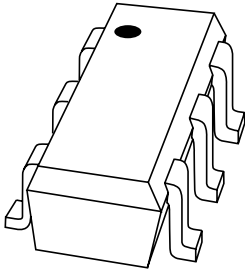


DATA SHEET



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

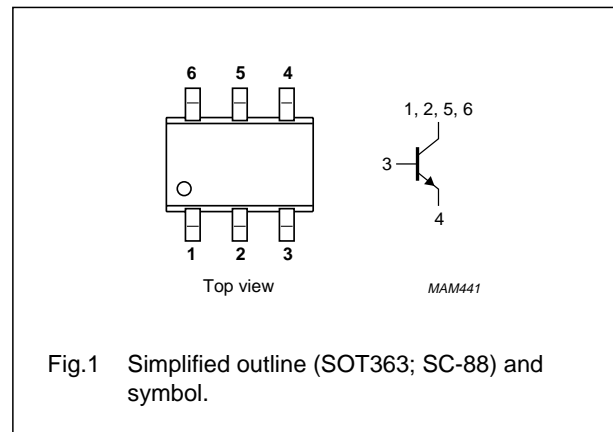


Fig.1 Simplified outline (SOT363; SC-88) and symbol.

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

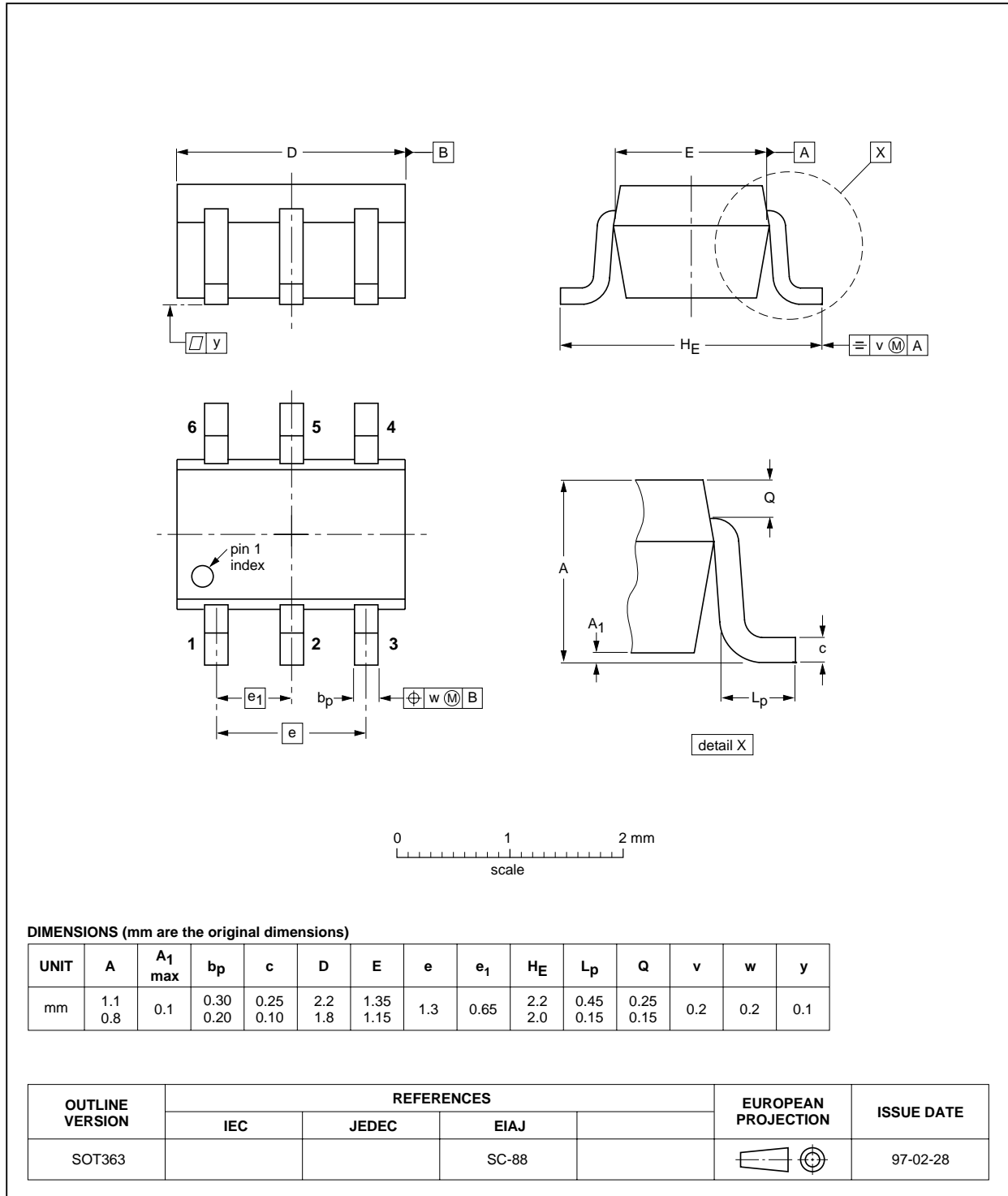
40 V low V_{CEsat} NPN transistor

PBSS4240Y

PACKAGE OUTLINE

Plastic surface mounted package; 6 leads

SOT363



40 V low V_{CEsat} NPN transistor

PBSS4240Y

DATA SHEET STATUS

DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	DEFINITIONS
Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device.

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