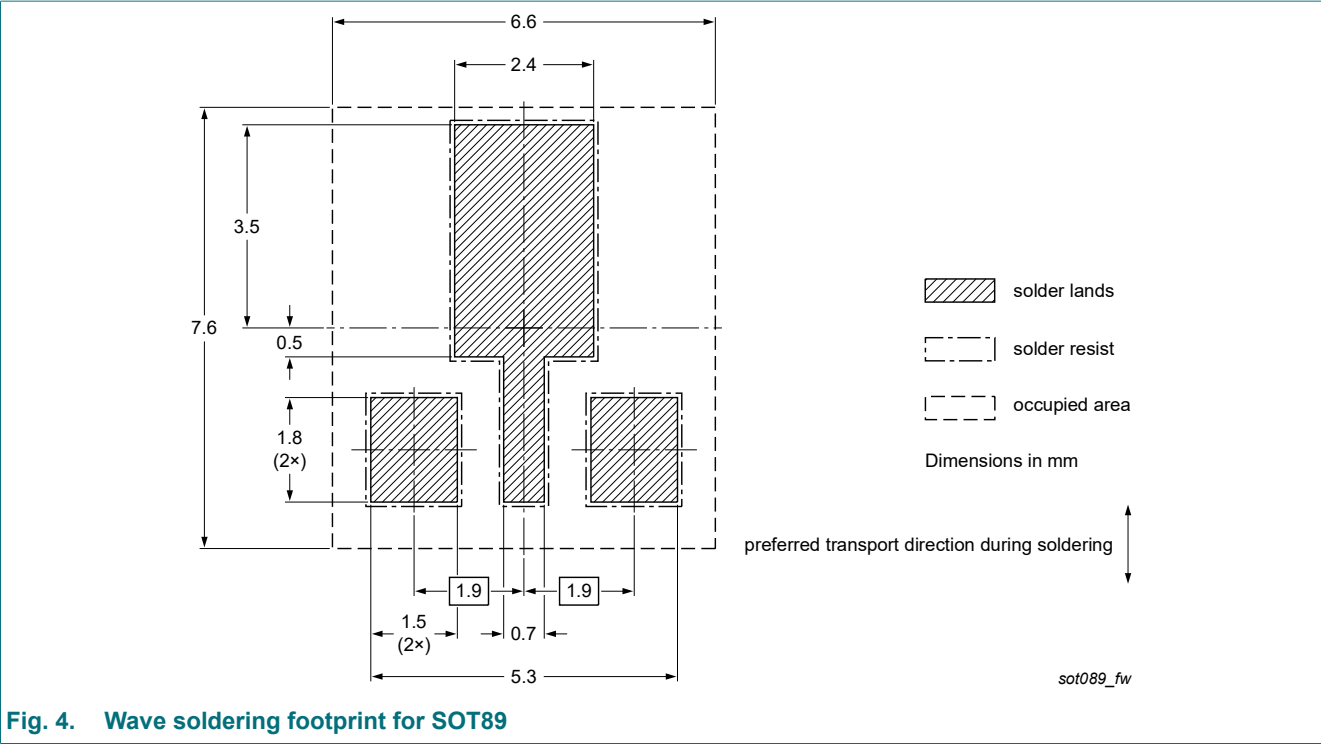


Fig. 4. Wave soldering footprint for SOT89

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BCV49-Q v.1	20230413	Product data sheet	-	-

15. Legal information

Data sheet status

Document status [1][2]	Product status [3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

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- [2] The term 'short data sheet' is explained in section "Definitions".
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