Dual - MOSMIC®– two AGC Amplifiers for TV–Tuner Prestage with 5 V Supply Voltage

MOSMIC - **MOS M**onolithic **I**ntegrated **C**ircuit

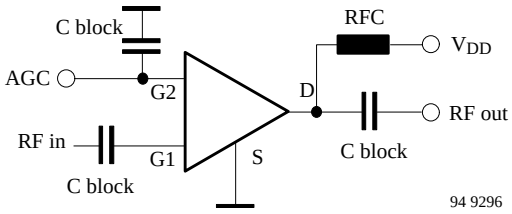
Electrostatic sensitive device.
Observe precautions for handling.

Applications

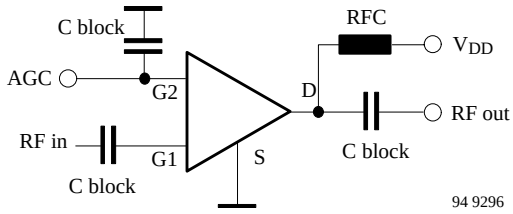
Low noise gain controlled input stages in UHF-and VHF- tuner with 5 V supply voltage.

Typical Application

Amplifier 1

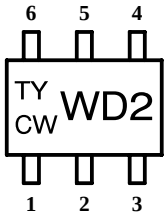


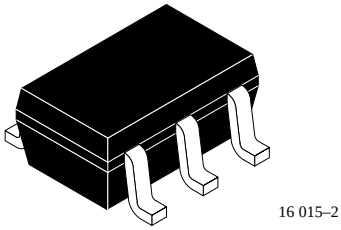
Amplifier 2



Features

- Two AGC amplifiers in a single package
- Integrated gate protection diodes
- Low noise figure
- High gain, high forward transadmittance (24 mS typ.)
- Biasing network on chip
- Improved cross modulation at gain reduction
- High AGC-range
- SMD package





TSDF52424 Marking: WD2
Plastic case (SOT 363)
1 = Gate 1 (amplifier 1), 2 = Gate 2, 3 = Drain (amplifier 1),
4 = Drain (amplifier 2), 5 = Source, 6 = Gate1 (amplifier 2)

T = Telefunken
Y = Year, is variable for digit from 0 to 9 (e.g. 9 = 1999, 0 = 2000)
CW = Calendar Week, is variable for number from 01 to 52
Number of Calendar Week is always indicating place of pin 1

All of following data and characteristics are valid for operating either amplifier 1 (pin 1, 3, 2, 5) or amplifier 2 (pin 6, 4, 2, 5)

Absolute Maximum Ratings

T_{amb} = 25°C, unless otherwise specified

Parameter	Test Conditions	Symbol	Value	Unit
Drain - source voltage		V_{DS}	8	V
Drain current		I_D	20	mA
Gate 1/Gate 2 - source peak current		$\pm I_{G1/G2SM}$	10	mA
Gate 1/Gate 2 - source voltage		$\pm V_{G1/G2SM}$	6	V
Total power dissipation	$T_{amb} \leq 78$ °C	P_{tot}	160	mW
Channel temperature		T_{Ch}	150	°C
Storage temperature range		T_{stg}	–55 to +150	°C

Maximum Thermal Resistance

T_{amb} = 25°C, unless otherwise specified

Parameter	Test Conditions	Symbol	Value	Unit
Channel ambient	on glass fibre printed board (25 x 20 x 1.5) mm^3 plated with 35µm Cu	R_{thChA}	450	K/W

Electrical DC Characteristics

T_{amb} = 25°C, unless otherwise specified

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Gate 1 - source breakdown voltage	$\pm I_{G1S}$ = 10 mA, $V_{G2S} = V_{DS} = 0$	$\pm V_{(BR)G1SS}$	7		10	V
Gate 2 - source breakdown voltage	$\pm I_{G2S}$ = 10 mA, $V_{G1S} = V_{DS} = 0$	$\pm V_{(BR)G2SS}$	7		10	V
Gate 1 - source leakage current	$+V_{G1S}$ = 5 V, $V_{G2S} = V_{DS} = 0$	$+I_{G1SS}$			50	µA
	$-V_{G1S}$ = 5 V, $V_{G2S} = V_{DS} = 0$	$-I_{G1SS}$			100	µA
Gate 2 - source leakage current	$\pm V_{G2S}$ = 5 V, $V_{G1S} = V_{DS} = 0$	$\pm I_{G2SS}$			20	nA
Drain current	V_{DS} = 5 V, V_{G1S} = 0, V_{G2S} = 4 V	I_{DSS}	50		500	µA
Self-biased operating current	V_{DS} = 5 V, V_{G1S} = nc, V_{G2S} = 4 V	I_{DSP}	7	10	14	mA
Gate 2 - source cut-off voltage	V_{DS} = 5 V, V_{G1S} = nc, I_D = 20 µA	$V_{G2S(OFF)}$		1.0		V

Electrical AC Characteristics

V_{DS} = 5 V, V_{G2S} = 4 V, f = 1 MHz , T_{amb} = 25°C, unless otherwise specified

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Forward transadmittance		$\|y_{21s}\|$	20	24	28	mS
Gate 1 input capacitance		C_{issg1}		2.1	2.5	pF
Feedback capacitance		C_{rss}		20		fF
Output capacitance		C_{oss}		0.9		pF
Power gain	G_S = 2 mS, G_L = 0.5 mS, f = 200 MHz	G_{ps}		26		dB
	G_S = 3,3 mS, G_L = 1 mS, f = 800 MHz	G_{ps}	16.5	20		dB
AGC range	V_{DS} = 5 V, V_{G2S} = 1 to 4 V, f = 800 MHz	ΔG_{ps}		45		dB
Noise figure	G_S = 2 mS, G_L = 0.5 mS, f = 200 MHz	F		1		dB
	G_S = 3,3 mS, G_L = 1 mS, f = 800 MHz	F		1.3		dB
Cross modulation	Input level for k = 1 % @ 0 dB AGC f_w = 50 MHz, f_{unw} = 60 MHz	X_{mod}	85			dBµV
	Input level for k = 1 % @ 40 dB AGC f_w = 50 MHz, f_{unw} = 60 MHz	X_{mod}	100			dBµV

Caution for Gate 1 switch-off mode:

No external DC-voltage on Gate 1 in active mode!
Switch-off at Gate 1 with V_{G1S} < 0.7 V is feasible.
Using open collector switching transistor (inside of PLL), insert 10 kΩ collector resistor.

Dimensions of TSDF52424 in mm

specificati.

Ozone Depleting Substances Policy Statement

It is the policy of **Vishay Semiconductor GmbH** to

1. Meet all present and future national and international statutory requirements.

2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.