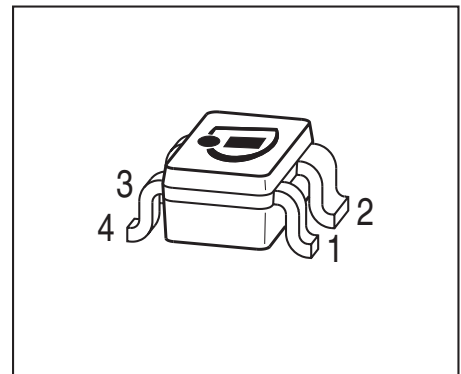


Low Noise Silicon Bipolar RF Transistor

- For low noise, low distortion broadband amplifiers in antenna and telecommunications systems up to 1.5 GHz at collector currents from 20 mA to 80 mA
- Power amplifier for DECT and PCN systems
- $f_T = 7.5$ GHz, $NF_{min} = 1.3$ dB at 900 MHz
- Pb-free (RoHS compliant) and halogen-free package with visible leads
- Qualification report according to AEC-Q101 available



RoHS



ESD (Electrostatic discharge) sensitive device, observe handling precaution!

Type	Marking	Pin Configuration						Package
BFP196W	RIs	1 = E	2 = C	3 = E	4 = B	-	-	SOT343

Maximum Ratings at $T_A = 25$ °C, unless otherwise specified

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}	12	V
Collector-emitter voltage	V_{CES}	20	
Collector-base voltage	V_{CBO}	20	
Emitter-base voltage	V_{EBO}	2	
Collector current	I_C	150	mA
Base current	I_B	15	
Total power dissipation ¹⁾ $T_S \leq 69^\circ\text{C}$	P_{tot}	700	mW
Junction temperature	T_J	150	°C
Ambient temperature	T_A	-65 ... 150	
Storage temperature	T_{Stg}	-65 ... 150	

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point ²⁾	R_{thJS}	115	K/W

¹⁾ T_S is measured on the collector lead at the soldering point to the pcb

²⁾ For the definition of R_{thJS} please refer to Application Note AN077 (Thermal Resistance Calculation)

Electrical Characteristics at $T_A = 25\text{ °C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage $I_C = 1\text{ mA}$, $I_B = 0$	$V_{(BR)CEO}$	12	-	-	V
Collector-emitter cutoff current $V_{CE} = 20\text{ V}$, $V_{BE} = 0$	I_{CES}	-	-	100	μA
Collector-base cutoff current $V_{CB} = 10\text{ V}$, $I_E = 0$	I_{CBO}	-	-	100	nA
Emitter-base cutoff current $V_{EB} = 1\text{ V}$, $I_C = 0$	I_{EBO}	-	-	1	μA
DC current gain $I_C = 50\text{ mA}$, $V_{CE} = 8\text{ V}$, pulse measured	h_{FE}	70	100	140	-

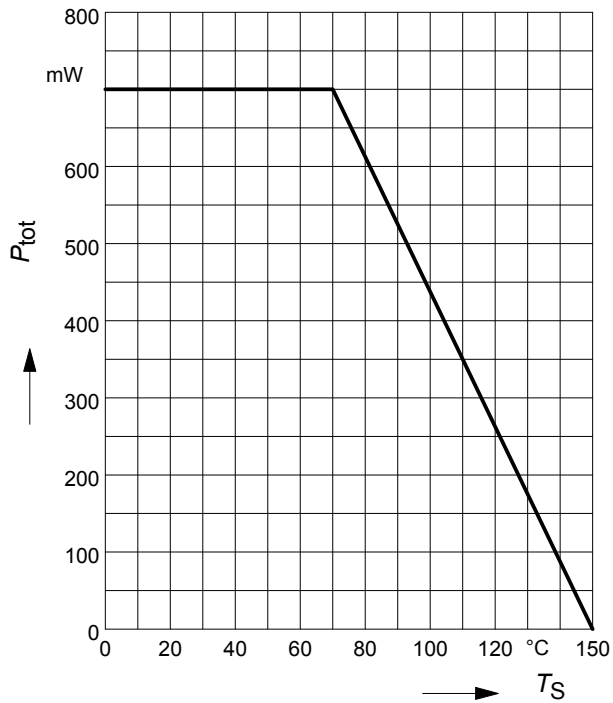
Electrical Characteristics at $T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics (verified by random sampling)					
Transition frequency $I_C = 70\text{ mA}$, $V_{CE} = 8\text{ V}$, $f = 500\text{ MHz}$	f_T	5	7.5	-	GHz
Collector-base capacitance $V_{CB} = 10\text{ V}$, $f = 1\text{ MHz}$, $V_{BE} = 0$, emitter grounded	C_{cb}	-	0.86	1.3	pF
Collector emitter capacitance $V_{CE} = 10\text{ V}$, $f = 1\text{ MHz}$, $V_{BE} = 0$, base grounded	C_{ce}	-	0.4	-	
Emitter-base capacitance $V_{EB} = 0.5\text{ V}$, $f = 1\text{ MHz}$, $V_{CB} = 0$, collector grounded	C_{eb}	-	3.9	-	
Minimum noise figure $I_C = 20\text{ mA}$, $V_{CE} = 8\text{ V}$, $Z_S = Z_{Sopt}$, $f = 900\text{ MHz}$ $f = 1.8\text{ GHz}$	NF_{min}	- -	1.3 2.3	- -	dB
Power gain, maximum available ¹⁾ $I_C = 50\text{ mA}$, $V_{CE} = 8\text{ V}$, $Z_S = Z_{Sopt}$, $Z_L = Z_{Lopt}$, $f = 900\text{ MHz}$ $f = 1.8\text{ GHz}$	G_{ma}	- -	19 12.5	- -	
Transducer gain $I_C = 50\text{ mA}$, $V_{CE} = 8\text{ V}$, $Z_S = Z_L = 50\Omega$, $f = 900\text{ MHz}$ $f = 1.8\text{ GHz}$	$ S_{21e} ^2$	- -	13 7	- -	
Third order intercept point at output ²⁾ $I_C = 50\text{ mA}$, $V_{CE} = 8\text{ V}$, $Z_S = Z_L = 50\ \Omega$, $f = 0.9\text{ GHz}$	IP_3	-	32	-	dBm
1dB Compression point at output $I_C = 50\text{ mA}$, $V_{CE} = 8\text{ V}$, $Z_S = Z_L = 50\ \Omega$, $f = 0.9\text{ GHz}$	P_{-1dB}	-	19	-	

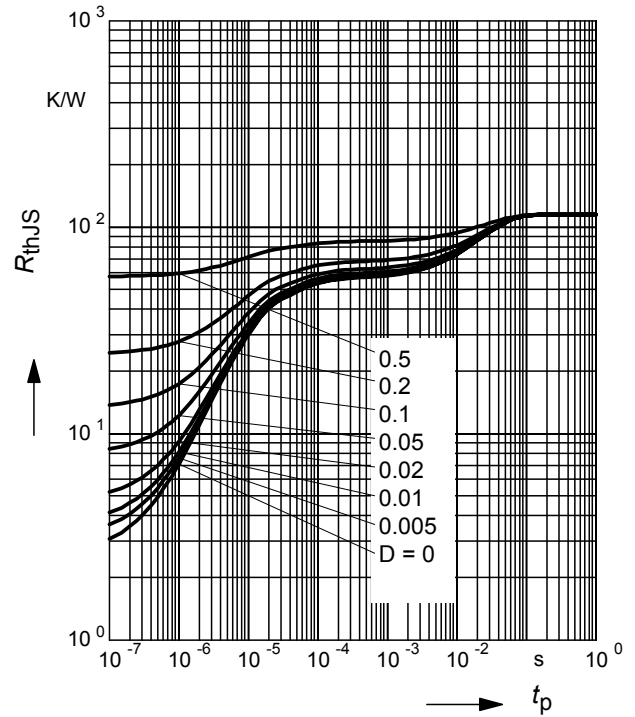
¹⁾ $G_{ma} = |S_{21} / S_{12}| (k - (k^2 - 1)^{1/2})$
²⁾ IP_3 value depends on termination of all intermodulation frequency components.

Termination used for this measurement is 50Ω from 0.2 MHz to 12 GHz

Total power dissipation $P_{\text{tot}} = f(T_S)$

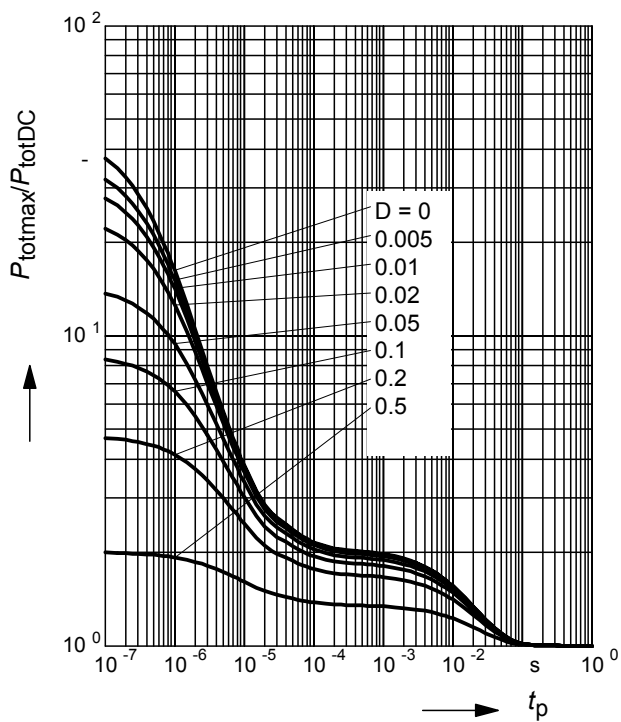


Permissible Pulse Load $R_{\text{thJS}} = f(t_p)$



Permissible Pulse Load

$P_{\text{totmax}}/P_{\text{totDC}} = f(t_p)$



Technical drawing of a mechanical part, showing front and side views with dimensions and tolerances.

Front View (Left):

- Overall width: 2 ± 0.2
- Distance between mounting holes: 1.3
- Mounting holes: 4 (top left), 3 (top right), 1 (bottom left), 2 (bottom right)
- Bottom flange width: 0.15
- Bottom flange thickness: $0.3^{+0.1}_{-0.05}$
- Bottom flange hole diameter: $4 \times \varnothing 0.1 \text{ M}$
- Bottom flange hole position: $0.6^{+0.1}_{-0.05}$

Side View (Right):

- Overall height: 0.9 ± 0.1
- Top flange thickness: 0.1 MAX.
- Top flange hole diameter: $\varnothing 0.1$
- Top flange hole position: 0.1 MIN.
- Top flange hole diameter: 0.1 MIN.
- Top flange hole position: $0.15^{+0.1}_{-0.05}$
- Top flange hole diameter: $0.15^{+0.1}_{-0.05}$
- Top flange hole position: 1.25 ± 0.1
- Top flange hole diameter: 0.2 M A

Diagram illustrating the marking on a 16-pin DIP package:

- Date code (YM):** 2005, June (indicated by '59')
- Type code:** X
- Manufacturer:** YS (Infineon)
- Pin 1:** Indicated by the bottom-left pin.

Technical drawing of a 3D printed part. The drawing includes a top view and a side view. The top view shows a rectangular part with a width of 4 and a height of 8. There are three rectangular features along the bottom edge, each with a width of 2.15 and a height of 2.3. A dimension of 4 is also shown for the distance between the first two features. A dimension of 0.2 is shown for the thickness of the part. A dimension of 1. is shown for the height of the side view. A label 'Pin 1' is present near the bottom left corner.

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