

CONSOLIDATED VERSION

VERSION CONSOLIDÉE



**Semiconductor devices –
Part 16-1: Microwave integrated circuits – Amplifiers**

**Dispositifs à semiconducteurs –
Partie 16-1: Circuits intégrés hyperfréquences – Amplificateurs**



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CONTENTS

FOREWORD.....	7
1 Scope.....	9
2 Normative references	9
3 Terminology Terms and definitions	10
4 Essential ratings and characteristics.....	12
4.1 General.....	12
4.1.1 Circuit identification and types	12
4.2 Application related description.....	13
4.2.1 Conformance to system and/or interface information	13
4.2.2 Overall block diagram	13
4.2.3 Reference data	13
4.2.4 Electrical compatibility.....	13
4.2.5 Associated devices	14
4.3 Specification of the function	14
4.3.1 Detailed block diagram – Functional blocks	14
4.3.2 Identification and function of terminals.....	14
4.3.3 Functional description.....	15
4.3.4 Family-related characteristics	15
4.4 Limiting values (absolute maximum rating system)	15
4.4.1 Electrical limiting values	16
4.4.2 Temperatures	16
4.5 Operating conditions (within the specified operating temperature range)	17
4.5.1 Power supplies positive and/or negative values	17
4.5.2 Initialization sequences (where appropriate)	17
4.5.3 Input voltage(s) (where appropriate)	17
4.5.4 Output current(s) (where appropriate).....	17
4.5.5 Voltage and/or current of other terminal(s)	17
4.5.6 External elements (where appropriate)	17
4.5.7 Operating temperature range.....	17
4.6 Electrical characteristics.....	17
4.6.1 Static characteristics	17
4.6.2 Dynamic or a.c. characteristics	18
4.7 Mechanical and environmental ratings, characteristics and data	19
4.8 Additional information.....	19
4.8.1 Equivalent input and output circuit	19
4.8.2 Internal protection	19
4.8.3 Capacitors at terminals.....	19
4.8.4 Thermal resistance	19
4.8.5 Interconnections to other types of circuit	19
4.8.6 Effects of externally connected component(s).....	19
4.8.7 Recommendations for any associated device(s)	19
4.8.8 Handling precautions	19
4.8.9 Application data.....	20
4.8.10 Other application information	20
4.8.11 Date of issue of the data sheet	20
5 Measuring methods	20
5.1 General.....	20
5.1.1 Characteristic impedances.....	20
5.1.2 General precautions	20
5.1.3 Handling precautions	20
5.1.4 Types	20

5.2	Linear (power) gain (G_{lin})	20
5.2.1	Purpose	20
5.2.2	Circuit diagram	21
5.2.3	Principle of measurement	21
5.2.4	Circuit description and requirements	21
5.2.5	Precautions to be observed	21
5.2.6	Measurement procedure	22
5.2.7	Specified conditions	22
5.3	Linear (power) gain flatness (ΔG_{lin})	22
5.3.1	Purpose	22
5.3.2	Circuit diagram	22
5.3.3	Principle of measurement	22
5.3.4	Circuit description and requirements	22
5.3.5	Precautions to be observed	22
5.3.6	Measurement procedure	22
5.3.7	Specified conditions	23
5.4	Power gain (G_p)	23
5.4.1	Purpose	23
5.4.2	Circuit diagram	23
5.4.3	Principle of measurement	23
5.4.4	Circuit description and requirements	23
5.4.5	Precautions to be observed	23
5.4.6	Measurement procedure	23
5.4.7	Specified conditions	23
5.5	(Power) gain flatness (ΔG_p)	24
5.5.1	Purpose	24
5.5.2	Circuit diagram	24
5.5.3	Principle of measurement	24
5.5.4	Circuit description and requirements	24
5.5.5	Precautions to be observed	24
5.5.6	Measurement procedure	24
5.5.7	Specified conditions	24
5.6	(Maximum available) gain reduction (ΔG_{red})	25
5.6.1	Purpose	25
5.6.2	Circuit diagram	25
5.6.3	Principle of measurement	25
5.6.4	Circuit description and requirements	25
5.6.5	Precautions to be observed	25
5.6.6	Measurement procedure	25
5.6.7	Specified conditions	25
5.7	Limiting output power ($P_{O(ltg)}$) and limiting output power flatness ($\Delta P_{O(ltg)}$)	25
5.7.1	Purpose	25
5.7.2	Circuit diagram	26
5.7.3	Principle of measurement	26
5.7.4	Circuit description and requirements	26
5.7.5	Precautions to be observed	26
5.7.6	Measurement procedure	26
5.7.7	Specified conditions	26
5.8	Output power (P_O)	26
5.8.1	Purpose	26
5.8.2	Circuit diagram	26
5.8.3	Principle of measurement	26
5.8.4	Circuit description and requirements	27
5.8.5	Precautions to be observed	27
5.8.6	Measurement procedure	27

5.8.7	Specified conditions	27
5.9	Output power at 1 dB gain compression ($P_{O(1dB)}$)	27
5.9.1	Purpose	27
5.9.2	Circuit diagram	27
5.9.3	Principle of measurement	27
5.9.4	Circuit description and requirements	27
5.9.5	Precautions to be observed	27
5.9.6	Measurement procedure	27
5.9.7	Specified conditions	28
5.10	Noise figure (F)	28
5.10.1	Purpose	28
5.10.2	Circuit diagram	28
5.10.3	Principle of measurement	28
5.10.4	Circuit description and requirements	29
5.10.5	Precautions to be observed	29
5.10.6	Measurement procedure	29
5.10.7	Specified conditions	30
5.11	Intermodulation distortion (two-tone) (P_n/P_1)	30
5.11.1	Purpose	30
5.11.2	Circuit diagram	30
5.11.3	Principle of measurement	30
5.11.4	Circuit description and requirements	31
5.11.5	Precautions to be observed	31
5.11.6	Measurement procedure	31
5.11.7	Specified conditions	31
5.12	Power at the intercept point (for intermodulation products) ($P_n(IP)$)	31
5.12.1	Purpose	31
5.12.2	Circuit diagram	32
5.12.3	Principle of measurement	32
5.12.4	Circuit description and requirements	32
5.12.5	Precautions to be observed	32
5.12.6	Measurement procedure	32
5.12.7	Specified conditions	32
5.13	Magnitude of the input reflection coefficient (input return loss) ($+s_{11}+ S_{11} $)	32
5.13.1	Purpose	32
5.13.2	Circuit diagram	33
5.13.3	Principle of measurement	33
5.13.4	Circuit description and requirements	33
5.13.5	Precautions to be observed	33
5.13.6	Measurement procedure	33
5.13.7	Specified conditions	34
5.14	Magnitude of the output reflection coefficient (output return loss) ($+s_{22}+ S_{22} $)	34
5.14.1	Magnitude of the output reflection coefficient (output return loss) under small-signal operating condition	34
5.14.2	Magnitude of the output reflection coefficient (output return loss) under large-signal operating condition	35
5.15	Magnitude of the reverse transmission coefficient (isolation) ($+s_{12}+ S_{12} $)	37
5.15.1	Purpose	37
5.15.2	Circuit diagram	38
5.15.3	Principle of measurement	38
5.15.4	Circuit description and requirements	38
5.15.5	Precautions to be observed	38
5.15.6	Measurement procedure	38
5.15.7	Specified conditions	39

5.16	Conversion coefficient of amplitude modulation to phase modulation ($\alpha_{(AM-PM)}$)	39
5.16.1	Purpose	39
5.16.2	Circuit diagram	39
5.16.3	Principle of measurement	39
5.16.4	Circuit description and requirements	40
5.16.5	Precautions to be observed	40
5.16.6	Measurement procedure	40
5.16.7	Specified conditions	40
5.17	Group delay time ($t_d(\text{grp})$)	40
5.17.1	Purpose	40
5.17.2	Circuit diagram	41
5.17.3	Principle of measurement	41
5.17.4	Circuit description and requirements	41
5.17.5	Precautions to be observed	41
5.17.6	Measurement procedure	41
5.17.7	Specified conditions	41
5.18	Power added efficiency (η_{add})	42
5.18.1	Purpose	42
5.18.2	Circuit diagram	42
5.18.3	Principle of measurement	42
5.18.4	Circuit description and requirements	43
5.18.5	Precautions to be observed	43
5.18.6	Measurement procedure	43
5.18.7	Specified conditions	43
5.19	n th order harmonic distortion ratio (P_{nth}/P_1)	43
5.19.1	Purpose	43
5.19.2	Circuit diagram	44
5.19.3	Principle of measurement	44
5.19.4	Circuit description and requirements	44
5.19.5	Precautions to be observed	44
5.19.6	Measurement procedure	44
5.19.7	Specified conditions	45
5.20	Output noise power (P_N)	45
5.20.1	Purpose	45
5.20.2	Circuit diagram	45
5.20.3	Principle of measurement	45
5.20.4	Circuit description and requirements	46
5.20.5	Precautions to be observed	46
5.20.6	Measurement procedure	46
5.20.7	Specified conditions	46
5.21	Spurious intensity under specified load VSWR (P_{sp}/P_o)	47
5.21.1	Purpose	47
5.21.2	Circuit diagram	47
5.21.3	Principle of measurement	47
5.21.4	Circuit description and requirements	47
5.21.5	Precautions to be observed	47
5.21.6	Measurement procedure	48
5.21.7	Specified conditions	48
5.22	Adjacent channel power ratio ($P_{\text{adj}}/P_o(\text{mod})$)	48
5.22.1	Purpose	48
5.22.2	Circuit diagram	49
5.22.3	Principle of measurement	49
5.22.4	Circuit description and requirement	50
5.22.5	Precautions to be observed	50

5.22.6	Measurement procedure	50
5.22.7	Specified conditions	50
6	Verifying methods	51
6.1	Load mismatch tolerance (Ψ_L)	51
6.1.1	Purpose	51
6.1.2	Verification of method 1 (spurious intensity)	51
6.1.3	Verification of method 2 (no discontinuity of the frequency response)	53
6.2	Source mismatch tolerance (Ψ_S)	54
6.2.1	Purpose	54
6.2.2	Verification of method 1 (spurious intensity)	54
6.2.3	Verifying method 2 (no discontinuity of the frequency response)	55
6.3	Load mismatch ruggedness (Ψ_R)	56
6.3.1	Purpose	56
6.3.2	Circuit diagram	57
6.3.3	Circuit description and requirements	57
6.3.4	Precautions to be observed	57
6.3.5	Test procedure	57
6.3.6	Specified conditions	58
Figure 1	– Circuit for the measurements of linear gain	21
Figure 2	– Basic circuit for the measurement of the noise figure	28
Figure 3	– Basic circuit for the measurements of two-tone intermodulation distortion	30
Figure 4	– Circuit for the measurements of magnitude of input/output reflection coefficient (input/output return loss)	33
Figure 5	– Circuit for the measurement of output reflection coefficient	36
Figure 6	– Circuit for the measurement of isolation	38
Figure 7	– Basic circuit for the measurement of α (AM-PM)	39
Figure 8	– Circuit for the measurement of the power added efficiency	42
Figure 9	– Circuit for the measurements of the n th order harmonic distortion ratio	44
Figure 10	– Circuit diagram for the measurement of the output noise power	45
Figure 11	– Circuit diagram for the measurement of the spurious intensity	47
Figure 12	– Circuit for the measurement of the adjacent channel power ratio	49
Figure 13	– Circuit for the verification of load mismatch tolerance in method 1	51
Figure 14	– Circuit for the verification of load mismatch tolerance in method 2	53
Figure 15	– Circuit for the verification of source mismatch tolerance in method 1	54
Figure 16	– Circuit for the verification of source mismatch tolerance in method 2	55
Figure 17	– Circuit for the verification of load mismatch ruggedness	57

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SEMICONDUCTOR DEVICES –

Part 16-1: Microwave integrated circuits – Amplifiers

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SEMICONDUCTOR DEVICES –

Part 16-1: Microwave integrated circuits – Amplifiers

1 Scope

This part of IEC 60747 provides the terminology, the essential ratings and characteristics, as well as the measuring methods for integrated circuit microwave power amplifiers.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 60747. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of IEC 60747 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60050-702, *International Electrotechnical Vocabulary – Chapter 702: Oscillations, signals and related devices* (available at: <http://www.electropedia.org>)

~~IEC 60617-12:1997, Graphical symbols for diagrams – Part 12: Binary logic elements~~

~~IEC 60617-13:1993, Graphical symbols for diagrams – Part 13: Analogue elements~~

IEC 60617, *Graphical symbols for diagrams* (available at: <http://std.iec.ch/iec60617>)

IEC 60747-1:~~1983~~ 2006, *Semiconductor devices – Discrete devices – Part 1: General*
IEC 60747-1:2006/AMD1:2010

IEC 60747-4:2007, *Semiconductor devices – Discrete devices – Part 4: Microwave diodes and transistors*
IEC 60747-4:2007/AMD1:2017

~~IEC 60747-7:2000, Semiconductor devices – Part 7: Bipolar transistors~~

IEC 60748-2:1997, *Semiconductor devices – Integrated circuits – Part 2: Digital integrated circuits*

IEC 60748-3:1986, *Semiconductor devices – Integrated circuits – Part 3: Analogue integrated circuits*
IEC 60748-3:1986/AMD1:1991
IEC 60748-3:1986/AMD2:1994

IEC 60748-4:1997, *Semiconductor devices – Integrated circuits – Part 4: Interface integrated circuits*

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

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

3 Terminology Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

linear (power) gain G_{lin}

power gain in the linear region of the power transfer curve P_o (dBm) = $f(P_i)$

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

3.2

linear (power) gain flatness ΔG_{lin}

power gain flatness when the operating point lies in the linear region of the power transfer curve

3.3

power gain G_p , G

ratio of the output power to the input power

NOTE Usually the power gain is expressed in decibels.

3.4

(power) gain flatness ΔG_p

difference between the maximum and minimum power gain for a specified input power in a specified frequency range

3.5

(maximum available) gain reduction ΔG_{red}

difference in decibels between the maximum and minimum power gains that can be provided by the gain control

3.6 Output power limiting

3.6.1

output power limiting range

range in which, for rising input power, the output power is limiting

NOTE For specification purposes, the limits of this range are specified by specified lower and upper limit values for the input power.

3.6.2

limiting output power $P_{o(ltg)}$

output power in the range where it is limiting

3.6.3

limiting output power flatness $\Delta P_{o(ltg)}$

difference between the maximum and minimum output power in the output power limiting range:

$$\Delta P_{o(ltg)} = P_{o(ltg,max)} - P_{o(ltg,min)}$$

3.7

intermodulation distortion

P_n/P_1 P_n/P_1

ratio of ~~the output power of~~ the n th order component to the output power of the fundamental component, ~~at a specified input of the output power~~

Note 1 to entry: The abbreviation "IMD_n" is in common use for the n th order intermodulation distortion.