

DATA SHEET

PMBT3640 PNP 1 GHz switching transistor

Product specification
File under Discrete Semiconductors, SC14

September 1995

PNP 1 GHz switching transistor

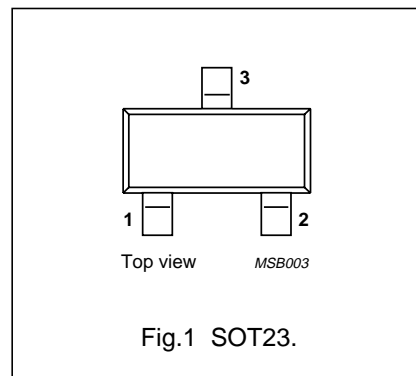
PMBT3640

DESCRIPTION

PNP general purpose switching transistor in a SOT23 package.

PINNING

PIN	DESCRIPTION
Code: V25	
1	base
2	emitter
3	collector



LIMITING VALUES

In accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$-V_{CBO}$	collector-base voltage	open emitter	-	12	V
$-V_{CEO}$	collector-emitter voltage	open base	-	12	V
$-V_{EBO}$	emitter-base voltage	open collector	-	4	V
$-I_C$	DC collector current		-	80	mA
P_{tot}	total power dissipation	up to $T_s = 85\text{ °C}$ (note 1)	-	350	mW
T_{stg}	storage temperature		-55	150	°C
T_j	junction temperature		-	175	°C

THERMAL RESISTANCE

SYMBOL	PARAMETER	THERMAL RESISTANCE
$R_{th\ j-s}$	from junction to soldering point (note 1)	260 K/W

Note

1. T_s is the temperature at the soldering point of the collector tab.

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CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Off characteristics					
$-V_{(BR)CBO}$	collector-base breakdown voltage	$-I_C = 100\text{ }\mu\text{A}; I_E = 0$	12	–	V
$-V_{(BR)CES}$	collector-emitter breakdown voltage	$-I_C = 100\text{ }\mu\text{A}; V_{BE} = 0$	12	–	V
$-V_{(BR)EBO}$	emitter-base breakdown voltage	$-I_E = 100\text{ }\mu\text{A}; I_C = 0$	4	–	V
$-I_{CES}$	collector cut-off current	$-V_{CE} = 6\text{ V}; V_{BE} = 0$	–	0.01	μA
		$-V_{CE} = 6\text{ V}; V_{BE} = 0; T_{amb} = 65\text{ }^\circ\text{C}$	–	1	μA
$-I_B$	base current	$-V_{CE} = 6\text{ V}; V_{BE} = 0$	–	10	nA
On characteristics; pulse test: pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.					
h_{FE}	DC current gain	$-I_C = 10\text{ mA}; -V_{CE} = 0.3\text{ V}$	30	120	
		$-I_C = 50\text{ mA}; -V_{CE} = 1\text{ V}$	20	–	
$-V_{CEsat}$	collector-emitter saturation voltage	$-I_C = 10\text{ mA}; -I_B = 1\text{ mA}$	–	0.2	V
		$-I_C = 50\text{ mA}; -I_B = 5\text{ mA}$	–	0.6	V
		$-I_C = 10\text{ mA}; -I_B = 1\text{ mA}; T_{amb} = 65\text{ }^\circ\text{C}$	–	0.25	V
$-V_{BEsat}$	base-emitter saturation voltage	$-I_C = 10\text{ mA}; -I_B = 0.5\text{ mA}$	0.75	0.95	V
		$-I_C = 10\text{ mA}; -I_B = 1\text{ mA}$	0.8	1	V
		$-I_C = 50\text{ mA}; -I_B = 5\text{ mA}$	–	1.5	V
Small-signal characteristics					
f_T	transition frequency	$-I_C = 10\text{ mA}; -V_{CE} = 5\text{ V};$ $f = 100\text{ MHz}$	500	–	MHz
C_c	output capacitance	$I_E = 0; -V_{CB} = 5\text{ V}; f = 1\text{ MHz}$	–	3.5	pF
C_e	input capacitance	$I_C = 0; -V_{EB} = 0.5\text{ V}; f = 1\text{ MHz}$	–	3.5	pF
Switching times					
t_d	delay time	$-V_{CC} = 6\text{ V}; -I_C = 50\text{ mA};$ $-V_{BE(off)} = 1.9\text{ V}; -I_{B1} = 5\text{ mA}$	–	10	ns
t_s	storage time	$-V_{CC} = 6\text{ V}; -I_C = 50\text{ mA};$ $-I_{B1} = -I_{B2} = 5\text{ mA}$	–	20	ns
t_r	rise time	$-V_{CC} = 6\text{ V}; -I_C = 50\text{ mA};$ $-V_{BE(off)} = 1.9\text{ V}; -I_{B1} = 5\text{ mA}$	–	30	ns
t_f	fall time	$-V_{CC} = 6\text{ V}; -I_C = 50\text{ mA};$ $-I_{B1} = -I_{B2} = 5\text{ mA}$	–	12	ns
t_{on}	turn-on time	$-V_{CC} = 6\text{ V}; -I_C = 50\text{ mA};$ $-V_{BE(off)} = 1.9\text{ V}; -I_{B1} = 5\text{ mA}$	–	25	ns
		$-V_{CC} = 1.5\text{ V}; -I_C = 10\text{ mA};$ $-I_{B1} = 0.5\text{ mA}$	–	60	ns
t_{off}	turn-off time	$-V_{CC} = 6\text{ V}; -I_C = 50\text{ mA};$ $-V_{BE(off)} = 1.9\text{ V}; -I_{B1} = I_{B2} = 5\text{ mA}$	–	35	ns
		$-V_{CC} = 1.5\text{ V}; -I_C = 10\text{ mA};$ $-I_{B1} = I_{B2} = 0.5\text{ mA}$	–	75	ns

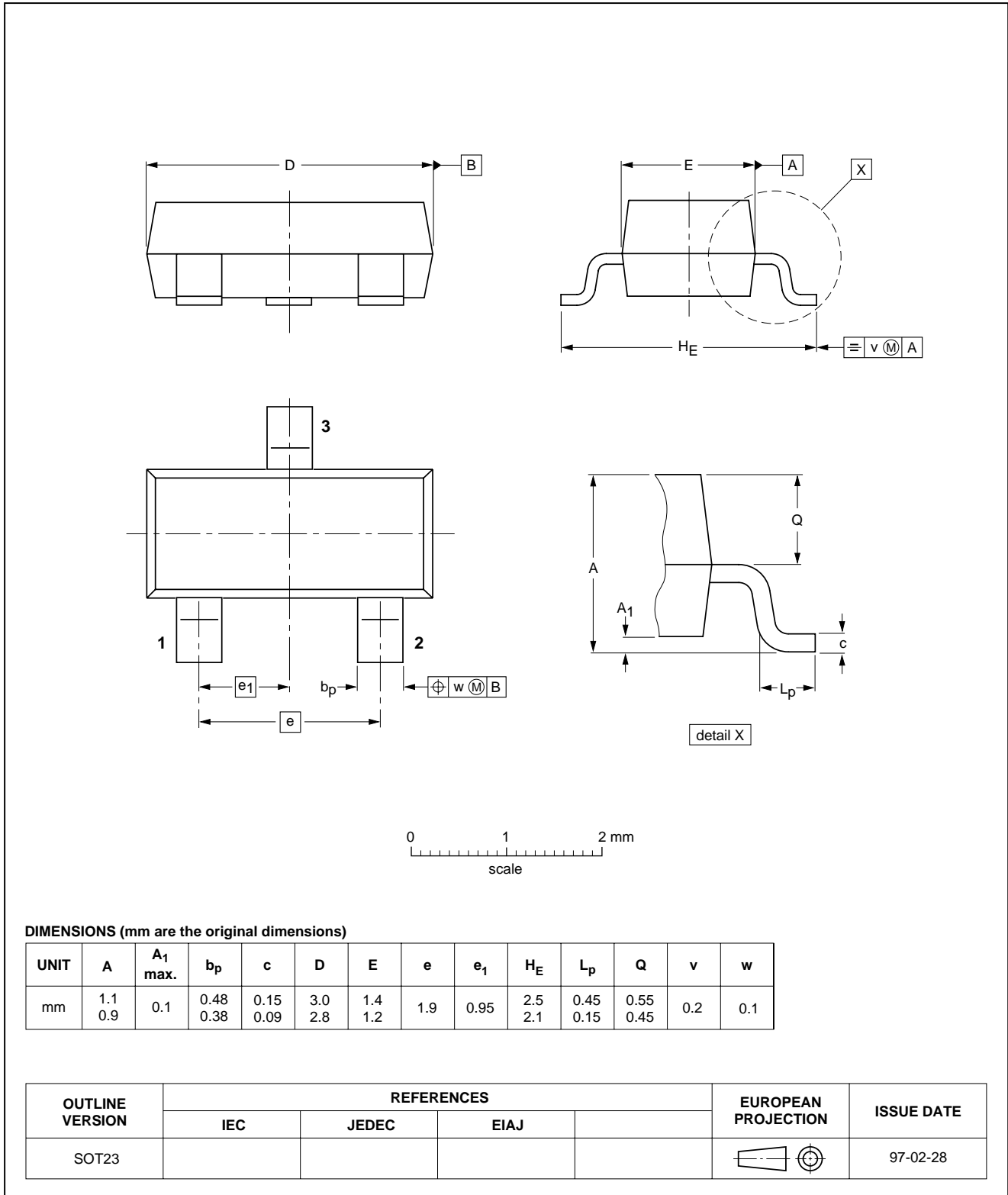
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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



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DEFINITIONS

Data Sheet Status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

LIFE SUPPORT APPLICATIONS

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