

BC807K-40R Datasheet



DiGi Electronics Part Number	BC807K-40R-DG
Manufacturer	Nexperia USA Inc.
Manufacturer Product Number	BC807K-40R
Description	BC807K-40/SOT23/TO-236AB
Detailed Description	Bipolar (BJT) Transistor PNP 45 V 500 mA 80MHz
	0 mW Surface Mount TO-236AB

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Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
BC807K-40R	Nexperia USA Inc.
Series:	Product Status:
	Active
Transistor Type:	Current - Collector (Ic) (Max):
PNP	500 mA
Voltage - Collector Emitter Breakdown (Max):	Vce Saturation (Max) @ lb, lc:
45 V	700mV @ 50mA, 500mA
Current - Collector Cutoff (Max):	DC Current Gain (hFE) (Min) @ lc, Vce:
100nA (ICBO)	250 @ 100mA, 1V
Power - Max:	Frequency - Transition:
250 mW	80MHz
Operating Temperature:	Grade:
150°C (TJ)	Automotive
Qualification:	Mounting Type:
AEC-Q100	Surface Mount
Package / Case:	Supplier Device Package:
TO-236-3, SC-59, SOT-23-3	ТО-236АВ
Base Product Number:	
BC807	

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
ROHS3 Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8541.21.0095	



Product data sheet

1 Product profile

1.1 General description

PNP general-purpose transistors in a small SOT23 (TO-236AB) Surface-Mounted Device (SMD) plastic package.

Table 1. Product overview

Type number	Package	NPN complement	
	Nexperia	JEDEC	
BC807K-16	SOT23	TO-236AB	BC817K-16
BC807K-25			BC817K-25
BC807K-40	-		BC817K-40

1.2 Features and benefits

- Three current gain selections
- · High power dissipation capability
- AEC-Q101 qualified

1.3 Applications

General-purpose switching and amplification



BC807K series

45 V, 500 mA PNP general-purpose transistors

1.4 Quick reference data

Table 2. Quick reference data

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

Symbol	Parameter	Conditions		Min	Тур	Max	Unit
V _{CEO}	collector-emitter voltage	open base		-	-	-45	V
I _C	collector current			-	-	-500	mA
I _{CM}	peak collector current	single pulse; t _p ≤ 1 ms		-	-	-1	А
h _{FE}	DC current gain	V _{CE} = -1 V; I _C = -100 mA					
	BC807K-16		[1]	100	-	250	-
	BC807K-25		[1]	160	-	400	-
	BC807K-40		[1]	250	-	600	-

[1] pulsed; $t_p \le 300 \ \mu s$; $\delta \le 0.02$

2 Pinning information

Table 3. Pinning									
Pin	Symbol	Description	Simplified outline	Graphic symbol					
1	В	base							
2	E	emitter	3	C I					
3	С	collector		B E sym132					

3 Ordering information

Table 4. Ordering information							
Type number Package							
	Name	Description	Version				
BC807K-16	TO-236AB	Plastic surface-mounted package; 3 leads	SOT23				
BC807K-25							
BC807K-40							

BC807K_SER Product data sheet

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Marking 4

Table 5. Marking						
Type number		Marking code				
BC807K-16	[1]	HA%				
BC807K-25	[1]	HB%				
BC807K-40	[1]	HC%				

[1] % = placeholder for manufacturing site code

Limiting values 5

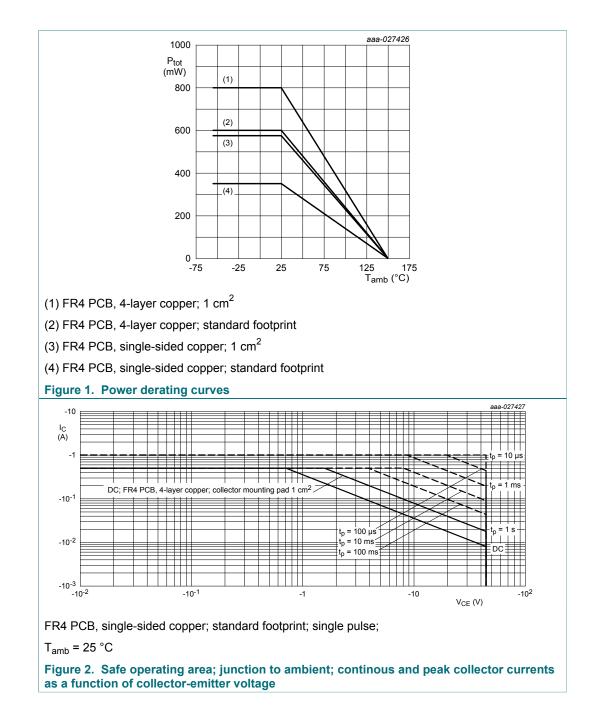
Table 6. Limiting values

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

Symbol	Parameter	Conditions	Conditions		Max	Unit
V _{CBO}	collector-base voltage	open emitter	open emitter			V
V _{CEO}	collector-emitter voltage	open base		-	-45	V
V _{EBO}	emitter-base voltage	open collector		-	-5	V
I _C	collector current			-	-500	mA
I _{CM}	peak collector current	single pulse; t _p ≤ 1 ms	single pulse; t _p ≤ 1 ms		-1	А
I _{BM}	peak base current	single pulse; t _p ≤ 1 ms	single pulse; t _p ≤ 1 ms		-200	mA
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C	[1]	-	350	mW
			[2]	-	575	mW
			[3]	-	600	mW
			[4]	-	800	mW
Tj	junction temperature		I	-	150	°C
T _{amb}	ambient temperature			-55	150	°C
T _{stg}	storage temperature			-65	150	°C

Device mounted on an FR4 Printed-Circuit-Board (PCB); single-sided copper; tin-plated and standard footprint.
 Device mounted on an FR4 Printed-Circuit-Board (PCB); single-sided copper; tin-plated; mounting pad for collector 1 cm².
 Device mounted on an FR4 Printed-Circuit-Board (PCB); 4-layer copper; tin-plated and standard footprint.
 Device mounted on an FR4 Printed-Circuit-Board (PCB); 4-layer copper; tin-plated; mounting pad for collector 1 cm².

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Thermal characteristics 6

Table 7. Thermal characteristics

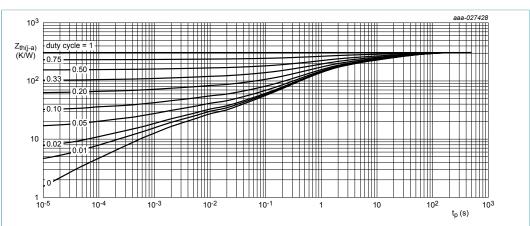
Symbol	Parameter	Conditions		Min	Тур	Max	Unit
R _{th(j-a)}	thermal resistance from junction	in free air	[1]	-	-	358	K/W
l	to ambient	[2]	[2]	-	-	218	K/W
			[3]	-	-	209	K/W
			[4]	-	-	157	K/W
R _{th(j-sp)}	thermal resistance from junction to solder point			-	-	60	K/W

Device mounted on an FR4 PCB; single-sided copper; tin-plated and standard footprint. [1]

Device mounted on an FR4 PCB; single-sided copper; tin-plated; mounting pad for children 1 cm². Device mounted on an FR4 PCB; 4-layer copper; tin-plated and standard footprint.

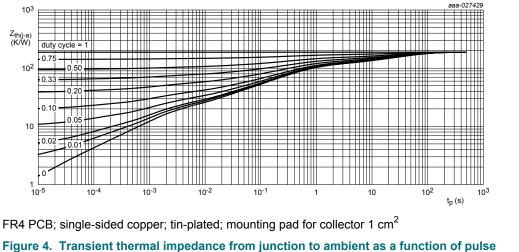
[2] [3] [4]

Device mounted on an FR4 PCB; 4-layer copper; tin-plated; mounting pad for collector 1 cm².



FR4 PCB; single-sided copper; tin-plated and standard footprint

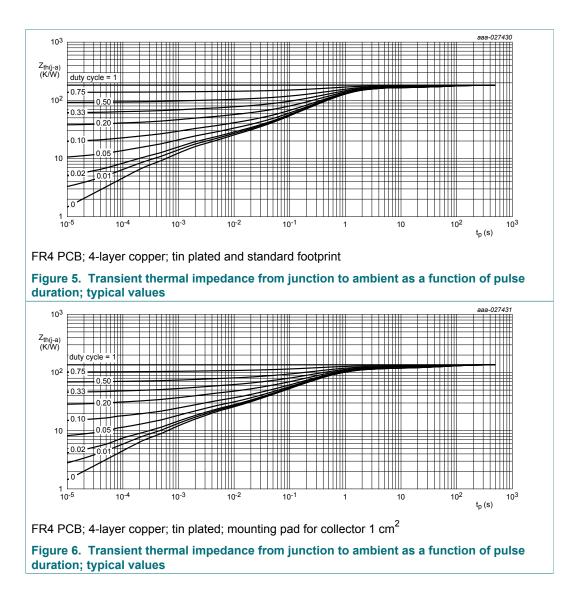






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7 Characteristics

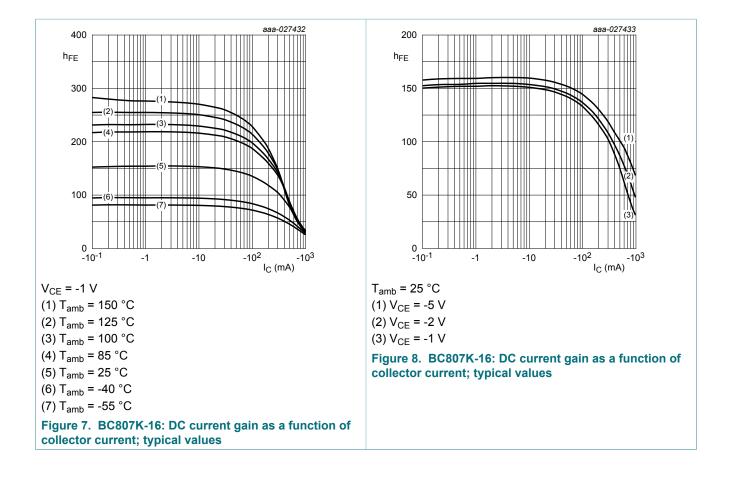
Table 8. Characteristics

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

Symbol	Parameter	Conditions		Min	Тур	Мах	Unit
V _{(BR)CBO}	collector-base breakdown voltage	I _C = -100 μΑ; I _E = 0 Α		-50	-	-	V
V _{(BR)CEO}	collector-emitter breakdown voltage	I _C = -10 mA; I _B = 0 A		-45	-	-	V
V _{(BR)EBO}	emitter-base breakdown voltage	I _E = -100 μΑ; I _C = 0 Α		-5	-	-	V
I _{CBO}	collector-base	V _{CB} = -25 V; I _E = 0 A		-	-	-100	nA
	cut-off current	V _{CB} = -25 V; I _E = 0 A; T _j = 150 °C		-	-	-5	μA
I _{EBO}	emitter-base cut-off current	V _{EB} = -5 V; I _C = 0 A	,		-	-100	nA
h _{FE}	DC current gain	·		I	-		
	BC807K-16	V _{CE} = -1 V; I _C = -100 mA	[1]	100	-	250	
	BC807K-25	V _{CE} = -1 V; I _C = -100 mA	[1]	160	-	400	
	BC807K-40	V _{CE} = -1 V; I _C = -100 mA	[1]	250	-	600	
	BC807K-16, -25, -40	V _{CE} = -1 V; I _C = -500 mA	[1]	40	-	-	
V _{CEsat}	collector-emitter saturation voltage	I _C = -500 mA; I _B = -50 mA	[1]	-	-	-700	mV
V _{BEsat}	base-emitter saturation voltage	I _C = -500 mA; I _B = -50 mA	[1]	-	-	-1.2	V
V _{BE}	base-emitter voltage	V _{CE} = -1 V; I _C = -500 mA	[1]	-	-	-1.2	V
f _T	transition frequency	V _{CE} = -5 V; I _C = -10 mA; f = 100 MHz		80	-	-	MHz
C _c	collector capacitance	V _{CB} = -10 V; I _E = i _e = 0 A; f = 1 MHz		-	7	-	pF
C _e	emitter capacitance	V _{EB} = -0.5 V; I _C = i _c = 0 A; f = 1 MHz					
	BC807K-16			-	50	-	pF
	BC807K-25	-		-	45	-	pF
	BC807K-40			-	37	-	pF

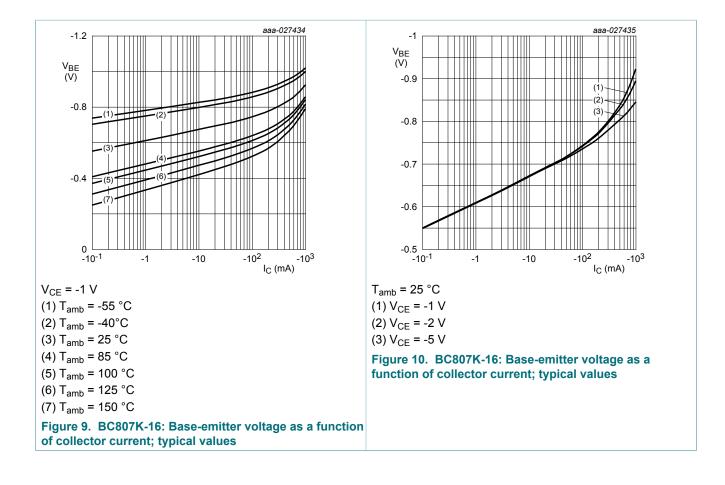
[1] pulsed; $t_p \le 300 \ \mu s$; $\delta \le 0.02$

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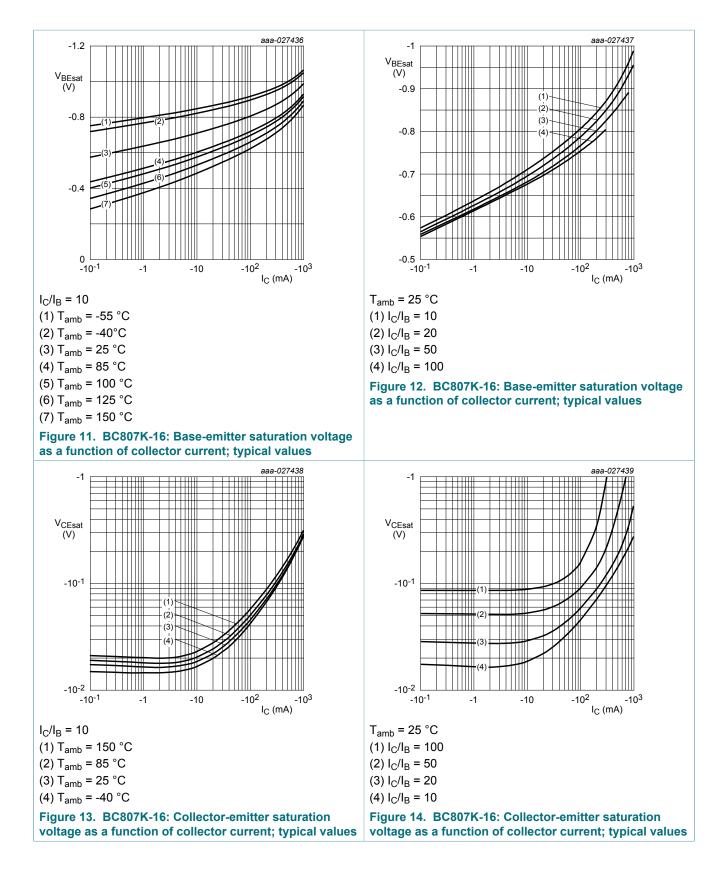
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45 V, 500 mA PNP general-purpose transistors

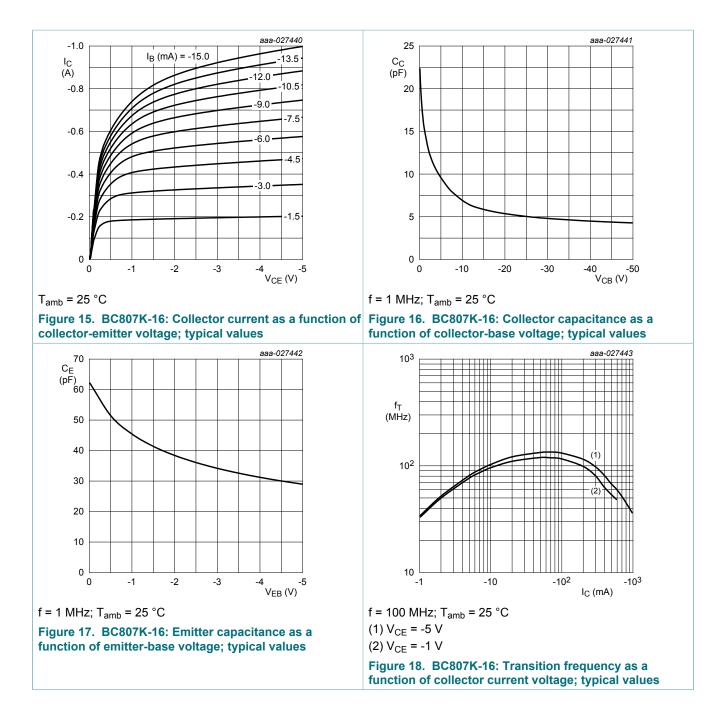


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Product data sheet

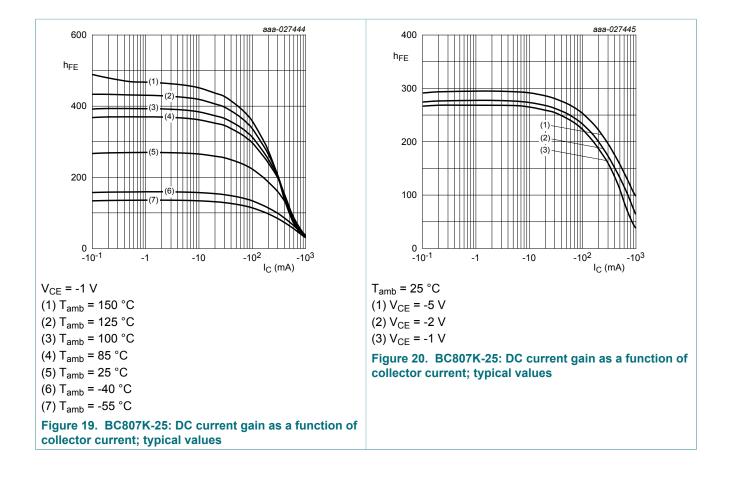
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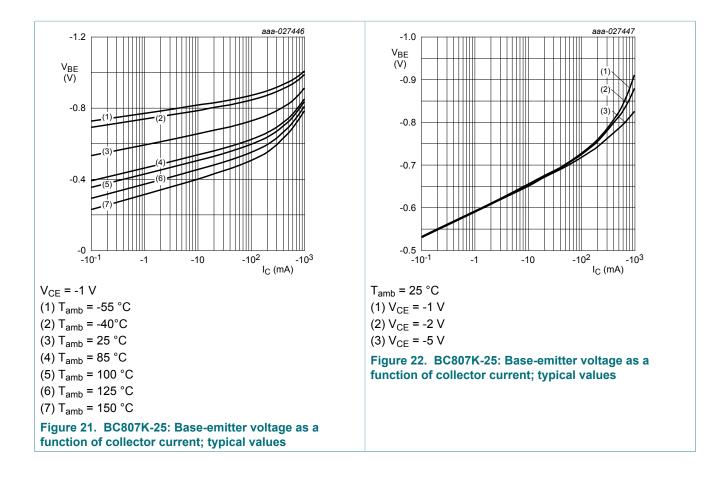


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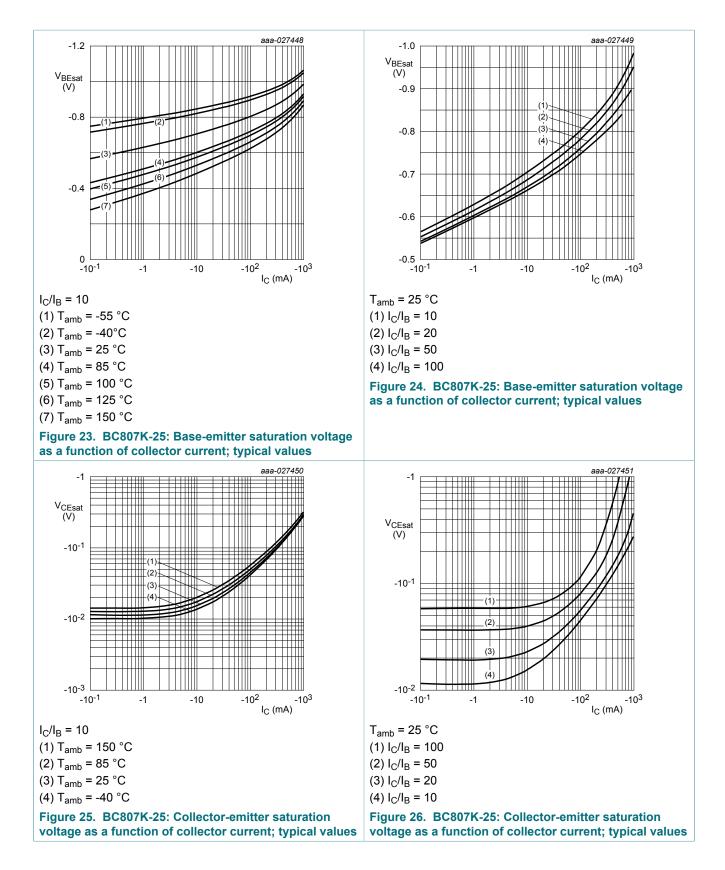
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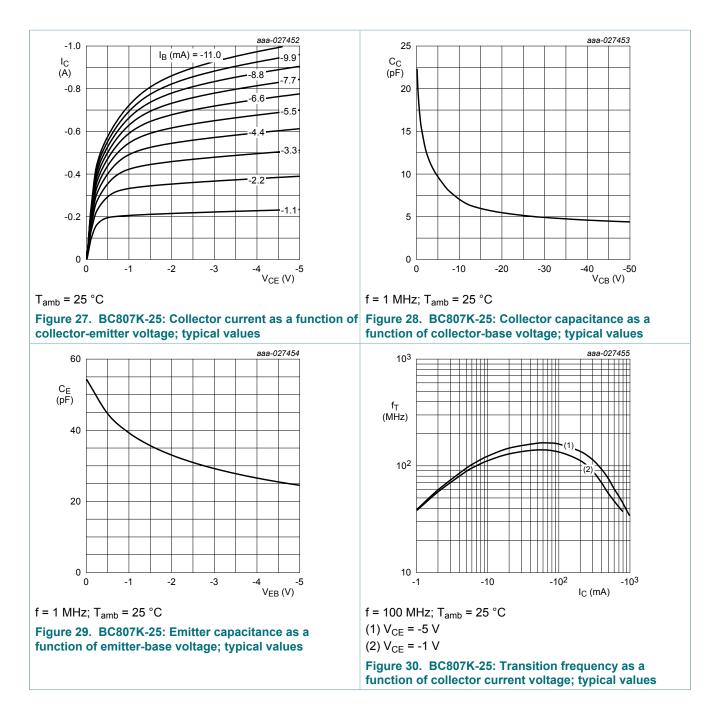


BC807K_SER Product data sheet

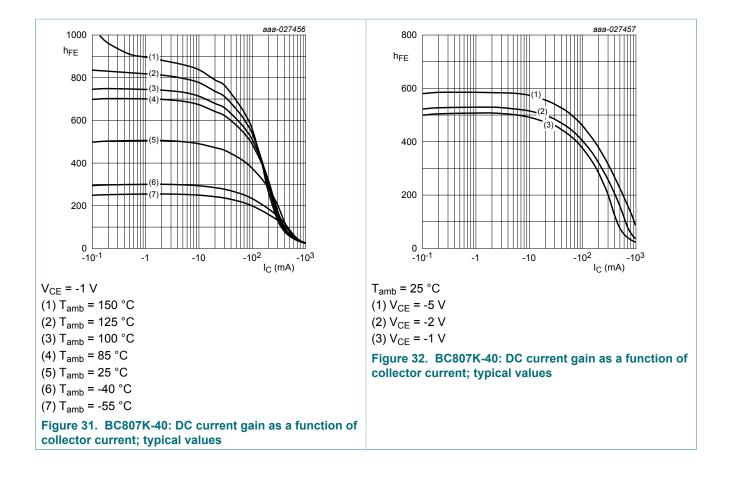
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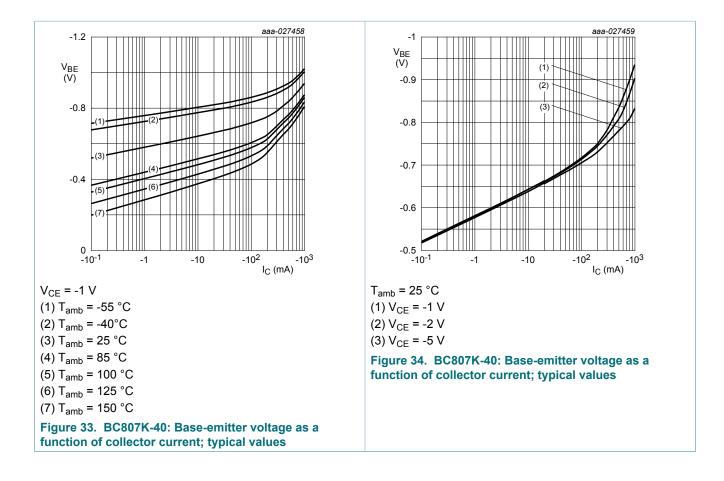


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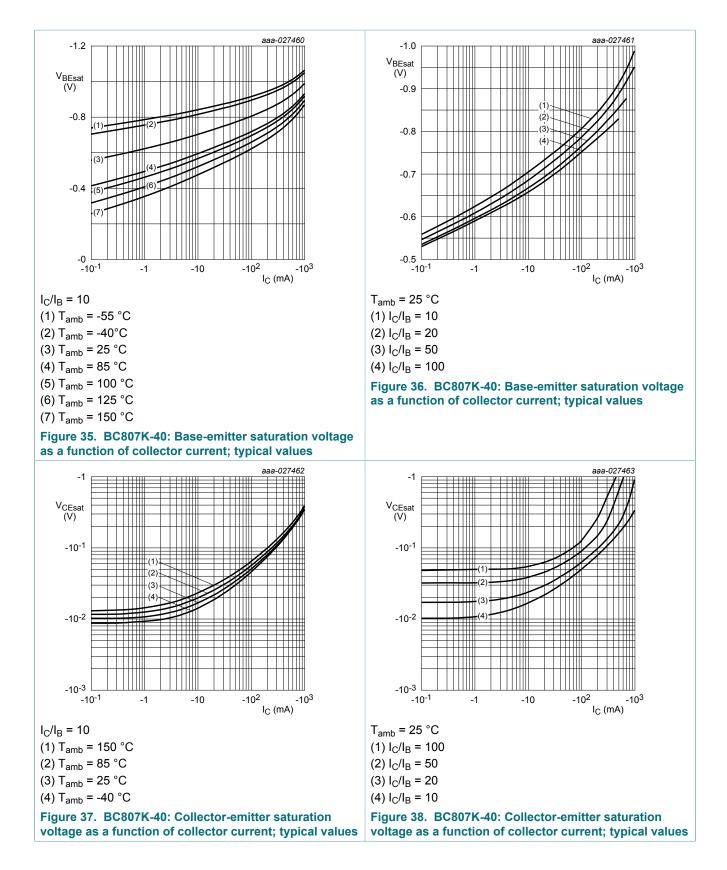
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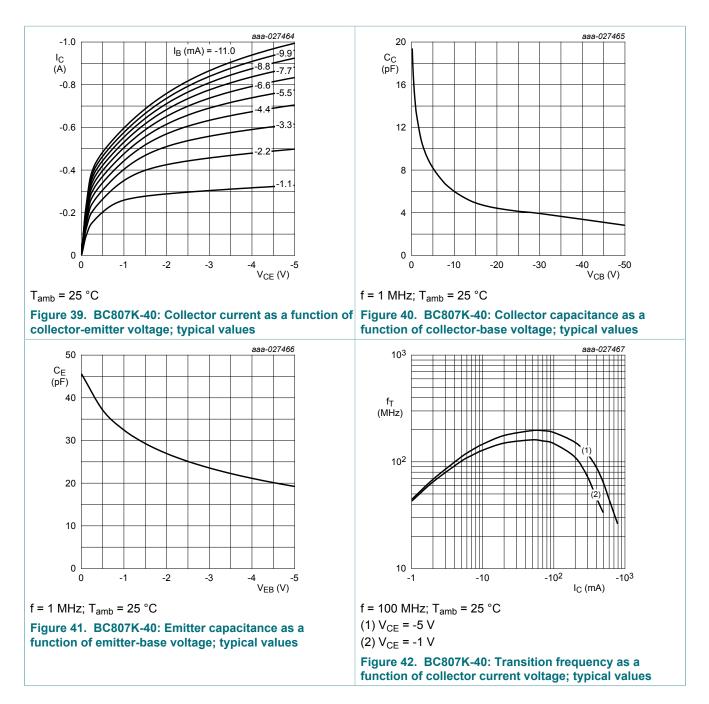
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8 Test information

8.1 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.

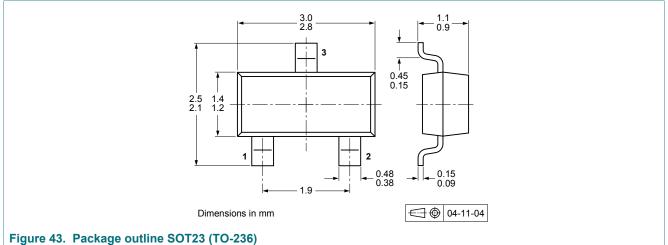
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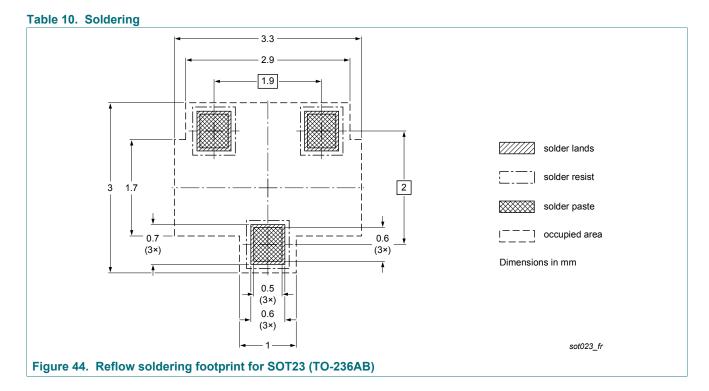
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9 Package outline



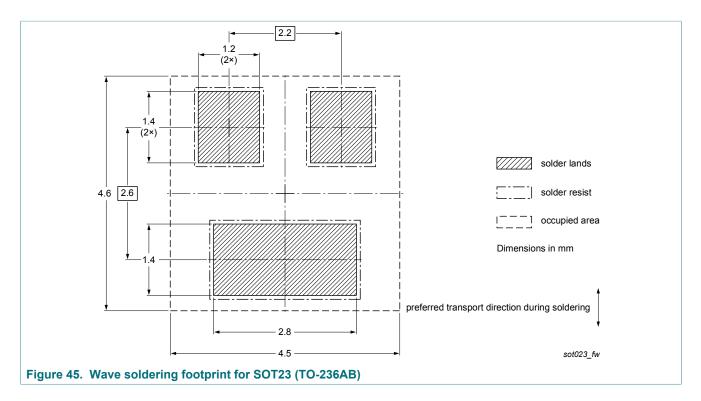


10 Soldering



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11 Revision history

Table 11. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes			
BC807K_SER v.2	20180424	Product data sheet	-	BC807_SER v.1			
Modifications:	Characteristics: Figures are updated						
BC807_SER v.1	20171108	Product data sheet	-	-			

BC807K series

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12 Legal information

12.1 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.

Please consult the most recently issued document before initiating or completing a design. [1]

The term 'short data sheet' is explained in section "Definitions".

[2] [3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL http://www.nexperia.com.

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Product data sheet

BC807K SER

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45 V, 500 mA PNP general-purpose transistors

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Date of release: 24 April 2018 Document identifier: BC807K_SER



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