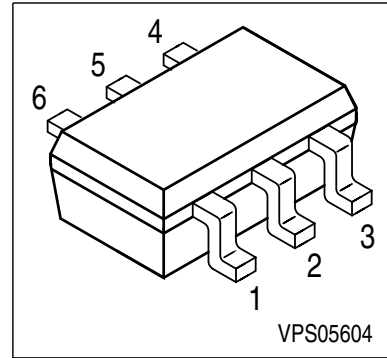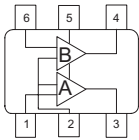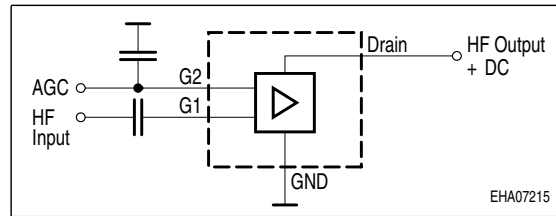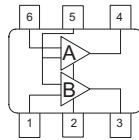## DUAL N-Channel MOSFET Tetrode

- 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

VPS05604

BG3230

BG3230R

EHA07215

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
BG3230R	SOT363	1=G1	2=S	3=D	4=D	5=G2	6=G1	KIs

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}	160	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

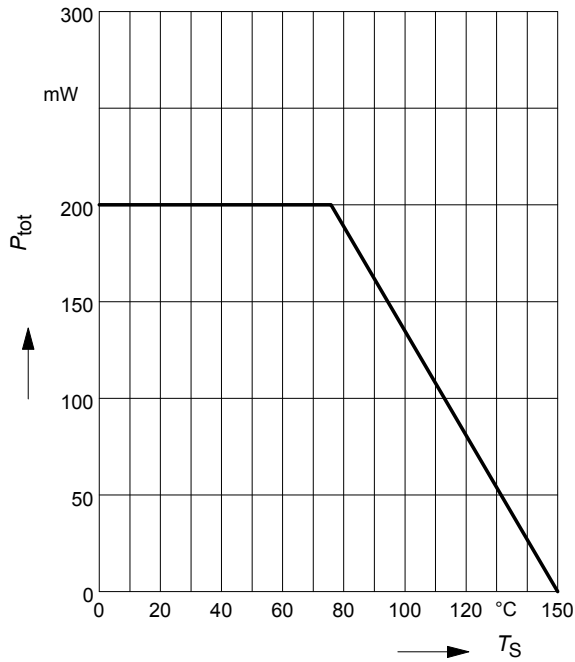[1] For calculation of R_{thJA} please refer to Application Note Thermal Resistance

Feb-27-2004

Electrical Characteristics

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

Feb-27-2004

Electrical Characteristics

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 = 1 MHz	C_{g1ss}	-	1.9	-	pF
Output capacitance V_{DS} = 5 V, V_{G2S} = 4 V, f = 100 MHz	C_{dss}	-	1.1	-	
Power gain (self biased)	G_p				dB
V_{DS} = 5 V, V_{G2S} = 4 V, f = 800 MHz		-	24	-	
V_{DS} = 5 V, V_{G2S} = 4 V, f = 45 MHz		-	31	-	
Noise figure (self biased)	F				dB
V_{DS} = 5 V, V_{G2S} = 4 V, f = 800 MHz		-	1.3	-	
V_{DS} = 5 V, V_{G2S} = 4 V, f = 45 MHz		-	1.7	-	
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	X_{mod}				-
AGC = 0 dB		90	-	-	
AGC = 10 dB		-	87	-	
AGC = 40 dB		96	100	-	

Feb-27-2004

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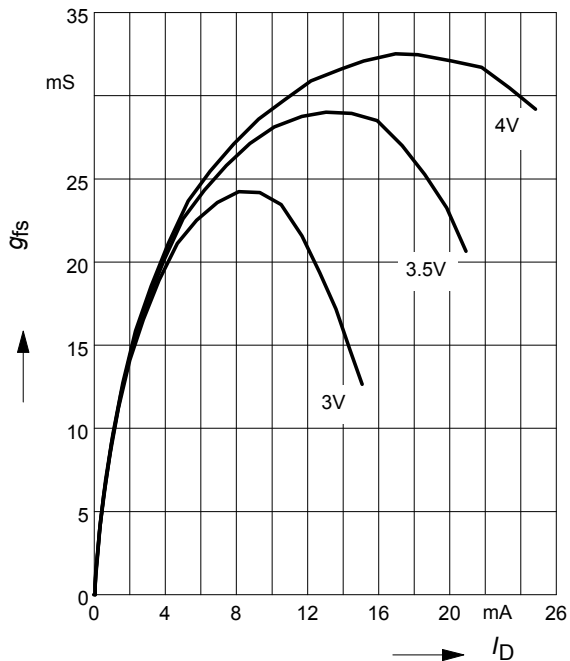

Output characteristics I_D = $f(V_{DS})$
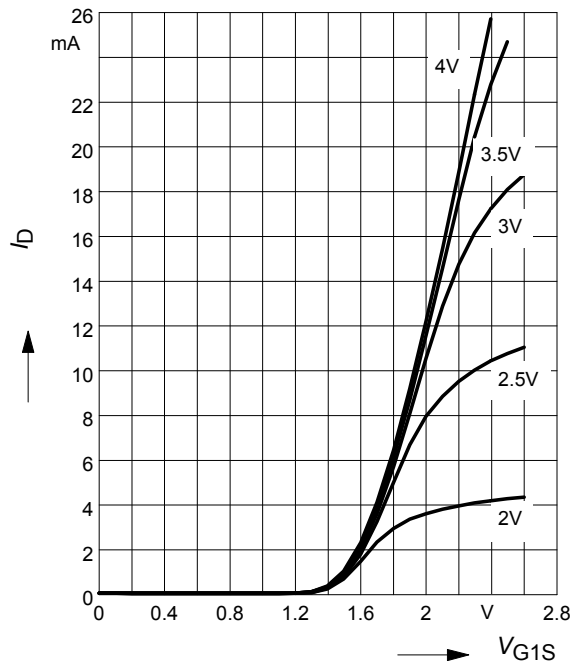

Gate 1 forward transconductance

g_{fs} = $f(I_D)$

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

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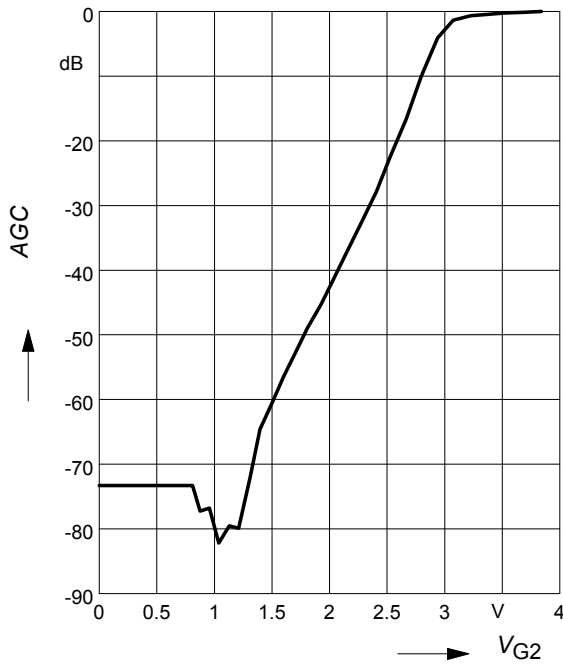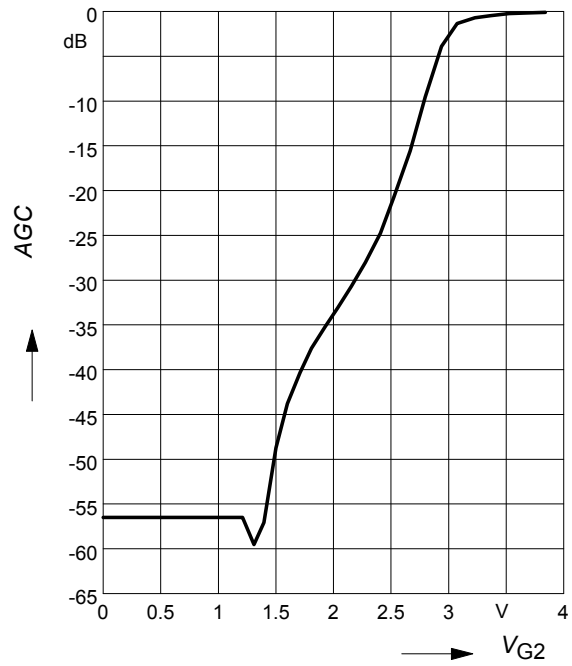
V_{DS} = 5V

V_{G2S} = Parameter

4

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

$f = 200$ MHz
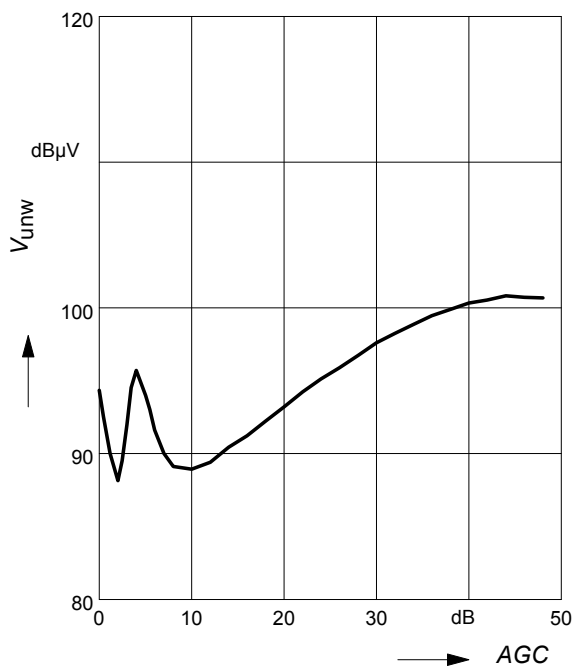

AGC characteristic $AGC = f(V_{G2S})$

$f = 800$ MHz

Crossmodulation $V_{unw} = (AGC)$

$V_{DS} = 5$ V, $R_{g1} = 68$ kΩ

5   Feb-27-2004

Cossmodulation test circuit

Feb-27-2004