



## Absolute Maximum Ratings

$T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Drain - source voltage		$V_{DS}$	8	V
Drain current		$I_D$	30	mA
Gate 1/Gate 2 - source peak current		$\pm I_{G1/G2SM}$	10	mA
Gate 1 - source voltage		$+ V_{G1S}$	6	V
		$- V_{G1S}$	1.5	V
Gate 2 - source voltage		$\pm V_{G2SM}$	6	V
Total power dissipation	$T_{amb} \leq 60\text{ }^{\circ}\text{C}$	$P_{tot}$	200	mW
Channel temperature		$T_{Ch}$	150	$^{\circ}\text{C}$
Storage temperature range		$T_{stg}$	- 55 to + 150	$^{\circ}\text{C}$

## Maximum Thermal Resistance

Parameter	Test condition	Symbol	Value	Unit
Channel ambient	1)	$R_{thChA}$	450	K/W

1) on glass fibre printed board (25 x 20 x 1.5) mm<sup>3</sup> plated with 35  $\mu\text{m}$  Cu

## Electrical DC Characteristics

$T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Drain - source breakdown voltage	$I_D = 10\text{ }\mu\text{A}$ , $V_{G1S} = V_{G2S} = 0$	$V_{(BR)DSS}$	12			V
Gate 1 - source breakdown voltage	$\pm I_{G1S} = 10\text{ mA}$ , $V_{G2S} = V_{DS} = 0$	$\pm V_{(BR)G1SS}$	7		10	V
Gate 2 - source breakdown voltage	$\pm I_{G2S} = 10\text{ mA}$ , $V_{G1S} = V_{DS} = 0$	$\pm V_{(BR)G2SS}$	7		10	V
Gate 1 - source leakage current	$+ V_{G1S} = 5\text{ V}$ , $V_{G2S} = V_{DS} = 0$	$+ I_{G1SS}$			20	nA
Gate 2 - source leakage current	$\pm V_{G2S} = 5\text{ V}$ , $V_{G1S} = V_{DS} = 0$	$\pm I_{G2SS}$			20	nA
Drain - source operating current	$V_{DS} = V_{RG1} = 5\text{ V}$ , $V_{G2S} = 4\text{ V}$ , $R_{G1} = 56\text{ k}\Omega$	$I_{DSO}$	8	14	20	mA
Gate 1 - source cut-off voltage	$V_{DS} = 5\text{ V}$ , $V_{G2S} = 4\text{ V}$ , $I_D = 20\text{ }\mu\text{A}$	$V_{G1S(OFF)}$	0.5		1.3	V
Gate 2 - source cut-off voltage	$V_{DS} = V_{RG1} = 5\text{ V}$ , $R_{G1} = 56\text{ k}\Omega$ , $I_D = 20\text{ }\mu\text{A}$	$V_{G2S(OFF)}$	0.8	1.0	1.4	V

### Remark on improving intermodulation behavior:

By setting  $R_{G1}$  smaller than 56 k $\Omega$ , typical value of  $I_{DSO}$  will raise and improved intermodulation behavior will be performed.

## Electrical AC Characteristics

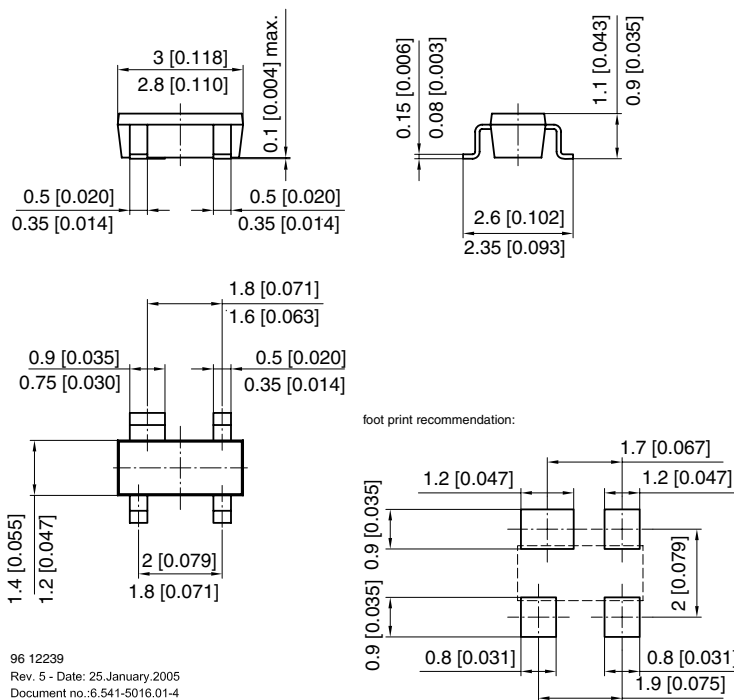
$T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified

$V_{DS} = V_{RG1} = 5\text{ V}$ ,  $V_{G2S} = 4\text{ V}$ ,  $R_{G1} = 56\text{ k}\Omega$ ,  $I_D = I_{DSO}$ ,  $f = 1\text{ MHz}$

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward transadmittance		$ y_{21s} $	27	30	35	mS
Gate 1 input capacitance		$C_{issg1}$		1.8	2.2	pF
Feedback capacitance		$C_{rss}$		20	30	fF
Output capacitance		$C_{oss}$		1.0		pF

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Power gain	$G_S = 2 \text{ mS}$ , $G_L = 0.5 \text{ mS}$ , $f = 200 \text{ MHz}$	$G_{ps}$		28		dB
	$G_S = 3.3 \text{ mS}$ , $G_L = 1 \text{ mS}$ , $f = 800 \text{ MHz}$	$G_{ps}$	17	22		dB
AGC range	$V_{DS} = 5 \text{ V}$ , $V_{G2S} = 1 \text{ to } 4 \text{ V}$ , $f = 800 \text{ MHz}$	$\Delta G_{ps}$	45	50		dB
Noise figure	$G_S = 2 \text{ mS}$ , $G_L = 0.5 \text{ mS}$ , $f = 200 \text{ MHz}$	F		1		dB
	$G_S = 3.3 \text{ mS}$ , $G_L = 1 \text{ mS}$ , $f = 800 \text{ MHz}$	F		1.3		dB
Cross modulation	Input level for $k = 1 \% @ 0 \text{ dB}$ AGC $f_w = 50 \text{ MHz}$ , $f_{unw} = 60 \text{ MHz}$	$X_{mod}$	90			dB $\mu\text{V}$
	Input level for $k = 1 \% @ 40 \text{ dB}$ AGC $f_w = 50 \text{ MHz}$ , $f_{unw} = 60 \text{ MHz}$	$X_{mod}$	100	105		dB $\mu\text{V}$

## Package Dimensions in mm

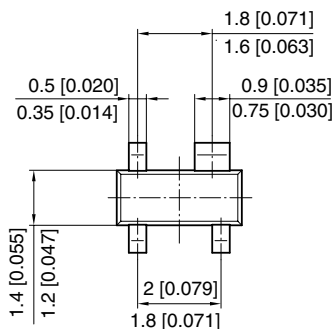
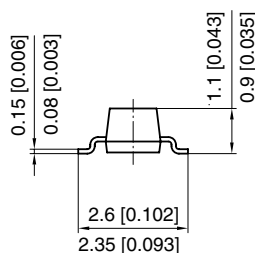
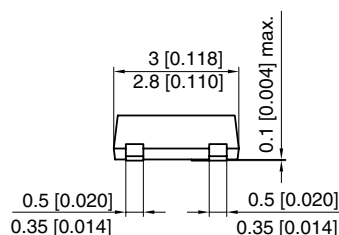


# S505TX/S505TXR/S505TXRW

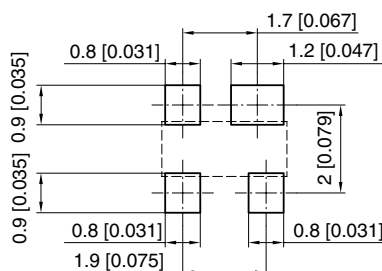
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## Package Dimensions in mm

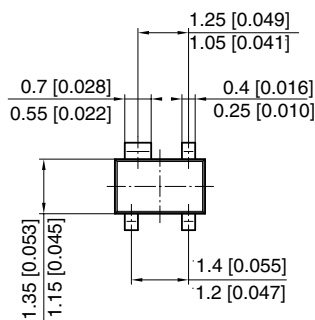
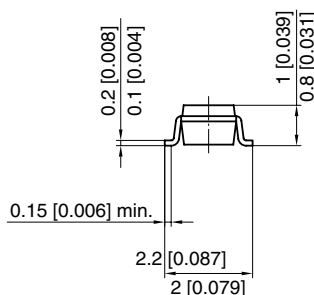
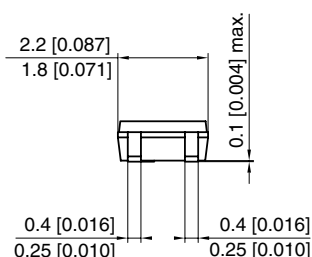


foot print recommendation:

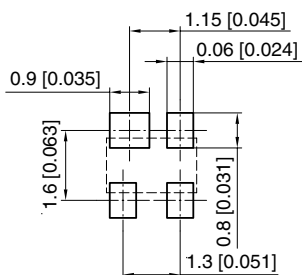


96 12240  
Rev. 5 - Date: 25 January 2005  
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## Package Dimensions in mm



foot print recommendation:



96 12238  
Rev. 4 - Date: 26 January 2005  
Document no.: 6.541-5042.01-4



## 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.

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.

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

We reserve the right to make changes to improve technical design  
and may do so without further notice.

Parameters can vary in different applications. All operating parameters must be validated for each customer application by the customer. Should the buyer use Vishay Semiconductors products for any unintended or unauthorized application, the buyer shall indemnify Vishay Semiconductors against all claims, costs, damages, and expenses, arising out of, directly or indirectly, any claim of personal damage, injury or death associated with such unintended or unauthorized use.

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