

ANTREX Electronics

Electronic Components Sourcing Information

Product Reference Information

Part Number: NHDTA114YUX
Manufacturer: Nexperia USA Inc.
Package: SC-70, SOT-323
Availability: Please confirm with sales

Product Page:

<https://antrexco.com/product/details/nexperia-usa-inc/nhdt114yux.html>

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Note:

This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.



NHDTA123JU/143ZU/114YU series

80 V, 100 mA PNP resistor-equipped transistors

Rev. 2 — 12 August 2026

Product data sheet

1. General description

PNP Resistor-Equipped Transistor (RET) family in a very small SOT323 (SC-70) Surface-Mounted Device (SMD) plastic package.

Table 1. Product overview

Type number	R1	R2	Package		NPN complement:
	k Ω	k Ω	Nexperia	JEITA	
NHDTA123JU	2.2	47	SOT323	SC-70	NHDTC123JU
NHDTA143ZU	4.7	47			NHDTC143ZU
NHDTA114YU	10	47			NHDTC114YU

2. Features and benefits

- 100 mA output current capability
- High breakdown voltage
- Built-in resistors
- Simplifies circuit design
- Reduces component count
- Reduces pick and place costs

3. Applications

- Digital applications
- Cost saving alternative for BC856 series in digital applications
- Controlling IC inputs
- Switching loads

4. Quick reference data

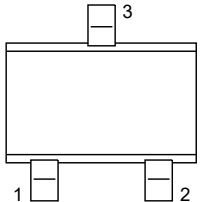
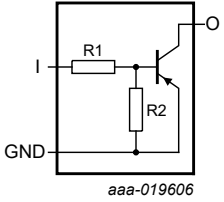
Table 2. Quick reference data

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{CEO}	collector-emitter voltage	open base	-	-	-80	V
I_O	output current		-	-	-100	mA

5. Pinning information

Table 3. Pinning

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	I	input (base)		 aaa-019606
2	GND	GND (emitter)		
3	O	output (collector)		

6. Ordering information

Table 4. Ordering information

Type number	Package		
	Name	Description	Version
NHDTA123JU	SC-70	plastic surface-mounted package; 3 leads	SOT323
NHDTA143ZU			
NHDTA114YU			

7. Marking

Table 5. Marking

Type number	Marking code [1]
NHDTA123JU	5H%
NHDTA143ZU	5K%
NHDTA114YU	5G%

[1] % = placeholder for manufacturing site code

8. Limiting values

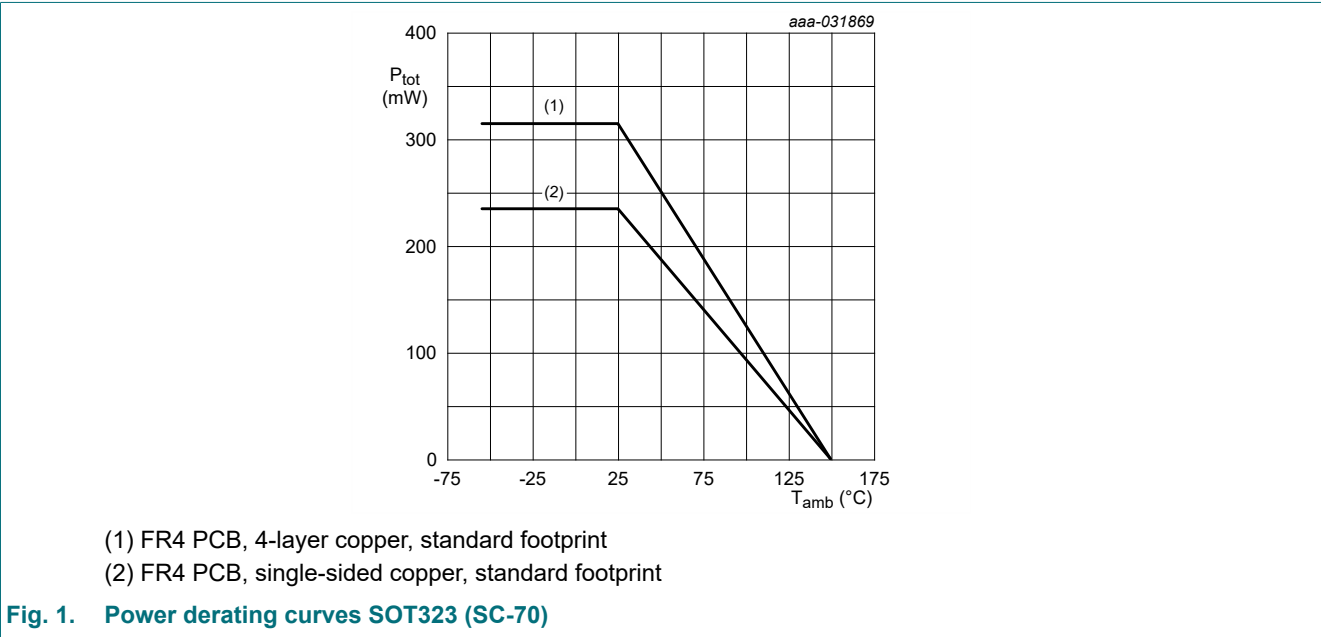
Table 6. Limiting values

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

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

Symbol	Parameter	Conditions	Min	Max	Unit
V_{CBO}	collector-base voltage	open emitter	-	-80	V
V_{CEO}	collector-emitter voltage	open base	-	-80	V
V_{EBO}	emitter-base voltage	open collector	-	-7	V
V_I	input voltage				
	NHDTA123JU		-20	+7	V
	NHDTA143ZU		-30	+7	V
	NHDTA114YU		-40	+7	V
I_O	output current		-	-100	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ }^{\circ}\text{C}$ [1]	-	235	mW
		[2]	-	315	mW
T_j	junction temperature		-	150	$^{\circ}\text{C}$
T_{amb}	ambient temperature		-55	150	$^{\circ}\text{C}$
T_{stg}	storage temperature		-65	150	$^{\circ}\text{C}$

- [1] Device mounted on an FR4 Printed-Circuit-Board (PCB); single-sided copper; tin-plated and standard footprint.
- [2] Device mounted on an FR4 Printed-Circuit-Board (PCB); 4-layer copper; tin-plated and standard footprint.



9. Thermal characteristics

Table 7. Thermal characteristics

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

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
R _{th(j-a)}	thermal resistance from junction to ambient	in free air	[1]	-	-	532	K/W
			[2]	-	-	397	K/W
R _{th(j-sp)}	thermal resistance from junction to solder point			-	-	150	K/W

- [1] Device mounted on an FR4 Printed-Circuit-Board (PCB); single-sided copper; tin-plated and standard footprint.
- [2] Device mounted on an FR4 Printed-Circuit Board (PCB), 4-layer copper, tin-plated and standard footprint.

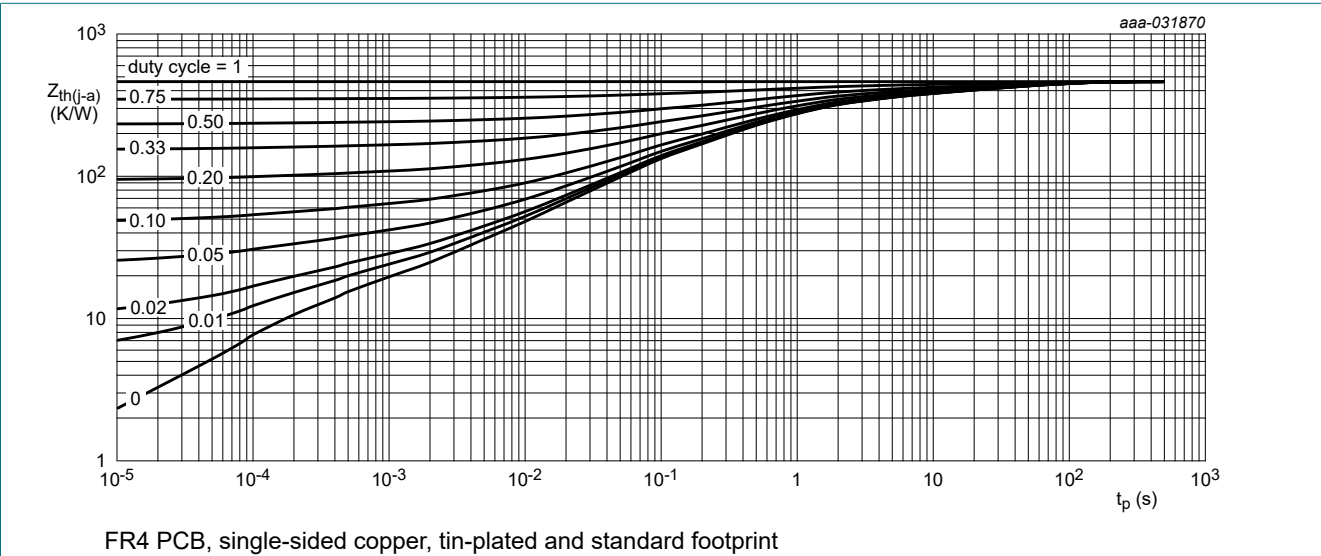


Fig. 2. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

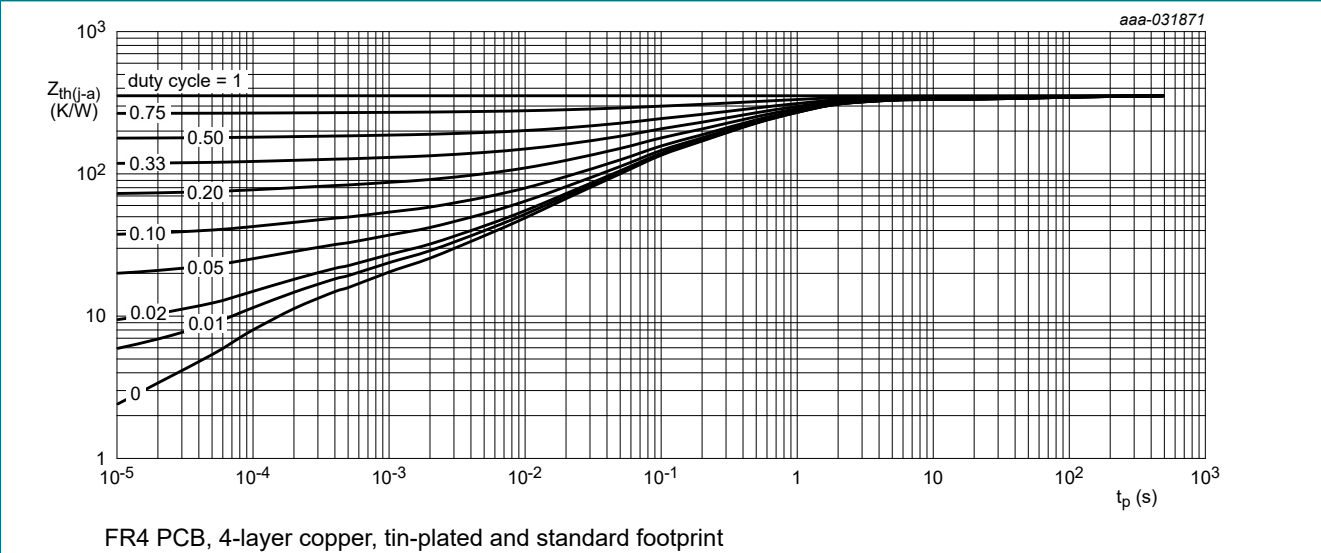


Fig. 3. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

10. Characteristics

Table 8. Characteristics

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
V _{(BR)CBO}	collector-base breakdown voltage	I _C = -100 μA; I _E = 0 A	-80	-	-	V	
V _{(BR)CEO}	collector-emitter breakdown voltage	I _C = -2 mA; I _B = 0 A	-80	-	-	V	
I _{CBO}	collector-base cut-off current	V _{CB} = -80 V; I _E = 0 A	-	-	-100	nA	
I _{CEO}	collector-emitter cut-off current	V _{CE} = -60 V; I _B = 0 A	-	-	-100	nA	
		V _{CE} = -60 V; I _B = 0 A; T _j = 150 °C	-	-	-5	μA	
I _{EBO}	emitter-base cut-off current						
	NHDTA123JU	V _{EB} = -7 V; I _C = 0 A	-	-	-270	μA	
	NHDTA143ZU		-	-	-260	μA	
	NHDTA114YU		-	-	-230	μA	
h _{FE}	DC current gain	V _{CE} = -5 V; I _C = -10 mA	100	-	-		
V _{CEsat}	collector-emitter saturation voltage	I _C = -10 mA; I _B = -0.5 mA	-	-	-100	mV	
V _{I(off)}	off-state input voltage						
	NHDTA123JU	V _{CE} = -5 V ; I _C = -100 μA	-	-595	-500	mV	
	NHDTA143ZU		-	-625	-500	mV	
	NHDTA114YU		-	-690	-500	mV	
V _{I(on)}	on-state input voltage						
	NHDTA123JU	V _{CE} = -0.3 V ; I _C = -10 mA	-1.2	-0.81	-	V	
	NHDTA143ZU		-1.4	-0.95	-	V	
	NHDTA114YU		-1.6	-1.22	-	V	
R1	bias resistor 1 (input)		[1]				
	NHDTA123JU		1.54	2.2	2.86	kΩ	
	NHDTA143ZU		3.3	4.7	6.1	kΩ	
	NHDTA114YU		7	10	13	kΩ	
R2/R1	bias resistor ratio		[1]				
	NHDTA123JU		17	21	26		
	NHDTA143ZU		8	10	12		
	NHDTA114YU		3.7	4.7	5.7		
f _T	transition frequency	V _{CE} = -5 V; I _C = -10 mA; f = 100 MHz	[2]	-	150	-	MHz
C _c	collector capacitance	V _{CB} = -10 V; I _E = i _e = 0 A; f = 1 MHz	-	-	3	pF	

[1] See section "Test information" for resistor calculation and test conditions

[2] Characteristics of built-in transistor

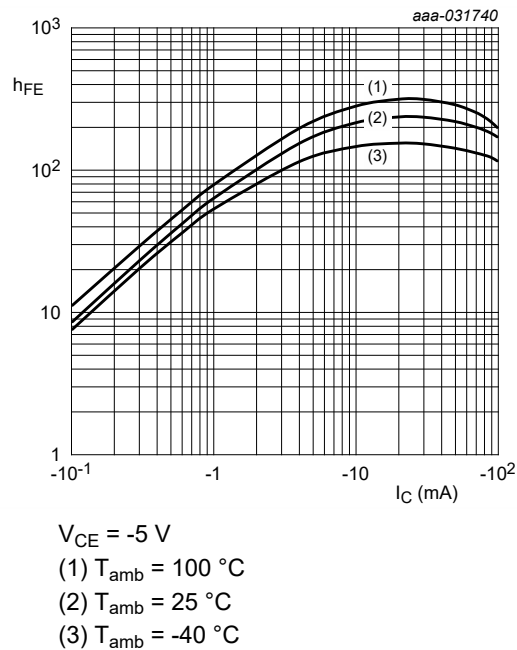


Fig. 4. NHDTA123JU: DC current gain as a function of collector current; typical values

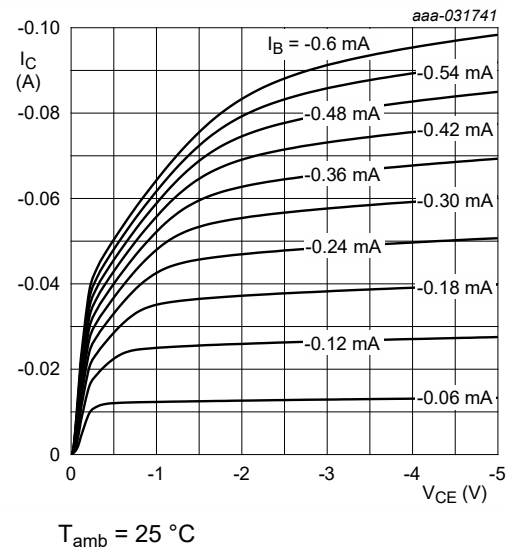


Fig. 5. NHDTA123JU: Collector current as a function of collector-emitter voltage; typical values

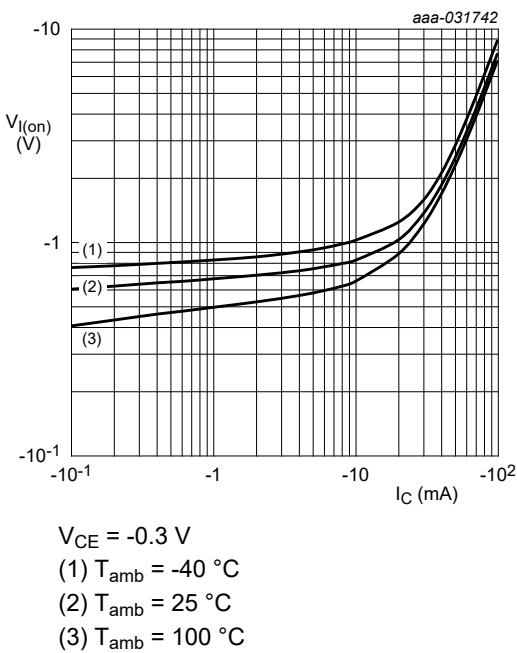


Fig. 6. NHDTA123JU: On-state input voltage as a function of collector current; typical values

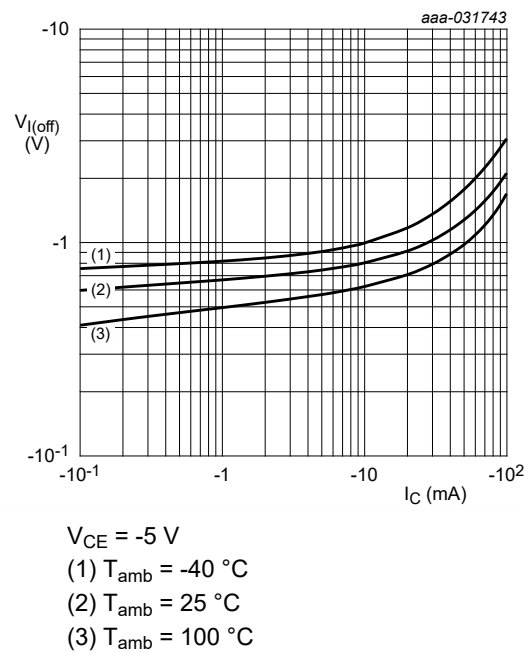


Fig. 7. NHDTA123JU: Off-state input voltage as a function of collector current; typical values

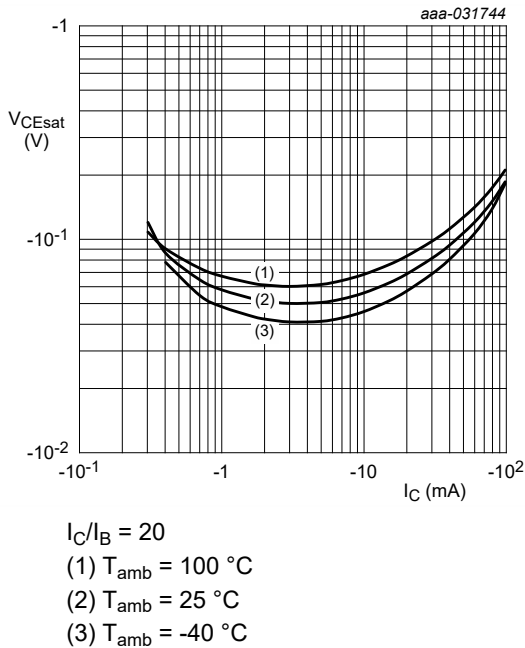


Fig. 8. NHDTA123JU: Collector-emitter saturation voltage as a function of collector current; typical values

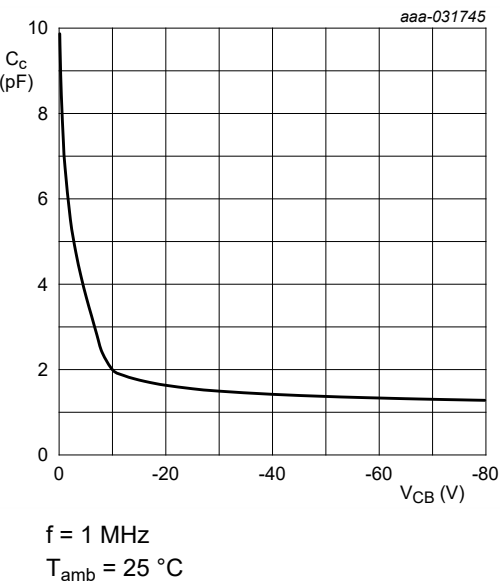


Fig. 9. NHDTA123JU: Collector capacitance as a function of collector-base voltage; typical values

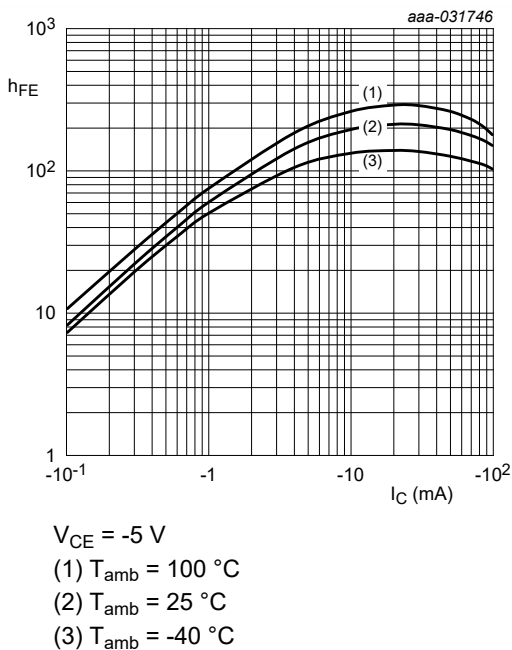


Fig. 10. NHDTA143ZU: DC current gain as a function of collector current; typical values

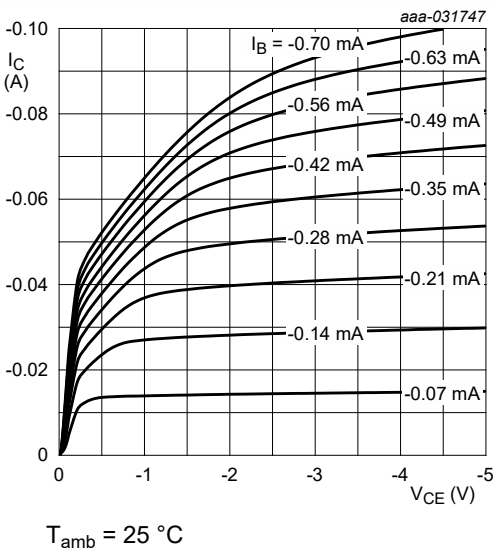


Fig. 11. NHDTA143ZU: Collector current as a function of collector-emitter voltage; typical values

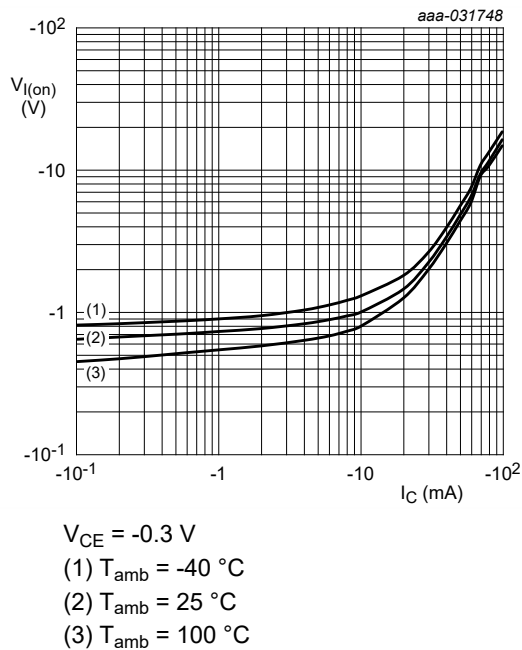


Fig. 12. NHDTA143ZU: On-state input voltage as a function of collector current; typical values

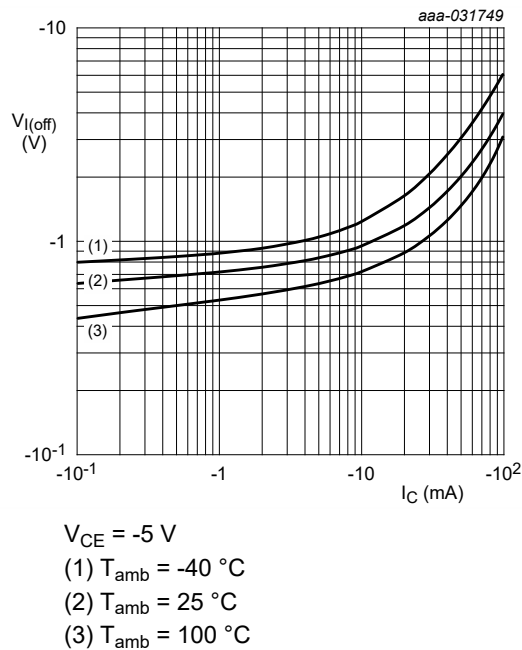


Fig. 13. NHDTA143ZU: Off-state input voltage as a function of collector current; typical values

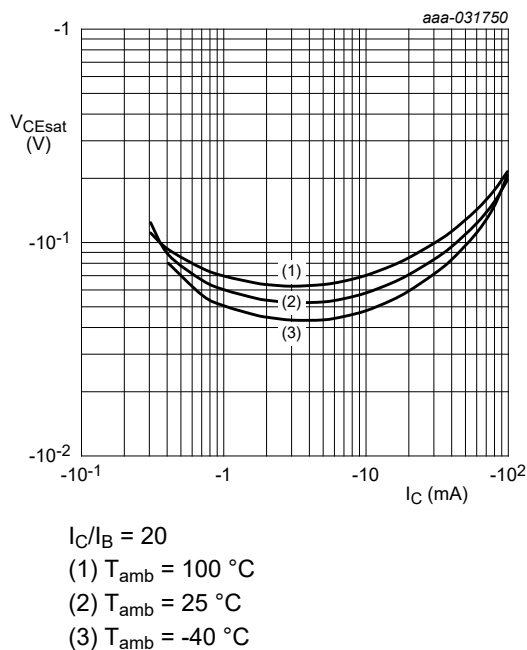


Fig. 14. NHDTA143ZU: Collector-emitter saturation voltage as a function of collector current; typical values

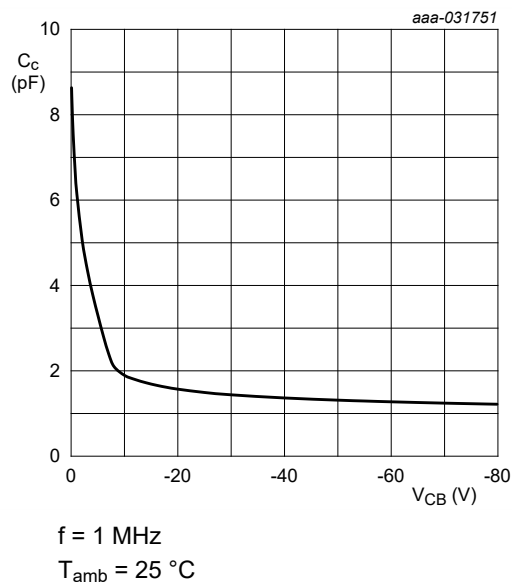


Fig. 15. NHDTA143ZU: Collector capacitance as a function of collector-base voltage; typical values

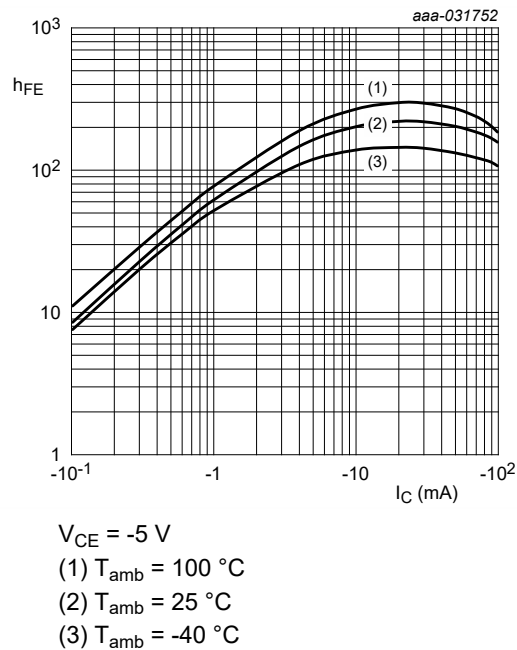


Fig. 16. NHDTA114YU: DC current gain as a function of collector current; typical values

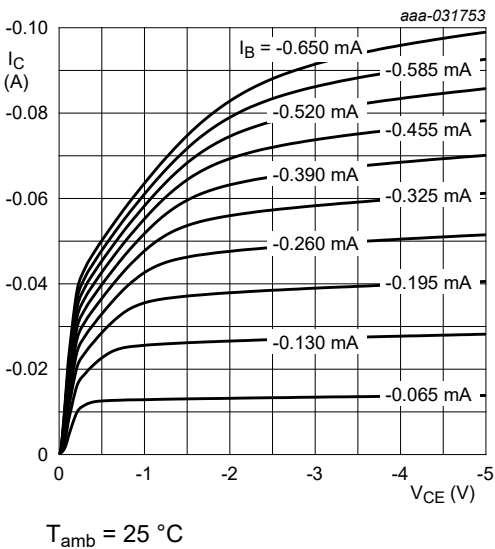


Fig. 17. NHDTA114YU: Collector current as a function of collector-emitter voltage; typical values

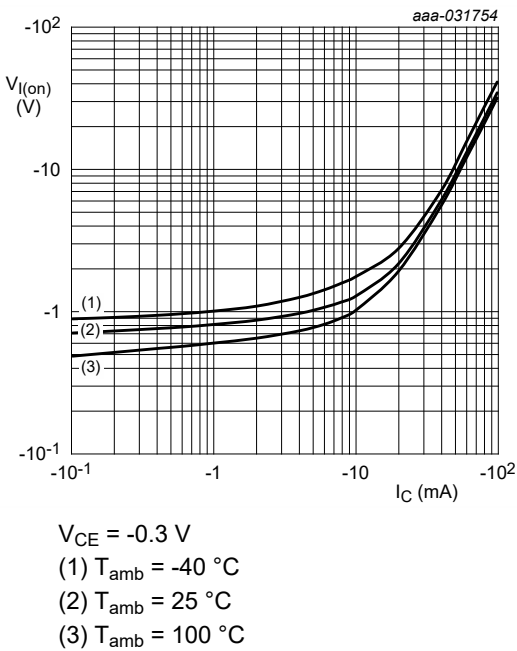


Fig. 18. NHDTA114YU: On-state input voltage as a function of collector current; typical values

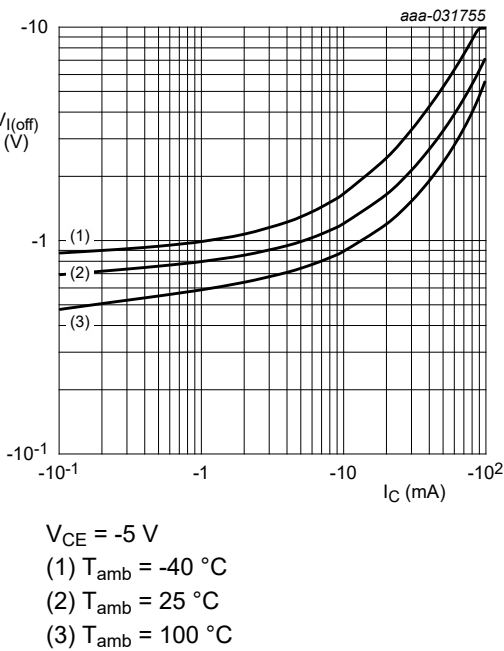


Fig. 19. NHDTA114YU: Off-state input voltage as a function of collector current; typical values

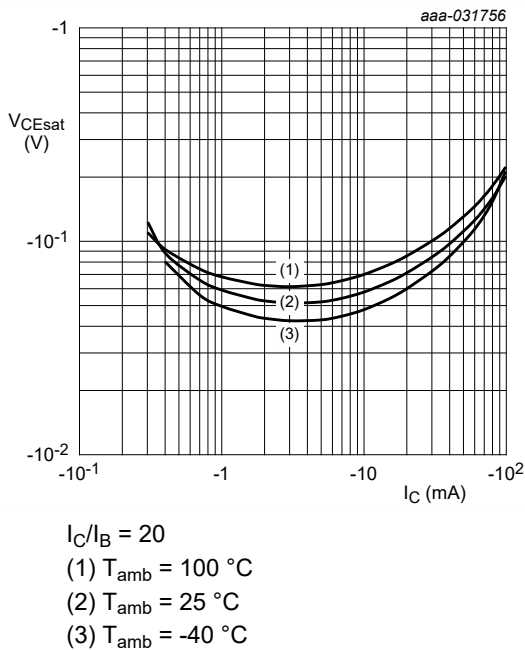


Fig. 20. NHDTA114YU: Collector-emitter saturation voltage as a function of collector current; typical values

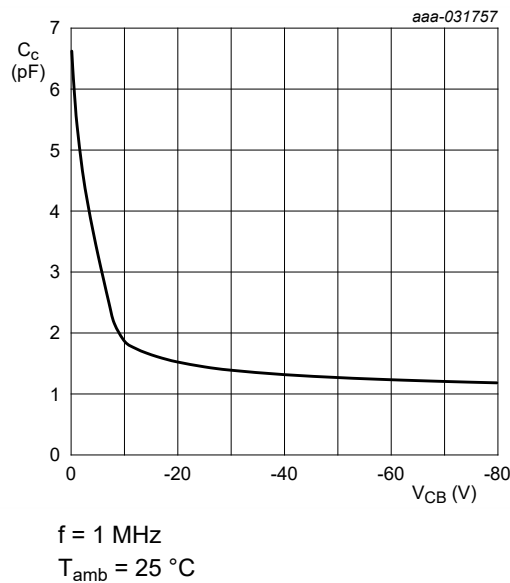


Fig. 21. NHDTA114YU: Collector capacitance as a function of collector-base voltage; typical values

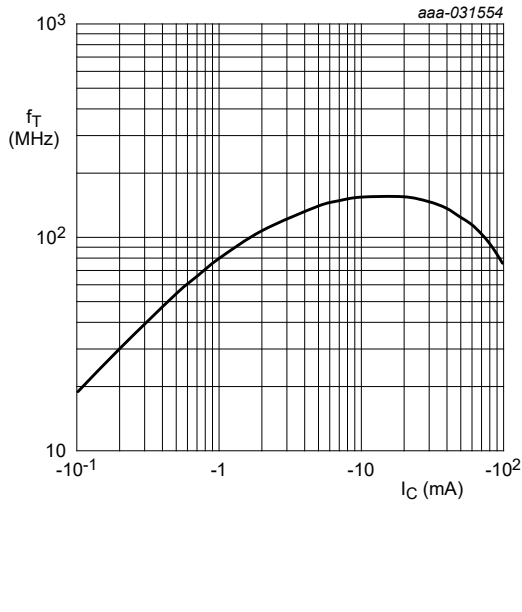


Fig. 22. Transition frequency as a function of collector current; typical values of built-in transistor

11. Test information

Resistor calculation

- Calculation of bias resistor 1 (R1)
$$R_1 = \frac{V(I_2) - V(I_1)}{I_2 - I_1}$$
- Calculation of bias resistor ratio (R2/R1)
$$\frac{R_2}{R_1} = \frac{V(I_4) - V(I_3)}{R_1 \cdot (I_4 - I_3)} - 1$$

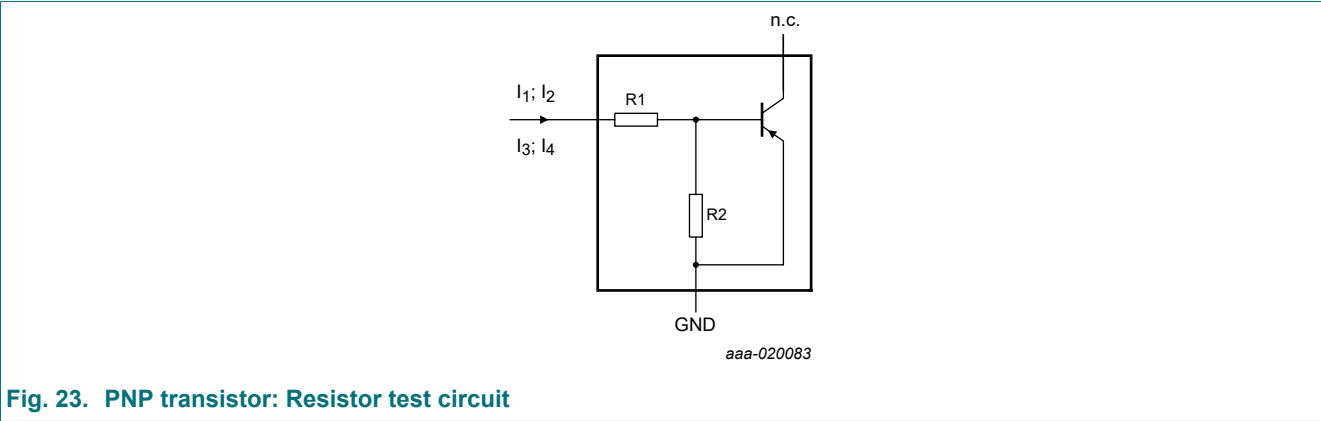


Fig. 23. PNP transistor: Resistor test circuit

Resistor test conditions

Table 9. Resistor test conditions

Type number	R1 (kΩ)	R2 (kΩ)	Test conditions			
			I ₁	I ₂	I ₃	I ₄
NHDTA123JU	2.2	47	-1.6 mA	-2.4 mA	55 μA	105 μA
NHDTA143ZU	4.7	47	-1.2 mA	-1.8 mA	55 μA	105 μA
NHDTA114YU	10	47	-0.8 mA	-1.1 mA	55 μA	105 μA

12. Package outline

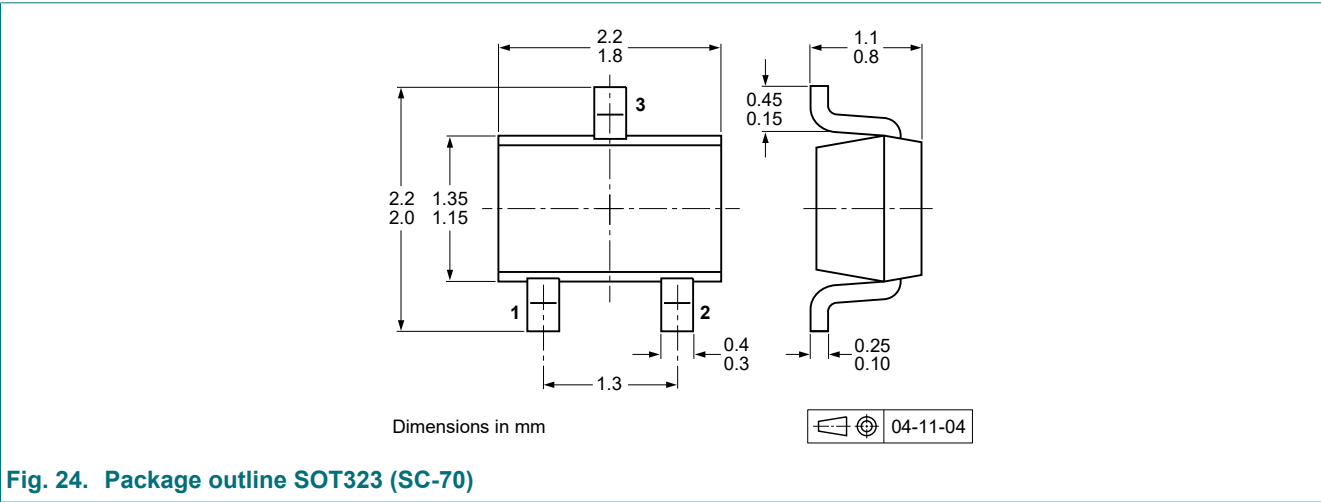


Fig. 24. Package outline SOT323 (SC-70)

13. Soldering

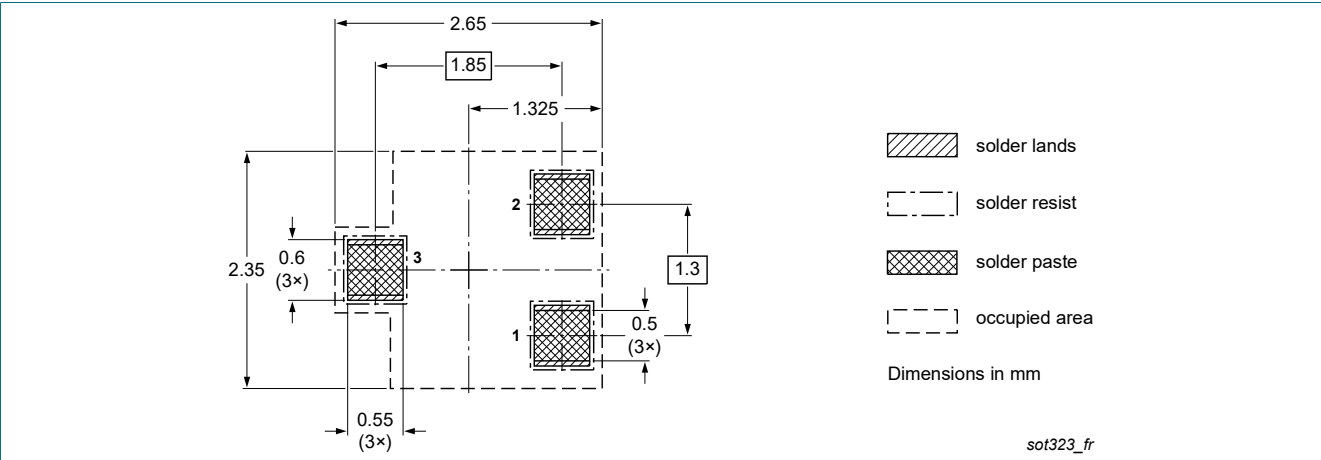


Fig. 25. Reflow soldering footprint for SOT323 (SC-70)

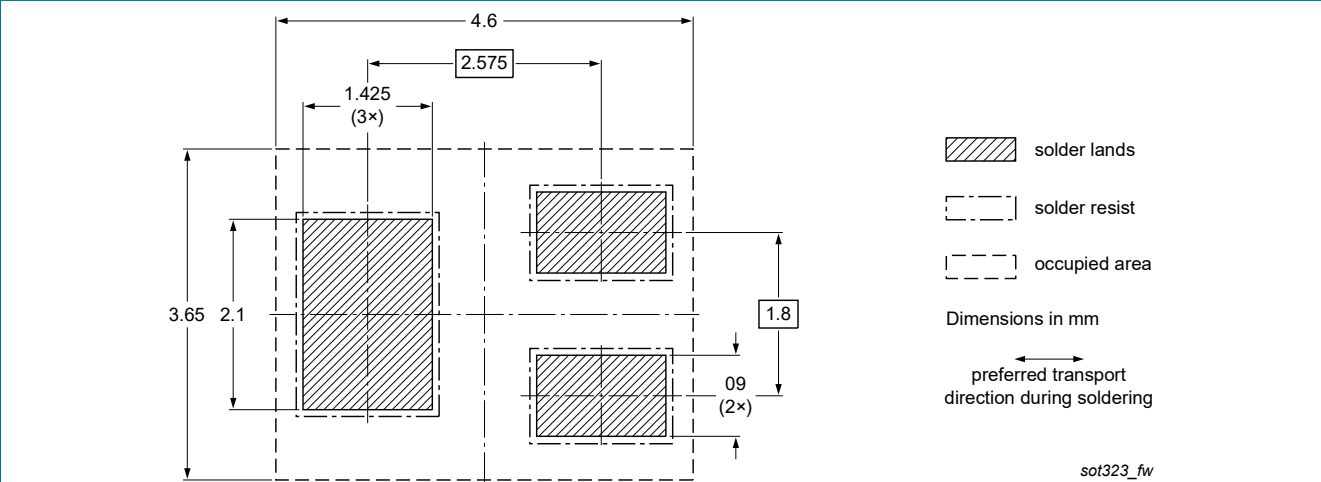


Fig. 26. Wave soldering footprint for SOT323 (SC-70)

14. Revision history

Table 10. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
NHDTA123JU_143ZU_114YU_SER v.2	20260812	Product data sheet	-	NHDTA123JU_143ZU_114YU_SER v.1
Modifications:	Product(s) changed to non-automotive qualification. Please refer to nexperia.com for automotive (-Q) product alternative(s).			
NHDTA123JU_143ZU_114YU_SER v.1	20200716	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.

- [1] Please consult the most recently issued document before initiating or completing a design.
- [2] The term 'short data sheet' is explained in section "Definitions".
- [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 <https://www.nexperia.com>.

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