N-Channel Dual-Gate MOS-Fieldeffect Tetrode, Depletion Mode

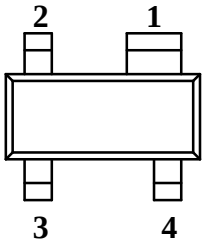
Electrostatic sensitive device.
Observe precautions for handling.

Applications

Input- and mixer stages in low voltage UHF- and VHF-tuner with only 5 V supply voltage and in cordless phones.

Features

- Integrated gate protection diodes
- Low noise figure
- High gain
- Only 5 V supply voltage
- Low input capacitance
- High AGC-range



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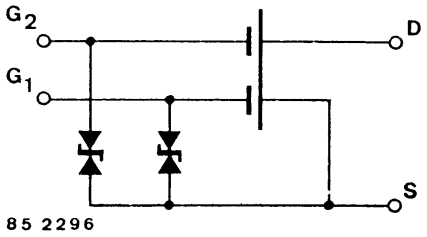


S888T Marking: 888
Plastic case (SOT 143)
1 = Source; 2 = Drain; 3 = Gate 2; 4 = Gate 1

Absolute Maximum Ratings

Parameters	Symbol	Value	Unit
Drain source voltage	V_{DS}	10	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	$\pm V_{G1S/G2S}$	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

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

Electrical DC Characteristics

T_{amb} = 25°C

Parameters /Test Conditions	Symbol	Min.	Typ.	Max.	Unit
Drain-source breakdown voltage I_D = 10 µA, $-V_{G1S} = -V_{G2S}$ = 2 V	$V_{(BR)DS}$	10			V
Gate 1-source breakdown voltage $\pm I_{G1S}$ = 10 mA, $V_{G2S} = V_{DS}$ = 0 V	$\pm V_{(BR)G1SS}$	7.5		12	V
Gate 2-source breakdown voltage $\pm I_{G2S}$ = 10 mA, $V_{G1S} = V_{DS}$ = 0 V	$\pm V_{(BR)G2SS}$	7.5		12	V
Gate 1-source leakage current $\pm V_{G1S}$ = 5 V, $V_{G2S} = V_{DS}$ = 0 V	$\pm I_{G1SS}$			50	nA
Gate 2-source leakage current $\pm V_{G2S}$ = 5 V, $V_{G1S} = V_{Ds}$ = 0 V	$\pm I_{G2SS}$			50	nA
Drain current V_{DS} = 4 V, V_{G1S} = 0 V, V_{G2S} = 2 V	I_{DSS}	1		12	mA
Gate 1-source cut–off voltage V_{DS} = 4 V, V_{G2S} = 2 V, I_D = 20 µA	$-V_{G1S(OFF)}$			1.0	V
Gate 2-source cut-off voltage V_{DS} = 4 V, V_{G1S} = 0 V, I_D = 20 µA	$-V_{G2S(OFF)}$			0.8	V

Electrical AC Characteristics

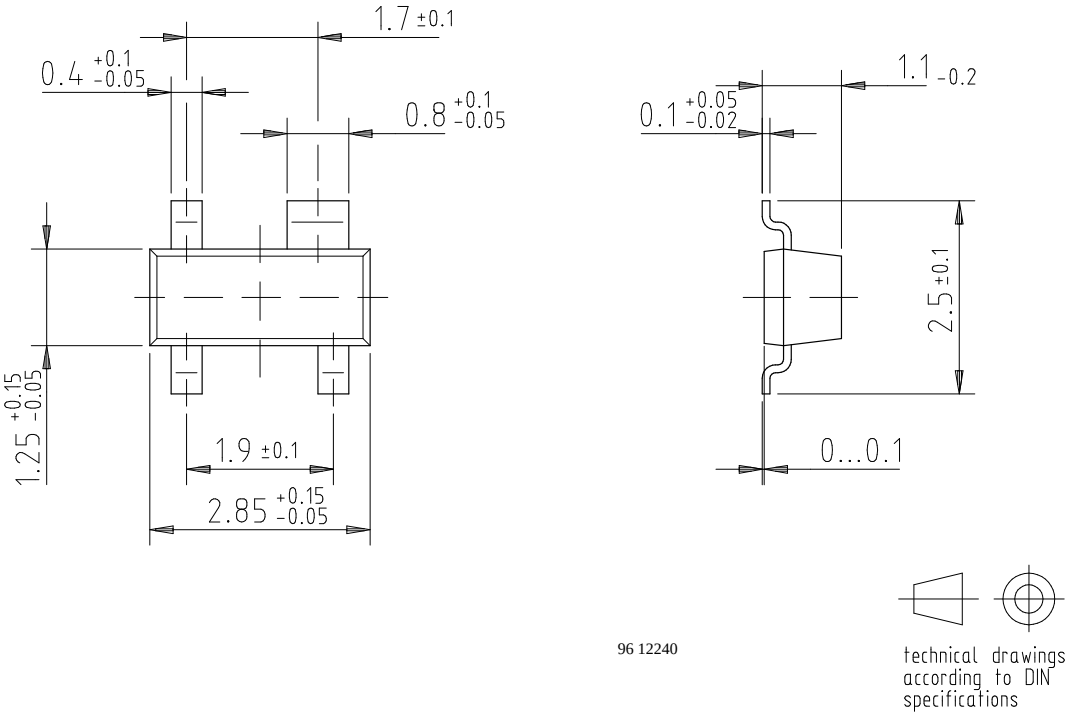
V_{DS} = 4 V, I_D = 10 mA, V_{G2S} = 2 V, f = 1 MHz, T_{amb} = 25°C

Parameters /Test Conditions	Symbol	Min.	Typ.	Max.	Unit
Forward transadmittance	$\lvert y_{21s} \rvert$	20	24		mS
Gate 1 input capacitance	C_{issg1}		1.9		pF
Gate 2 input capacitance V_{G1S} = 0 V, V_{G2S} = 2 V	C_{issg2}		1.2		pF
Feedback capacitance	C_{rss}		20		fF
Output capacitance	C_{oss}		0.9		pF
Power gain g_G = 2 mS, g_L = 0.5 mS, f = 200 MHz g_G = 3.3 mS, g_L = 1 mS, f = 800 MHz	 G_{ps} G_{ps}	 16.5	 26 20		 dB dB
AGC range V_{DS} = 4 V, V_{G2S} = 2 to –1 V, f = 800 MHz	ΔG_{ps}	40			dB
Noise figure g_G = 2 mS, g_L = 0.5 mS, f = 200 MHz g_G = 3.3 mS, g_L = 1 mS, f = 800 MHz	 F F		 0.9 1.3		 dB dB

Common Source S-Parameters
V_{G2S} = 4 V, Z_0 = 50 Ω

V_{DS}/V	I_D /mA	f/MHz	S_{11}		S_{21}		S_{12}		S_{22}	
			LOG MAG	ANG	LOG MAG	ANG	LOG MAG	ANG	LOG MAG	ANG
			dB	deg	dB	deg	dB	deg	dB	deg
4	10	100	–0.04	–7.4	7.54	169.3	–57.68	84.3	–0.08	–3.4
		200	–0.15	–14.6	7.32	157.8	–52.06	78.8	–0.15	–6.8
		300	–0.35	–21.4	7.01	147.1	–49.12	73.9	–0.24	–10.0
		400	–0.58	–28.1	6.59	136.7	–47.51	69.8	–0.35	–13.1
		500	–0.83	–34.4	6.17	126.7	–46.85	65.8	–0.48	–16.2
		600	–1.10	–40.3	5.70	117.8	–46.64	67.6	–0.61	–18.7
		700	–1.36	–46.1	5.31	109.5	–46.80	69.3	–0.73	–21.4
		800	–1.62	–51.5	4.90	101.3	–47.07	76.0	–0.83	–24.1
		900	–1.86	–57.2	4.54	93.6	–47.06	85.6	–0.94	–26.9
		1000	–2.09	–62.3	4.14	85.8	–47.29	95.0	–1.09	–29.1
		1100	–2.34	–67.6	3.80	78.4	–46.88	110.8	–1.21	–31.8
		1200	–2.52	–72.7	3.60	71.7	–45.49	127.1	–1.22	–34.8
		1300	–2.75	–77.6	3.33	64.5	–43.34	139.2	–1.26	–37.6
	5	100	–0.04	–6.8	5.89	169.2	–58.18	84.4	–0.05	–3.3
		200	–0.14	–13.7	5.65	157.6	–52.56	78.7	–0.11	–6.6
		300	–0.33	–19.9	5.36	146.7	–49.71	73.5	–0.21	–9.7
		400	–0.54	–26.0	4.97	136.3	–48.01	69.5	–0.29	–12.5
		500	–0.78	–32.1	4.55	126.1	–47.44	65.4	–0.43	–15.7
		600	–1.03	–37.6	4.10	116.9	–47.33	66.7	–0.54	–18.2
		700	–1.26	–43.0	3.71	108.3	–47.59	68.5	–0.64	–21.0
		800	–1.51	–48.2	3.31	100.1	–48.16	75.6	–0.74	–23.5
		900	–1.74	–53.5	2.95	92.0	–48.25	86.7	–0.85	–26.2
		1000	–1.94	–58.3	2.54	84.0	–48.59	98.3	–1.01	–28.5
		1100	–2.18	–63.3	2.22	76.5	–48.17	117.8	–1.11	–31.2
		1200	–2.34	–68.4	2.01	69.6	–46.19	135.8	–1.12	–34.1
		1300	–2.57	–73.1	1.77	62.4	–43.65	147.4	–1.16	–36.8

Dimensions in mm



Ozone Depleting Substances Policy Statement

It is the policy of **TEMIC TELEFUNKEN microelectronic 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.

TEMIC TELEFUNKEN microelectronic GmbH semiconductor division has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively

2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA

3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

TEMIC can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

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