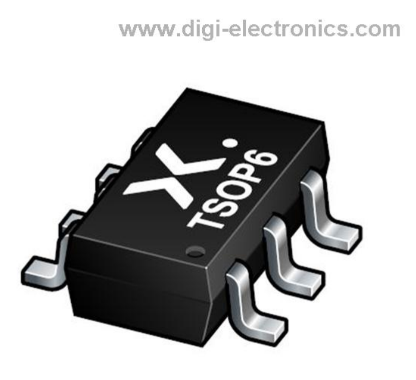
# PBSS5320D,125 Datasheet



https://www.DiGi-Electronics.com

| | |
|---|---|
| DiGi Electronics Part Number | PBSS5320D,125-DG |
| Manufacturer | Nexperia USA Inc. |
| Manufacturer Product Number | PBSS5320D,125 |
| Description | TRANS PNP 20V 3A 6TSOP |
| Detailed Description | Bipolar (BJT) Transistor PNP 20 V 3 A 100MHz 750 mW Surface Mount 6-TSOP |

## Purchase and inquiry

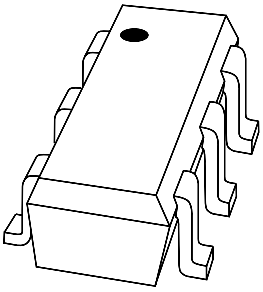
| | | | |
|---|---|---|---|
| Manufacturer Product Number: | PBSS5320D,125 | Manufacturer: | Nexperia USA Inc. |
| Series: | - | Product Status: | Active |
| Transistor Type: | PNP | Current - Collector (Ic) (Max): | 3 A |
| Voltage - Collector Emitter Breakdown (Max): | 20 V | Vce Saturation (Max) @ Ib, Ic: | 400mV @ 300mA, 3A |
| Current - Collector Cutoff (Max): | 100nA (ICBO) | DC Current Gain (hFE) (Min) @ Ic, Vce: | 150 @ 2A, 2V |
| Power - Max: | 750 mW | Frequency - Transition: | 100MHz |
| Operating Temperature: | 150°C (TJ) | Grade: | Automotive |
| Qualification: | AEC-Q100 | Mounting Type: | Surface Mount |
| Package / Case: | SC-74, SOT-457 | Supplier Device Package: | 6-TSOP |
| Base Product Number: | PBSS5320 | | |

## Environmental & Export classification

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

**DISCRETE SEMICONDUCTORS**

# DATA SHEET



# PBSS5320D

## 20 V low $V_{CEsat}$ PNP transistor

Product data sheet

2002 Jun 12

founded by Philips

# 20 V low $V_{CEsat}$ PNP transistor PBSS5320D

## FEATURES

- Low collector-emitter saturation voltage
- High current capability
- Improved device reliability due to reduced heat generation

## APPLICATIONS

- Supply line switching circuits
- Battery management applications
- DC/DC converter applications
- Strobe flash units
- Heavy duty battery powered equipment (motor and lamp drivers).

## DESCRIPTION

PNP low $V_{CEsat}$ transistor in a SOT457 (SC-74) plastic package.

## MARKING

| TYPE NUMBER | MARKING CODE |
|---|---|
| PBSS5320D | 52 |

## QUICK REFERENCE DATA

| SYMBOL | PARAMETER | MAX. | UNIT |
|---|---|---|---|
| $V_{CEO}$ | collector-emitter voltage | –20 | V |
| $I_C$ | collector current (DC) | –3 | A |
| $I_{CM}$ | peak collector current | –5 | A |
| $R_{CEsat}$ | equivalent on-resistance | 133 | mΩ |

## PINNING

| PIN | DESCRIPTION |
|---|---|
| 1 | collector |
| 2 | collector |
| 3 | base |
| 4 | emitter |
| 5 | collector |
| 6 | collector |

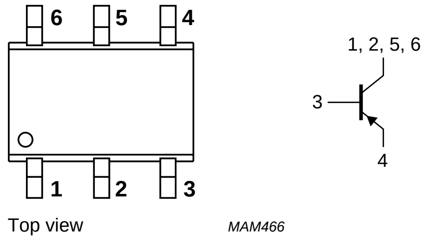


Fig.1 Simplified outline (SOT457; SC-74) and symbol.

## 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 | – | –20 | V |
| $V_{CEO}$ | collector-emitter voltage | open base | – | –20 | V |
| $V_{EBO}$ | emitter-base voltage | open collector | – | –5 | V |
| $I_C$ | collector current (DC) | | – | –3 | A |
| $I_{CM}$ | peak collector current | | – | –5 | A |
| $I_B$ | base current | | – | –500 | mA |
| $P_{tot}$ | total power dissipation | $T_{amb} \leq 25$ °C; note 1 | – | 600 | mW |
| | | $T_{amb} \leq 25$ °C; note 2 | – | 750 | mW |
| $T_{stg}$ | storage temperature | | –65 | +150 | °C |
| $T_j$ | junction temperature | | – | 150 | °C |
| $T_{amb}$ | operating ambient temperature | | –65 | +150 | °C |

**Notes**

1. Device mounted on a printed-circuit board, single side copper, tinplated, mounting pad for collector 1 $cm^2$.
2. Device mounted on a printed-circuit board, single side copper, tinplated, mounting pad for collector 6 $cm^2$.

## THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---|---|---|---|---|
| $R_{th\ j\text{-}a}$ | thermal resistance from junction to ambient | note 1 | 208 | K/W |
| | | note 2 | 160 | K/W |

**Notes**

1. Device mounted on a printed-circuit board, single side copper, tinplated, mounting pad for collector 1 $cm^2$.
2. Device mounted on a printed-circuit board, single side copper, tinplated, mounting pad for collector 6 $cm^2$.

## CHARACTERISTICS

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

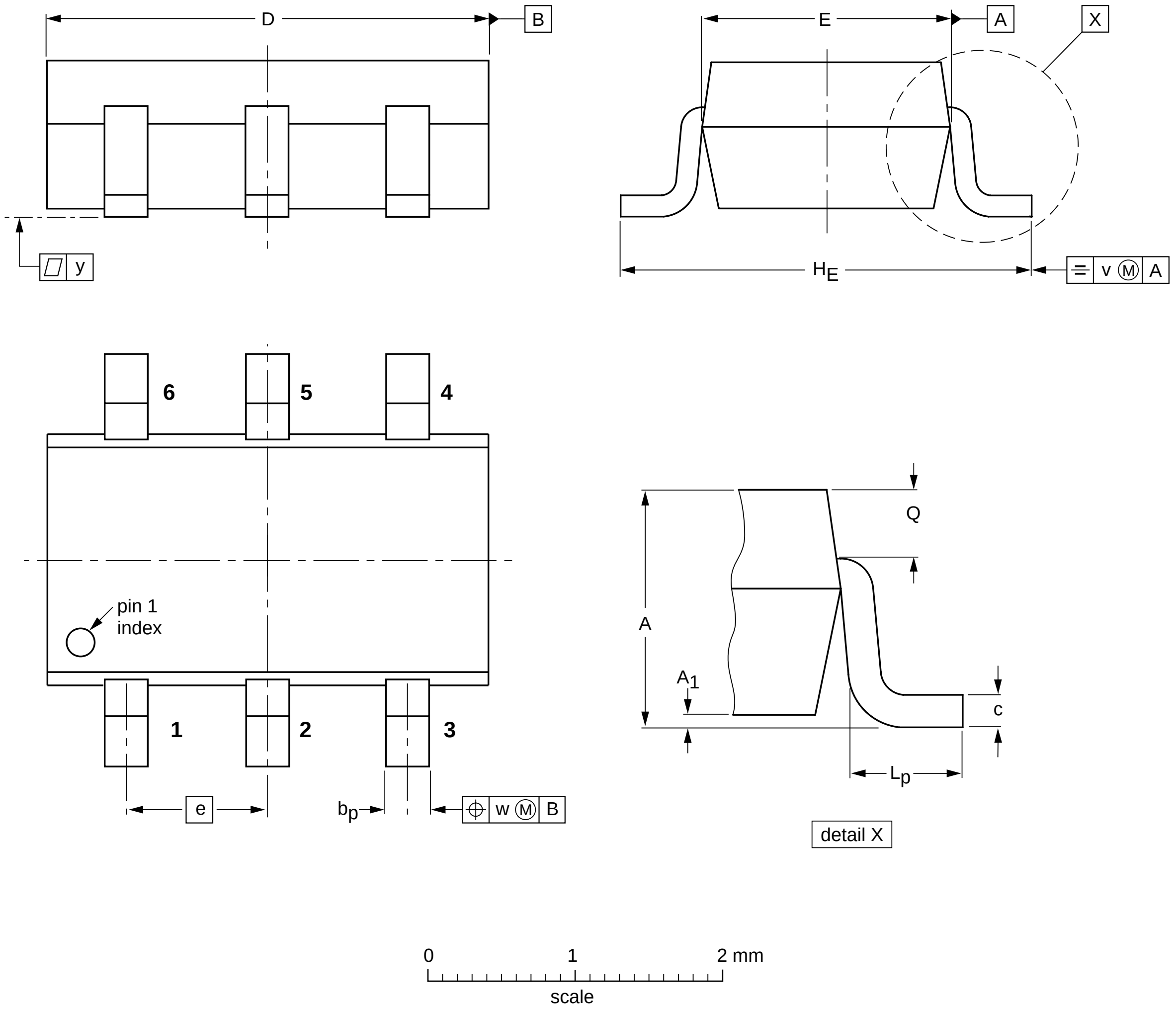
| SYMBOL | PARAMETER | CONDITIONS | MIN. | MIN. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| $I_{CBO}$ | collector-base cut-off current | $V_{CB}$ = –20 V; $I_E$ = 0 | – | – | –100 | nA |
| | | $V_{CB}$ = –20 V; $I_E$ = 0; $T_j$ = 150 °C | – | – | –50 | μA |
| $I_{EBO}$ | emitter-base cut-off current | $V_{EB}$ = –5 V; $I_C$ = 0 | – | – | –100 | nA |
| $h_{FE}$ | DC current gain | $V_{CE}$ = –2 V; $I_C$ = –100 mA | 200 | – | – | |
| | | $V_{CE}$ = –2 V; $I_C$ = –500 mA | 200 | – | – | |
| | | $V_{CE}$ = –2 V; $I_C$ = –1000 mA; note 1 | 200 | – | – | |
| | | $V_{CE}$ = –2 V; $I_C$ = –2000 mA; note 1 | 150 | – | – | |
| $V_{CEsat}$ | collector-emitter saturation voltage | $I_C$ = –500 mA; $I_B$ = –5 mA | – | – | –130 | mV |
| | | $I_C$ = –500 mA; $I_B$ = –50 mA | – | – | –80 | mV |
| | | $I_C$ = –1 A; $I_B$ = –50 mA | – | – | –160 | mV |
| | | $I_C$ = –2 A; $I_B$ = –20 mA; note 1 | – | – | –400 | mV |
| | | $I_C$ = –2 A; $I_B$ = –200 mA; note 1 | – | – | –250 | mV |
| | | $I_C$ = –3 A; $I_B$ = –300 mA; note 1 | – | – | –400 | mV |
| $R_{CEsat}$ | equivalent on-resistance | $I_C$ = –3 A; $I_B$ = –300 mA; note 1 | – | 85 | 133 | mΩ |
| $V_{BEsat}$ | base-emitter saturation voltage | $I_C$ = –2 A; $I_B$ = –200 mA; note 1 | – | – | –1.2 | V |
| $V_{BEon}$ | base-emitter turn-on voltage | $V_{CE}$ = –2 V; $I_C$ = –1 A; note 1 | –1.2 | – | – | V |
| $C_c$ | collector capacitance | $V_{CB}$ = –10 V; $I_E$ = $I_e$ = 0; f = 1 MHz | – | – | 50 | pF |
| $F_T$ | transition frequency | $I_C$ = –200 mA; $V_{CE}$ = –10 V;<br>f = 100 MHz | 100 | – | – | MHz |

**Note**

1. Pulse test: $t_p \leq 300$ μs; $\delta \leq 0.02$.

## PACKAGE OUTLINE

**Plastic surface mounted package; 6 leads** **SOT457**



**DIMENSIONS (mm are the original dimensions)**

| UNIT | A | $A_1$ | $b_p$ | c | D | E | e | $H_E$ | $L_p$ | Q | v | w | y |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | 1.1<br>0.9 | 0.1<br>0.013 | 0.40<br>0.25 | 0.26<br>0.10 | 3.1<br>2.7 | 1.7<br>1.3 | 0.95 | 3.0<br>2.5 | 0.6<br>0.2 | 0.33<br>0.23 | 0.2 | 0.2 | 0.1 |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | EIAJ | | | |
| SOT457 | | | SC-74 | | | ~~97-02-28~~<br>01-05-04 |

## DATA SHEET STATUS

| DOCUMENT STATUS[1] | PRODUCT STATUS[2] | 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. |

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Michele Dickstein
President

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