

DATA SHEET

PPC5001T NPN microwave power transistor

Product specification
Supersedes data of November 1994
File under Discrete Semiconductors, SC15

1997 Mar 03

NPN microwave power transistor

PPC5001T

FEATURES

- Diffused emitter ballasting resistors providing excellent current sharing and withstanding a high VSWR
- Interdigitated structure provides high emitter efficiency
- Gold metallization realizes very stable characteristics and excellent lifetime
- Multicell geometry gives good balance of dissipated power and low thermal resistance

APPLICATIONS

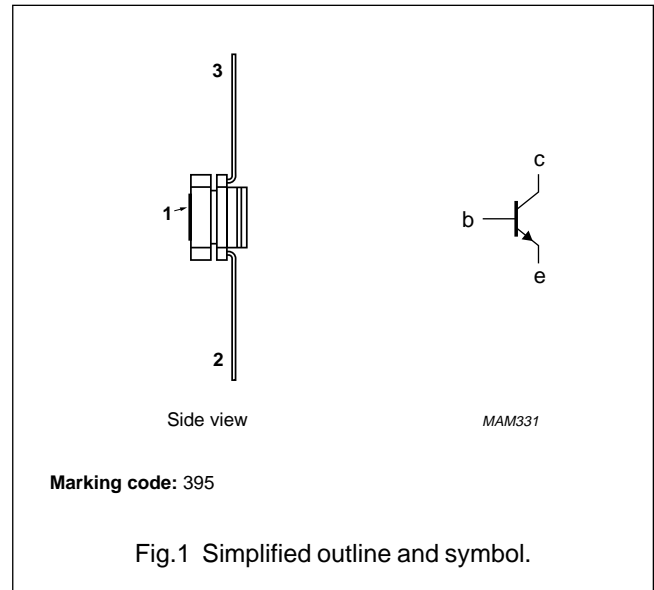
Intended for use in common-collector oscillator circuits in military and professional applications up to 5 GHz.

DESCRIPTION

NPN silicon planar epitaxial microwave power transistor in a SOT447A metal ceramic flange package.

PINNING - SOT447A

PIN	DESCRIPTION
1	base
2	emitter
3	collector



QUICK REFERENCE DATA

Microwave performance up to $T_{mb} = 25\text{ °C}$ in an oscillator circuit up to 5 GHz; typical values.

MODE OF OPERATION	f (GHz)	V_{CE} (V)	I_C (mA)	P_L (mW)
Class A (CW)	5	20	200	450

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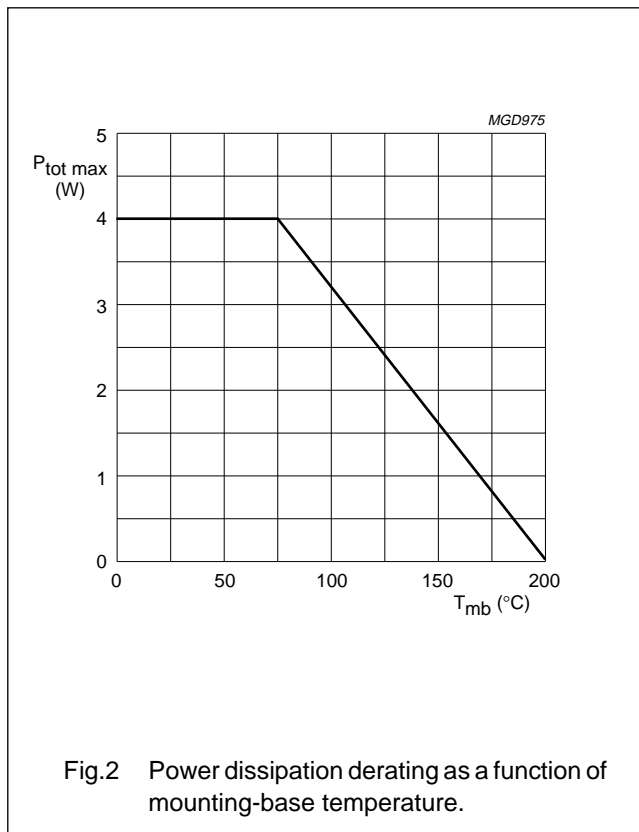
LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	–	40	V
V_{CER}	collector-emitter voltage	$R_{BE} = 70 \Omega$	–	35	V
V_{CEO}	collector-emitter voltage	open emitter	–	16	V
V_{EBO}	emitter-base voltage	open collector	–	3	V
I_C	collector current (DC)		–	0.25	A
P_{tot}	total power dissipation	$T_{amb} \leq 75 \text{ }^\circ\text{C}$	–	4	W
T_{stg}	storage temperature		–65	+200	$^\circ\text{C}$
T_j	junction temperature		–	200	$^\circ\text{C}$
T_{sld}	soldering temperature	$t \leq 10 \text{ s}$; note 1	–	235	$^\circ\text{C}$

Note

- At 0.1 mm from the case.



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THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
$R_{th\ j-mb}$	thermal resistance from junction to mounting base	$T_j = 75\text{ }^\circ\text{C}$	24	K/W

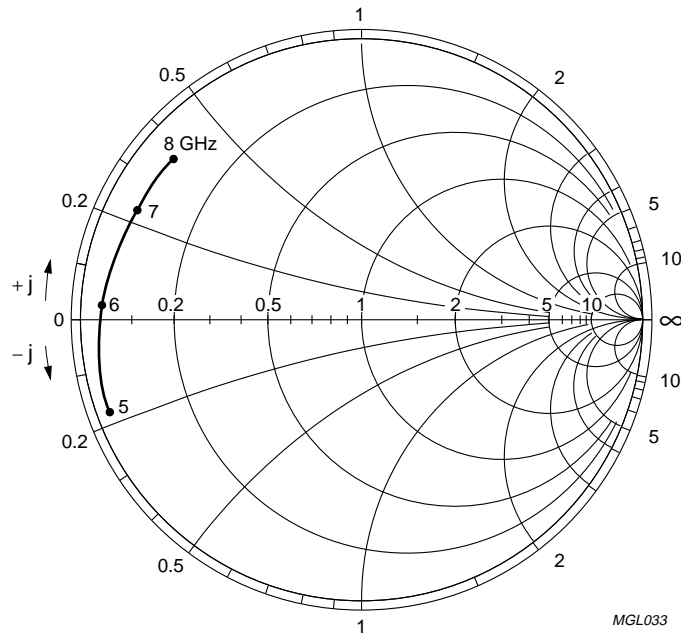
CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector cut-off current	$V_{CB} = 24\text{ V}; I_E = 0$	–	–	100	μA
I_{EBO}	emitter cut-off current	$V_{EB} = 1.5\text{ V}; I_C = 0$	–	–	200	nA
$V_{(BR)CBO}$	collector-base breakdown voltage	$I_C = 500\text{ }\mu\text{A}; I_E = 0$	40	–	–	V
$V_{(BR)CER}$	collector-emitter breakdown voltage	$I_C = 2.5\text{ mA}; R_{BE} = 70\text{ }\Omega$	35	–	–	V
C_{cb}	collector-base capacitance	$V_{CB} = 18\text{ V}; V_{EB} = 1.5\text{ V};$ $I_E = I_C = 0; f = 1\text{ MHz}$	–	1.4	–	pF
C_{ce}	collector-emitter capacitance	$V_{CE} = 18\text{ V}; V_{EB} = 1.5\text{ V};$ $I_E = I_C = 0; f = 1\text{ MHz}$	–	0.9	–	pF
C_{eb}	emitter-base capacitance	$V_{CB} = 10\text{ V}; V_{EB} = 1\text{ V};$ $I_C = I_E = 0; f = 1\text{ MHz}$	–	5.5	–	pF

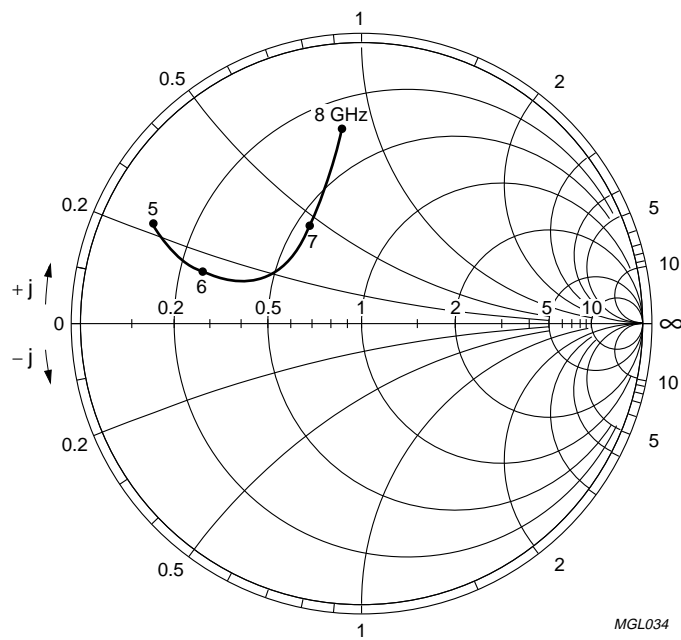
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$V_{CE} = 20 \text{ V}; I_C = 200 \text{ mA}; Z_0 = 50 \Omega.$

Fig.3 Emitter reflection coefficient.



$V_{CE} = 20 \text{ V}; I_C = 200 \text{ mA}; Z_0 = 50 \Omega.$

Fig.4 Base reflection coefficient

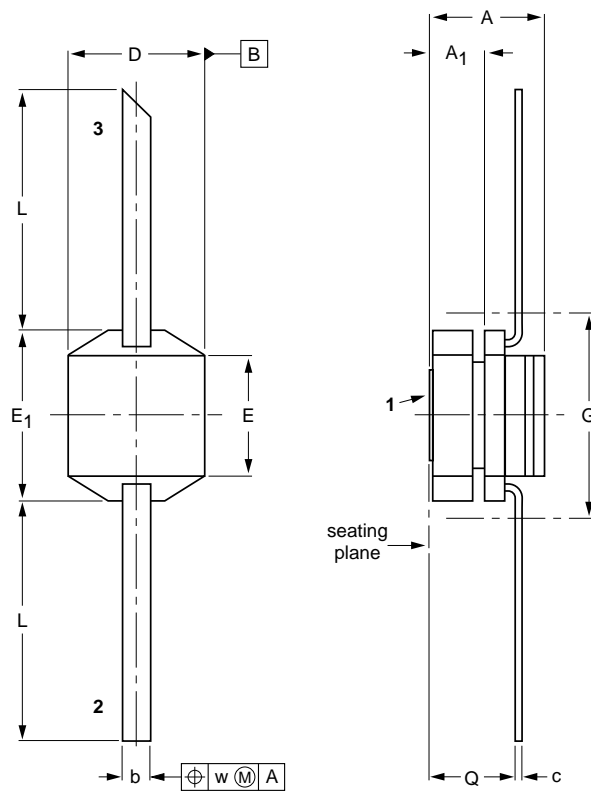
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PACKAGE OUTLINE

Flangeless ceramic package; 2 leads

SOT447A



DIMENSIONS (mm are the original dimensions)

UNIT	A max.	A ₁ max.	b	c	D	E	E ₁	G max.	L min.	Q	w
mm	2.8	1.3	0.58	0.1	2.8	2.64 2.38	3.61 3.35	3.8	3.1	1.7	0.2

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT447A						97-02-28

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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.	

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