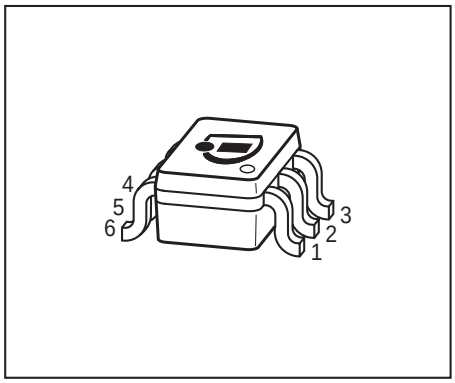
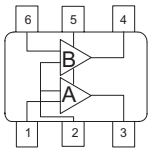
DUAL N-Channel MOSFET Tetrode

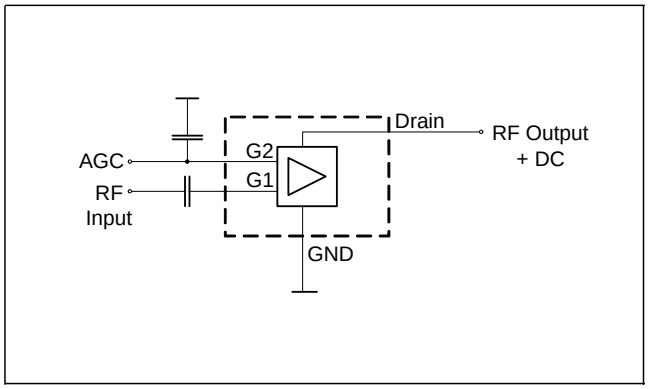


- Low noise gain controlled input stages of UHF- and VHF-tuners with 5V supply voltage
- Two AGC amplifiers in one single package
- Integrated stabilized bias network
- Integrated gate protection diodes
- High gain, low noise figure
- Improved cross modulation at gain reduction
- High AGC-range
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101

AEC Qualified RoHS

BG3230





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

Type	Package	Pin Configuration						Marking
BG3230	SOT363	1=G1*	2=G2	3=D*	4=D**	5=S	6=G1**	KBs

* 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	

Thermal Resistance

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

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

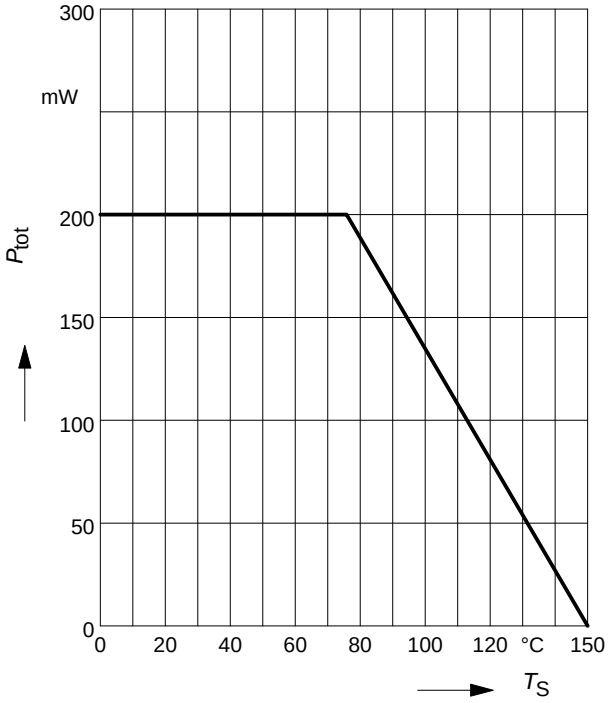
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Drain-source breakdown voltage I_D = 100 µA, V_{G1S} = 0 , V_{G2S} = 0	$V_{(BR)DS}$	12	-	-	V
Gate1-source breakdown voltage $+I_{G1S}$ = 10 mA, V_{G2S} = 0 , V_{DS} = 0	$+V_{(BR)G1SS}$	6	-	15	
Gate2 source breakdown voltage $\pm I_{G2S}$ = 10 mA, V_{G1S} = 0 , V_{DS} = 0	$\pm V_{(BR)G2SS}$	6	-	15	
Gate1-source leakage current V_{G1S} = 6 V, V_{G2S} = 0	$+I_{G1SS}$	-	-	50	µA
Gate 2 source leakage current $\pm V_{G2S}$ = 6 V, V_{G1S} = 0 , V_{DS} = 0	$\pm I_{G2SS}$	-	-	50	nA
Drain current V_{DS} = 5 V, V_{G1S} = 0 , V_{G2S} = 4 V	I_{DSS}	-	-	100	µA
Operating current (selfbiased) V_{DS} = 5 V, V_{G2S} = 4 V	I_{DSO}	-	13	-	mA
Gate2-source pinch-off voltage V_{DS} = 5 V, I_D = 100 µA	$V_{G2S(p)}$	-	1	-	V

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

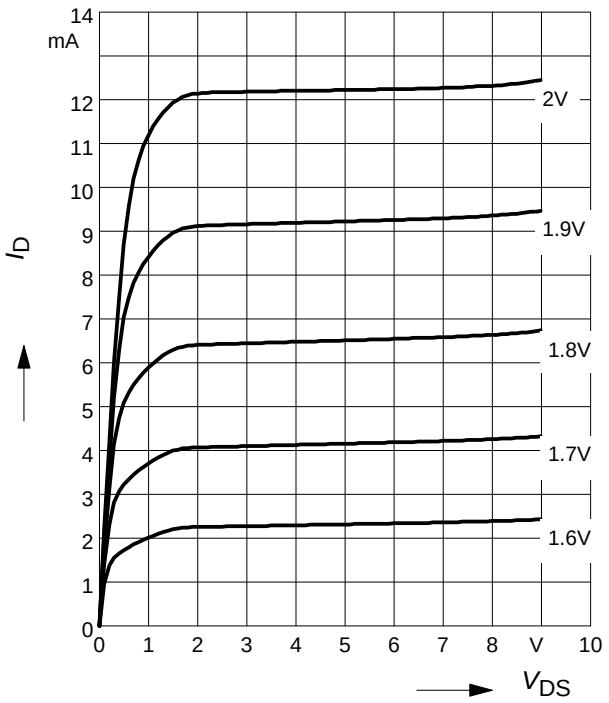
Electrical Characteristics at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics - (verified by random sampling)					
Forward transconductance V_{DS} = 5 V, V_{G2S} = 4 V	g_{fs}	-	33	-	mS
Gate1 input capacitance V_{DS} = 5 V, V_{G2S} = 4 V, f = 10 MHz	C_{g1ss}	-	1.9	-	pF
Output capacitance V_{DS} = 5 V, V_{G2S} = 4 V, f = 10 MHz	C_{dss}	-	1.1	-	
Power gain (self biased) V_{DS} = 5 V, V_{G2S} = 4 V, f = 800 MHz V_{DS} = 5 V, V_{G2S} = 4 V, f = 45 MHz	G_p	 - -	 24 31	 - -	dB
Noise figure (self biased) V_{DS} = 5 V, V_{G2S} = 4 V, f = 800 MHz V_{DS} = 5 V, V_{G2S} = 4 V, f = 45 MHz	F	 - -	 1.3 1.7	 - -	dB
Gain control range V_{DS} = 5 V, 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 $P_{tot} = f(T_S)$



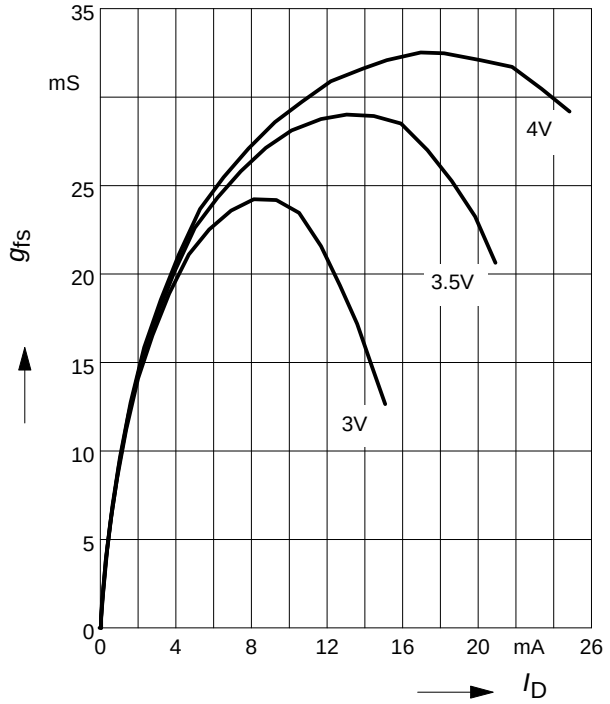
Output characteristics $I_D = f(V_{DS})$



Gate 1 forward transconductance

$g_{fs} = f(I_D)$

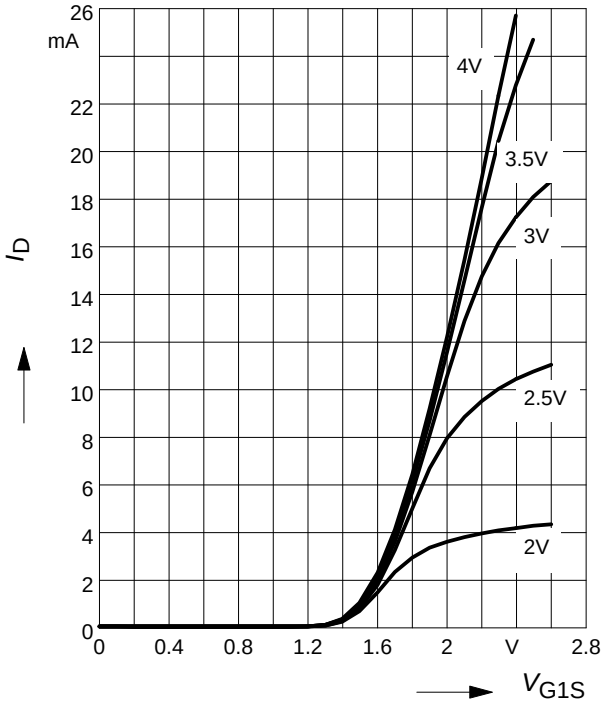
V_{DS} = 5V, V_{G2S} = Parameter



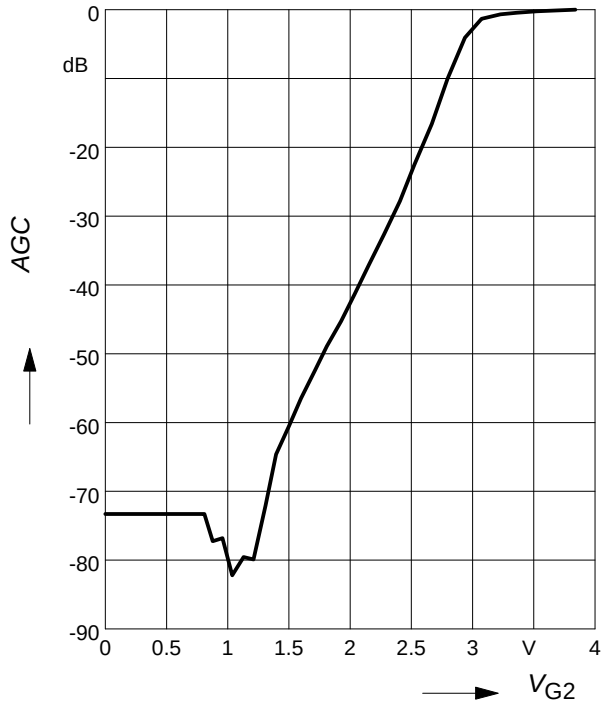
Drain current $I_D = f(V_{G1S})$

V_{DS} = 5V

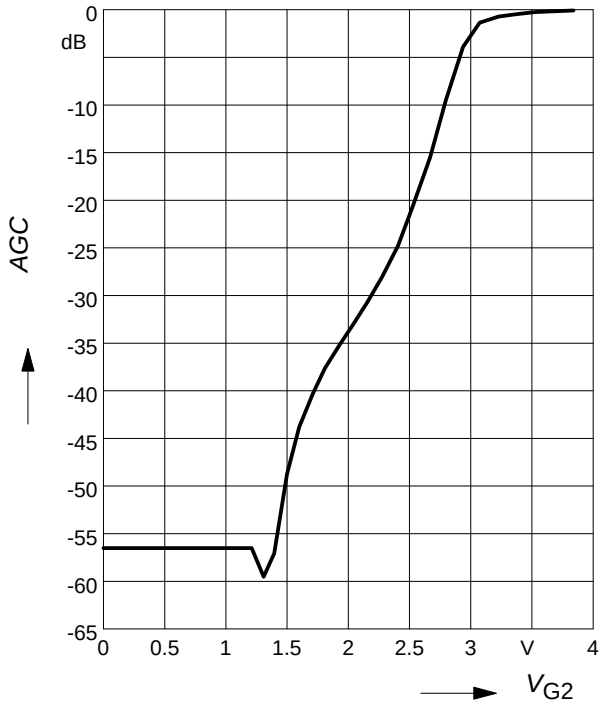
V_{G2S} = Parameter



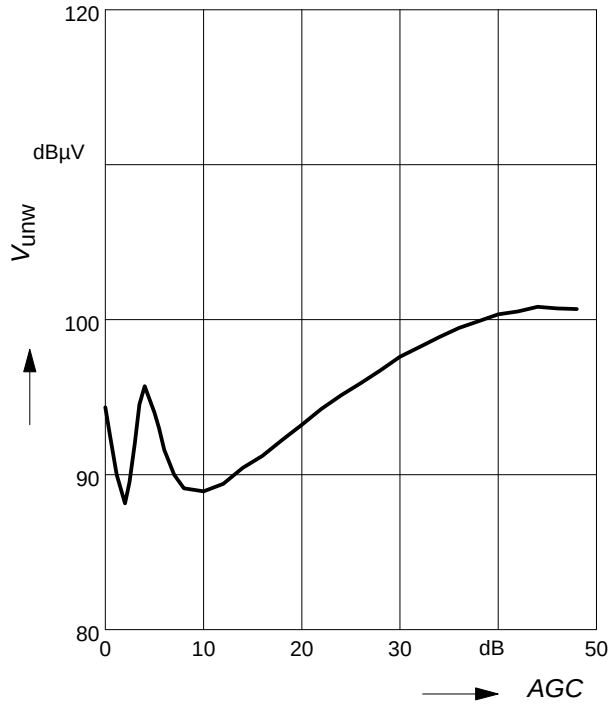
AGC characteristic $AGC = f(V_{G2S})$
f = 200 MHz



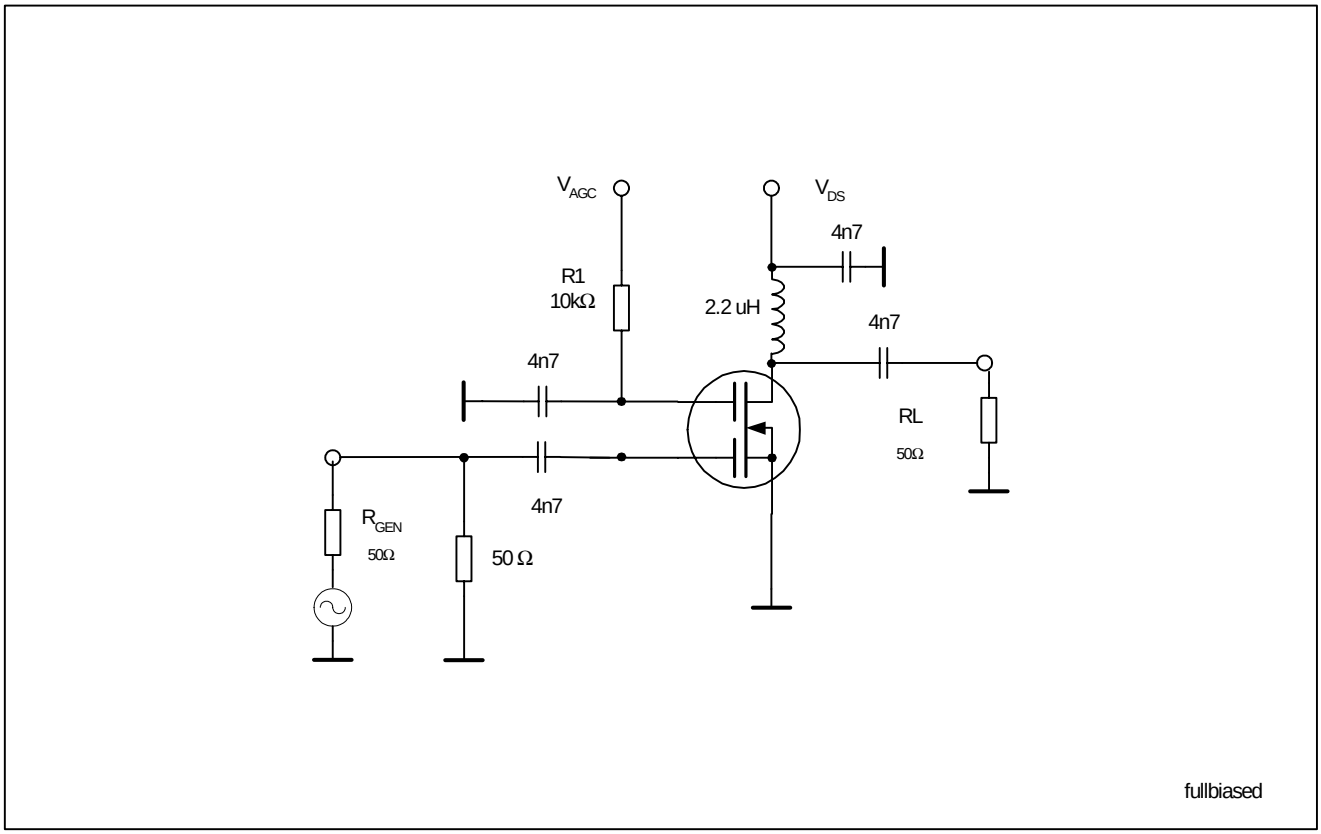
AGC characteristic $AGC = f(V_{G2S})$
f = 800 MHz



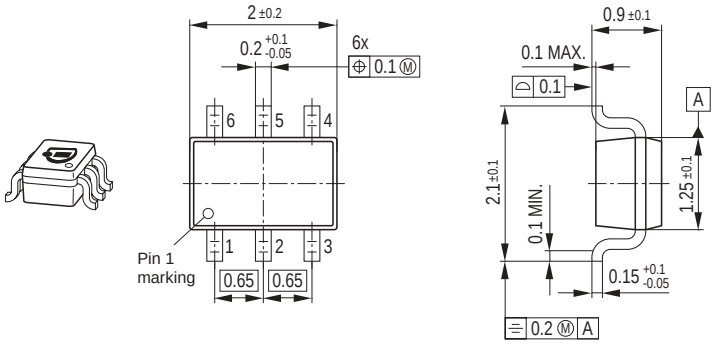
Crossmodulation $V_{unw} = (AGC)$
V_{DS} = 5 V, R_{g1} = 68 kΩ



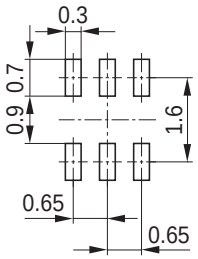
Crossmodulation test circuit



Package Outline

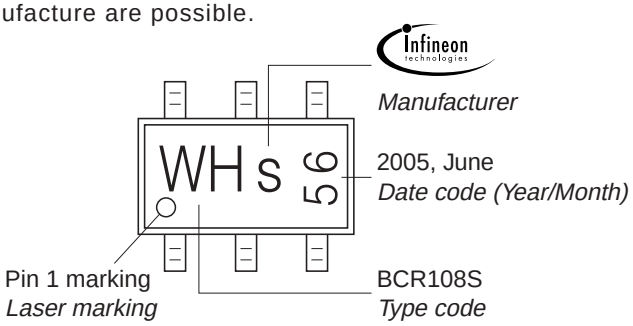


Foot Print



Marking Layout (Example)

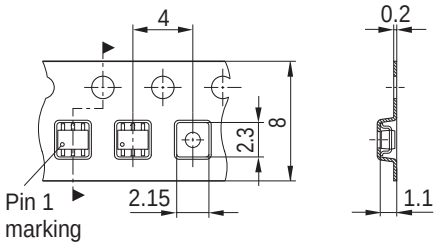
Small variations in positioning of
Date code, Type code and Manufacture are possible.



Standard Packing

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

For symmetric types no defined Pin 1 orientation in reel.



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