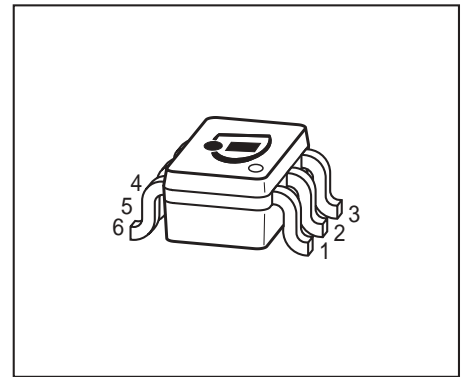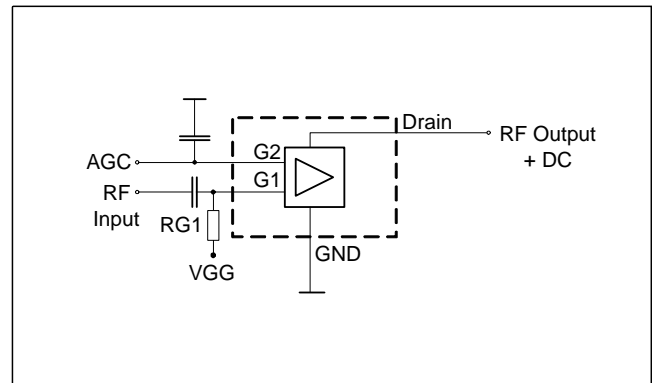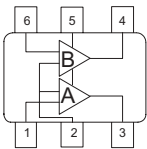**DUAL N-Channel MOSFET Tetrode**

- Two gain controlled input stage for UHF and VHF -tuners e.g. (NTSC, PAL)
- Two AGC amplifiers in one single package
- Integrated gate protection diodes
- High AGC-range, low noise figure, high gain
- Improved cross modulation at gain reduction

BG3130
BG3130R

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

Type	Package	Pin Configuration						Marking
BG3130	SOT363	1=G1*	2=G2	3=D*	4=D**	5=S	6=G1**	KAs
BG3130R	SOT363	1=G1*	2=S	3=D*	4=D**	5=G2	6=G1**	KHs

* For amp. A; ** for amp. B
180° rotated tape loading orientation available

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	$\pm I_{G1/2SM}$	1	
Gate 1/ gate 2-source voltage	$\pm V_{G1/G2S}$	6	V
Total power dissipation	P_{tot}	200	mW
Storage temperature	T_{stg}	-55 ... 150	°C
Channel temperature	T_{ch}	150	

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Thermal Resistance

Parameter	Symbol	Value	Unit
Channel - soldering point[1]	R_{thchs}	≤ 280	K/W

Electrical Characteristics

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Drain-source breakdown voltage $I_D = 10\ \mu A$, $V_{G1S} = 0\ V$, $V_{G2S} = 0\ V$	$V_{(BR)DS}$	12	-	-	V
Gate1-source breakdown voltage $+I_{G1S} = 10\ mA$, $V_{G2S} = 0\ V$, $V_{DS} = 0\ V$	$+V_{(BR)G1SS}$	6	-	15	
Gate2-source breakdown voltage $+I_{G2S} = 10\ mA$, $V_{G1S} = 0\ V$, $V_{DS} = 0\ V$	$+V_{(BR)G2SS}$	6	-	15	
Gate1-source leakage current $V_{G1S} = 6\ V$, $V_{G2S} = 0\ V$	$+I_{G1SS}$	-	-	50	μA
Gate2-source leakage current $V_{G2S} = 8\ V$, $V_{G1S} = 0\ V$, $V_{DS} = 0\ V$	$+I_{G2SS}$	-	-	50	nA
Drain current $V_{DS} = 5\ V$, $V_{G1S} = 0\ V$, $V_{G2S} = 4.5\ V$	I_{DSS}	-	-	10	μA
Drain-source current $V_{DS} = 5\ V$, $V_{G2S} = 4\ V$, $R_{G1} = 120\ k\Omega$	I_{DSX}	-	10	-	mA
Gate1-source pinch-off voltage $V_{DS} = 5\ V$, $V_{G2S} = 4\ V$, $I_D = 20\ \mu A$	$V_{G1S(p)}$	-	0.7	-	V
Gate2-source pinch-off voltage $V_{DS} = 5\ V$, $I_D = 20\ \mu A$	$V_{G2S(p)}$	-	0.6	-	

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

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Electrical Characteristics

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics V_{DS} = 5V, V_{G2S} = 4V, (I_D = 14 mA) (verified by random sampling)					
Forward transconductance	g_{fs}	-	33	-	mS
Gate1 input capacitance f = 10 MHz	C_{g1ss}	-	1.9	-	pF
Output capacitance f = 10 MHz	C_{dss}	-	1.1	-	
Power gain f = 800 MHz f = 45 MHz	G_p	- -	24 31	- -	dB
Noise figure f = 800 MHz f = 45 MHz	F	- -	1.3 1.7	- -	dB
Gain control range V_{G2S} = 4 ... 0 V, f = 800 MHz	ΔG_p	45	-	-	
Cross-modulation k=1%, f_w=50MHz, f_{unw}=60MHz AGC = 0 dB AGC = 10 dB AGC = 40 dB	X_{mod}	90 - 96	- 87 100	- - -	-

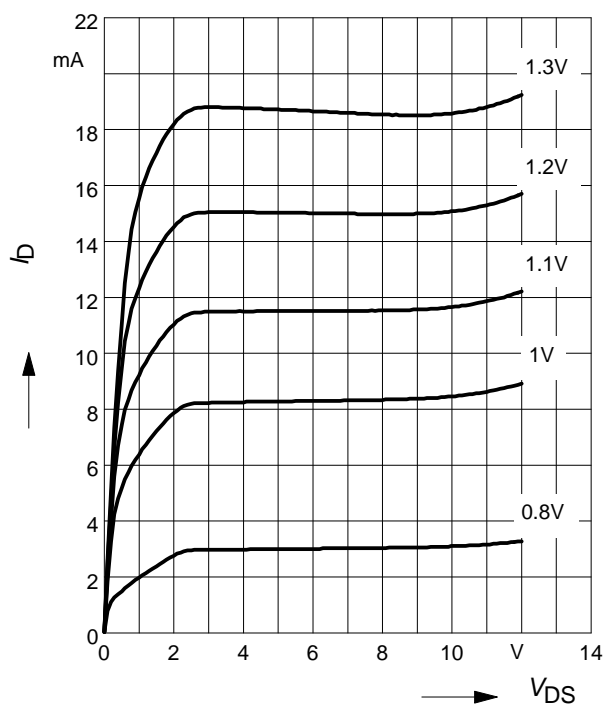**Total power dissipation** $P_{tot} = f(T_S)$

amp. A = amp. B

Drain current $I_D = f(I_{G1})$
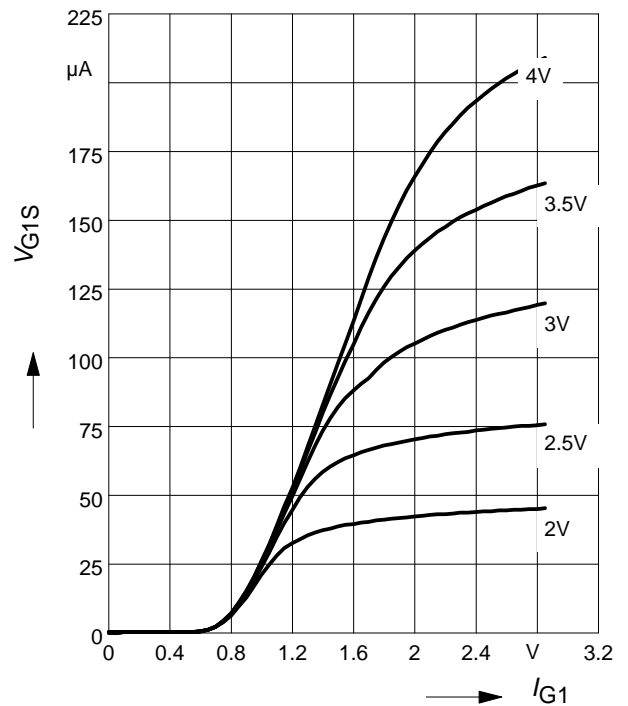
$V_{G2S} = 4V$

amp. A = amp. B

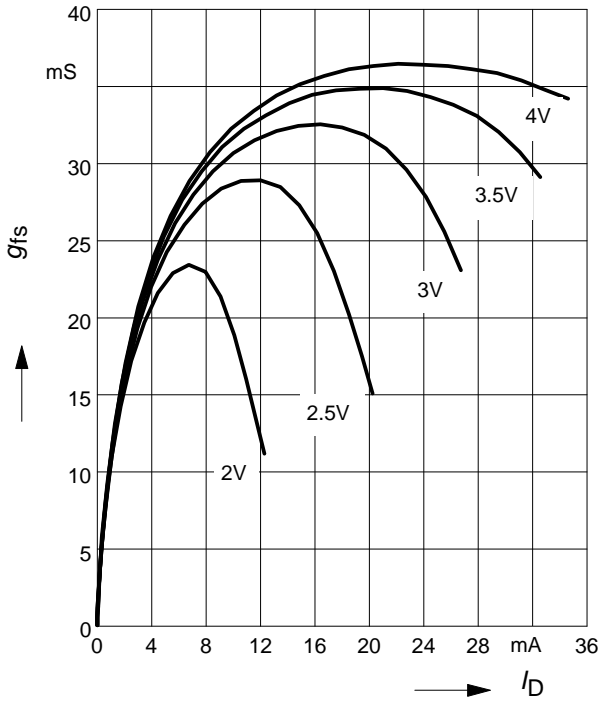**Output characteristics** $I_D = f(V_{DS})$

amp. A = amp. B

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

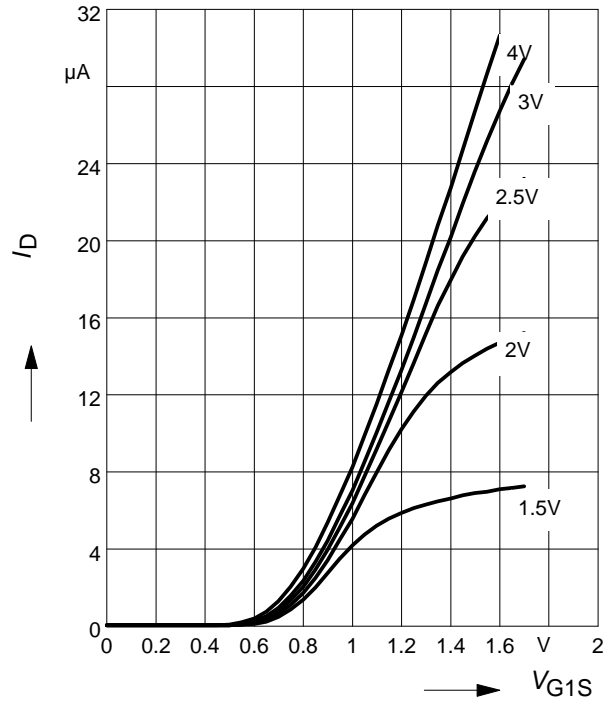$V_{DS} = 5V$, $V_{G2S} = $ Parameter

amp. A = amp. B

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Gate 1 forward transconductance

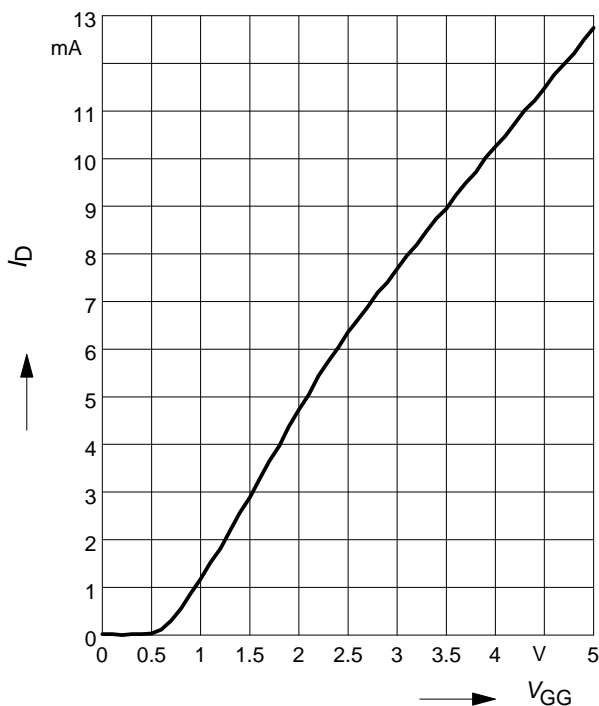$g_{fs} = f(I_D)$, $V_{DS} = 5V$, $V_{G2S} = $ Parameter

amp. A = amp. B

Drain current $I_D = f(V_{G1S})$
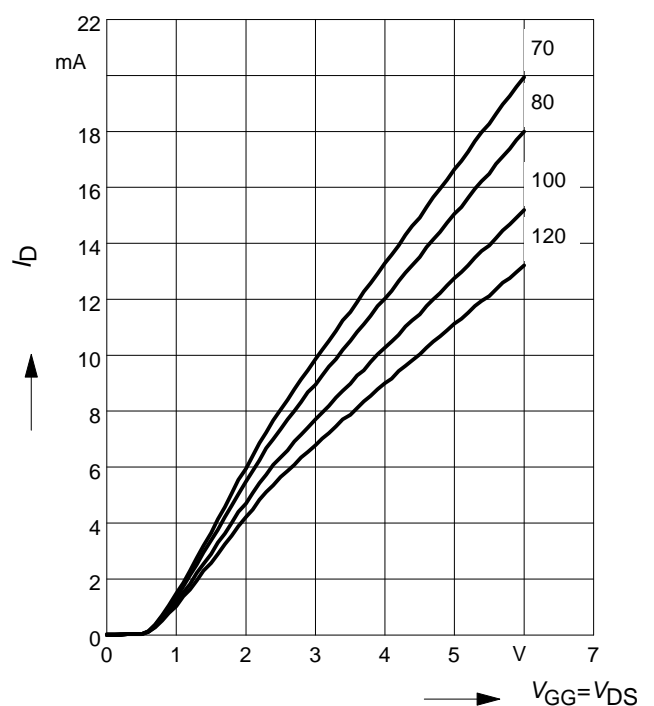
$V_{DS} = 5V$, $V_{G2S} = $ Parameter

amp. A = amp. B
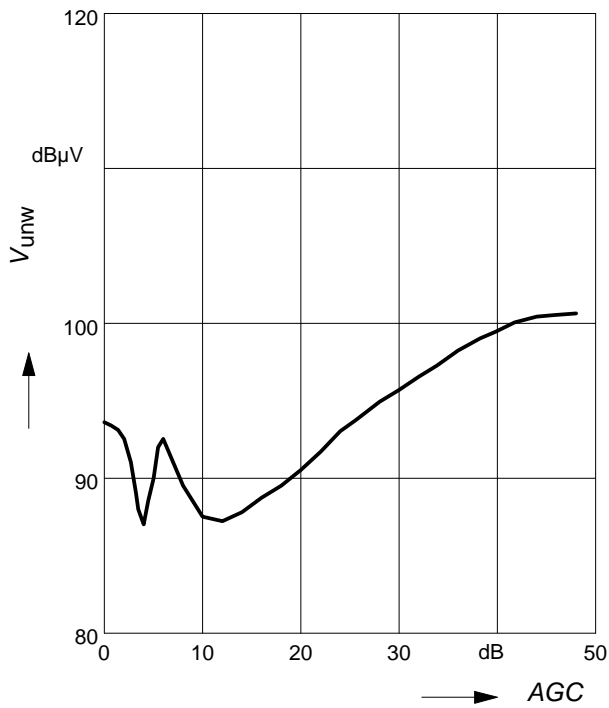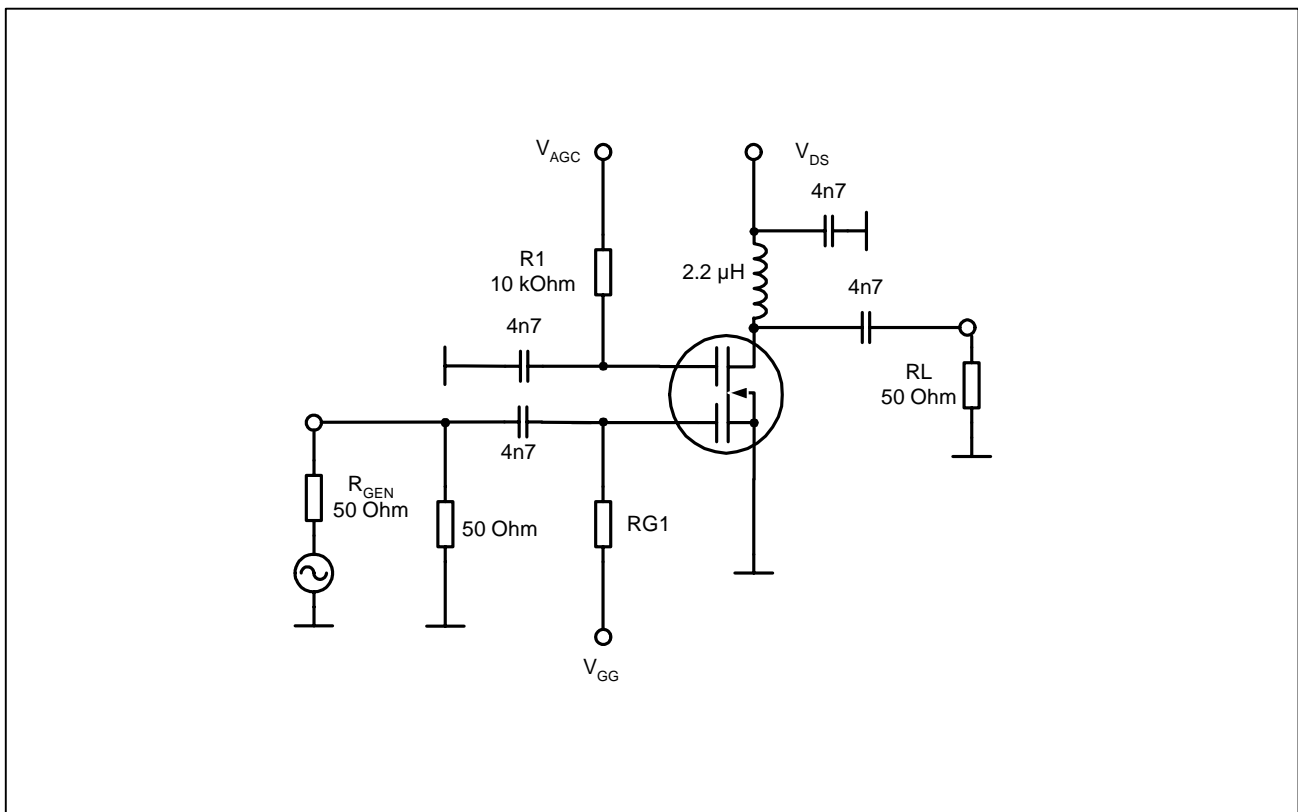

Drain current $I_D = f(V_{GG})$ amp.A=amp.B

$V_{DS} = 5V$, $V_{G2S} = 4V$, $R_{G1} = 120k\Omega$
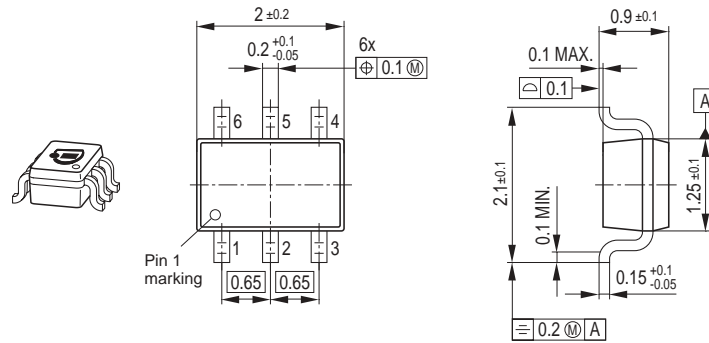
(connected to V_{GG}, V_{GG}=gate1 supply voltage)

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

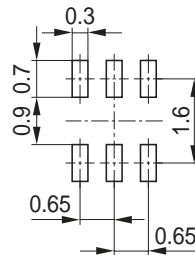$V_{G2S} = 4V$, $R_{G1} = $ Parameter in kΩ

amp. A = amp. B

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Crossmodulation $V_{unw} = (AGC)$

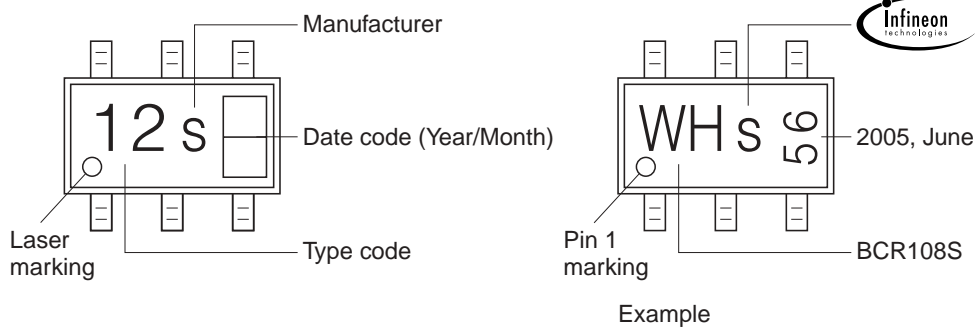$V_{DS} = 5$ V, $R_{g1} = 68$ kΩ

Crossmodulation test circuit

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Package Outline

Foot Print

Marking Layout

Manufacturer

Date code (Year/Month)

Laser marking

Type code

Pin 1 marking

2005, June

BCR108S

Example

Standard Packing

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

Pin 1 marking

Attention please!

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