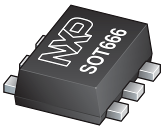


BF1206F

Dual N-channel dual gate MOSFET

Rev. 2 — 7 September 2011 **Product data sheet**

1. Product profile

1.1 General description

The BF1206F is a combination of two different dual gate MOSFET amplifiers with shared source and gate2 leads.

The source and substrate are interconnected. Internal bias circuits enable Direct Current (DC) stabilization and a very good cross-modulation performance during Automatic Gain Control (AGC). Integrated diodes between the gates and source protect against excessive input voltage surges. The transistor is encapsulated in a SOT666 micro-miniature plastic package.

CAUTION

This device is sensitive to ElectroStatic Discharge (ESD). Therefore care should be taken during transport and handling.

1.2 Features and benefits

- Two low noise gain controlled amplifiers in a single package
- Superior cross-modulation performance during AGC
- High forward transfer admittance
- High forward transfer admittance to input capacitance ratio
- Suited for 3 volt applications

1.3 Applications

- Gain controlled low noise amplifiers for Very High Frequency (VHF) and Ultra High Frequency (UHF) applications with 3 V supply voltage, such as digital and analog television tuners

1.4 Quick reference data

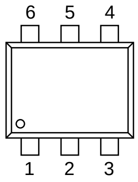
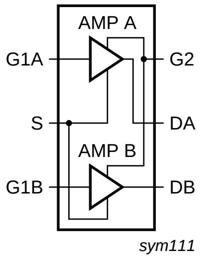
Table 1. Quick reference data

Per MOSFET unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{DS}	drain-source voltage (DC)		-	-	6	V
I_D	drain current (DC)		-	-	30	mA
$\|y_{fs}\|$	forward transfer admittance	I_D = 4 mA				
		amplifier A	17	22	32	mS
		amplifier B	17	22	32	mS
$C_{iss(G1)}$	input capacitance at gate1	I_D = 4 mA; f = 100 MHz				
		amplifier A	-	2.4	2.9	pF
		amplifier B	-	1.7	2.2	pF
NF	noise figure	I_D = 4 mA				
		amplifier A; f = 400 MHz	-	1.0	1.6	dB
		amplifier B; f = 800 MHz	-	1.0	1.6	dB
Xmod	cross modulation	input level for k = 1 % at 40 dB AGC				
		amplifier A	92	97	-	dBμV
		amplifier B	93	98	-	dBμV

2. Pinning information

Table 2. Discrete pinning

Pin	Description	Simplified outline	Symbol
1	gate1 (AMP A)		
2	source		
3	gate1 (AMP B)		
4	drain (AMP B)		
5	drain (AMP A)		
6	gate2		

3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BF1206F	-	plastic surface mounted package; 6 leads	SOT666

4. Marking

Table 4. Marking

Type number	Marking code
BF1206F	2N

5. Limiting values

Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions		Min	Max	Unit
Per MOSFET						
V_{DS}	drain-source voltage (DC)			-	6	V
I_D	drain current (DC)			-	30	mA
I_{G1}	gate1 current			-	±10	mA
I_{G2}	gate2 current			-	±10	mA
P_{tot}	total power dissipation	$T_{sp} \leq 107$ °C	[1]	-	180	mW
T_{stg}	storage temperature			−65	+150	°C
T_j	junction temperature			-	150	°C

[1] T_{sp} is the temperature at the solder point of the source lead.

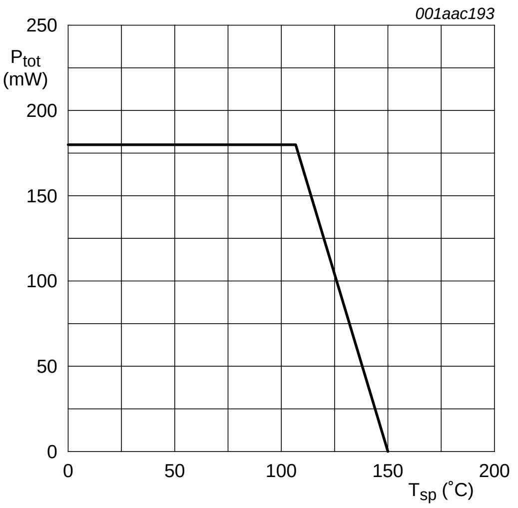


Fig 1. Power derating curve

6. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions	Typ	Unit
$R_{th(j-sp)}$	thermal resistance from junction to solder point		240	K/W

7. Static characteristics

Table 7. Static characteristics

$T_j = 25$ °C.

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per MOSFET; unless otherwise specified							
$V_{(BR)DSS}$	drain-source breakdown voltage	$V_{G1-S} = V_{G2-S} = 0$ V; $I_D = 10$ μA					
		amplifier A		6	-	-	V
		amplifier B		6	-	-	V
$V_{(BR)G1-SS}$	gate1-source breakdown voltage	$V_{GS} = V_{DS} = 0$ V; $I_{G1-S} = 10$ mA		6	-	10	V
$V_{(BR)G2-SS}$	gate2-source breakdown voltage	$V_{GS} = V_{DS} = 0$ V; $I_{G2-S} = 10$ mA		6	-	10	V
$V_{F(S-G1)}$	forward source-gate1 voltage	$V_{G2-S} = V_{DS} = 0$ V; $I_{S-G1} = 10$ mA		0.5	-	1.5	V
$V_{F(S-G2)}$	forward source-gate2 voltage	$V_{G1-S} = V_{DS} = 0$ V; $I_{S-G2} = 10$ mA		0.5	-	1.5	V
$V_{G1-S(th)}$	gate1-source threshold voltage	$V_{DS} = 5$ V; $V_{G2-S} = 4$ V; $I_D = 100$ μA		0.3	-	1.0	V
$V_{G2-S(th)}$	gate2-source threshold voltage	$V_{DS} = 5$ V; $V_{G1-S} = 5$ V; $I_D = 100$ μA		0.35	-	1.0	V
I_{DSX}	drain cut-off current	$V_{G2-S} = 2.5$ V; $V_{DS} = 2.8$ V	[1]				
		amplifier A; $R_{G1} = 270$ kΩ		3	-	6.5	mA
		amplifier B; $R_{G1} = 220$ kΩ		3	-	6.5	mA
I_{G1-S}	gate1 cut-off current	$V_{G1-S} = 5$ V; $V_{G2-S} = V_{DS} = 0$ V					
		amplifier A		-	-	50	nA
		amplifier B		-	-	50	nA
I_{G2-S}	gate2 cut-off current	$V_{G2-S} = 5$ V; $V_{G1-S} = V_{DS} = 0$ V;		-	-	20	nA

[1] R_{G1} connects gate 1 to $V_{GG} = 2.8$ V.

8. Dynamic characteristics

8.1 Dynamic characteristics for amplifier A

Table 8. Dynamic characteristics for amplifier A

Common source; $T_{amb} = 25$ °C; $V_{G2-S} = 2.5$ V; $V_{DS} = 2.8$ V; $I_D = 4$ mA.

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$\|y_{fs}\|$	forward transfer admittance	$T_j = 25$ °C		17	22	32	mS
$C_{iss(G1)}$	input capacitance at gate1	f = 100 MHz	[1]	-	2.4	2.9	pF
$C_{iss(G2)}$	input capacitance at gate2	f = 100 MHz	[1]	-	3.2	-	pF
C_{oss}	output capacitance	f = 100 MHz	[1]	-	1.1	-	pF
C_{rss}	reverse transfer capacitance	f = 100 MHz	[1]	-	15	30	fF
G_{tr}	transducer power gain	$B_S = B_{S(opt)}$; $B_L = B_{L(opt)}$	[1]				
		f = 200 MHz; $G_S = 2$ mS; $G_L = 0.5$ mS		-	31	-	dB
		f = 400 MHz; $G_S = 2$ mS; $G_L = 1$ mS		-	28	-	dB
		f = 800 MHz; $G_S = 3.3$ mS; $G_L = 1$ mS		-	23	-	dB
NF	noise figure	f = 11 MHz; $G_S = 20$ mS; $B_S = 0$		-	3.5	-	dB
		f = 400 MHz; $Y_S = Y_{S(opt)}$		-	1.0	1.6	dB
		f = 800 MHz; $Y_S = Y_{S(opt)}$		-	1.1	1.7	dB

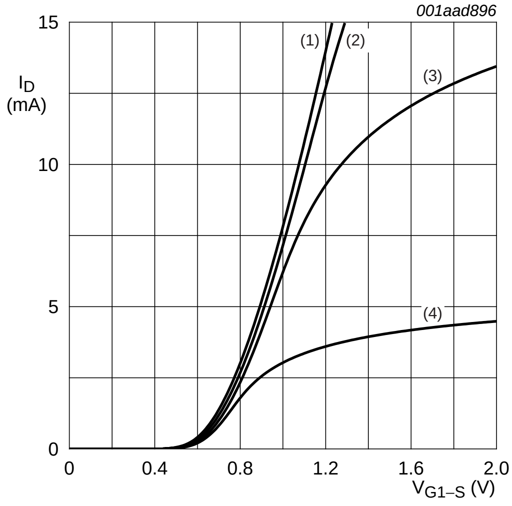
Table 8. Dynamic characteristics for amplifier A *…continued*
Common source; T_{amb} = 25 °C; $V_{G2\text{-}S}$ = 2.5 V; V_{DS} = 2.8 V; I_D = 4 mA.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Xmod	cross modulation	input level for k = 1 %; f_w = 50 MHz; f_{unw} = 60 MHz [2]				
		at 0 dB AGC	88	-	-	dBμV
		at 10 dB AGC	-	85	-	dBμV
		at 40 dB AGC	92	97	-	dBμV

[1] Calculated from measured S-parameters.

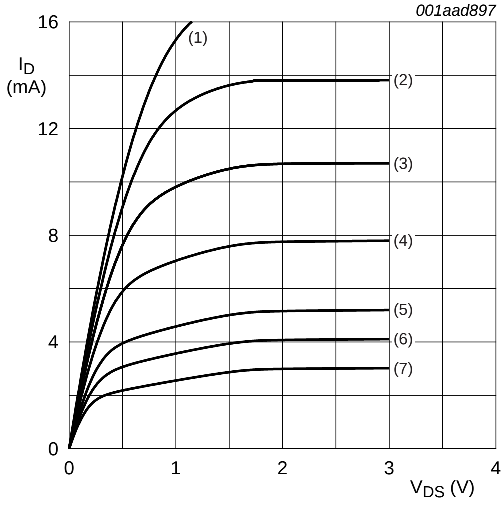
[2] Measured in Figure 32 test circuit.

8.1.1 Graphs for amplifier A



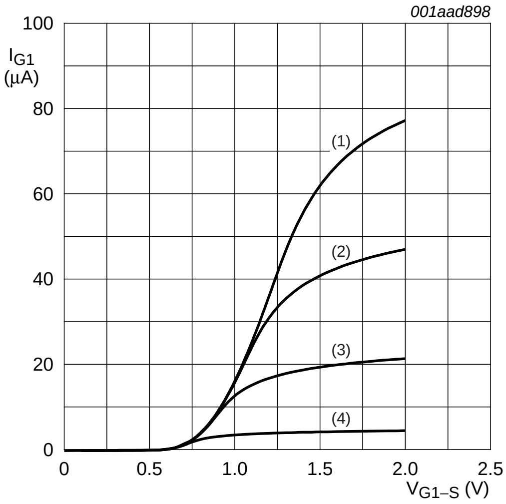
(1) $V_{G2\text{-}S}$ = 2.5 V.
(2) $V_{G2\text{-}S}$ = 2.0 V.
(3) $V_{G2\text{-}S}$ = 1.5 V.
(4) $V_{G2\text{-}S}$ = 1.0 V.
$V_{DS(A)}$ = 2.8 V; T_j = 25 °C.

Fig 2. Amplifier A: transfer characteristics; typical values



(1) $V_{G1\text{-}S(A)}$ = 1.4 V.
(2) $V_{G1\text{-}S(A)}$ = 1.3 V.
(3) $V_{G1\text{-}S(A)}$ = 1.2 V.
(4) $V_{G1\text{-}S(A)}$ = 1.0 V.
(5) $V_{G1\text{-}S(A)}$ = 0.9 V.
(6) $V_{G1\text{-}S(A)}$ = 0.85 V.
(7) $V_{G1\text{-}S(A)}$ = 0.8 V.
$V_{G2\text{-}S}$ = 2.5 V; T_j = 25 °C.

Fig 3. Amplifier A: output characteristics; typical values



(1) $V_{G2\text{-}S}$ = 2.5 V.

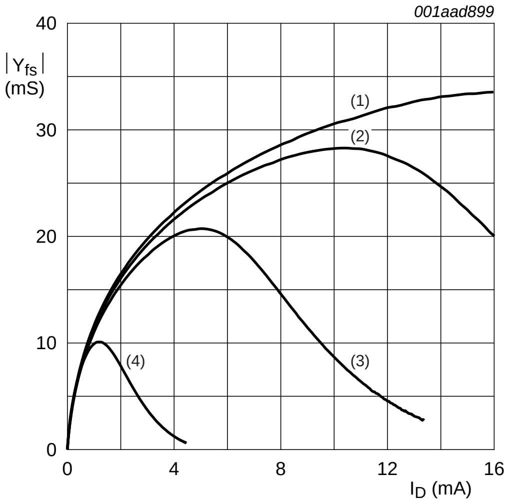
(2) $V_{G2\text{-}S}$ = 2.0 V.

(3) $V_{G2\text{-}S}$ = 1.5 V.

(4) $V_{G2\text{-}S}$ = 1.0 V.

$V_{DS(A)}$ = 2.8 V; T_j = 25 °C.

Fig 4. Amplifier A: gate1 current as a function of gate1 voltage; typical values



(1) $V_{G2\text{-}S}$ = 2.5 V.

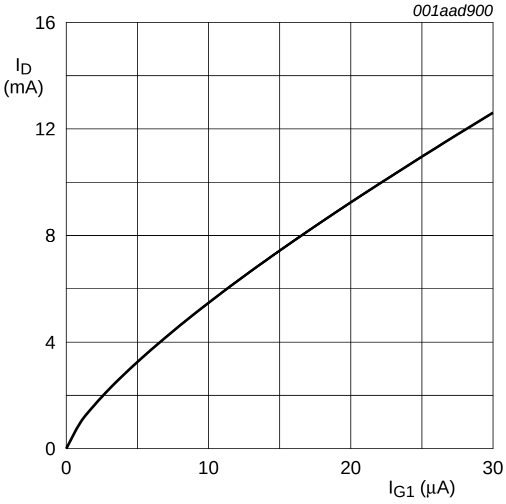
(2) $V_{G2\text{-}S}$ = 2.0 V.

(3) $V_{G2\text{-}S}$ = 1.5 V.

(4) $V_{G2\text{-}S}$ = 1.0 V.

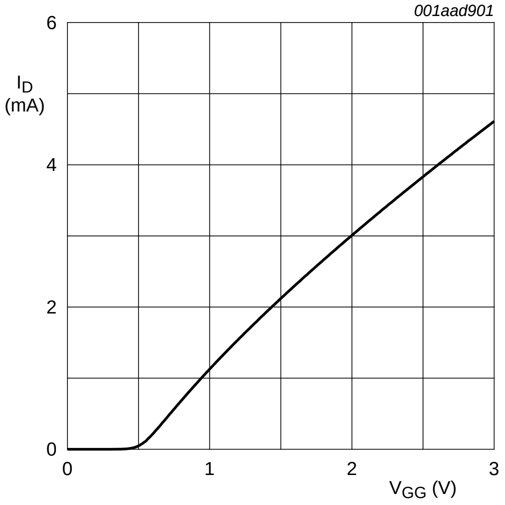
$V_{DS(A)}$ = 2.8 V; T_j = 25 °C.

Fig 5. Amplifier A: forward transfer admittance as a function of drain current; typical values



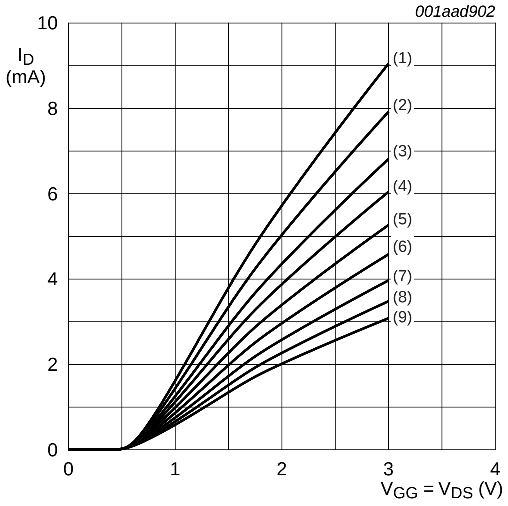
$V_{DS(A)}$ = 2.8 V; $V_{G2\text{-}S}$ = 2.5 V, T_{amb} = 25 °C.

Fig 6. Amplifier A: drain current as a function of gate1 current; typical values



$V_{DS(A)}$ = 2.8 V; V_{G2} = 2.5 V; $R_{G1(A)}$ = 270 kΩ; see Figure 32.

Fig 7. Amplifier A: drain current as a function of gate1 supply voltage (=V_{GG}); typical values



(1) R_{G1} = 100 kΩ.

(2) R_{G1} = 120 kΩ.

(3) R_{G1} = 150 kΩ.

(4) R_{G1} = 180 kΩ.

(5) R_{G1} = 220 kΩ.

(6) R_{G1} = 270 kΩ.

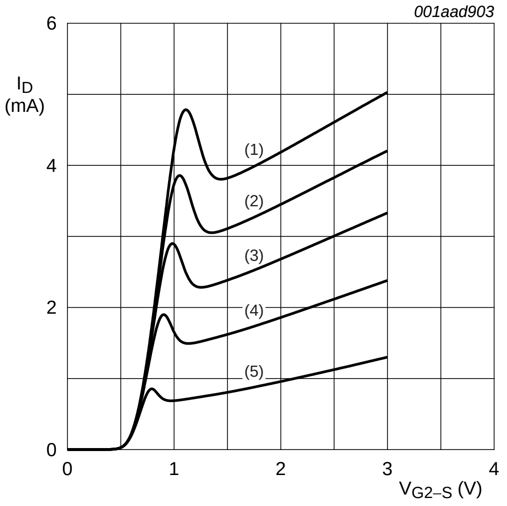
(7) R_{G1} = 330 kΩ.

(8) R_{G1} = 390 kΩ.

(9) R_{G1} = 470 kΩ.

$V_{G2\text{-}S}$ = 2.5 V; T_j = 25 °C; see Figure 32.

Fig 8. Amplifier A: drain current as a function of V_{DS} and V_{GG}; typical values



(1) V_{GG} = 1.0 V

(2) V_{GG} = 1.5 V

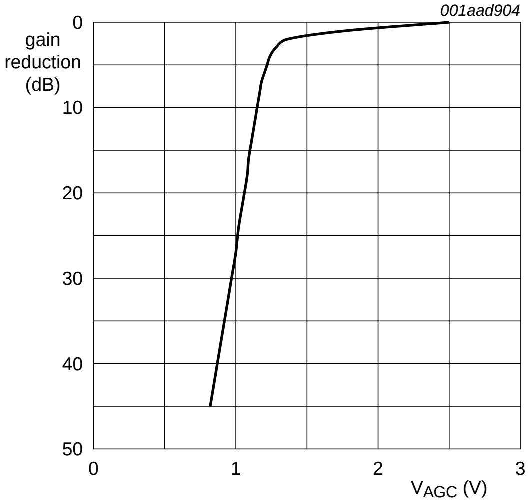
(3) V_{GG} = 2.0 V

(4) V_{GG} = 2.5 V

(5) V_{GG} = 3.0 V

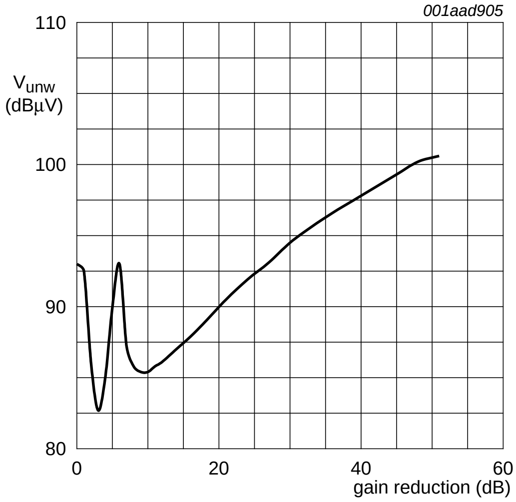
T_j = 25 °C; $R_{G1(A)}$ = 270 kΩ (connected to V_{GG}); see Figure 32.

Fig 9. Amplifier A: drain current as a function of gate2 voltage; typical values



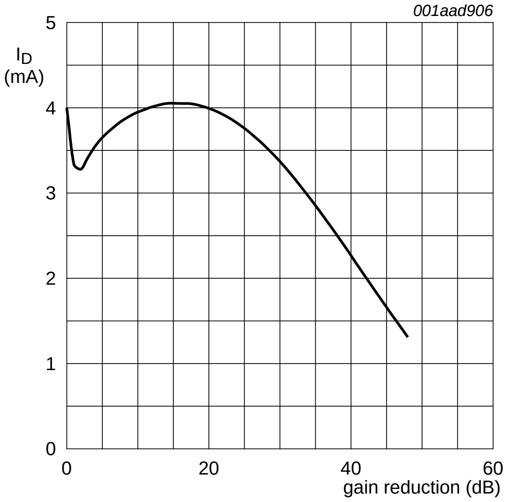
$V_{DS(A)}$ = 2.8 V; V_{GG} = 2.8 V; $I_{D(nom)}$ = 4 mA;
T_{amb} = 25 °C.

Fig 10. Amplifier A: typical gain reduction as a function of the AGC voltage; typical values



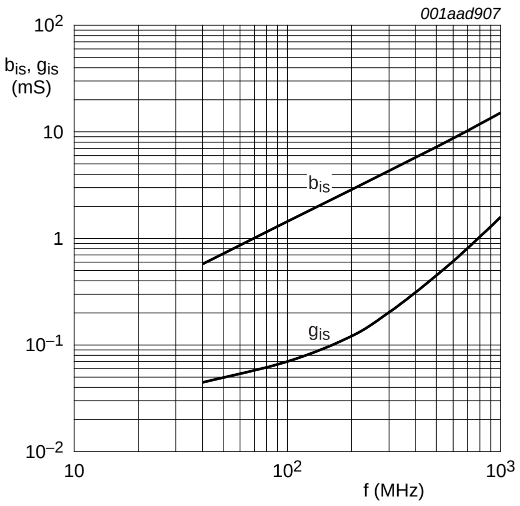
$V_{DS(A)}$ = 2.8 V; V_{GG} = 2.8 V; $V_{G2(nom)}$ = 2.5 V;
f_w = 50 MHz; f_{unw} = 60 MHz; $I_{D(nom)}$ = 4 mA;
T_{amb} = 25 °C.

Fig 11. Amplifier A: unwanted voltage for 1 % cross-modulation as a function of gain reduction; typical values



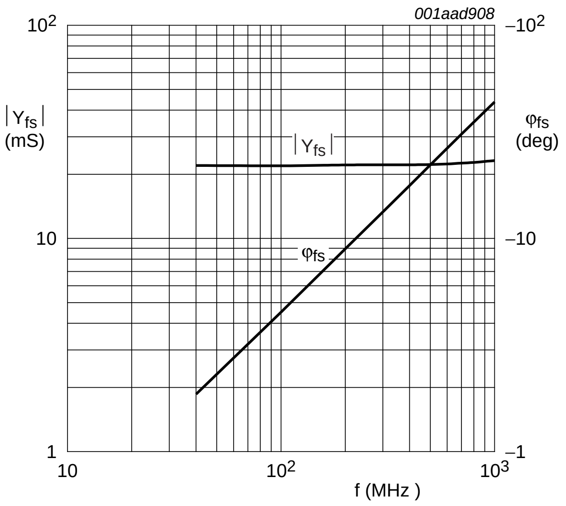
$V_{DS(A)}$ = 2.8 V; V_{GG} = 2.8 V; $V_{G2(nom)}$ = 2.5 V; $R_{G1(A)}$ = 270 kΩ; f = 50 MHz; T_{amb} = 25 °C.

Fig 12. Amplifier A: typical drain current as a function of gain reduction; typical values



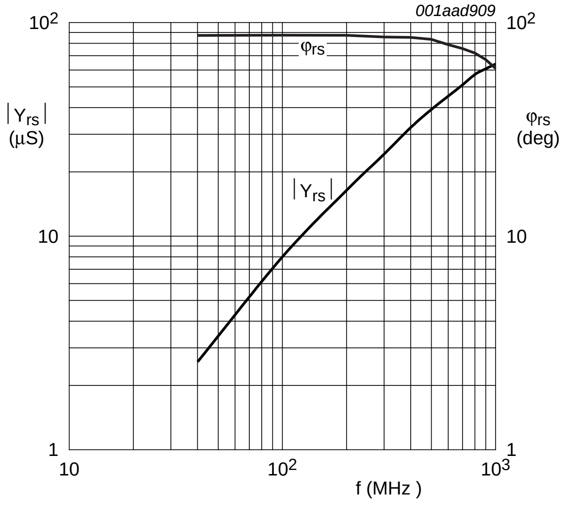
$V_{DS(A)}$ = 2.8 V; $V_{G2\text{-}S}$ = 2.5 V; $V_{DS(B)}$ = 0 V; $I_{D(A)}$ = 4 mA.

Fig 13. Amplifier A: input admittance and phase as a function of frequency; typical values



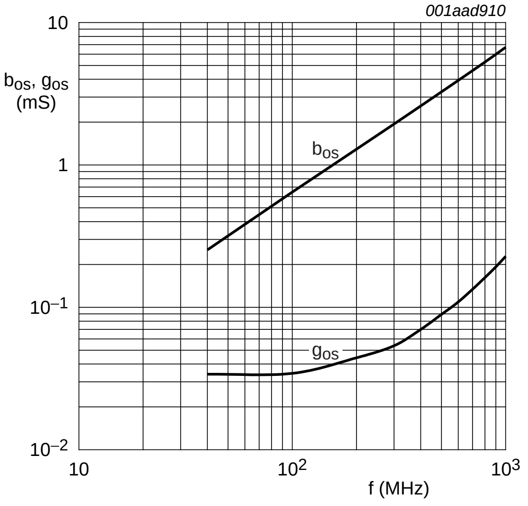
$V_{DS(A)}$ = 2.8 V; $V_{G2\text{-}S}$ = 2.5 V; $V_{DS(B)}$ = 0 V; $I_{D(A)}$ = 4 mA.

Fig 14. Amplifier A: forward transfer admittance and phase as a function of frequency; typical values



$V_{DS(A)}$ = 2.8 V; $V_{G2\text{-}S}$ = 2.5 V; $V_{DS(B)}$ = 0 V; $I_{D(A)}$ = 4 mA.

Fig 15. Amplifier A: reverse transfer admittance and phase as a function of frequency: typical values



$V_{DS(A)}$ = 2.8 V; $V_{G2\text{-}S}$ = 2.5 V; $V_{DS(B)}$ = 0 V; $I_{D(A)}$ = 4 mA.

Fig 16. Amplifier A: output admittance and phase as a function of frequency; typical values

8.1.2 Scattering parameters for amplifier A

Table 9. Scattering parameters for amplifier A

$V_{DS(A)} = 2.8$ V; $V_{G2\text{-}S} = 2.5$ V; $I_{D(A)} = 4$ mA; $V_{DS(B)} = 0$ V; $V_{G1\text{-}S(B)} = 0$ V; $T_{amb} = 25$ °C; typical values.

f (MHz)	s_{11}		s_{21}		s_{12}		s_{22}	
	Magnitude (ratio)	Angle (deg)	Magnitude (ratio)	Angle (deg)	Magnitude (ratio)	Angle (deg)	Magnitude (ratio)	Angle (deg)
50	0.9923	–4.11	2.18	174.68	0.00038	102.27	0.995	–1.83
100	0.9930	–8.29	2.18	169.51	0.00080	85.65	0.996	–3.75
200	0.9877	–16.41	2.16	159.20	0.00161	80.93	0.995	–7.49
300	0.9802	–24.48	2.12	149.04	0.00233	76.76	0.994	–11.22
400	0.9705	–32.34	2.07	138.99	0.00303	73.21	0.992	–14.96
500	0.9596	–39.91	2.01	129.15	0.00354	69.83	0.989	–18.68
600	0.9483	–47.34	1.94	119.45	0.00394	67.19	0.987	–22.39
700	0.9361	–54.59	1.87	109.95	0.00426	65.26	0.984	–26.11
800	0.9239	–61.64	1.79	100.69	0.00453	63.89	0.981	–29.82
900	0.9129	–68.28	1.72	91.66	0.00457	64.06	0.979	–33.57
1000	0.9018	–74.57	1.64	82.86	0.00456	65.60	0.976	–37.31

8.2 Noise data for amplifier A

Table 10. Noise data for amplifier A

$V_{DS(A)} = 2.8$ V; $V_{G2\text{-}S} = 2.5$ V; $I_{D(A)} = 4$ mA.

f (MHz)	NF_{min} (dB)	Γ_{opt}		r_n (ratio)
		ratio	(deg)	
400	1.0	0.78	26	0.84
800	1.1	0.87	53	0.87

8.3 Dynamic characteristics for amplifier B

Table 11. Dynamic characteristics for amplifier B

Common source; $T_{amb} = 25$ °C; $V_{G2\text{-}S} = 2.5$ V; $V_{DS} = 2.8$ V; $I_D = 4$ mA.

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$\|y_{fs}\|$	forward transfer admittance	$T_j = 25$ °C		-	22	-	mS
$C_{iss(G1)}$	input capacitance at gate1	f = 100 MHz	[1]	-	1.7	2.2	pF
$C_{iss(G2)}$	input capacitance at gate2	f = 100 MHz	[1]	-	4.0	-	pF
C_{oss}	output capacitance	f = 100 MHz	[1]	-	0.85	-	pF
C_{rss}	reverse transfer capacitance	f = 100 MHz	[1]	-	30	45	fF
G_{tr}	transducer power gain	$B_S = B_{S(opt)}$; $B_L = B_{L(opt)}$	[1]				
		f = 200 MHz; $G_S = 2$ mS; $G_L = 0.5$ mS		-	32	-	dB
		f = 400 MHz; $G_S = 2$ mS; $G_L = 1$ mS		-	29	-	dB
		f = 800 MHz; $G_S = 3.3$ mS; $G_L = 1$ mS		-	25	-	dB
NF	noise figure	f = 11 MHz; $G_S = 20$ mS; $B_S = 0$		-	4.5	-	dB
		f = 400 MHz; $Y_S = Y_{S(opt)}$		-	0.9	1.5	dB
		f = 800 MHz; $Y_S = Y_{S(opt)}$		-	1.0	1.6	dB

Table 11. Dynamic characteristics for amplifier B *…continued*

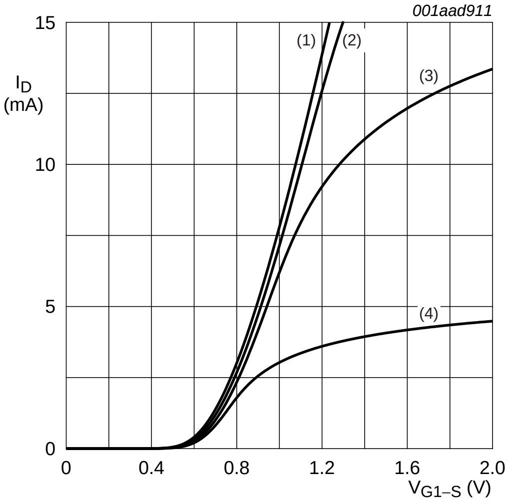
Common source; T_{amb} = 25 °C; $V_{G2\text{-}S}$ = 2.5 V; V_{DS} = 2.8 V; I_D = 4 mA.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Xmod	cross modulation	input level for k = 1 %; f_w = 50 MHz; f_{unw} = 60 MHz [2]				
		at 0 dB AGC	89	-	-	dBμV
		at 10 dB AGC	-	85	-	dBμV
		at 40 dB AGC	93	98	-	dBμV

[1] Calculated from measured S-parameters.

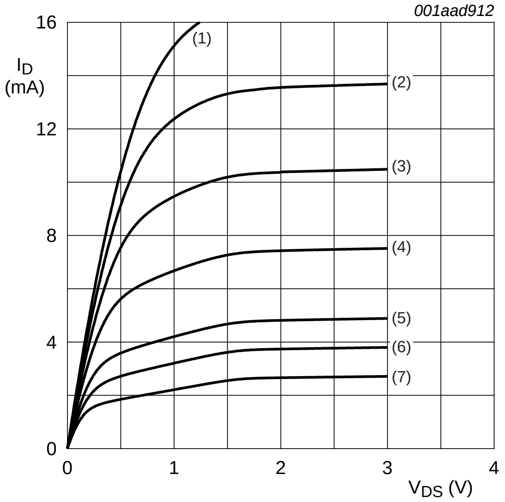
[2] Measured in Figure 32 test circuit.

8.3.1 Graphs for amplifier B



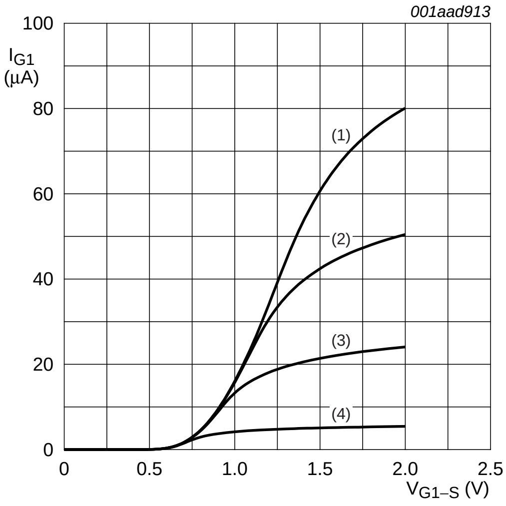
(1) $V_{G2\text{-}S}$ = 2.5 V.
(2) $V_{G2\text{-}S}$ = 2.0 V.
(3) $V_{G2\text{-}S}$ = 1.5 V.
(4) $V_{G2\text{-}S}$ = 1.0 V.
$V_{DS(B)}$ = 2.8 V; T_j = 25 °C.

Fig 17. Amplifier B: transfer characteristics; typical values



(1) $V_{G1\text{-}S(B)}$ = 1.3 V.
(2) $V_{G1\text{-}S(B)}$ = 1.2 V.
(3) $V_{G1\text{-}S(B)}$ = 1.1 V.
(4) $V_{G1\text{-}S(B)}$ = 1.0 V.
(5) $V_{G1\text{-}S(B)}$ = 0.9 V.
(6) $V_{G1\text{-}S(B)}$ = 0.85 V.
(7) $V_{G1\text{-}S(B)}$ = 0.8 V.
$V_{G2\text{-}S}$ = 2.5 V; T_j = 25 °C.

Fig 18. Amplifier B: output characteristics; typical values



(1) $V_{G2\text{-}S}$ = 2.5 V.

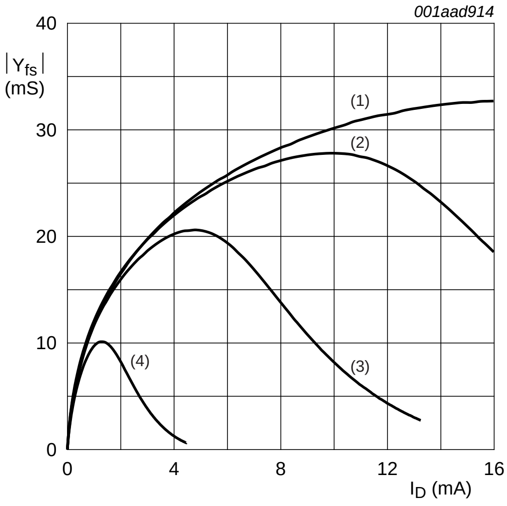
(2) $V_{G2\text{-}S}$ = 2.0 V.

(3) $V_{G2\text{-}S}$ = 1.5 V.

(4) $V_{G2\text{-}S}$ = 1.0 V.

$V_{DS(B)}$ = 2.8 V; T_j = 25 °C.

Fig 19. Amplifier B: gate1 current as a function of gate1 voltage; typical values



(1) $V_{G2\text{-}S}$ = 2.5 V.

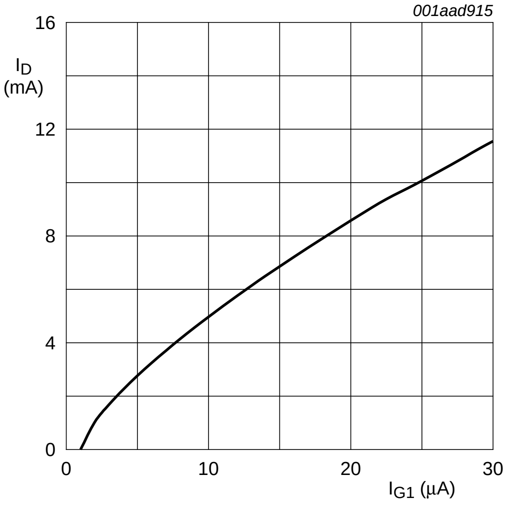
(2) $V_{G2\text{-}S}$ = 2.0 V.

(3) $V_{G2\text{-}S}$ = 1.5 V.

(4) $V_{G2\text{-}S}$ = 1.0 V.

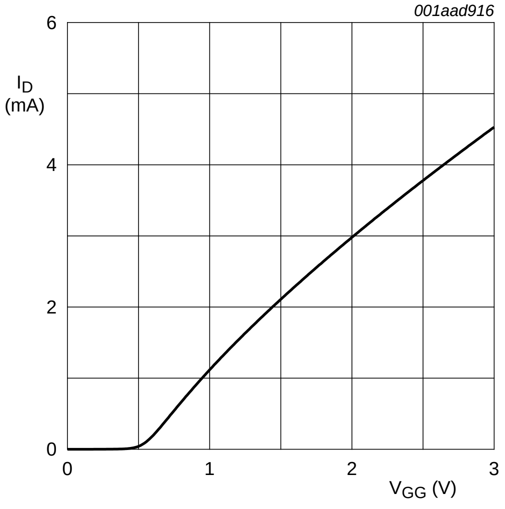
$V_{DS(B)}$ = 2.8 V; T_j = 25 °C.

Fig 20. Amplifier B: forward transfer admittance as a function of drain current; typical values



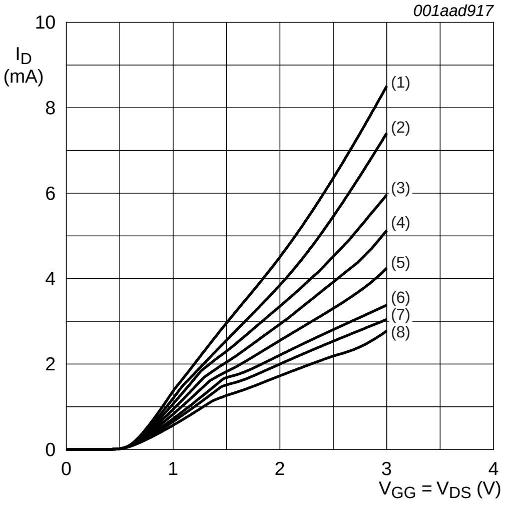
$V_{DS(B)}$ = 2.8 V; $V_{G2\text{-}S}$ = 2.5 V, T_{amb} = 25 °C.

Fig 21. Amplifier B: drain current as a function of gate1 current; typical values



$V_{DS(B)}$ = 2.8 V; $V_{G2\text{-}S}$ = 2.5 V; $R_{G1(B)}$ = 220 kΩ; see Figure 32.

Fig 22. Amplifier B: drain voltage as a function of gate1 supply voltage (=V_{GG}); typical values



(1) R_{G1} = 120 kΩ.

(2) R_{G1} = 150 kΩ.

(3) R_{G1} = 180 kΩ.

(4) R_{G1} = 220 kΩ.

(5) R_{G1} = 270 kΩ.

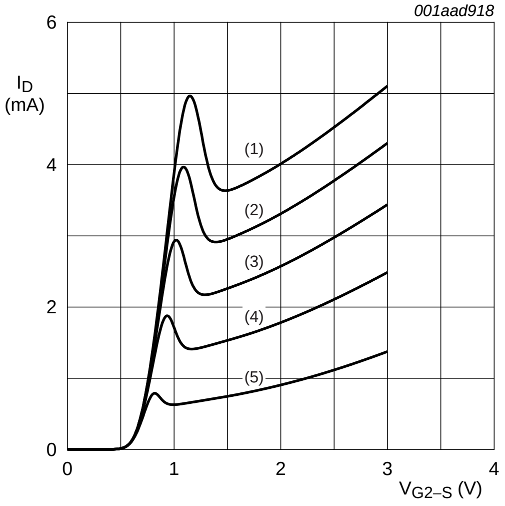
(6) R_{G1} = 330 kΩ.

(7) R_{G1} = 390 kΩ.

(8) R_{G1} = 470 kΩ.

$V_{G2\text{-}S}$ = 2.5 V; $R_{G1(B)}$ connected to V_{GG}; see Figure 32.

Fig 23. Amplifier B: drain current as a function of V_{DS} and V_{GG}; typical values



(1) V_{GG} = 3.0 V.

(2) V_{GG} = 2.5 V.

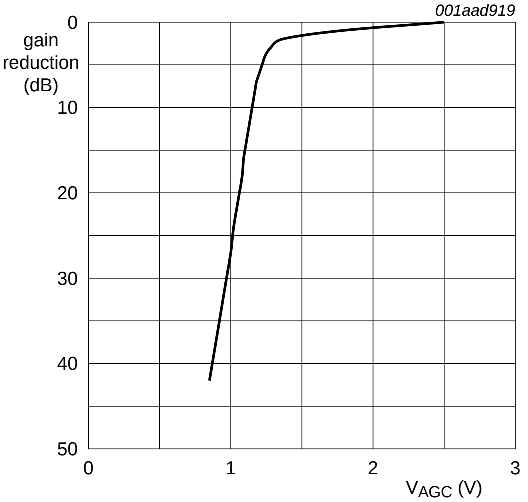
(3) V_{GG} = 2.0 V.

(4) V_{GG} = 1.5 V.

(5) V_{GG} = 1.0 V.

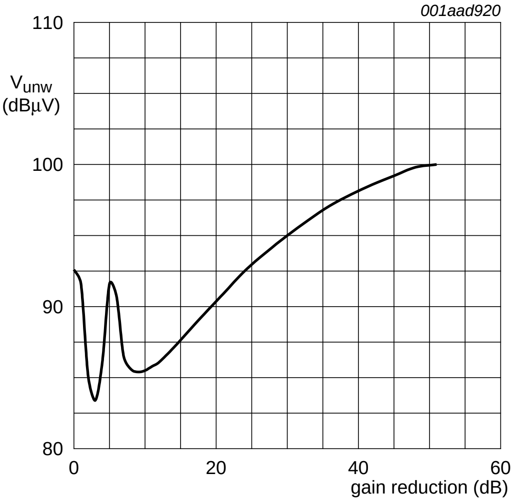
$R_{G1(B)}$ = 220 kΩ; T_j = 25 °C; see Figure 32.

Fig 24. Amplifier B: drain current as a function of gate2 voltage; typical values



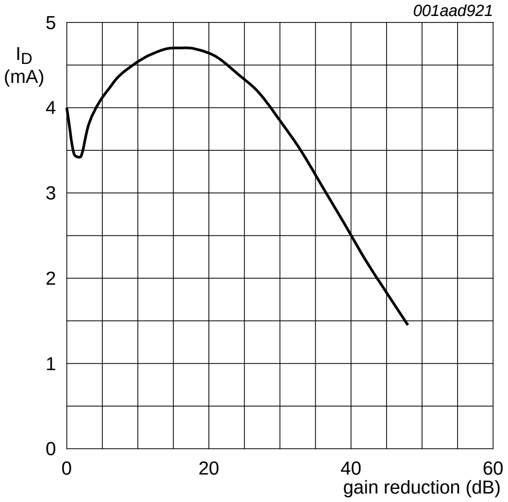
$V_{DS(A)}$ = 2.8 V; $V_{G2(nom)}$ = 2.5 V; $I_{D(nom)}$ = 4 mA; T_{amb} = 25 °C.

Fig 25. Amplifier B: typical gain reduction as a function of the AGC voltage; typical values



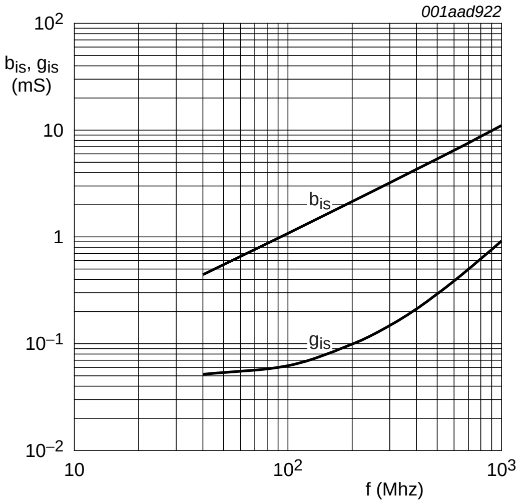
$V_{DS(B)}$ = 2.8 V; V_{G2} = 2.5 V; $I_{D(nom)}$ = 4 mA; f_w = 50 MHz; f_{unw} = 60 MHz; T_{amb} = 25 °C.

Fig 26. Amplifier B: unwanted voltage for 1 % cross-modulation as a function of gain reduction; typical values



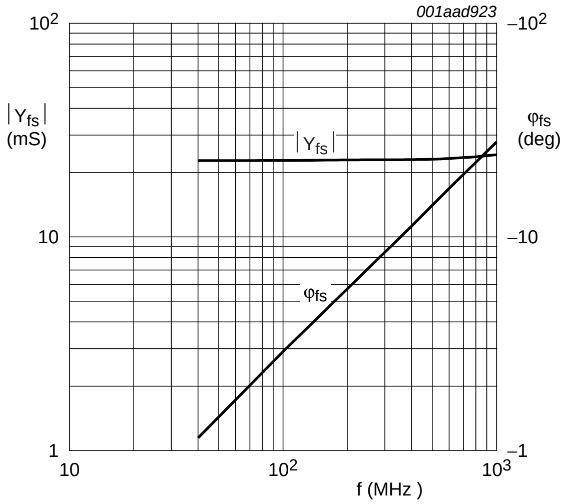
$V_{DS(B)} = V_{GG} = 2.8$ V; $V_{G2(nom)} = 2.5$ V; $R_{G1(B)} = 220$ kW; f = 50 MHz; $T_{amb} = 25$ °C.

Fig 27. Amplifier B: typical drain current as a function of gain reduction; typical values



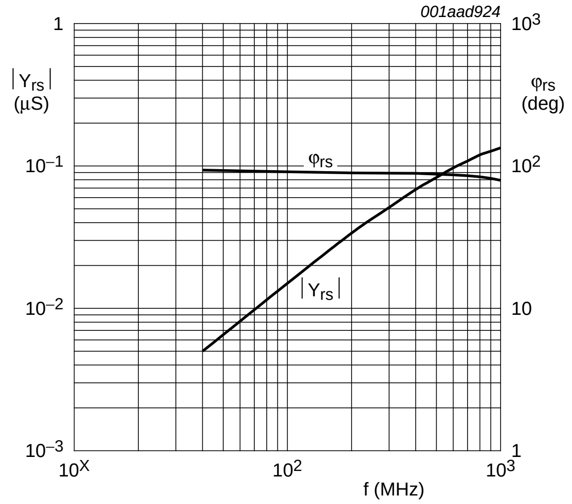
$V_{DS(B)}$ = 2.8 V; $V_{G2\text{-}S}$ = 2.5 V; $V_{DS(A)}$ = 0 V; $I_{D(B)}$ = 4 mA.

Fig 28. Amplifier B: input admittance and phase as a function of frequency; typical values



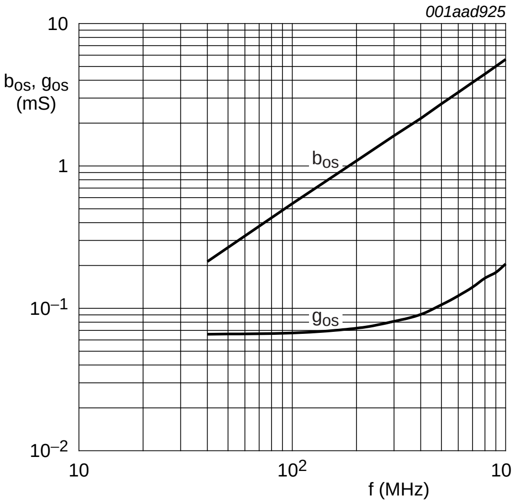
$V_{DS(B)}$ = 2.8 V; $V_{G2\text{-}S}$ = 2.5 V; $V_{DS(A)}$ = 0 V; $I_{D(B)}$ = 4 mA.

Fig 29. Amplifier B: forward transfer admittance and phase as a function of frequency; typical values



$V_{DS(B)}$ = 2.8 V; $V_{G2\text{-}S}$ = 2.5 V; $V_{DS(A)}$ = 0 V; $I_{D(B)}$ = 4 mA.

Fig 30. Amplifier B: reverse transfer admittance and phase as a function of frequency: typical values



$V_{DS(B)}$ = 2.8 V; $V_{G2\text{-}S}$ = 2.5 V; $V_{DS(A)}$ = 0 V; $I_{D(B)}$ = 4 mA.

Fig 31. Amplifier B: output admittance and phase as a function of frequency; typical values

8.3.2 Scattering parameters for amplifier B

Table 12. Scattering parameters for amplifier B

$V_{DS(B)} = 2.8$ V; $V_{G2\text{-}S} = 2.5$ V; $I_{D(B)} = 4$ mA; $V_{DS(A)} = 0$ V; $V_{G1\text{-}S(A)} = 0$ V; $T_{amb} = 25$ °C; typical values.

f (MHz)	s_{11}		s_{21}		s_{12}		s_{22}	
	Magnitude (ratio)	Angle (deg)	Magnitude (ratio)	Angle (deg)	Magnitude (ratio)	Angle (deg)	Magnitude (ratio)	Angle (deg)
50	0.9939	−3.12	2.27	176.11	0.00089	94.68	0.993	−1.62
100	0.9936	−6.29	2.26	172.41	0.00170	84.37	0.993	−3.23
200	0.9896	−12.47	2.25	164.98	0.00336	81.29	0.992	−6.44
300	0.9845	−18.59	2.23	157.64	0.00503	77.17	0.990	−9.65
400	0.9779	−24.66	2.20	150.35	0.00642	73.23	0.988	−12.85
500	0.9703	−30.55	2.16	143.16	0.00769	69.72	0.986	−16.00
600	0.9620	−36.37	2.13	136.02	0.00873	66.28	0.983	−19.18
700	0.9529	−42.10	2.08	129.01	0.00967	63.19	0.980	−22.37
800	0.9439	−47.79	2.04	122.01	0.01024	60.51	0.977	−25.50
900	0.9353	−53.24	1.99	115.30	0.01058	58.52	0.975	−28.66
1000	0.9266	−58.46	1.94	108.64	0.01074	57.24	0.973	−31.85

8.3.3 Noise data for amplifier B

Table 13. Noise data for amplifier B

$V_{DS(B)} = 2.8$ V; $V_{G2\text{-}S} = 2.5$ V; $I_{D(B)} = 4$ mA.

f (MHz)	NF_{min} (dB)	Γ_{opt}		r_n (ratio)
		ratio	(deg)	
400	0.9	0.8	19	0.9
800	1.0	0.83	46	0.96

9. Test information

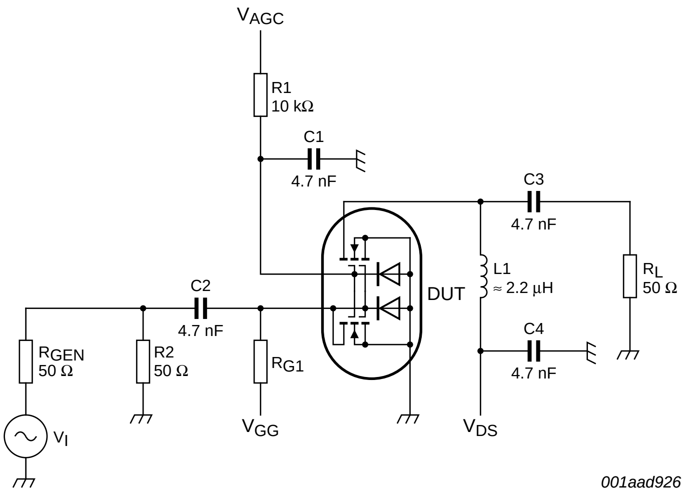
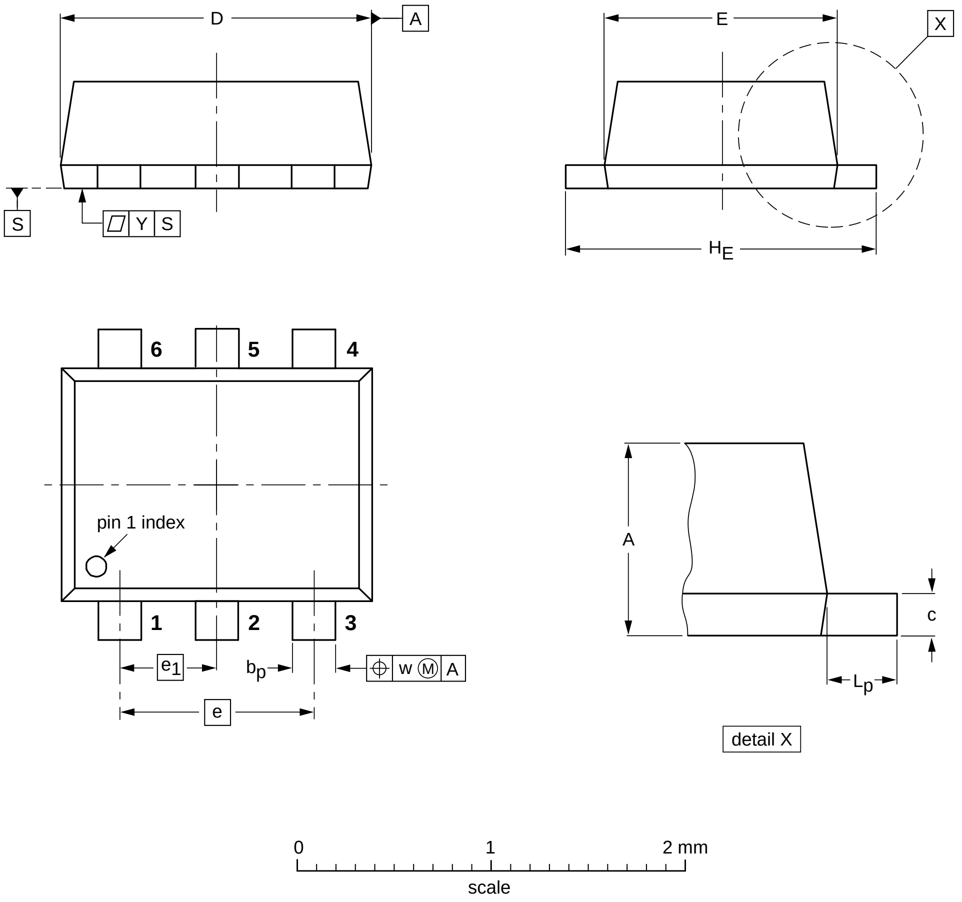


Fig 32. Cross-modulation test setup (for one MOSFET)

10. Package outline

Plastic surface-mounted package; 6 leads **SOT666**



DIMENSIONS (mm are the original dimensions)

UNIT	A	b_p	c	D	E	e	e_1	H_E	L_p	w	y
mm	0.6 0.5	0.27 0.17	0.18 0.08	1.7 1.5	1.3 1.1	1.0	0.5	1.7 1.5	0.3 0.1	0.1	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT666						~~04-11-08~~ 06-03-16

Fig 33. Package outline SOT666

11. Revision history

Table 14. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BF1206F v.2	20110907	Product data sheet	-	BF1206F v.1
Modifications:	• The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors. • Legal texts have been adapted to the new company name where appropriate. • Package outline drawings have been updated to the latest version.			
BF1206F v.1	20060130	Product data sheet	-	-

12. Legal information

12.1 Data sheet status

Document status[1][2]	Product status[3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term ‘short data sheet’ is explained in section “Definitions”.

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL http://www.nxp.com.

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14. Contents

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