IEC 60747-16-4

Edition 1.0 2009-03

INTERNATIONAL STANDARD

NORME INTERNATIONALE

AMENDMENT 1
AMENDEMENT 1

Semiconductor devices – Part 16-4: Microwave integrated circuits – Switches

Dispositifs à semiconducteurs – Partie 16-4: Circuits intégrés hyperfréquences – Commutateurs

IEC 60747-16-4:2004/A1:2009

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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX F

ICS 31.080.99

ISBN 978-2-88912-575-3

FOREWORD

This amendment has been prepared by subcommittee 47E: Discrete semiconductor devices, of IEC technical committee 47: Semiconductor devices.

This bilingual version, published in 2011-07, corresponds to the English version.

The text of this amendment is based on the following documents:

CDV	Report on voting
47E/358/CDV	47E/373/RVC

Full information on the voting for the approval of this amendment can be found in the report on voting indicated in the above table.

The French version of this amendment has not been voted upon.

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

CONTENTS

5.8 n-th order harmonic distortion ratio (P_{nth}/P_1)

Replace the title of this subclause by the following new title;

5.8 nth order harmonic distortion ratio (P_1/P_{nth})

2 Normative references

Replace the existing references IEC 60617-12, IEC 60617-13 and IEC 60747-1 as follows:

IEC 60617, *Graphical symbols for diagrams*

IEC 60747-1:2006, *Semiconductor devices – Part 1: General*

Add, to the existing list, the following new references:

IEC 60747-16-1:2001, *Semiconductor devices – Part 16-1: Microwave integrated circuits – Amplifiers*
Amendment 1 (2007)[1]

IEC 61340-5-1:2007, *Electrostatics – Part 5-1: Protection of electronic devices from electrostatic phenomena – General requirements*

IEC/TR 61340-5-2:2007, *Electrostatics – Part 5-2: Protection of electronic devices from electrostatic phenomena – User guide*

3 Terms and definitions

Replace the terms, definitions and NOTES 3.1, 3.2 and 3.11 by the following new terms, definitions and NOTES:

3.1
insertion loss
L_{ins}
ratio of the input power to the output power at the switched on port, in the linear region of the power transfer curve P_o (dBm) = $f(P_i)$

NOTE 1 In this region, ΔP_o (dBm) = ΔP_i (dBm).

NOTE 2 Usually the insertion loss is expressed in decibels.

3.2
isolation
L_{iso}
ratio of the input power to the output power at the switched off port, in the linear region of the power transfer curve P_o (dBm) = $f(P_i)$

NOTE 1 In this region, ΔP_o (dBm) = ΔP_i (dBm).

NOTE 2 Usually the isolation is expressed in decibels.

3.11
***n*th order harmonic distortion ratio**
P_1/P_{nth}
See 3.14 of Amendment 1 of IEC 60747-16-1:2007.

4.1.4 Package identification

*Replace, in item b), "*drawing, of drawing*" by "*drawing, or drawing*".*

4.3.1 Detailed block diagram – functional blocks

*Replace, in the last paragraph, "*IEC 60617-12 or IEC 60617-13*" by "*IEC 60617*".*

4.4.2 Temperatures

Replace the existing all items, a) to e), by the following new items:

[1] There exists a consolidated edition 1.1 published in 2007, including the base publication (2001) and its Amendment 1 (2007).

a) Operating temperature (ambient or reference-point temperature)
b) Storage temperature
c) Channel temperature
d) Lead temperature (for soldering).

4.6 Electrical characteristics

Delete, in the first paragraph, “of 4.6.1 and 4.6.2”.

Replace, in the table, the parameters 4.6.12 and 4.6.13 by the following new parameters.

Subclause	Parameters	Min.	Typical[a]	Max.
4.6.12	Adjacent channel power ratio (where appropriate)	+	+	
4.6.13	*n*th order harmonic distortion ratio (where appropriate)	+	+	

4.7 Mechanical and environmental ratings, characteristics and data

Replace "IEC 60747-1, Chapter VI, clause 7" *by* "5.10 and 5.11 of IEC 60747-1".

4.8.8 Handling precautions

Replace the existing text by the following amended text:

Where appropriate, handling precautions specific to the circuit should be stated (see also IEC 61340-5-1 and IEC 61340-5-2, concerning electrostatic-sensitive devices.

5.1.1 General precautions

Replace "Clause 2 of IEC 60747-1, Chapter VII, Section One apply" *by* "6.3, 6.4 and 6.6 of IEC 60747-1:2006 apply".

5.1.3 Handling precautions

Replace "Clause 1 of IEC 60747-1, Chapter IX" *by* "IEC 61340-5-1 and IEC 61340-5-2".

5.2.3 Principle of measurement

Replace Equation (1) by the following equation:

$$L_{\text{ins}} = P_{\text{i}} - P_{\text{o}} \qquad (1)$$

5.2.6 Measurement procedure

Replace the second paragraph by the following new paragraph:

The bias under specified conditions is applied.

Replace, in the last paragraph, “Equations (3) and (1)” *by* “Equations (2), (3) and (1)”.

5.3.6 Measurement procedure

Replace the second paragraph by the following new paragraph:

The bias under specified conditions is applied.

Replace, in the last paragraph, “Equations (6) and (4)” *by* “Equations (5), (6) and (4)”.

5.4.3 Principle of measurement

Replace Equation (7) by the following new equation:

$$L_{\text{ret}} = P_1 - P_2 \tag{7}$$

5.4.6 Measurement procedure

Replace the seventh paragraph by the following new paragraph:

The bias under specified conditions is applied.

5.5.3 Principle of measurement

Replace, in the second sentence, “the ratio of output power to input power” *by* “the ratio of input power to output power”.

5.5.6 Measurement procedure

Replace the second paragraph by the following new paragraph:

The bias under specified conditions is applied.

Replace, in the seventh paragraph, “the ratio of the output power to the input power” *by* “the ratio of the input power to the output power”.

5.6.3 Principle of measurement

Figure 5 – Input and output waveforms

Add the following new NOTE below Figure 5, but above the Figure title.

NOTE t_w: Average pulse duration. Determined as the pulse duration at 50 % relative pulse amplitude of the control voltage.

Delete the NOTE at the end of this subclause.

5.6.6 Measurement procedure

Replace the second paragraph by the following new paragraph:

The bias under specified conditions is applied.

5.7.6 Measurement procedure

Replace the second paragraph by the following new paragraph:

The bias under specified conditions is applied.

5.8 n-th order harmonic distortion ratio (P_{nth}/P_1)

Replace the existing title of Subclause 5.8 by the following new title:

5.8 *n*th order harmonic distortion ratio (P_1/P_{nth})

5.8.3 Principle of measurements

Replace the first paragraph by the following new paragraph:

The nth order harmonic distortion ratio P_1/P_{nth} is the ratio of the power of the fundamental frequency to the power of the nth order harmonic components measured at the output port of the device. The P_1/P_{nth} is derived from the following equations:

Replace Equation (17) by the following new equation:

$$P_1/P_{nth} = P_{o(1st)} - P_{o(nth)} \quad (17)$$

Replace the last paragraph as follows:

P_1/P_{nth}, $P_{o(1st)}$, $P_{o(nth)}$, $P_{E(1st)}$ and $P_{E(nth)}$ are expressed in dBm. $L_{(1st)}$ and $L_{(nth)}$ are expressed in dB.

5.8.5 Measurement procedure

Replace the second paragraph by the following new paragraph:

The bias under specified conditions is applied.

Replace the symbol in the fifth paragraph "P_n/P_1" *by* "P_1/P_{nth}".

Delete the last paragraph "The n-th order harmonic distortion ratio P_n/P_1 is calculated from Equation (17)".

Bibliography

Delete this clause.

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