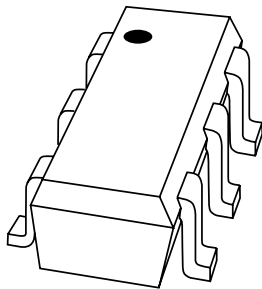


DATA SHEET



PBSS4240Y 40 V low V_{CEsat} NPN transistor

Product specification

2001 Jul 13

40 V low V_{CEsat} NPN transistor

PBSS4240Y

FEATURES

- Low collector-emitter saturation voltage
- High current capability
- Improved device reliability due to reduced heat generation
- Replacement for SOT89/SOT223 standard packaged transistors due to enhanced performance.

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

NPN low V_{CEsat} transistor in a SOT363 (SC-88) plastic package.
 PNP complement: PBSS5240Y.

MARKING

| TYPE NUMBER | MARKING CODE ⁽¹⁾ |
|-------------|-----------------------------|
| PBSS4240Y | 42* |

Note

- * = p: made in Hongkong.
 * = t: made in Malaysia.

QUICK REFERENCE DATA

| SYMBOL | PARAMETER | MAX. | UNIT |
|-------------|---------------------------|------|------------|
| V_{CEO} | collector-emitter voltage | 40 | V |
| I_{CM} | peak collector current | 3 | A |
| R_{CEsat} | equivalent on-resistance | <200 | m Ω |

PINNING

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

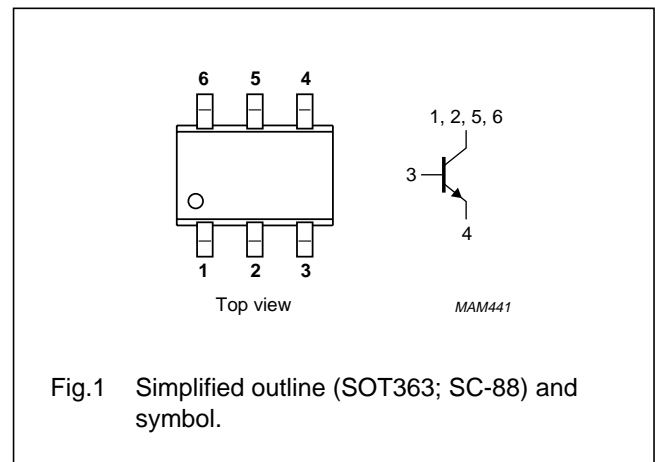


Fig.1 Simplified outline (SOT363; SC-88) and symbol.

40 V low V_{CEsat} NPN transistor

PBSS4240Y

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 | – | 40 | V |
| V_{CEO} | collector-emitter voltage | open base | – | 40 | V |
| V_{EBO} | emitter-base voltage | open collector | – | 5 | V |
| I_C | collector current (DC) | | – | 2 | A |
| I_{CM} | peak collector current | | – | 3 | A |
| I_{BM} | peak base current | | – | 300 | mA |
| P_{tot} | total power dissipation | $T_{amb} \leq 25\text{ °C}$; note 1 | – | 270 | mW |
| | | $T_{amb} \leq 25\text{ °C}$; note 2 | – | 430 | 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 and standard footprint.
2. Device mounted on a printed-circuit board, single side copper, tinplated and mounting pad for collector 1 cm².

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---------------|---|---------------------|-------|------|
| $R_{th\ j-a}$ | thermal resistance from junction to ambient | in free air; note 1 | 463 | K/W |
| | | in free air; note 2 | 291 | K/W |

Notes

1. Device mounted on a printed-circuit board, single side copper, tinplated and standard footprint.
2. Device mounted on a printed-circuit board, single side copper, tinplated and mounting pad for collector 1 cm².

40 V low V_{CEsat} NPN transistor

PBSS4240Y

CHARACTERISTICS

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|-------------|--------------------------------------|---|------|------|------|------------------|
| I_{CBO} | collector-base cut-off current | $V_{CB} = 30\text{ V}; I_E = 0$ | – | – | 100 | nA |
| | | $V_{CB} = 30\text{ V}; I_E = 0; T_j = 150\text{ °C}$ | – | – | 50 | μA |
| I_{EBO} | emitter-base cut-off current | $V_{EB} = 4\text{ V}; I_C = 0$ | – | – | 100 | nA |
| h_{FE} | DC current gain | $V_{CE} = 2\text{ V}; I_C = 100\text{ mA}$ | 350 | 470 | – | |
| | | $V_{CE} = 2\text{ V}; I_C = 500\text{ mA}$ | 300 | 450 | – | |
| | | $V_{CE} = 2\text{ V}; I_C = 1\text{ A}$ | 300 | 420 | – | |
| | | $V_{CE} = 2\text{ V}; I_C = 2\text{ A}$ | 150 | 250 | – | |
| V_{CEsat} | collector-emitter saturation voltage | $I_C = 100\text{ mA}; I_B = 1\text{ mA}$ | – | 45 | 70 | mV |
| | | $I_C = 500\text{ mA}; I_B = 50\text{ mA}$ | – | 70 | 100 | mV |
| | | $I_C = 750\text{ mA}; I_B = 15\text{ mA}$ | – | 120 | 180 | mV |
| | | $I_C = 1\text{ A}; I_B = 50\text{ mA}$ | – | 130 | 180 | mV |
| | | $I_C = 2\text{ A}; I_B = 200\text{ mA}$ | – | 240 | 320 | mV |
| R_{CEsat} | equivalent on-resistance | $I_C = 500\text{ mA}; I_B = 50\text{ mA}; \text{note 1}$ | – | 140 | <200 | $\text{m}\Omega$ |
| V_{BEsat} | base-emitter saturation voltage | $I_C = 2\text{ A}; I_B = 200\text{ mA}$ | – | – | 1.1 | V |
| V_{BEon} | base-emitter turn-on voltage | $V_{CE} = 2\text{ V}; I_C = 100\text{ mA}$ | – | – | 0.75 | V |
| C_c | collector capacitance | $V_{CB} = 10\text{ V}; I_E = I_e = 0; f = 1\text{ MHz}$ | – | 15 | 20 | pF |
| f_T | transition frequency | $I_C = 100\text{ mA}; V_{CE} = 10\text{ V}; f = 100\text{ MHz}$ | 100 | 230 | – | MHz |

Note

1. Pulse test: $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$.

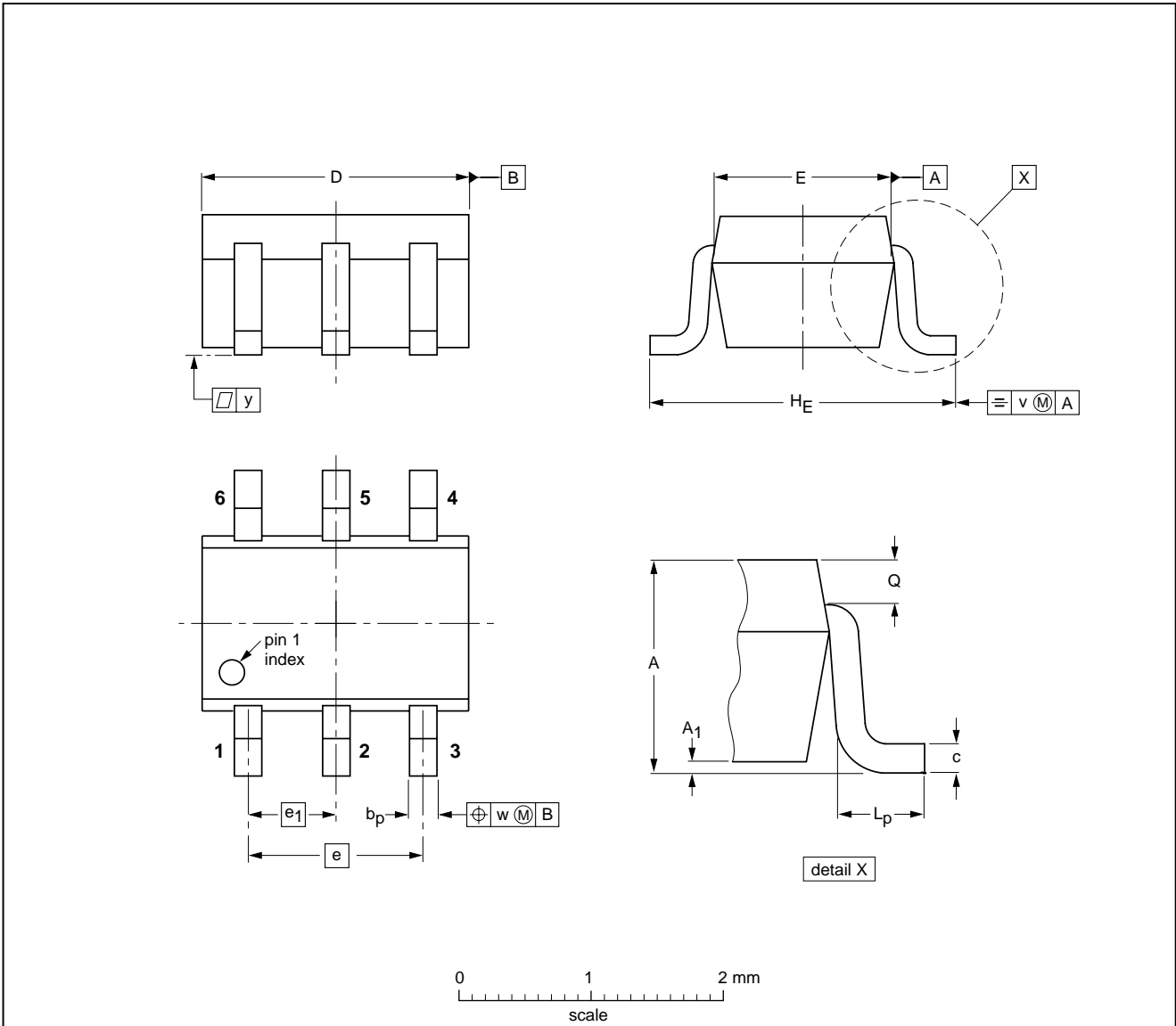
40 V low V_{CEsat} NPN transistor

PBSS4240Y

PACKAGE OUTLINE

Plastic surface mounted package; 6 leads

SOT363



DIMENSIONS (mm are the original dimensions)

| UNIT | A | A ₁ max | b _p | c | D | E | e | e ₁ | H _E | L _p | Q | v | w | y |
|------|------------|--------------------|----------------|--------------|------------|--------------|-----|----------------|----------------|----------------|--------------|-----|-----|-----|
| mm | 1.1 0.8 | 0.1 | 0.30 0.20 | 0.25 0.10 | 2.2 1.8 | 1.35 1.15 | 1.3 | 0.65 | 2.2 2.0 | 0.45 0.15 | 0.25 0.15 | 0.2 | 0.2 | 0.1 |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|-----------------|------------|-------|-------|--|---------------------|------------|
| | IEC | JEDEC | EIAJ | | | |
| SOT363 | | | SC-88 | | | 97-02-28 |

40 V low V_{CEsat} NPN transistor

PBSS4240Y

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|----------------------------------|-------------------------------|--|
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