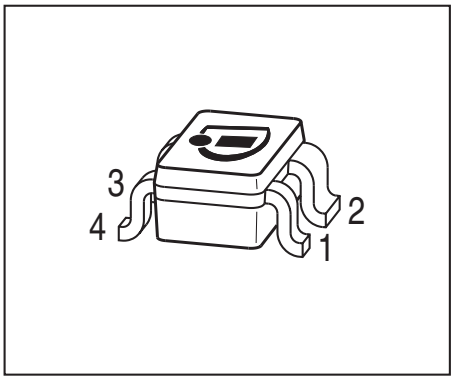
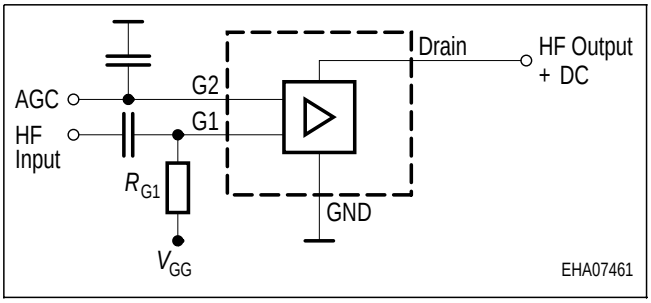
Silicon N-Channel MOSFET Tetrode



- Designed for input stages of UHF- and VHF-tuners with AGC function
- Supporting 5 V operations and power saving 3 V operations
- Integrated ESD gate protection diodes
- Very low noise figure
- High gain, high forward transadmittance
- Very good cross modulation at gain reduction
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101

AEC Qualified RoHS



ESD (**E**lectro**s**tatic **d**ischarge) sensitive device, observe handling precaution!

Type	Package	Pin Configuration						Marking
BF5030	SOT143	1=S	2=D	3=G2	4=G1	-	-	KXs
BF5030R	SOT143R	1=D	2=S	3=G1	4=G2	-	-	KXs
BF5030W	SOT343	1=D	2=S	3=G1	4=G2	-	-	KXs

Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	8	V
Continuous drain current	I_D	25	mA
Gate 1/ gate 2-source current	I_{G1S}, I_{G2S}	± 1	mA
Gate 1/ gate 2-source voltage	V_{G1S}, V_{G2S}	± 6	V
Total power dissipation	P_{tot}		mW
$T_S \leq 94$ °C, BF5030W		200	
$T_S \leq 76$ °C, BF5030, BF5030R		200	
Storage temperature	T_{stg}	-55 ... 150	°C
Channel temperature	T_{ch}	150	

Thermal Resistance

Parameter	Symbol	Value	Unit
Channel - soldering point[1)]	R_{thchs}		K/W
BF5030W		≤ 280	
BF5030, BF5030R		≤ 370	

[1]For calculation of R_{thJA} please refer to Application Note Thermal Resistance

Electrical Characteristics at T_A = 25°C, unless otherwise specified

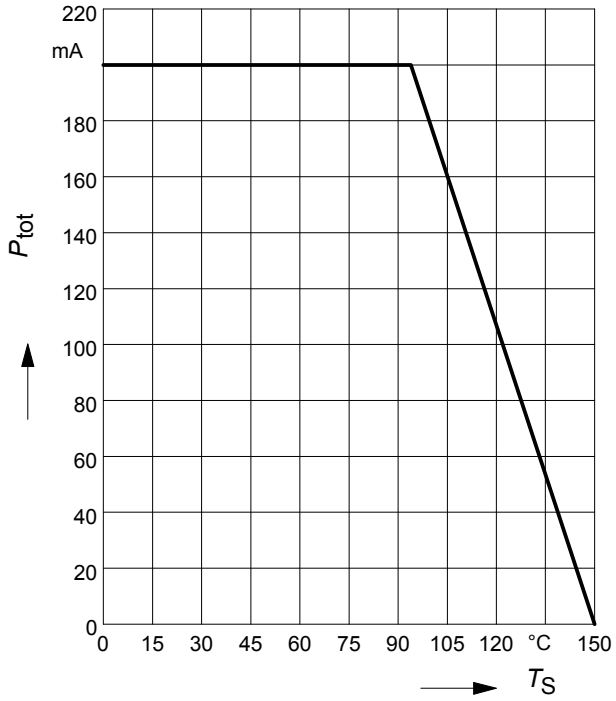
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Drain-source breakdown voltage I_D = 20 µA, V_{G1S} = 0 , V_{G2S} = 0	$V_{(BR)DS}$	12	-	-	V
Gate1-source breakdown voltage +I_{G1S} = 10 mA, V_{G2S} = 0 , V_{DS} = 0	+$V_{(BR)G1SS}$	6	-	15	
Gate2-source breakdown voltage +I_{G2S} = 10 mA, V_{G1S} = 0 , V_{DS} = 0	+$V_{(BR)G2SS}$	6	-	15	
Gate1-source leakage current V_{G1S} = 6 V, V_{G2S} = 0 , V_{DS} = 0	+I_{G1SS}	-	-	50	nA
Gate2-source leakage current V_{G2S} = 6 V, V_{G1S} = 0 , V_{DS} = 0	+I_{G2SS}	-	-	50	
Drain current	I_{DSS}				
V_{DS} = 3 V, V_{G1S} = 0 , V_{G2S} = 3 V		-	-	100	
V_{DS} = 5 V, V_{G1S} = 0 , V_{G2S} = 4 V		-	-	100	
Drain-source current	I_{DSX}				mA
V_{DS} = 3 V, V_{G2S} = 3 V, R_{G1} = 82 kΩ		-	13	-	
V_{DS} = 5 V, V_{G2S} = 4 V, R_{G1} = 180 kΩ		-	13	-	
Gate1-source pinch-off voltage	$V_{G1S(p)}$				V
V_{DS} = 3 V, V_{G2S} = 3 V, I_D = 20 µA		-	0.7	-	
V_{DS} = 5 V, V_{G2S} = 4 V, I_D = 20 µA		-	0.7	-	
Gate2-source pinch-off voltage	$V_{G2S(p)}$				
V_{DS} = 3 V, V_{G1S} = 3 V, I_D = 20 µA		-	0.7	-	
V_{DS} = 5 V, V_{G1S} = 4 V, I_D = 20 µA		-	0.7	-	

Electrical Characteristics at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics - (verified by random sampling)					
Forward transconductance	g_{fs}				mS
V_{DS} = 3 V, I_D = 10 mA, V_{G2S} = 3 V		-	41	-	
V_{DS} = 5 V, I_D = 10 mA, V_{G2S} = 4 V		-	41	-	
Gate1 input capacitance	C_{g1ss}				pF
V_{DS} = 3 V, I_D = 10 mA, V_{G2S} = 3 V		-	2.7	-	
V_{DS} = 5 V, I_D = 10 mA, V_{G2S} = 4 V		-	2.8	-	
Output capacitance	C_{dss}				
V_{DS} = 3 V, I_D = 10 mA, V_{G2S} = 3 V		-	1.6	-	
V_{DS} = 5 V, I_D = 10 mA, V_{G2S} = 4 V		-	1.5	-	
Power gain	G_p				dB
V_{DS} = 3 V, I_D = 10 mA, V_{G2S} = 3 V, f = 800 MHz		-	24	-	
V_{DS} = 3 V, I_D = 10 mA, V_{G2S} = 3 V, f = 45 MHz		-	34	-	
V_{DS} = 5 V, I_D = 10 mA, V_{G2S} = 4 V, f = 800 MHz		-	24	-	
V_{DS} = 5 V, I_D = 10 mA, V_{G2S} = 4 V, f = 45 MHz		-	34	-	
Noise figure	F				dB
V_{DS} = 3 V, I_D = 10 mA, V_{G2S} = 3 V, f = 800 MHz		-	1.3	-	
V_{DS} = 3 V, I_D = 10 mA, V_{G2S} = 3 V, f = 45 MHz		-	0.9	-	
V_{DS} = 5 V, I_D = 10 mA, V_{G2S} = 4 V, f = 800 MHz		-	1.3	-	
V_{DS} = 5 V, I_D = 10 mA, V_{G2S} = 4 V, f = 45 MHz		-	0.9	-	
Gain control range	ΔG_p				
V_{DS} = 3 V, V_{G2S} = 3...0 V , f = 800 MHz		45	50	-	
V_{DS} = 5 V, V_{G2S} = 4...0 V , f = 800 MHz		45	50	-	
Cross-modulation k=1%, f_w=50MHz, f_{unw}=60MHz	X_{mod}				dB
AGC = 0		90	94	-	
AGC = 10 dB		-	92	-	
AGC = 40 dB		96	98	-	

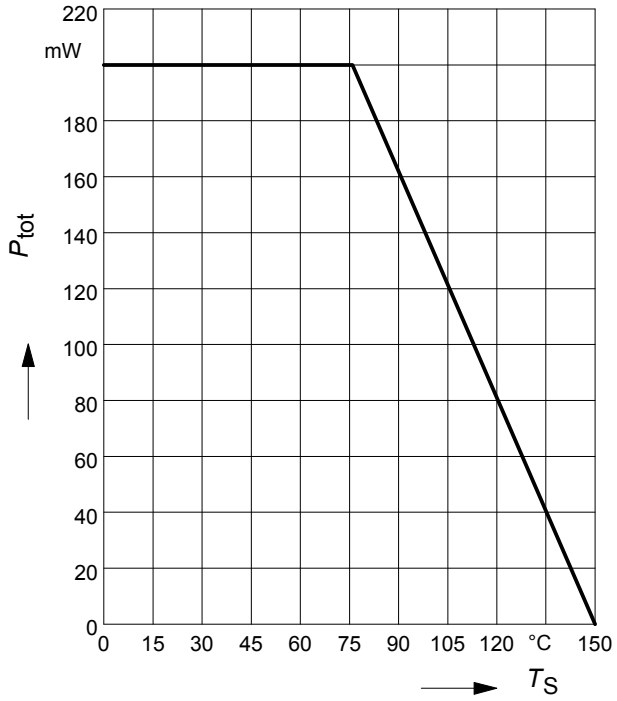
Total power dissipation $P_{tot} = f(T_S)$

BF5030W



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

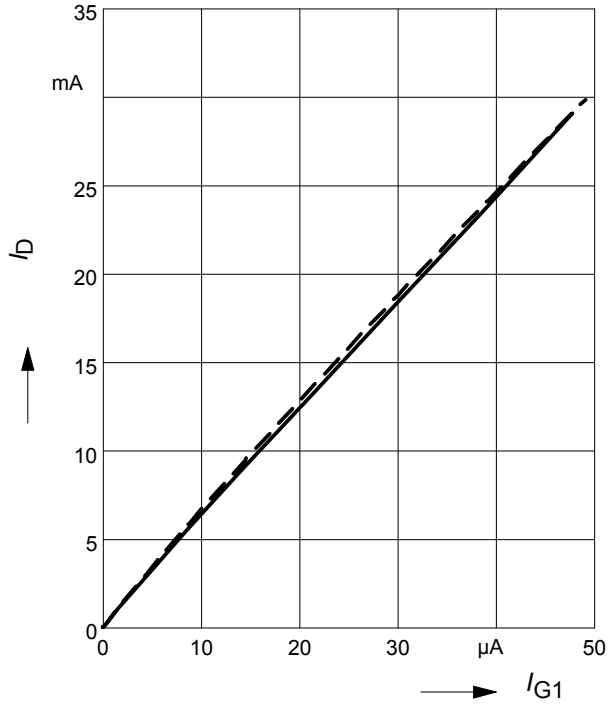
BF5030, BF5030R



Drain current $I_D = f(I_{G1})$

— V_{DS} = 3 V, V_{G2S} = 3 V

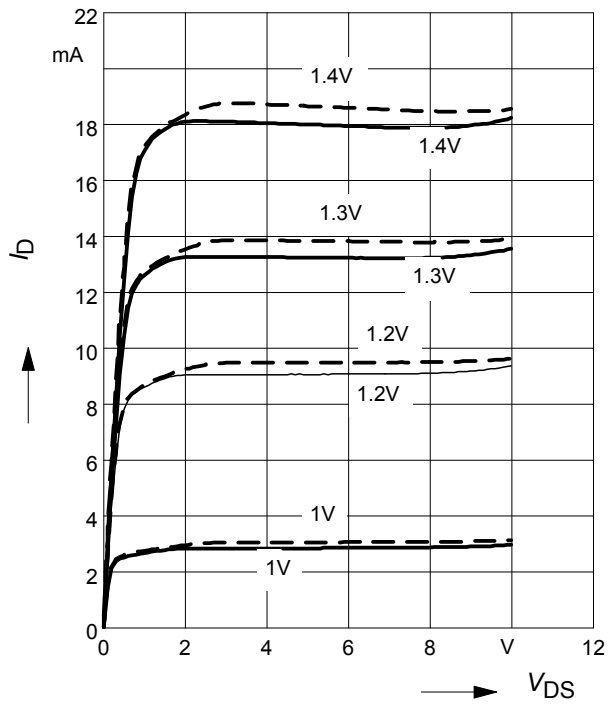
… V_{DS} = 5 V, V_{G2S} = 4 V



Output characteristics $I_D = f(V_{DS})$

V_{G1S} = Parameter

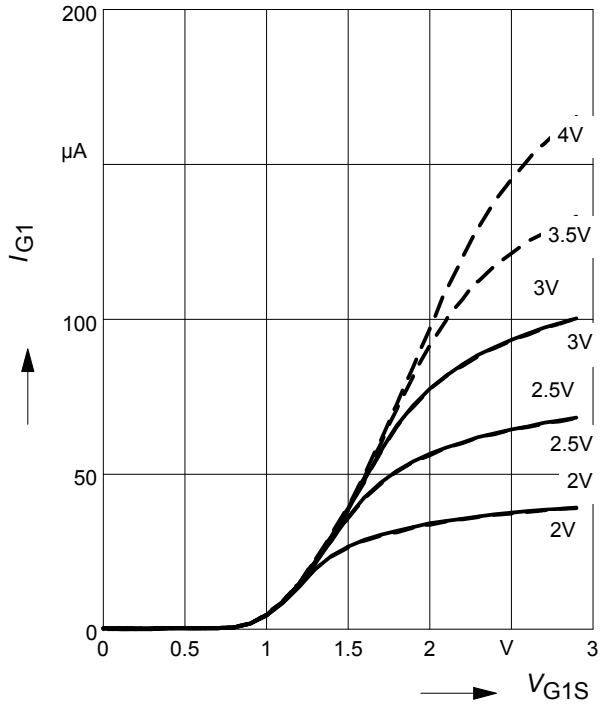
— V_{DS} = 3 V, … V_{DS} = 5 V



Gate 1 current $I_{G1} = f(V_{G1S})$

V_{G2S} = Parameter

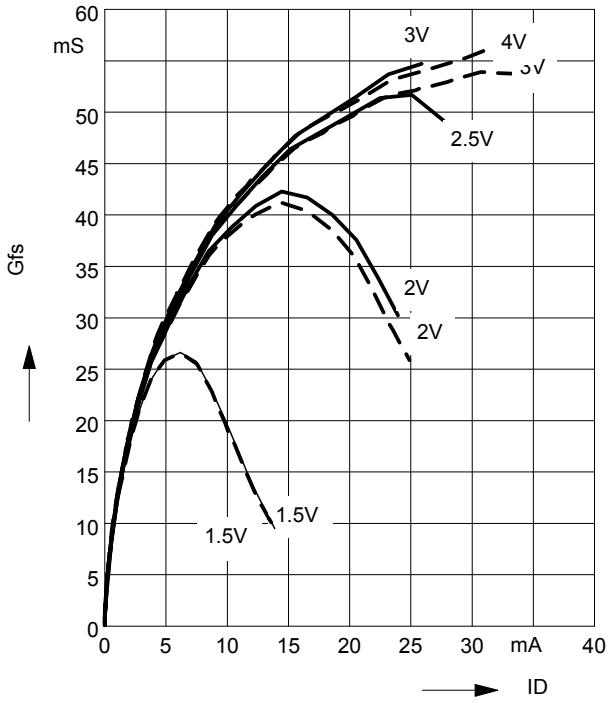
— V_{DS} = 3 V, … V_{DS} = 5 V



Gate 1 forward transconductance

$g_{fs} = f(I_D), V_{G2S}$ = Parameter

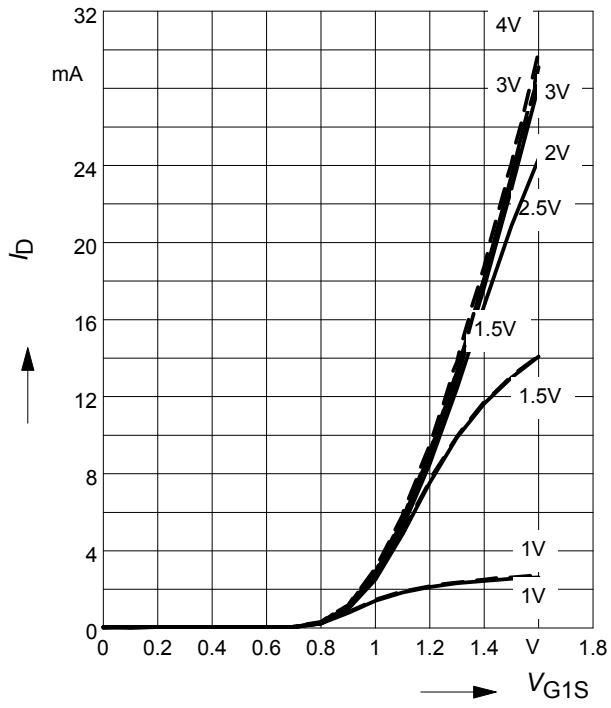
— V_{DS} = 3 V, … V_{DS} = 5 V



Drain current $I_D = f(V_{G1S})$

V_{G2S} = Parameter

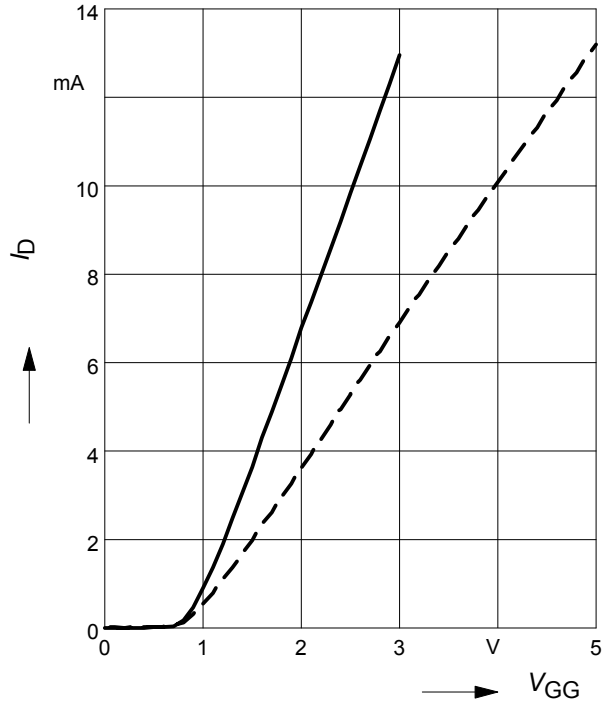
— V_{DS} = 3 V, … V_{DS} = 5 V



Drain current $I_D = f(V_{GG})$

— V_{DS} = 3 V, V_{G2S} = 3 V, R_{g1} = 82 kΩ

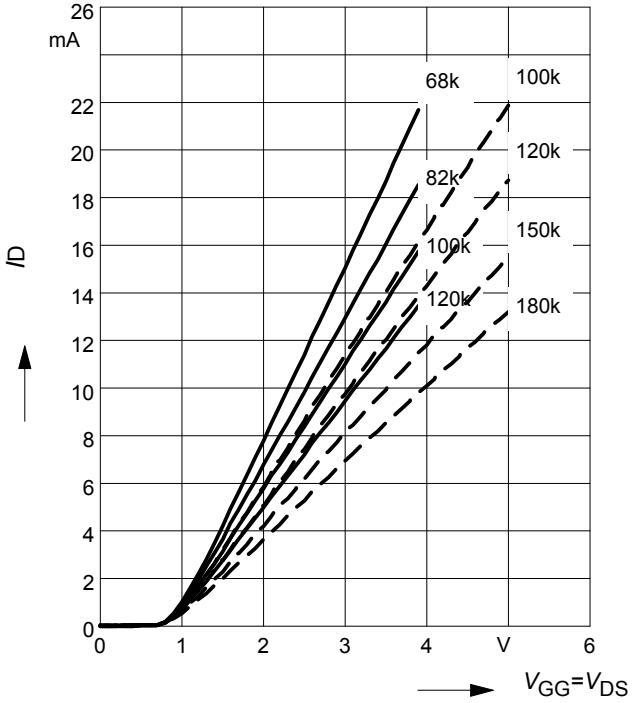
… V_{DS} = 5 V, V_{G2S} = 4 V, R_{g1} = 180 kΩ



Drain current $I_D = f(V_{GG})$

R_{G1} = Parameter in kΩ

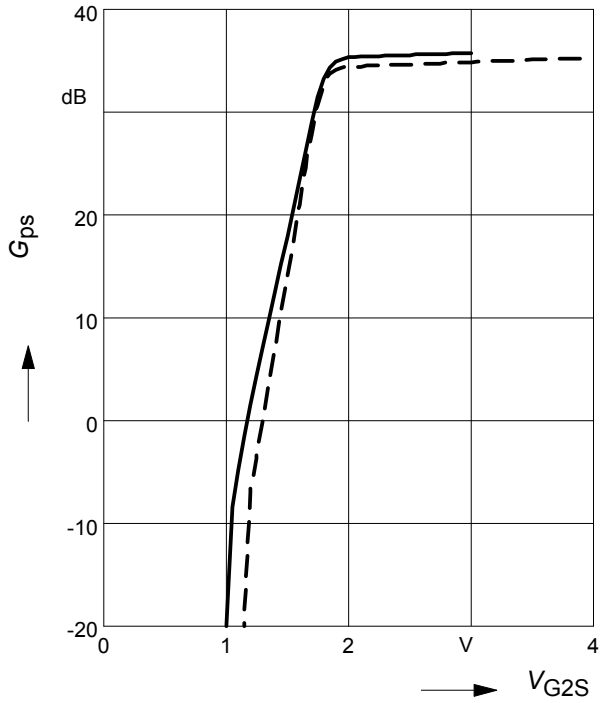
— V_{DS} = 3 V, … V_{DS} = 5 V



Power gain $G_{ps} = f(V_{G2S})$, f = 45 MHz

— V_{DS} = 3 V, V_{G2S} = 3 V, R_{g1} = 82 kΩ

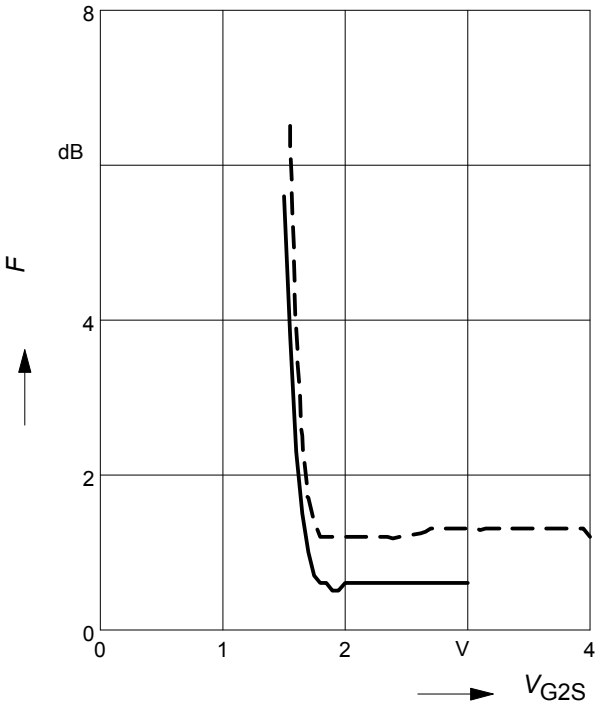
… V_{DS} = 5 V, V_{G2S} = 4 V, R_{g1} = 180 kΩ



Noise figure $F = f(V_{G2S})$, f = 45 MHz

— V_{DS} = 3 V, V_{G2S} = 3 V, R_{g1} = 82 kΩ

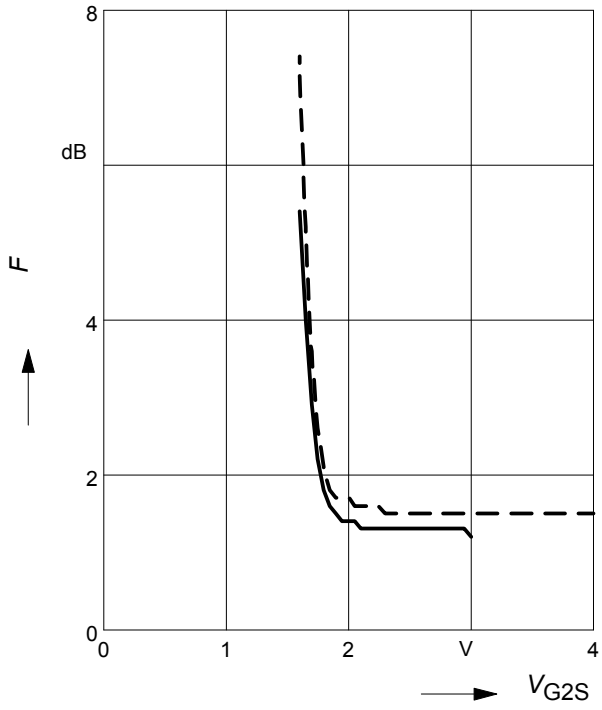
… V_{DS} = 5 V, V_{G2S} = 4 V, R_{g1} = 180 kΩ



Noise figure $F = f(V_{G2S})$, f = 800 MHz

— V_{DS} = 3 V, V_{G2S} = 3 V, R_{g1} = 82 kΩ

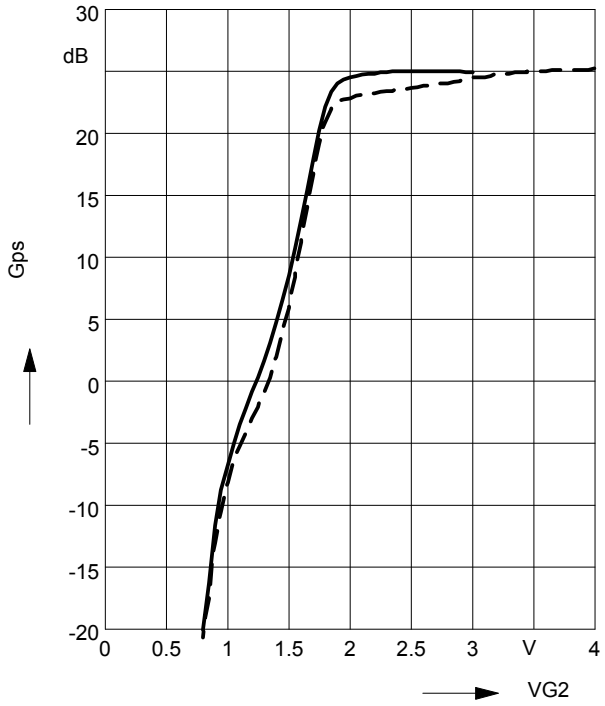
… V_{DS} = 5 V, V_{G2S} = 4 V, R_{g1} = 180 kΩ



Power gain $G_{ps} = f(V_{G2S})$, f = 800 MHz

— V_{DS} = 3 V, V_{G2S} = 3 V, R_{g1} = 82 kΩ

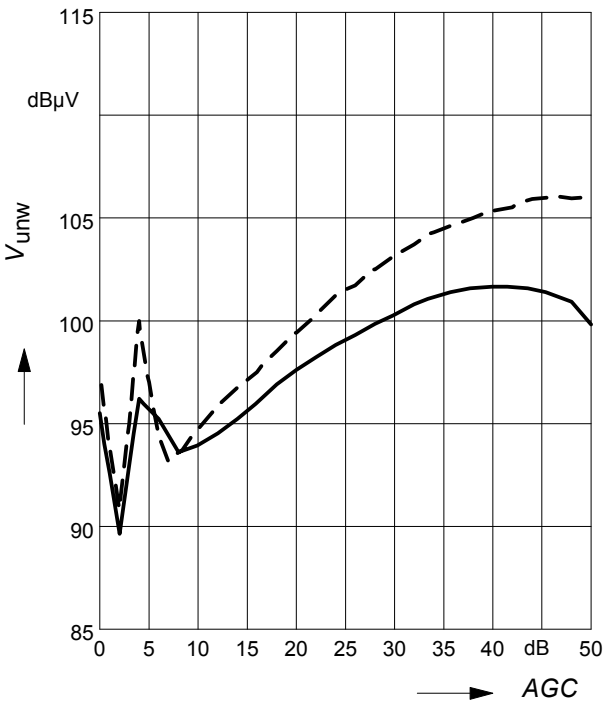
… V_{DS} = 5 V, V_{G2S} = 4 V, R_{g1} = 180 kΩ



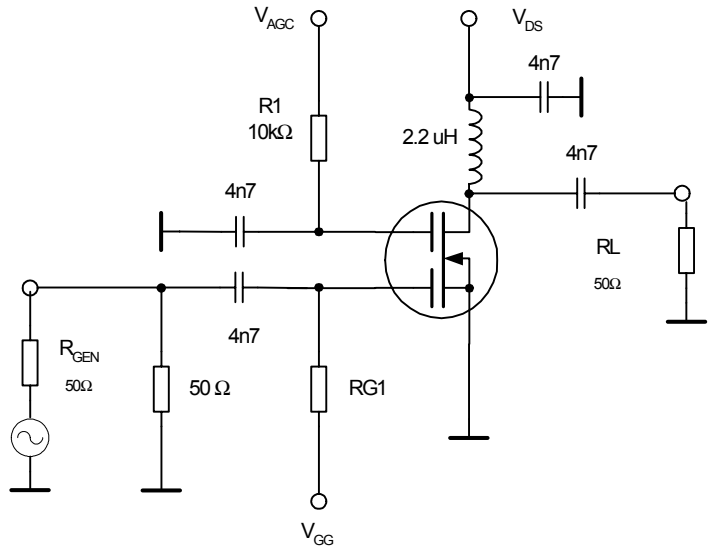
Crossmodulation V_{unw} = (*AGC*)

— V_{DS} = 3 V, V_{G2S} = 3 V, R_{g1} = 82 kΩ

… V_{DS} = 5 V, V_{G2S} = 4 V, R_{g1} = 180 kΩ

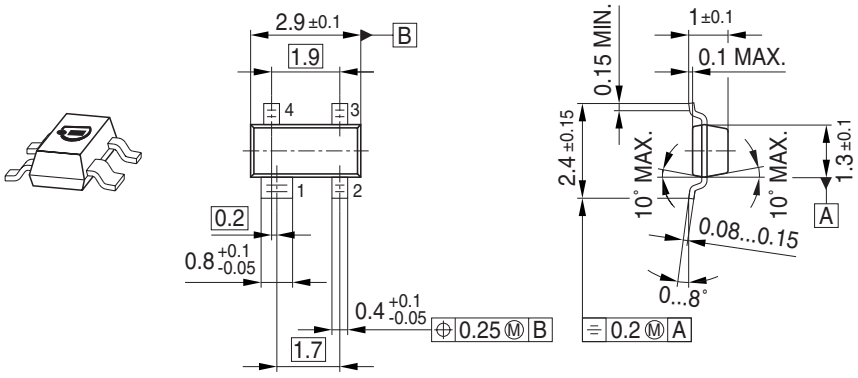


Crossmodulation test circuit

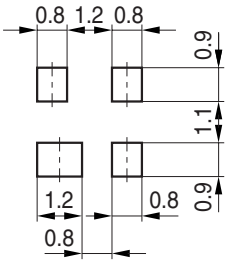


Semibiased

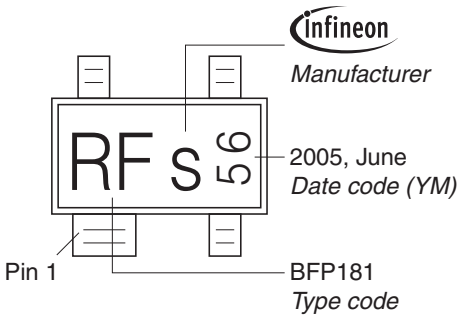
Package Outline



Foot Print

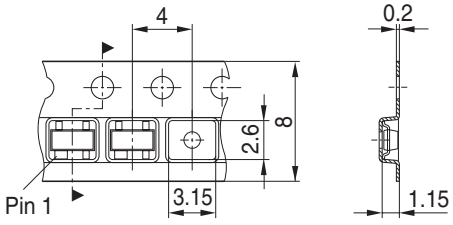


Marking Layout (Example)

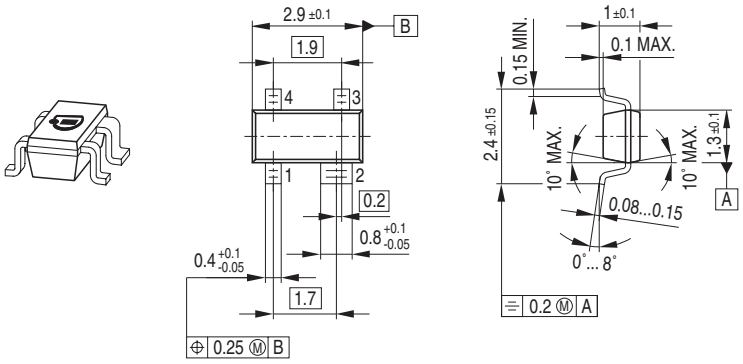


Standard Packing

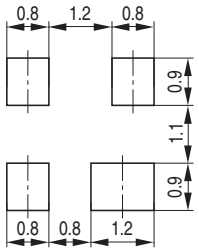
Reel ø180 mm = 3.000 Pieces/Reel
Reel ø330 mm = 10.000 Pieces/Reel



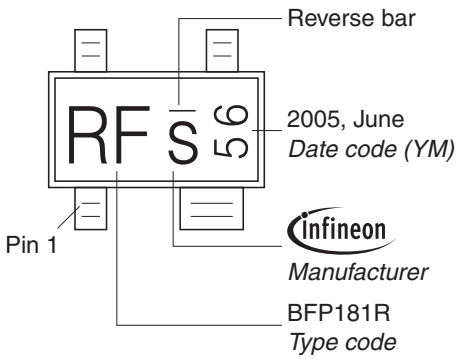
Package Outline



Foot Print

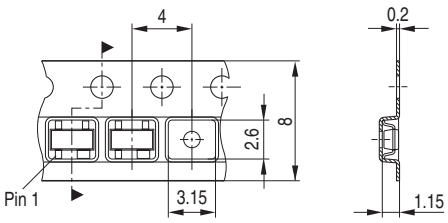


Marking Layout (Example)

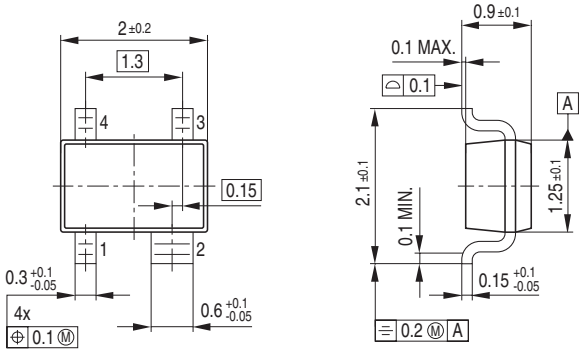


Standard Packing

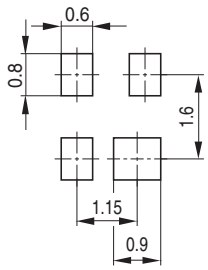
Reel ø180 mm = 3.000 Pieces/Reel
Reel ø330 mm = 10.000 Pieces/Reel



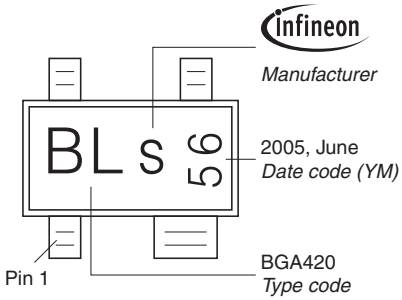
Package Outline



Foot Print

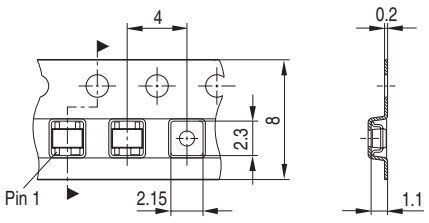


Marking Layout (Example)



Standard Packing

Reel ø180 mm = 3.000 Pieces/Reel
Reel ø330 mm = 10.000 Pieces/Reel



Edition 2006-02-01
Published by
Infineon Technologies AG
81726 München, Germany
© Infineon Technologies AG 2007.
All Rights Reserved.

Attention please!

The information given in this dokument shall in no event be regarded as a guarantee of conditions or characteristics (“Beschaffenheitsgarantie”). With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights of any third party.

Information

For further information on technology, delivery terms and conditions and prices please contact your nearest Infineon Technologies Office (**www.infineon.com**).

Warnings

Due to technical requirements components may contain dangerous substances. For information on the types in question please contact your nearest Infineon Technologies Office.
Infineon Technologies Components may only be used in life-support devices or systems with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system, or to affect the safety or effectiveness of that device or system.
Life support devices or systems are intended to be implanted in the human body, or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.

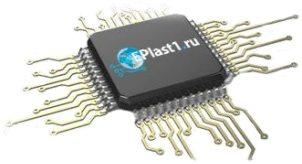
Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)
Факс: 8 (812) 320-02-42
Электронная почта: org@eplast1.ru
Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.