



PBSS5350D

50 V, 3 A PNP low V_{CEsat} transistor

1 January 2023

Product data sheet

1. General description

PNP low V_{CEsat} transistor in a small SOT457 (SC-74) Surface-Mounted Device (SMD) plastic package.

NPN complement: PBSS4350D

2. Features and benefits

- Low collector-emitter saturation voltage V_{CEsat}
- High current capability
- High efficiency due to less heat generation
- Smaller Printed-Circuit Board (PCB) area than for conventional transistors

3. Applications

- Supply line switching circuits
- Battery management applications
- DC-to-DC conversion

4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V _{CEO}	collector-emitter voltage	open base	-	-	-50	V
I _C	collector current		-	-	-3	A
I _{CM}	peak collector current		-	-	-5	A
R _{CEsat}	collector-emitter saturation resistance	I _C = -2 A; I _B = -200 mA; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	-	120	150	mΩ

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	C	collector	SC-74; TSOP6 (SOT457)	sym030
2	C	collector		
3	B	base		
4	E	emitter		
5	C	collector		
6	C	collector		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PBSS5350D	SC-74; TSOP6	plastic, surface-mounted package (SC-74; TSOP6); 6 leads	SOT457

7. Marking

Table 4. Marking codes

Type number	Marking code
PBSS5350D	53

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		-	-60	V
V _{CEO}	collector-emitter voltage	open base		-	-50	V
V _{EBO}	emitter-base voltage	open collector		-	-6	V
I _C	collector current			-	-3	A
I _{CM}	peak collector current			-	-5	A
I _{BM}	peak base current			-	-1	A
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C	[1]	-	600	mW
			[2]	-	750	mW
			[3]	-	1200	mW
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.
- [2] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for collector 6 cm².
- [3] Device mounted on an FR4 4-layer PCB.

9. Thermal characteristics

Table 6. Thermal characteristics

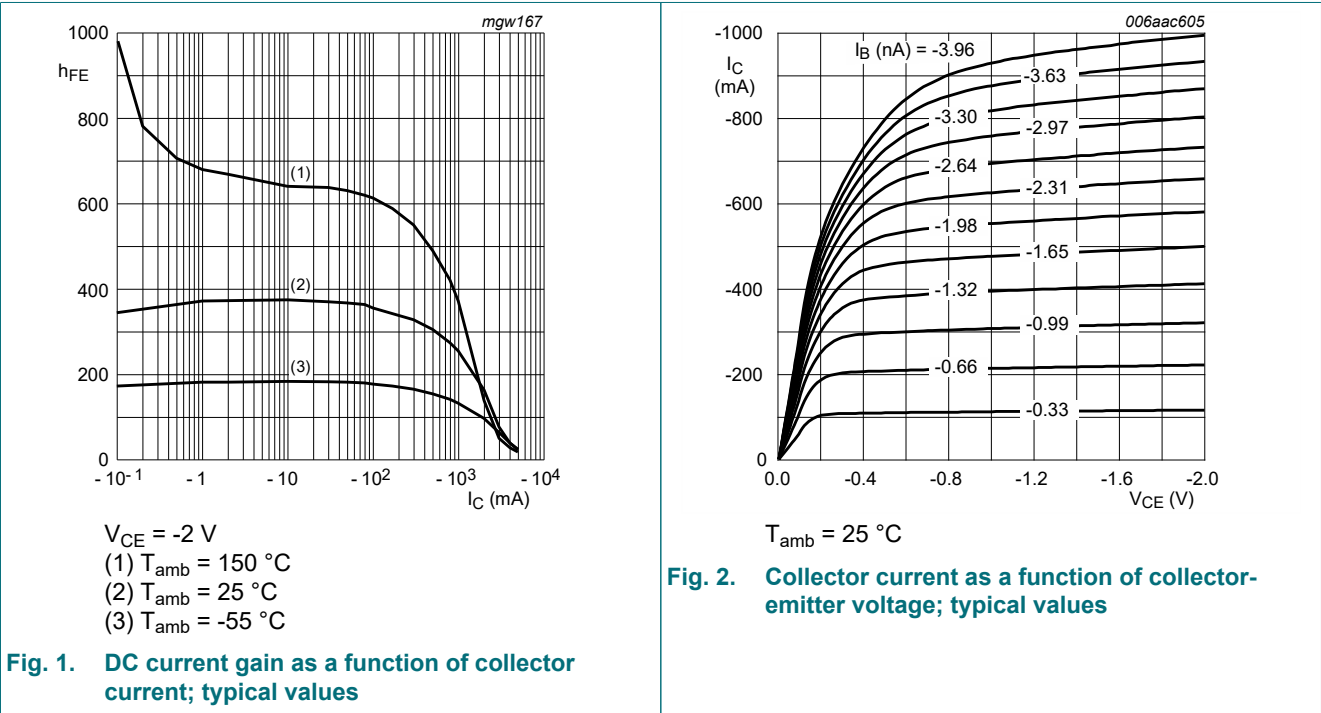
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
R _{th(j-a)}	thermal resistance from junction to ambient	in free air	[1]	-	-	208	K/W
			[2]	-	-	160	K/W
		pulsed; t _p ≤ 50 ms; δ ≤ 0.5.; in free air	[2]	-	-	100	K/W

- [1] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for collector 1 cm².
- [2] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for collector 6 cm².

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I _{CBO}	collector-base cut-off current	V _{CB} = -50 V; I _E = 0 A; T _{amb} = 25 °C	-	-	-100	nA
		V _{CB} = -50 V; I _E = 0 A; T _j = 150 °C	-	-	-50	μA
I _{EBO}	emitter-base cut-off current	V _{EB} = -5 V; I _C = 0 A; T _{amb} = 25 °C	-	-	-100	nA
h _{FE}	DC current gain	V _{CE} = -2 V; I _C = -500 mA; T _{amb} = 25 °C	200	-	-	
		V _{CE} = -2 V; I _C = -1 A; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	200	-	-	
		V _{CE} = -2 V; I _C = -2 A; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	100	-	-	
V _{CEsat}	collector-emitter saturation voltage	I _C = -500 mA; I _B = -50 mA; T _{amb} = 25 °C	-	-	-100	mV
		I _C = -1 A; I _B = -50 mA; T _{amb} = 25 °C	-	-	-180	mV
		I _C = -2 A; I _B = -200 mA; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	-	-	-300	mV
R _{CEsat}	collector-emitter saturation resistance		-	120	150	mΩ
V _{BEsat}	base-emitter saturation voltage		-	-	-1.2	V
V _{BEon}	base-emitter turn-on voltage	V _{CE} = -2 V; I _C = -1 A; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	-	-	-1.1	V
f _T	transition frequency	V _{CE} = -5 V; I _C = -100 mA; f = 100 MHz; T _{amb} = 25 °C	100	-	-	MHz
C _c	collector capacitance	V _{CB} = -10 V; I _E = 0 A; i _e = 0 A; f = 1 MHz; T _{amb} = 25 °C	-	-	40	pF



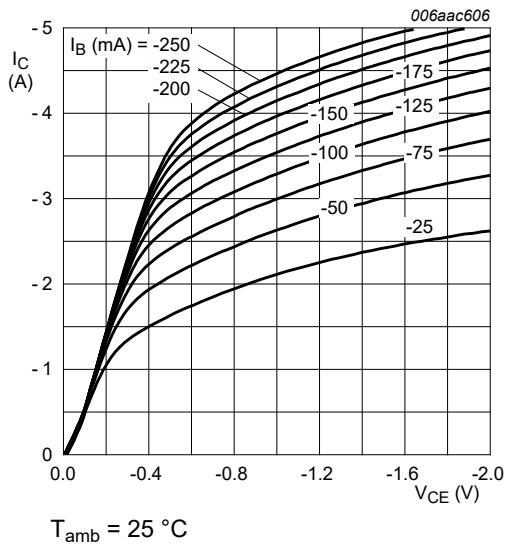


Fig. 3. Collector current as a function of collector-emitter voltage; typical values

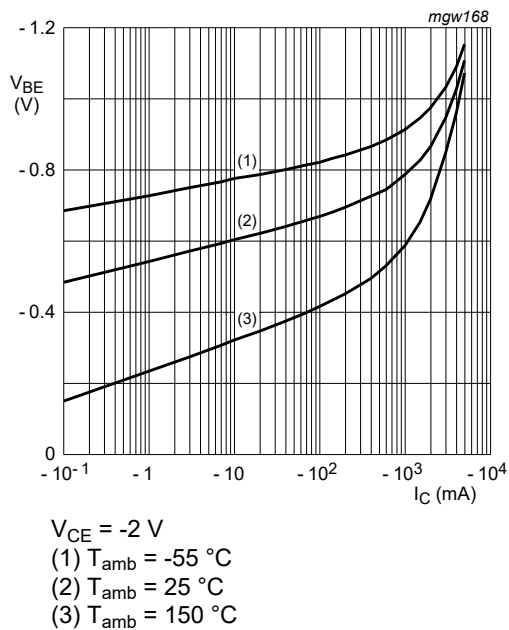


Fig. 4. Base-emitter voltage as a function of collector current; typical values

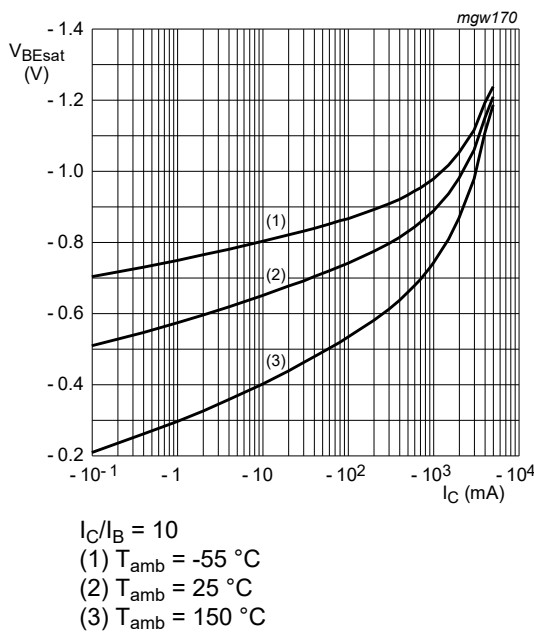


Fig. 5. Base-emitter saturation voltage as a function of collector current; typical values

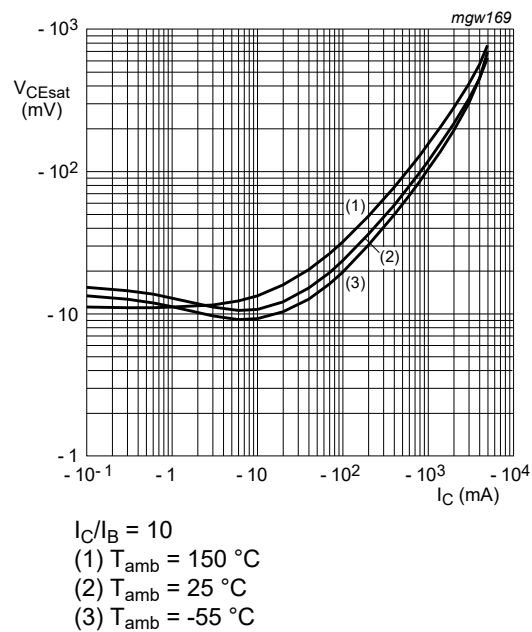
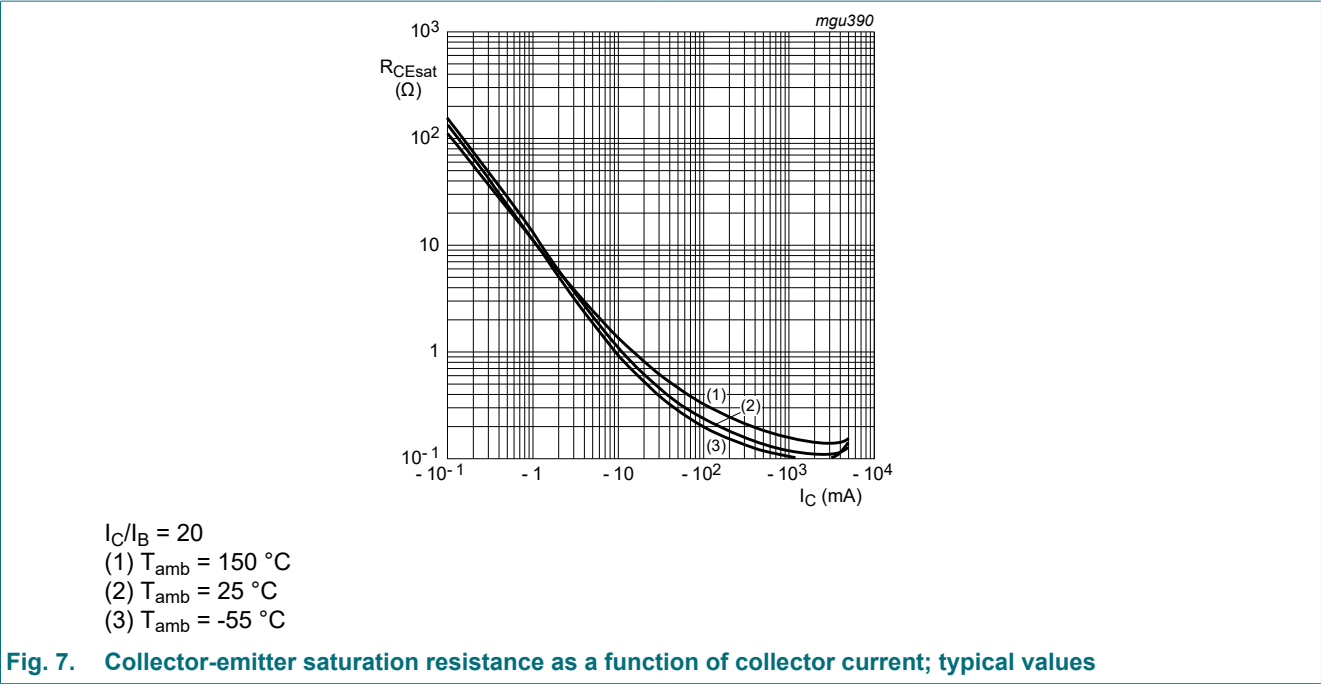
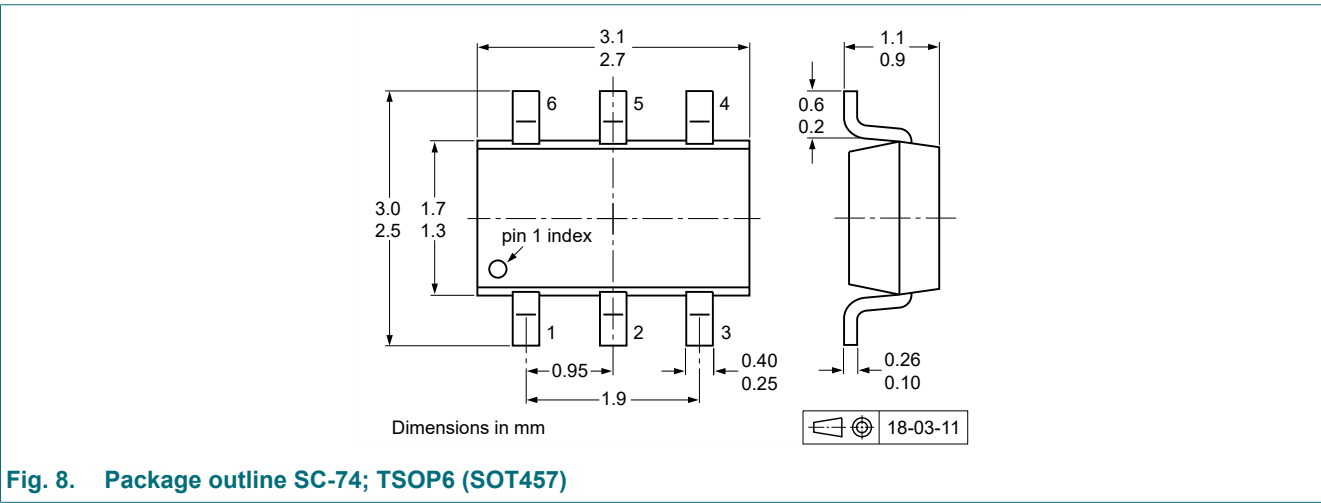


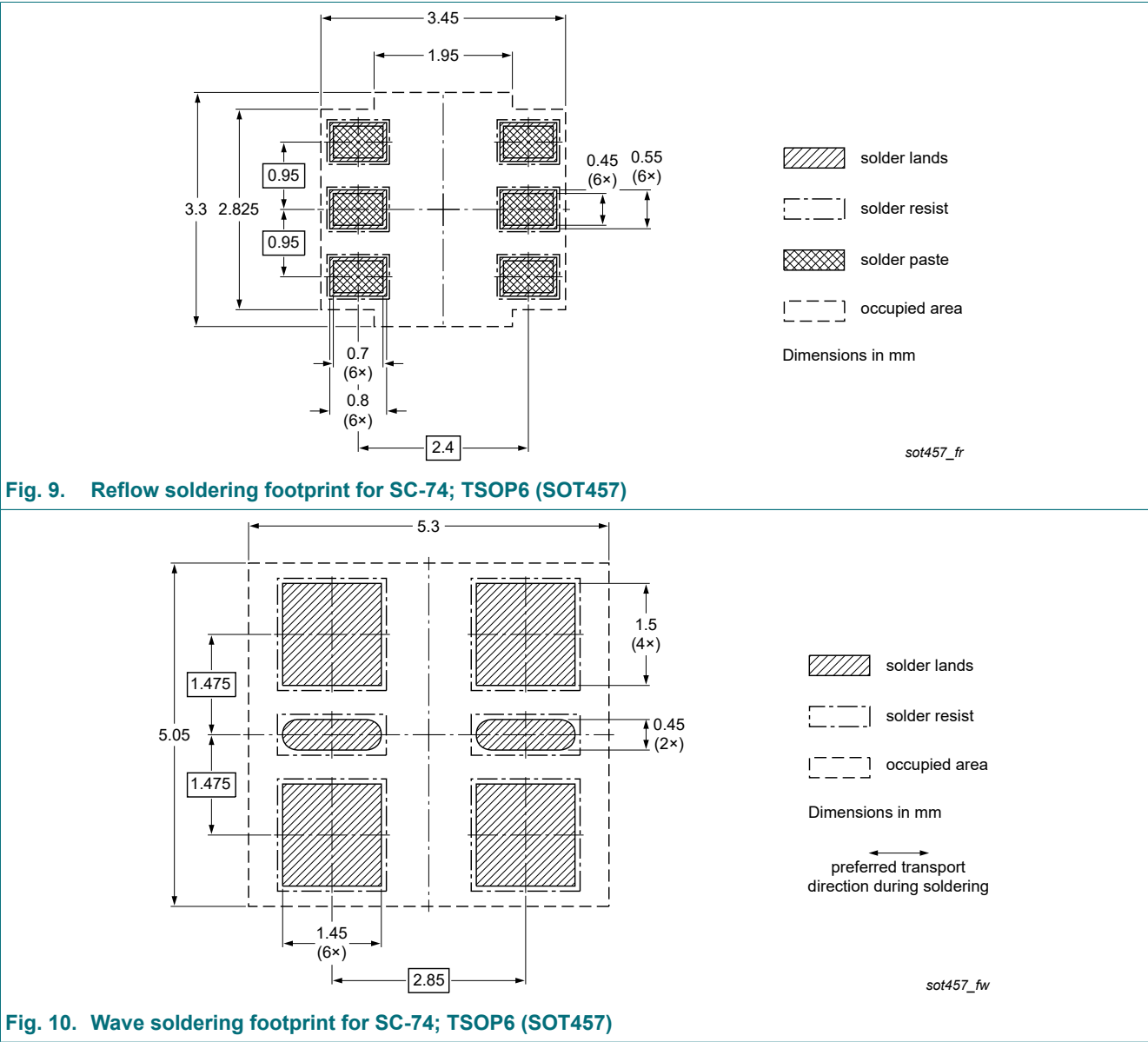
Fig. 6. Collector-emitter saturation voltage as a function of collector current; typical values



11. Package outline



12. Soldering



13. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PBSS5350D v.7	20230101	Product data sheet	-	PBSS5350D v.6
Modifications:	Product changed to non-automotive qualification. Please refer to nexperia.com for automotive (-Q) product alternative(s).			
PBSS5350D v.6	20110628	Product data sheet	-	PBSS5350D v.5
PBSS5350D v.5	20110323	Product data sheet	-	PBSS5350D v.4
PBSS5350D v.4	20011113	Product specification	-	PBSS5350D v.3
PBSS5350D v.3	20010713	Product specification	-	PBSS5350D v.2
PBSS5350D v.2	20010126	Product specification	-	PBSS5350D v.1
PBSS5350D v.1	20000308	Product specification	-	-

14. 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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