

REPLACEMENT PART REFERENCE GUIDE, ZX60-2531M-S+ AN-60-103

ORIGINAL PART: ZX60-2531M-S+
 REPLACEMENT PART: ZX60-2531MA-S+

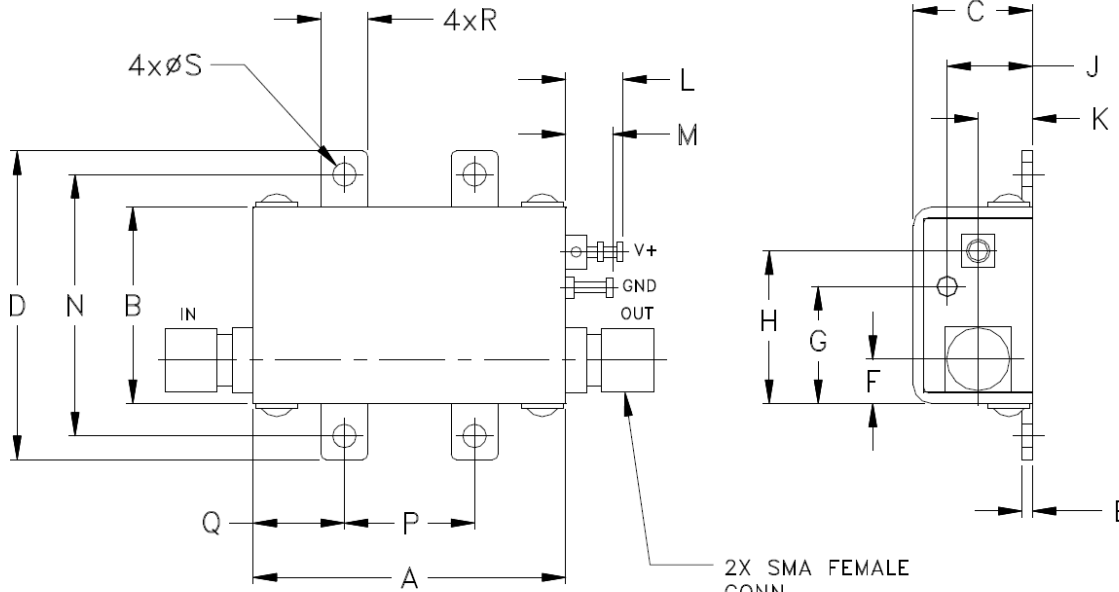


Replacement Part has been judged by Mini-Circuits Engineering as a suitable replacement to Original Part

MECHANICAL DIMENSIONS & PCB LAND PATTERN

ORIGINAL PART: ZX60-2531M-S+	REPLACEMENT PART: ZX60-2531MA-S+
-------------------------------------	---

Case Style GA955(No Change)



CASE #.	A	B	C	D	E	F	G	H	J	K	L	M	N
GA955	1.20 (30.48)	.75 (19.05)	.46 (11.68)	1.18 (29.97)	.04 (1.02)	.17 (4.32)	.45 (11.43)	.59 (14.99)	.33 (8.38)	.21 (5.33)	.22 (5.59)	.18 (4.57)	1.00 (25.40)

CASE #.	P	Q	R	S	WT, GRAM
GA955	.50 (12.70)	.35 (8.89)	.18 (4.57)	.106 (2.69)	35.0

Dimensions are in inches (mm). Tolerances: 2Pl. ±.03; 3Pl. ±.015
Tolerance on hole size and interaxes dimensions to be ±.005.

Marking ZX60-2531M-S+	Marking ZX60-2531MA-S+
--	---

Notes:
 a. Suitability for model replacement within a particular system must be determined by and is solely the responsibility of the customer based on, among other things, electrical performance criteria, stimulus conditions, application, compatibility with other components and environmental conditions and stresses.

CONCLUSION:

1) FORM-FIT-FUNCTIONAL COMPATIBLE:

Replacement part is Form, Fit compatible. Following is a summary of changes/improvements:

Typical performance comparison: See paragraphs 2 to 5

Min/Max Specifications - see below:

Parameter	Original Part (ZX60-2531M-S+)	Replacement Part (ZX60-2531MA-S+)
Gain-Min at 2 GHz (dB)	33.3dB(2.8V); 35.8dB (5V)	33.7dB(2.8V); 38.6dB (5V)

Notes:
a. Suitability for model replacement within a particular system must be determined by and is solely the responsibility of the customer based on, among other things, electrical performance criteria, stimulus conditions, application, compatibility with other components and environmental conditions and stresses.

2) PERFORMANCE COMPARISON_a (TYPICAL), DC Voltage=5V:

Parameter	Freq. MHz	ZX60-2531M-S+ Original part Data of one unit	ZX60-2531MA-S+ Replacement part Data of 10 units		
			Min	Average	Max
Gain (dB)	500	30.4	36.8	37.3	37.6
	1000	37.9	41.2	41.5	41.8
	1500	37.3	40.8	41.1	41.3
	2000	35.8	38.6	38.8	39.2
	2500	32.5	36.3	36.6	37.0
Input Return Loss (dB)	500	9.0	5.4	5.6	5.7
	1000	12.2	11.2	11.5	12.1
	1500	14.0	18.1	20.0	23.4
	2000	18.8	27.6	31.9	39.1
	2500	15.7	28.7	36.1	43.9
Output Return Loss (dB)	500	5.8	12.8	13.1	13.3
	1000	15.2	21.0	22.1	23.7
	1500	15.2	18.5	19.1	20.0
	2000	17.2	18.0	18.5	19.3
	2500	11.8	14.6	15.1	15.6
Output Power at 1dB Compression (dBm)	500	18.5	18.8	18.9	18.9
	1000	18.3	19.2	19.2	19.3
	1500	17.3	18.6	18.7	18.8
	2000	16.4	17.6	17.8	18.0
	2500	16.4	16.5	16.7	16.9
Output IP3 (dBm)	500	29.0	28.6	29.0	29.5
	1000	29.2	23.6	24.0	24.4
	1500	27.6	24.2	24.6	24.9
	2000	27.5	25.7	26.0	26.4
	2500	26.6	26.9	27.2	27.5
NF (dB)	500	3.7	3.2	3.3	3.3
	1000	3.6	2.8	2.8	2.9
	1500	3.6	2.9	2.9	3.0
	2000	3.8	2.7	2.8	2.8
	2500	4.0	2.7	2.7	2.8
Directivity (Isolation - Gain) (dB)	500	59.0	23.3	28.4	35.8
	1000	29.5	18.4	24.6	35.6
	1500	25.9	15.7	20.6	26.1
	2000	24.3	17.5	19.9	25.4
	2500	24.7	19.1	21.9	24.7
DC Current (mA)	DC	102.0	110.3	113.2	116.1

Notes:
a. Suitability for model replacement within a particular system must be determined by and is solely the responsibility of the customer based on, among other things, electrical performance criteria, stimulus conditions, application, compatibility with other components and environmental conditions and stresses.

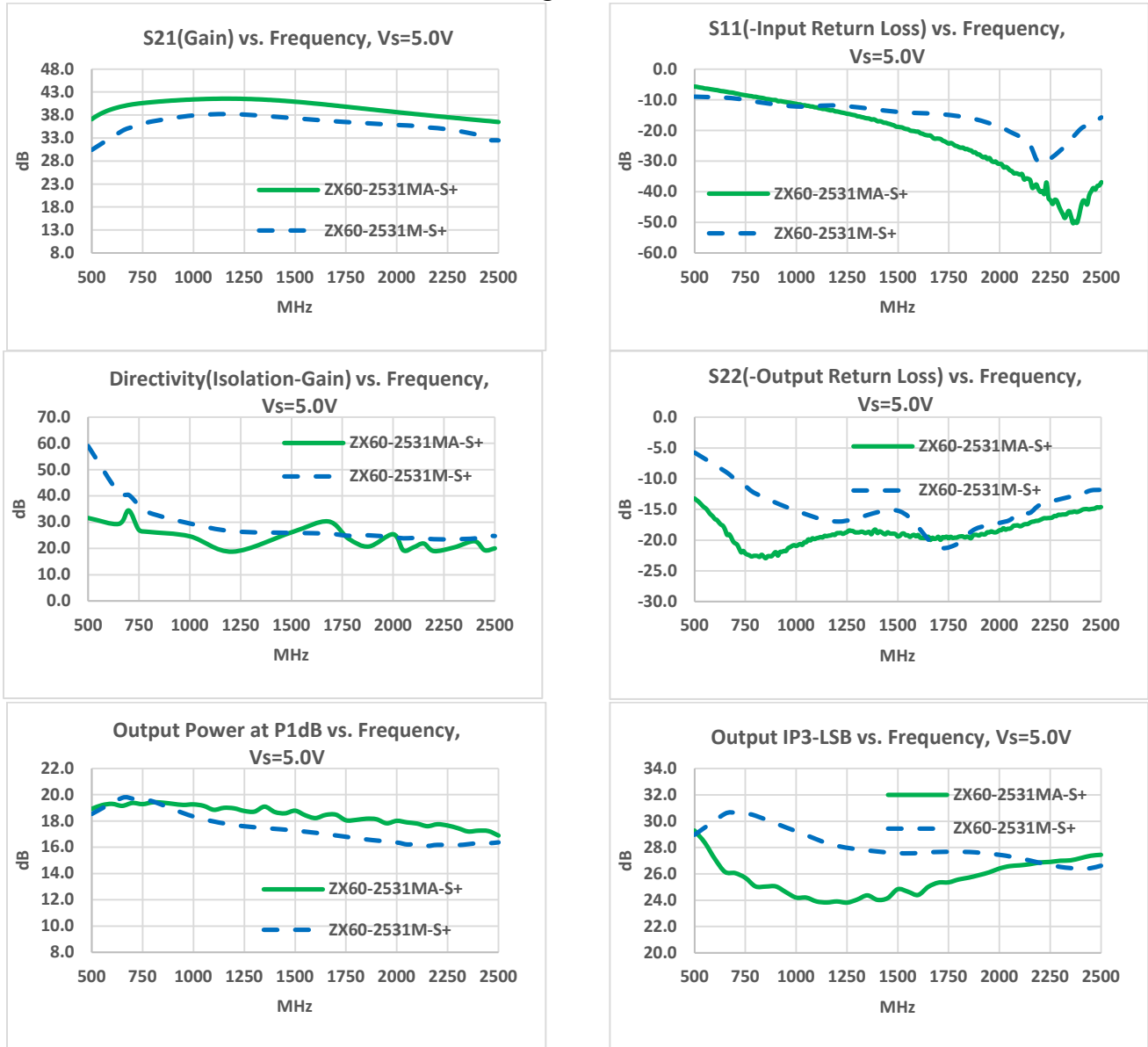
3) PERFORMANCE COMPARISON_a (TYPICAL), DC Voltage=2.8V:

Parameter	Freq. MHz	ZX60-2531M-S+ Original part Data of one unit	ZX60-2531MA-S+ Replacement part Data of 10 units		
			Min	Average	Max
Gain (dB)	500	28.4	33.5	33.9	34.4
	1000	35.0	37.1	37.3	37.6
	1500	34.3	35.9	36.2	36.5
	2000	33.3	33.7	34.0	34.2
	2500	30.5	31.4	31.7	32.0
Input Return Loss (dB)	500	8.7	5.6	5.7	5.8
	1000	11.8	12.4	12.7	13.2
	1500	12.1	19.5	21.0	23.5
	2000	19.4	27.4	30.5	37.3
	2500	15.9	26.2	27.9	33.6
Output Return Loss (dB)	500	5.3	11.8	11.9	12.1
	1000	11.3	11.7	12.0	12.4
	1500	12.2	11.4	11.6	11.8
	2000	13.3	12.2	12.5	12.8
	2500	8.6	12.4	12.6	13.1
Output Power at 1dB Compression (dBm)	500	14.2	9.6	10.0	10.4
	1000	14.7	10.7	11.1	11.5
	1500	14.7	10.7	11.0	11.4
	2000	14.0	11.2	11.5	11.9
	2500	14.0	11.2	11.4	11.7
Output IP3 (dBm)	500	24.2	18.5	19.1	19.7
	1000	25.2	19.0	19.3	19.8
	1500	24.0	20.4	20.9	21.4
	2000	23.8	21.3	21.6	22.1
	2500	23.1	22.0	22.2	22.6
NF (dB)	500	3.8	3.4	3.4	3.4
	1000	3.7	3.0	3.1	3.1
	1500	3.7	3.1	3.1	3.2
	2000	3.8	3.1	3.1	3.2
	2500	4.0	3.1	3.2	3.2
Directivity (Isolation - Gain) (dB)	500	62.2	26.9	35.5	43.7
	1000	30.6	21.7	28.2	38.5
	1500	26.7	21.4	23.8	27.7
	2000	25.8	21.1	23.9	26.8
	2500	26.3	21.4	25.1	28.2
DC Current (mA)	DC	102.0	102.7	105.3	107.7

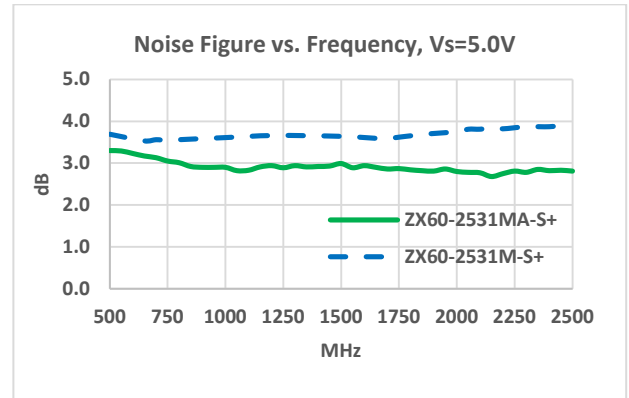
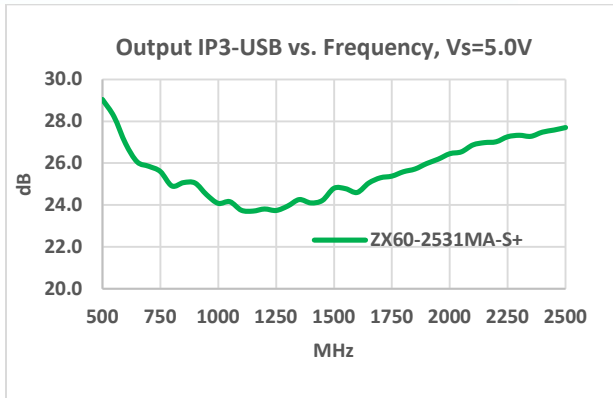
Notes:
a. Suitability for model replacement within a particular system must be determined by and is solely the responsibility of the customer based on, among other things, electrical performance criteria, stimulus conditions, application, compatibility with other components and environmental conditions and stresses.

4) PERFORMANCE COMPARISON CURVES^a(TYPICAL),DCSupply=5V:

— Data of Replacement Part
- - - Data of Original Part

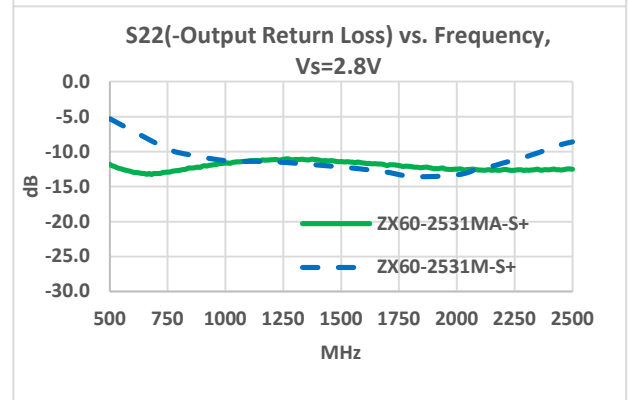
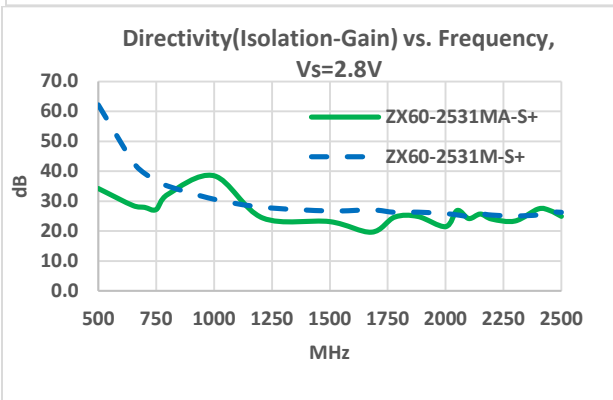
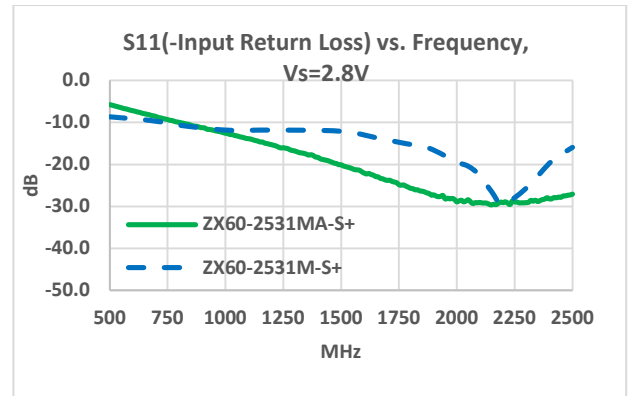
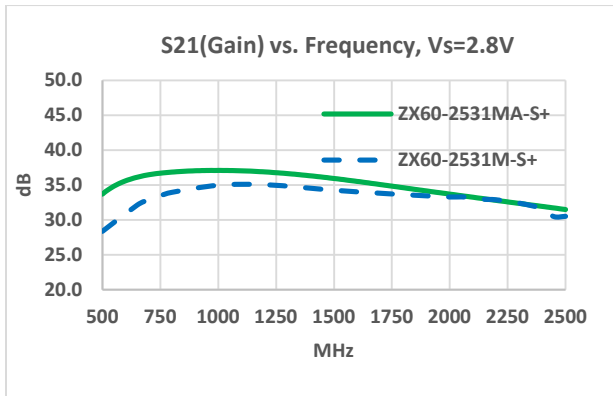


Notes:
 a. Suitability for model replacement within a particular system must be determined by and is solely the responsibility of the customer based on, among other things, electrical performance criteria, stimulus conditions, application, compatibility with other components and environmental conditions and stresses.

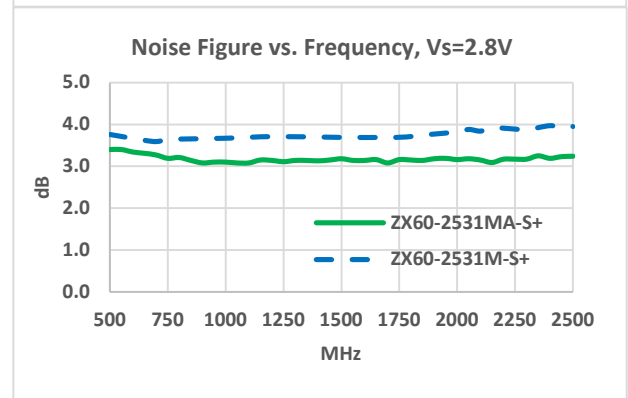
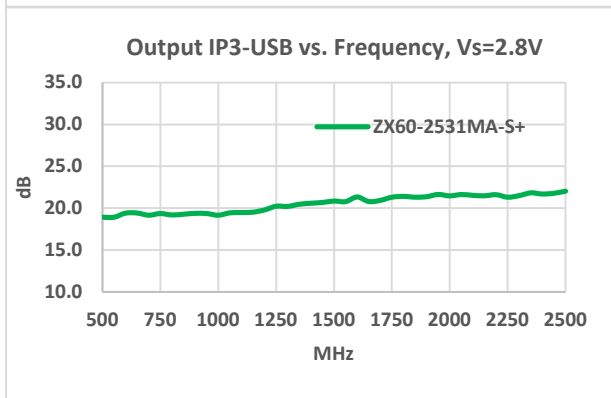
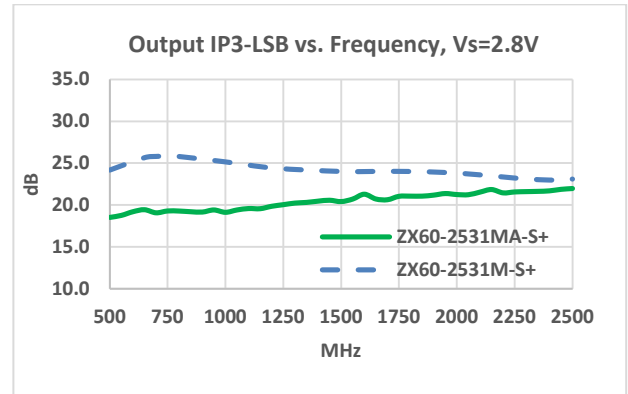
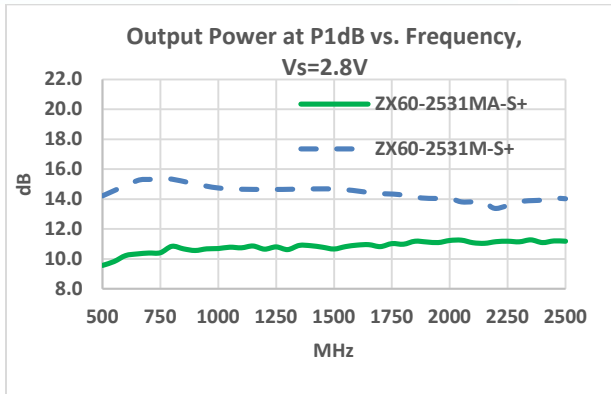


5) PERFORMANCE COMPARISON CURVES_a (TYPICAL), DC Supply=2.8V:

— Data of Replacement Part
- - - Data of Original Part



Notes:
 a. Suitability for model replacement within a particular system must be determined by and is solely the responsibility of the customer based on, among other things, electrical performance criteria, stimulus conditions, application, compatibility with other components and environmental conditions and stresses.



IMPORTANT NOTICE

© 2015 Mini-Circuits

This document is provided as an accommodation to Mini-Circuits customers in connection with Mini-Circuits parts only. In that regard, this document is for informational and guideline purposes only. Mini-Circuits assumes no responsibility for errors or omissions in this document or for any information contained herein. Mini-Circuits may change this document or the Mini-Circuits parts referenced herein (collectively, the "Materials") from time to time, without notice. Mini-Circuits makes no commitment to update or correct any of the Materials, and Mini-Circuits shall have no responsibility whatsoever on account of any updates or corrections to the Materials or Mini-Circuits' failure to do so. Mini-Circuits customers are solely responsible for the products, systems, and applications in which Mini-Circuits parts are incorporated or used. In that regard, customers are responsible for consulting with their own engineers and other appropriate professionals who are familiar with the specific products and systems into which Mini-Circuits' parts are to be incorporated or used so that the proper selection, installation/integration, use and safeguards are made. Accordingly, Mini-Circuits assumes no liability therefore. In addition, your use of this document and the information contained herein is subject to Mini-Circuits' standard terms of use, which are available at Mini-Circuits' website at www.minicircuits.com/homepage/terms_of_use.html.

Mini-Circuits and the Mini-Circuits logo are registered trademarks of Scientific Components Corporation d/b/a Mini-Circuits. All other third-party trademarks are the property of their respective owners. A reference to any third-party trademark does not constitute or imply any endorsement, affiliation, sponsorship, or recommendation: (i) by Mini-Circuits of such third-party's products, services, processes, or other information; or (ii) by any such third-party of Mini-Circuits or its products, services, processes, or other information.

Notes:
a. Suitability for model replacement within a particular system must be determined by and is solely the responsibility of the customer based on, among other things, electrical performance criteria, stimulus conditions, application, compatibility with other components and environmental conditions and stresses.