MICROWAVE POWER TRANSISTORS

NPN silicon power transistor for use in a common-collector oscillator circuits in military and professional applications.

The transistors operate in CW conditions and are recommended for applications up to 5 GHz.

Features:

- Interdigitated structure giving a high emitter efficiency
- Diffused emitter ballasting resistors providing excellent current sharing and withstanding a high VSWR
- Gold metallization realizing a very good stability of the characteristics and excellent life-time
- Multicell geometry giving good balance of dissipated power and low thermal resistance
- 5 GHz technology

The PPC5001T is housed in a metal ceramic flange envelope (FO-102).
The PQC5001T is housed in a metal ceramic flange envelope (FO-85).

QUICK REFERENCE DATA

Microwave performance up to T_{mb} = 25 °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

MECHANICAL DATA

PPC5001T FO-102 (see Fig. 1a)
PQC5001T FO-85 (see Fig. 1b).

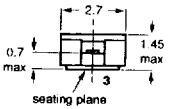
MECHANICAL DATA

Dimensions in mm

Fig. 1a FO-102.

PPC5001T

marking code = 395



Pinning:

1 = base
2 = emitter
3 = collector

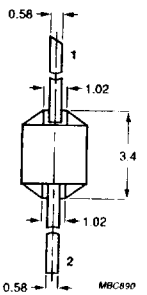
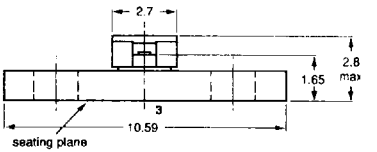


Fig. 1b FO-85.

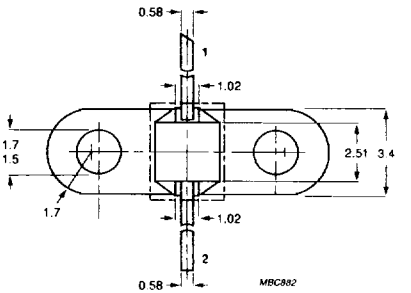
PQC5001T

marking code = 383



Pinning:

1 = base
2 = emitter
3 = collector



RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)

Collector-base voltage, open emitter	V_{CBO}	max.	40 V
Collector-emitter voltage,			
R_{BE} = 70 Ω	V_{CER}	max.	35 V
open emitter	V_{CEO}	max.	16 V
Emitter-base voltage, open collector	V_{EBO}	max.	3.0 V
Collector current, DC	I_C	max.	0.25 A
Total power dissipation			
up to T_{amb} = 75 °C	P_{tot}	max.	4 W
Storage temperature	T_{stg}		−65 to +200 °C
Junction temperature	T_j	max.	200 °C
Soldering temperature			
at 0.1 mm from the case, $t_{sld} \leqslant 10$ s	T_{sld}	max.	235 °C

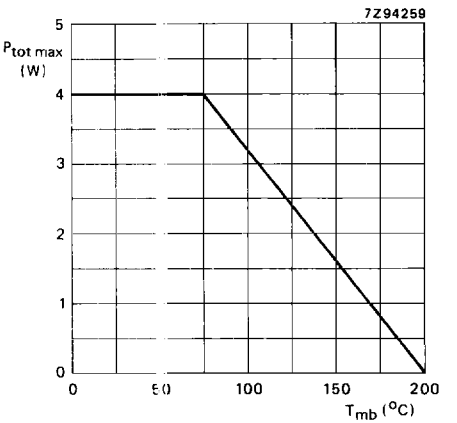


Fig.2 Power derating curve as a function of mounting base temperature.

THERMAL RESISTANCE (at T_j=75 °C)

From junction to mounting base	$R_{th\ j\text{-}mb}$	=	24 K/W

CHARACTERISTICS

T_{mb} = 25 °C unless otherwise specified

Breakdown voltages			
I_C = 500 μA; I_E = 0	$V_{(BR)CBO}$	min.	40 V
I_C = 2.5 mA; R_{BE} = 70 Ω	$V_{(BR)CER}$	min.	35 V
Collector cut-off current			
I_E = 0; V_{CB} = 24 V	I_{CBO}	max.	100 μA
Emitter cut-off current			
I_C = 0; V_{EB} = 1.5 V	I_{EBO}	max.	0.2 μA
Collector-base capacitance at f = 1 MHz			
$I_E = I_C$ = 0; V_{CB} = 18 V; V_{EB} = 1.5 V	C_{cb}	typ.	1.4 pF

Emitter-base capacitance at f = 1 MHz $I_E = I_C = 0$; $V_{EB} = 1$ V; $V_{CB} = 10$ V	C_{eb}	typ.	5.5 pF
Collector-emitter capacitance at f = 1 MHz $I_E = I_C = 0$; $V_{CE} = 18$ V; $V_{EB} = 1.5$ V	C_{ce}	typ.	0.9 pF

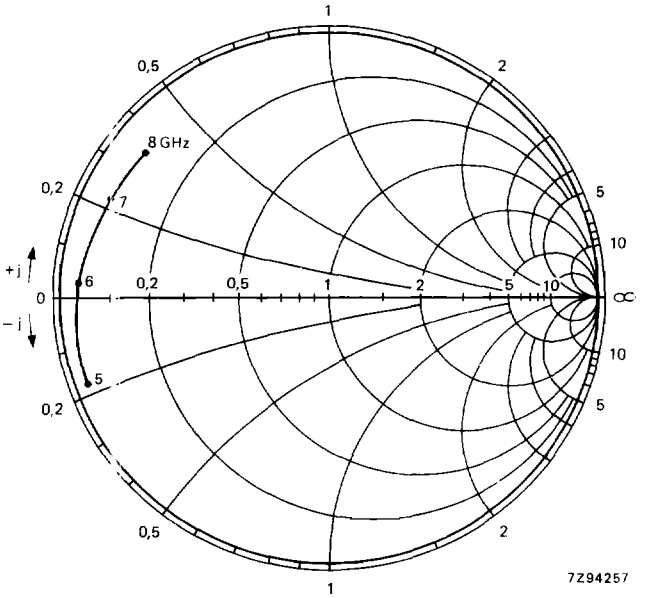


Fig. 3 Emitter reflection coefficient.

Conditions for Figs 3 and 4:

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

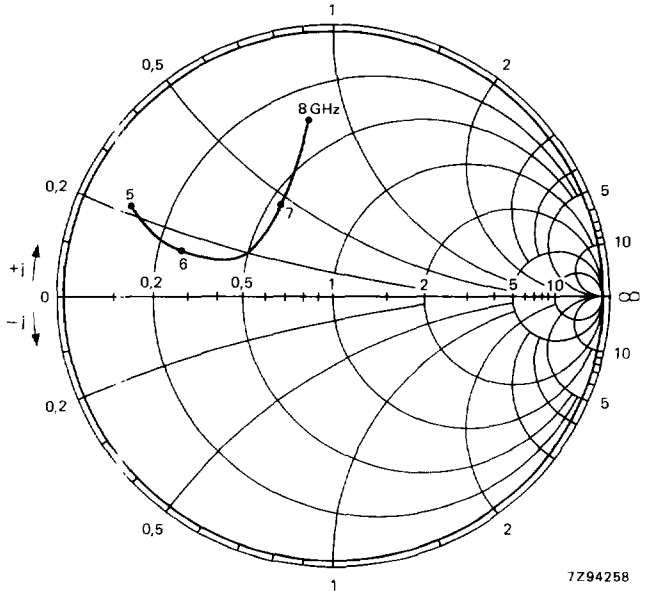


Fig. 4 Base reflection coefficient.