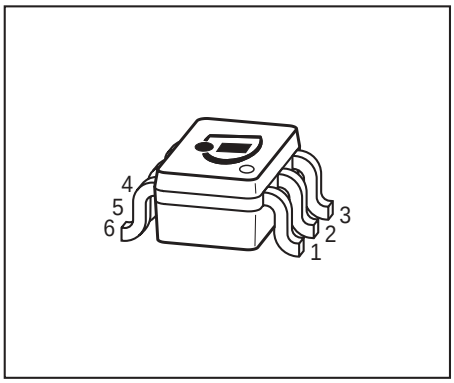
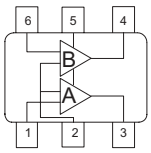
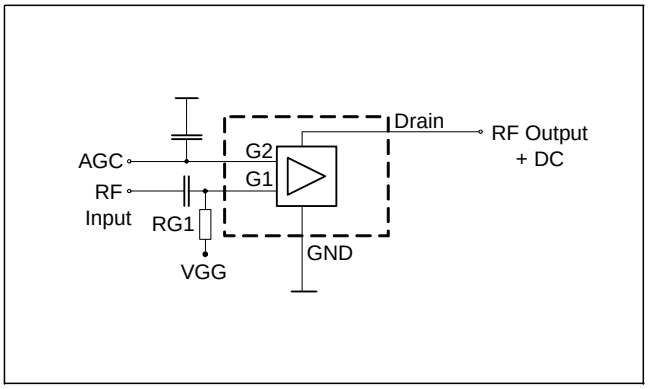
DUAL N-Channel MOSFET Tetrode



- 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	

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 µA, 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 kΩ	I_{DSX}	-	10	-	mA
Gate1-source pinch-off voltage V_{DS} = 5 V, V_{G2S} = 4 V, I_D = 20 µA	$V_{G1S(p)}$	-	0.7	-	V
Gate2-source pinch-off voltage V_{DS} = 5 V, I_D = 20 µA	$V_{G2S(p)}$	-	0.6	-	

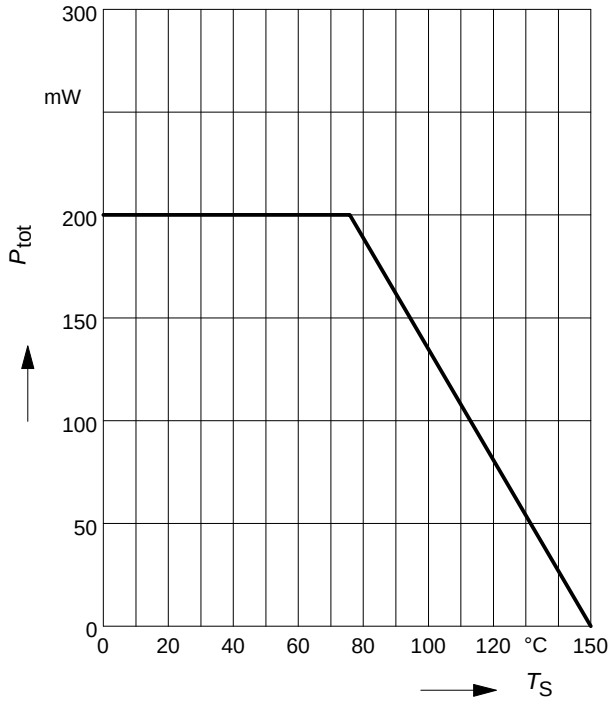
[1]For calculation of R_{thJA} please refer to Application Note Thermal Resistance

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	G_p				dB
f = 800 MHz		-	24	-	
f = 45 MHz		-	31	-	
Noise figure	F				dB
f = 800 MHz		-	1.3	-	
f = 45 MHz		-	1.7	-	
Gain control range 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	-	

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

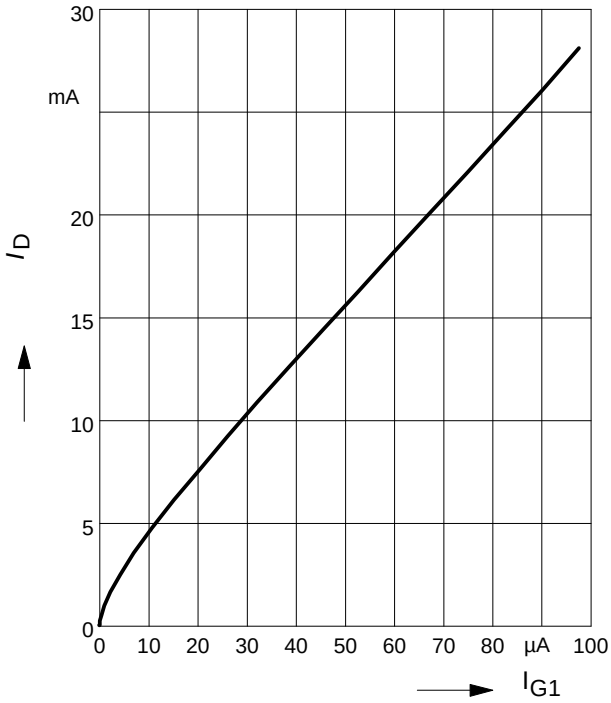
amp. A = amp. B



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

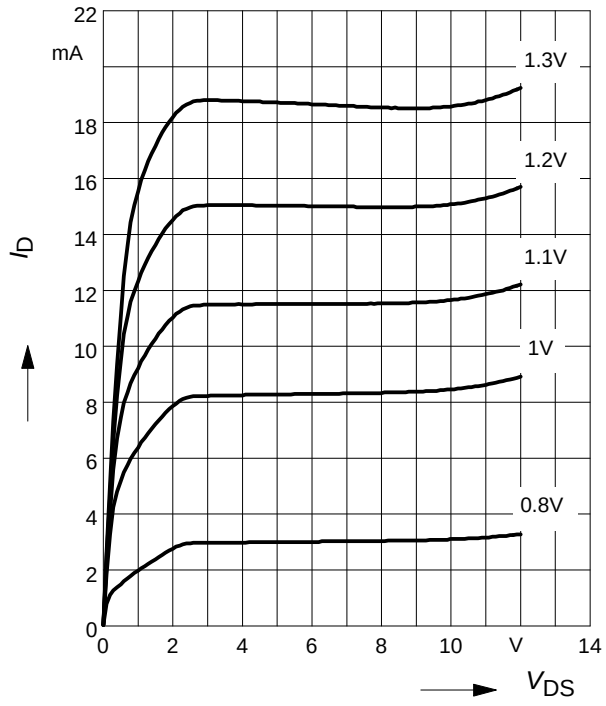
V_{G2S} = 4V

amp. A = amp. B



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

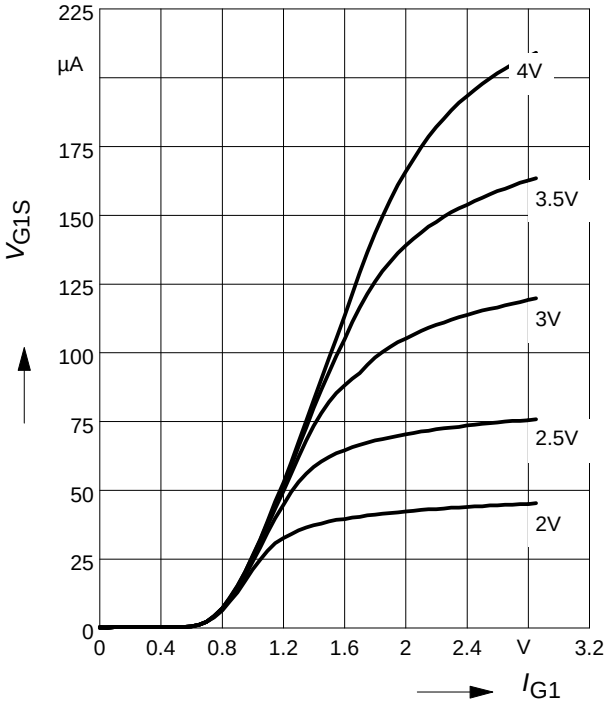
amp. A = amp. B



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

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

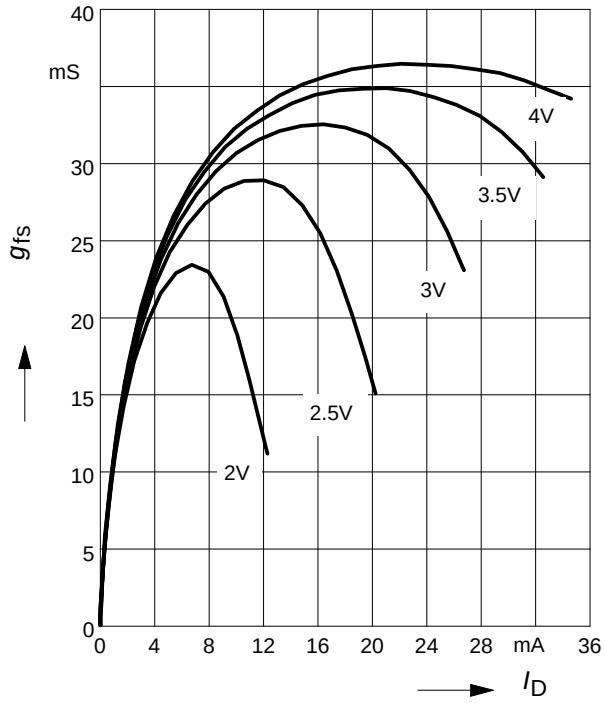
amp. A = amp. B



Gate 1 forward transconductance

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

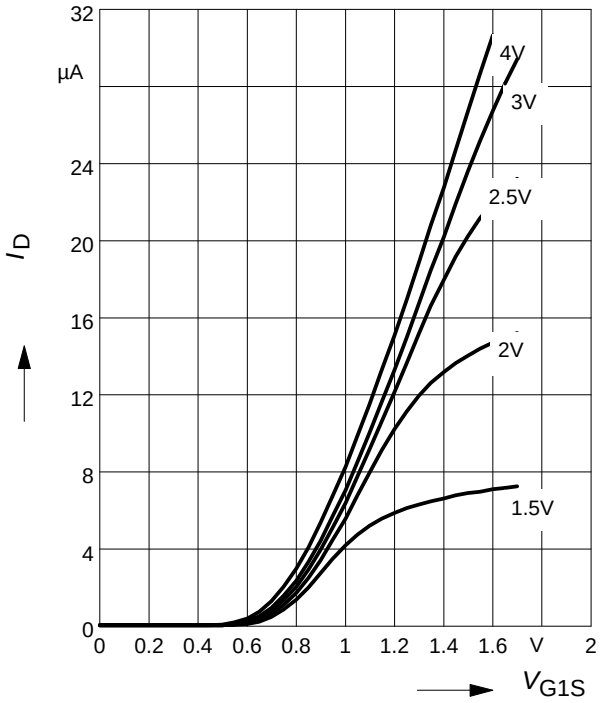
amp. A = amp. B



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

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

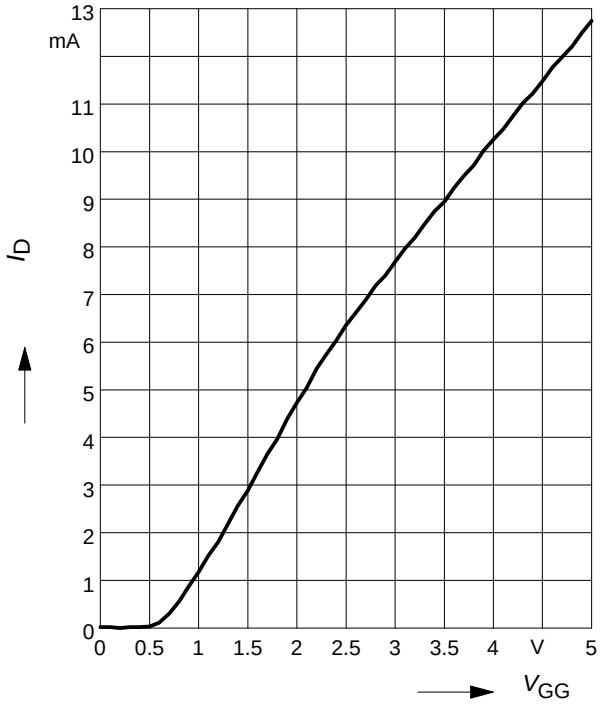
amp. A = amp. B



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

V_{DS} = 5V, V_{G2S} = 4V, R_{G1} = 120kΩ

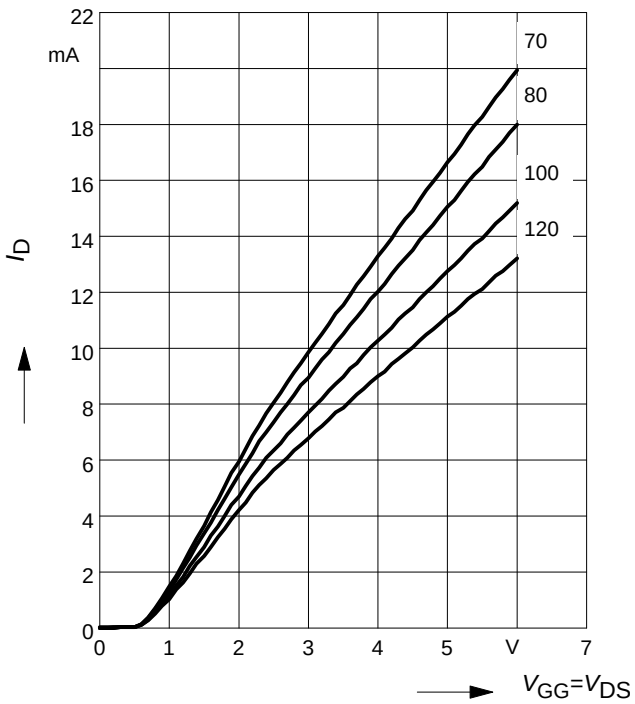
(connected to V_{GG}, V_{GG}=gate1 supply voltage)



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

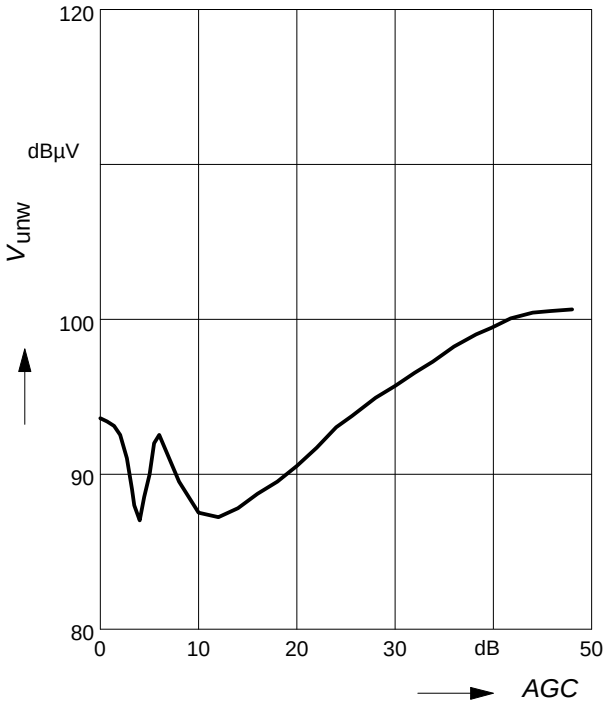
V_{G2S} = 4V, R_{G1} = Parameter in kΩ

amp. A = amp. B

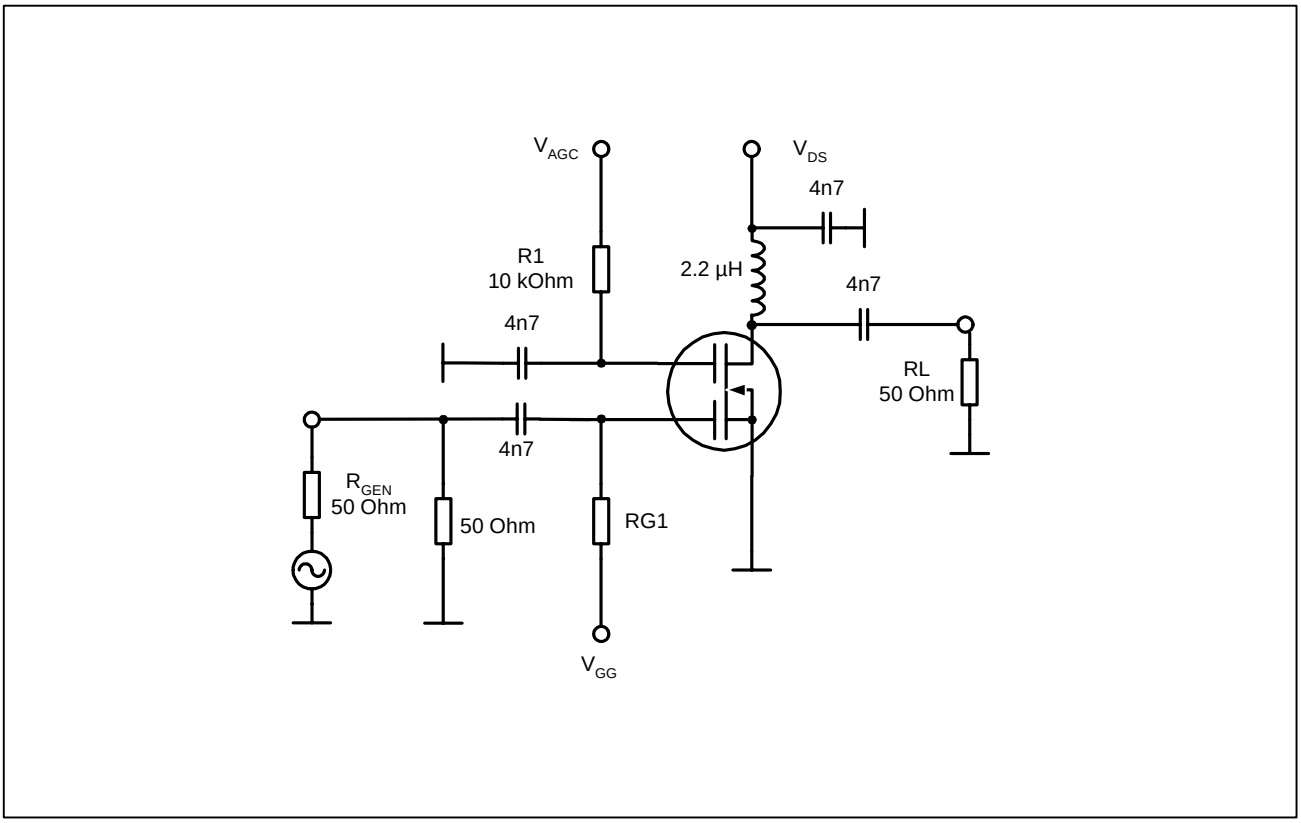


Crossmodulation V_{unw} = (*AGC*)

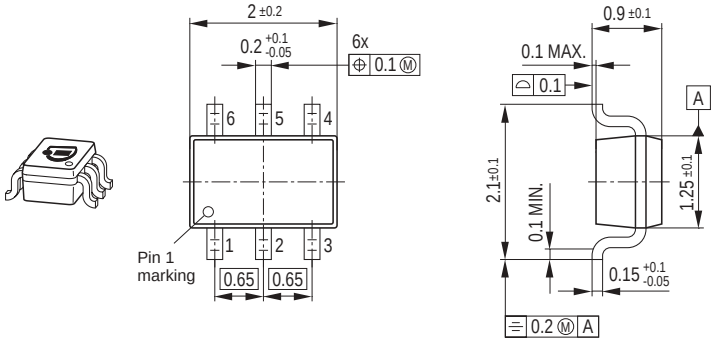
V_{DS} = 5 V, R_{g1} = 68 kΩ



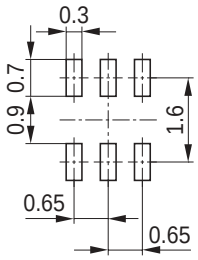
Crossmodulation test circuit



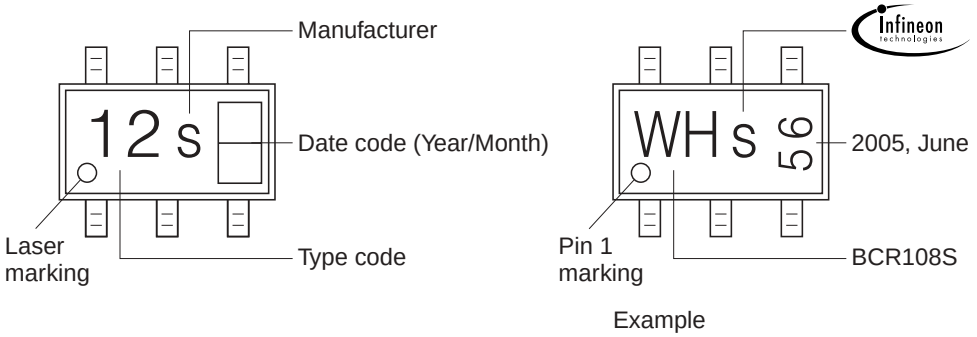
Package Outline



Foot Print

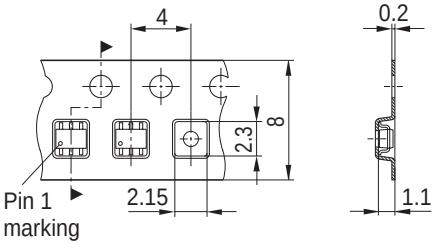


Marking Layout



Standard Packing

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



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