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PULSED MICROWAVE POWER TRANSISTOR

NPN silicon power transistor intended for use in military and professional applications. It operates only in pulsed conditions and is recommended for IFF applications at 1.09 GHz.

It offers the following technological advantages:

● Interdigitated structure giving a high emitter efficiency

● Diffused emitter ballasting resistors providing excellent current sharing and withstanding a high VSWR.

● Gold metallization realizes very good stability of the characteristics and excellent life time

● Multicell geometry gives good balance of dissipated power and thermal resistance

The transistor has an FO-67 metal ceramic flange package.

It is mounted in a common-base configuration, specified in class-C and operates in pulsed conditions. An input matching cell improves the input impedance and allows an easier design of wideband circuits.

QUICK REFERENCE DATA

Microwave performance up to $T_{mb} = 25\ ^oC$ in a common-base class-C selective amplifier.

mode of operation	f GHz	V_{CC} V	P_L W	G_p dB	η_c %	z_i Ω	Z_L Ω
pulsed: $t_p = 10\ \mu s$ $\delta = 1\%$	1.09	50	> 175	> 7.5	> 35	see Figs 3 and 4	

MECHANICAL DATA

FO-67 (see Fig.1)

WARNING

Product and environmental safety — toxic materials
This product contains beryllium oxide. The product is entirely safe provided that the BeO slab is not damaged. All persons who handle, use or dispose of this product should be aware of its nature and of the necessary safety precautions.
After use, dispose of as chemical or special waste according to the regulations applying at the location of the user. It must never be thrown out with general industrial or domestic waste.

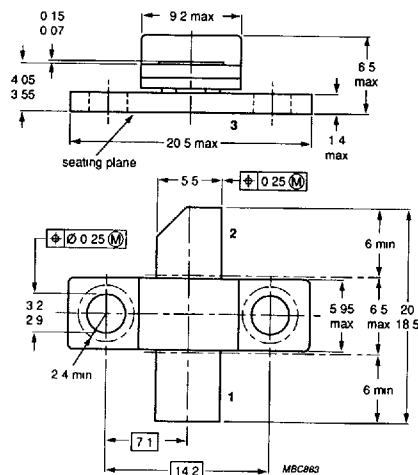PHILIPS INTERNATIONAL   56E D ■■ 7110826 0046331 282 ■■PHIN

MECHANICAL DATA

Fig. 1 FO-67.

Pinning:

1 = collector
2 = emitter
3 = base

Marking code

11175Y

Torque on screw: max. 0.4 Nm
Recommended screw: M2.5

RATINGS

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

Collector-base voltage, open emitter	V_{CBO}	max.	65	V
Collector-emitter voltage				
$R_{BE} = 0$	V_{CES}	max.	65	V
open base	V_{CEO}	max.	25	V
Emitter-base voltage, open collector	V_{EBO}	max.	3.0	V
Collector current				
$t_p \leqslant 10\,\mu s,\ \delta \leqslant 1\%$	I_C	max.	12.5	A
Total power dissipation				
$t_p \leqslant 10\,\mu s,\ \delta \leqslant 1\%;\ T_{mb} \leqslant 75\ ^oC$	P_{tot}	max.	500	W
Storage temperature	T_{stg}		−65 to 150	^oC
Junction temperature	T_j	max.	200	^oC
Soldering temperature				
at 0.1 mm from case; $t_{sld} \leqslant 10$ s	T_{sld}	max.	235	^oC

THERMAL RESISTANCE (at Tj=75 °C)

From junction to mounting base under pulsed conditions:

$t_p \leqslant 10\,\mu s,\ \delta \leqslant 1\%$	$R_{th\,j\text{-}mb}$	max.	0.08	K/W

Pulsed microwave power transistor

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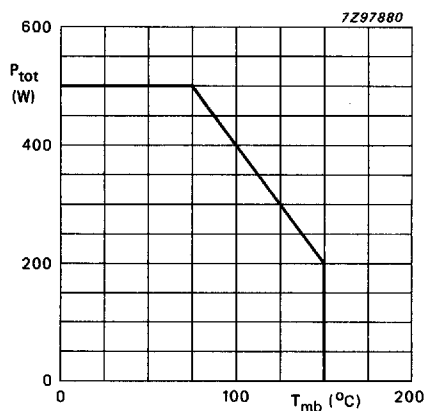

Fig.2 Power derating curve as a function of mounting base temperature in pulsed condition.

CHARACTERISTICS

T_{mb} = 25 °C unless otherwise specified

Breakdown voltages				
I_C = 40 mA; I_E = 0	$V_{(BR)CBO}$	min.	65	V
I_C = 40 mA; R_{BE} = 0	$V_{(BR)CES}$	min.	65	V
Collector cut-off current				
I_E = 0; V_{CB} = 50 V	I_{CBO}	max.	15	mA
Emitter cut-off current				
I_C = 0; V_{EB} = 1.5 V	I_{EBO}	max.	1.5	mA
Collector-base capacitance				
I_E = I_C = 0; V_{CB} = 50 V	C_{cb}	typ.	45	pF

APPLICATION INFORMATION

Microwave performance up to $T_{mb} = 25$ °C in a common-base class-B selective amplifier.

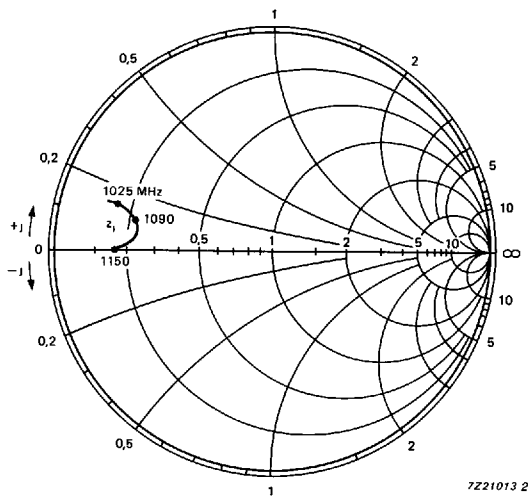| mode of operation	f GHz	V_{CC} V	P_L W	G_p dB	η_c %	z_i Ω	Z_L Ω
pulsed: $t_p = 10\ \mu s$ $\delta = 1\%$	1.09	50	⩾ 175 typ. 200	⩾ 7.5 typ. 8.5	⩾ 35 typ. 40	see Figs 3 and 4	

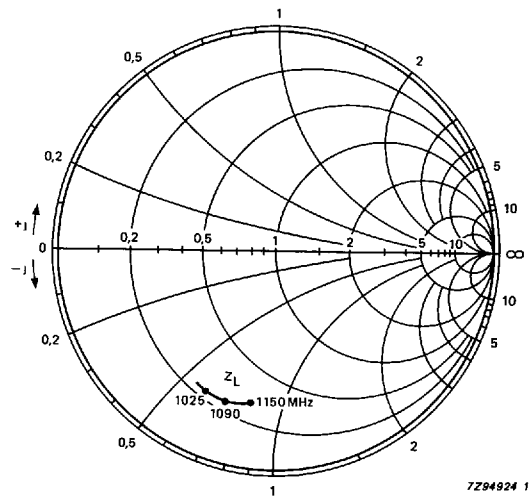Fig.3 Input impedance as a function of frequency; $Z_o = 50\ \Omega$; typical values.

Fig.4 Optimum load impedance as a function of frequency; $Z_o = 5\ \Omega$; typical values.