

REPLACEMENT PART REFERENCE GUIDE, DAT-31-SP+:

AN-70-011

ORIGINAL PART:

DAT-31-SP+

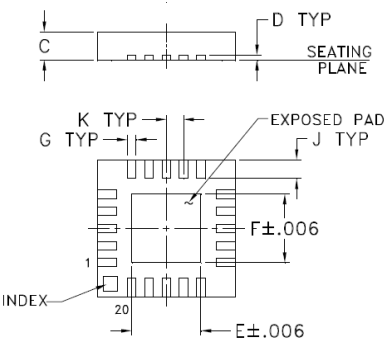
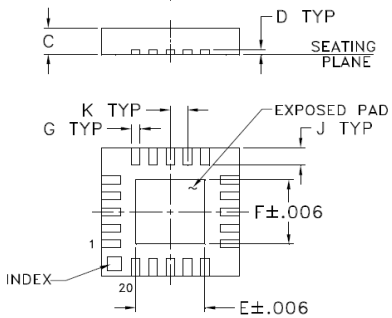
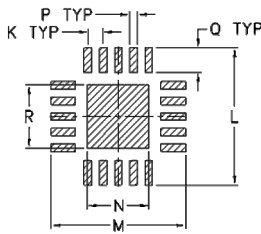
REPLACEMENT PART:

DAT-31A-SP+



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

MECHANICAL DIMENSIONS & PCB LAND PATTERN

ORIGINAL PART: DAT-31-SP+	REPLACEMENT PART: DAT-31A-SP+																
<p>Case Style: DG983-1</p>  <p>Inches (mm)</p> <table border="1"> <thead> <tr> <th>C</th> <th>E</th> <th>F</th> <th>G</th> </tr> </thead> <tbody> <tr> <td>.035 (0.90)</td> <td>.081 (2.06)</td> <td>.081 (2.06)</td> <td>.010 (0.25)</td> </tr> </tbody> </table>	C	E	F	G	.035 (0.90)	.081 (2.06)	.081 (2.06)	.010 (0.25)	<p>Case Style: DG983-2 (minor dimensional changes as below)</p>  <p>inches (mm)</p> <table border="1"> <thead> <tr> <th>C</th> <th>E</th> <th>F</th> <th>G</th> </tr> </thead> <tbody> <tr> <td>.033 (0.85)</td> <td>.085 (2.15)</td> <td>.085 (2.15)</td> <td>.009 (0.23)</td> </tr> </tbody> </table> <p>Note: Dimensions not shown are same as that in DG983-1</p>	C	E	F	G	.033 (0.85)	.085 (2.15)	.085 (2.15)	.009 (0.23)
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<p>Suggested PCB Land Pattern</p>  <table border="1"> <thead> <tr> <th>K</th> <th>L</th> <th>M</th> <th>N</th> <th>P</th> <th>Q</th> <th>R</th> </tr> </thead> <tbody> <tr> <td>.020 (0.50)</td> <td>.177 (4.50)</td> <td>.177 (4.50)</td> <td>.081 (2.06)</td> <td>.010 (0.25)</td> <td>.032 (0.81)</td> <td>.081 (2.06)</td> </tr> </tbody> </table>		K	L	M	N	P	Q	R	.020 (0.50)	.177 (4.50)	.177 (4.50)	.081 (2.06)	.010 (0.25)	.032 (0.81)	.081 (2.06)		
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.020 (0.50)	.177 (4.50)	.177 (4.50)	.081 (2.06)	.010 (0.25)	.032 (0.81)	.081 (2.06)											

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:

Parameter			DAT-31-SP+ (Original Part)	DAT-31A-SP+ (Replacement Part)	
Frequency (GHz)			DC-2.4	DC-4	
V _{DD} (V)			+2.7 to +3.3	+2.3 to +3.6, usable to +5.2V	
Control input High (V)			0.7V _{DD} to V _{DD}	+1.17 to +3.6	
Control input Low (V)			0 to 0.3V _{DD}	-0.3 to +0.6	
I _{DD} (μA)			100 μA max. During turn-on and transition between attenuation states, device may draw up to 2mA.	200 μA max.	
Control Current (μA)			1 max	1 max, except 30μA typ for C16 & 2μA typ. for LE at +3.6V	
Attenuation accuracy	Step (dB)	Freq (GHz)	Spec max	Spec max	
			8	1-2.4	0.25
			2.4-4	Not Specified	0.8
	16	1-2.4	0.3	0.7	
		2.4-4	Not Specified	1.45	
VSWR (:1) (1-2.4 GHz)			1.5 max	1.6 Max	
Operating Temperature (°C)			-40 to 85	-40 to 105	
Storage Temperature(°C)			-55 to 100	-65 to 150	
ESD (HBM)			Pass 500V	Pass 1500V	
Max Operating Power			Not Specified	From 10 kHz to 50 MHz per Figure 1 (in Model Data Sheet) and +24 dBm above 50 MHz	
Absolute Max input Power (dBm)			+24	+30	

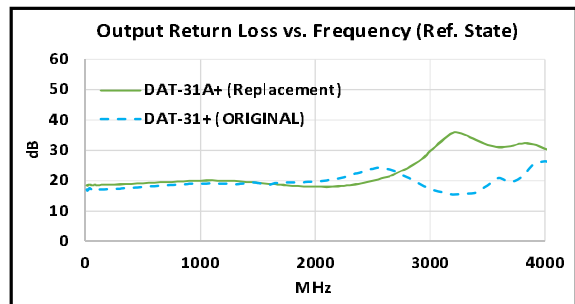
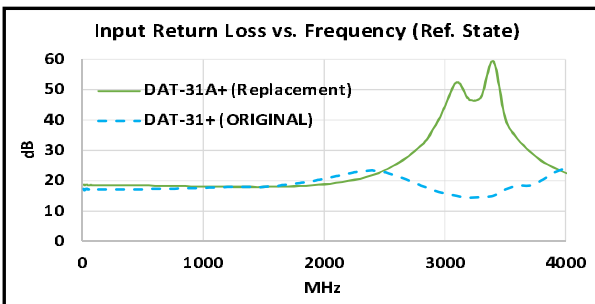
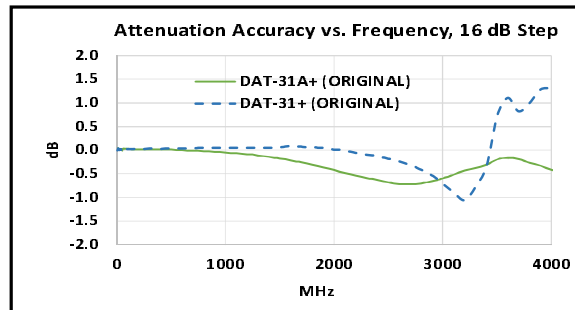
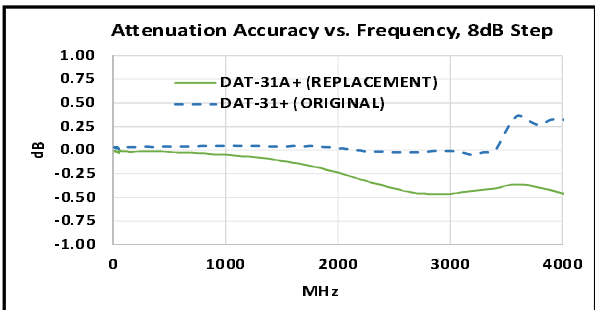
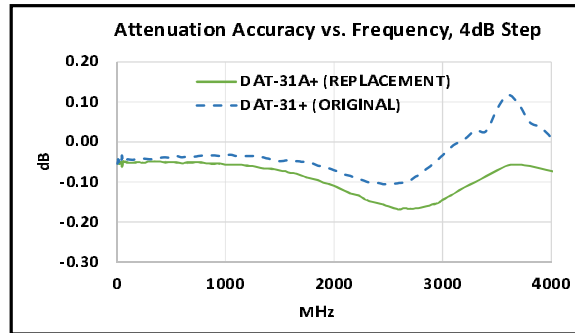
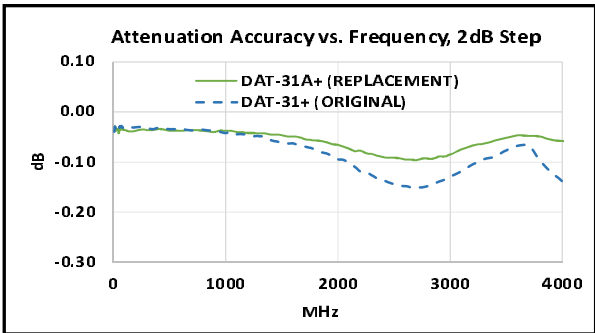
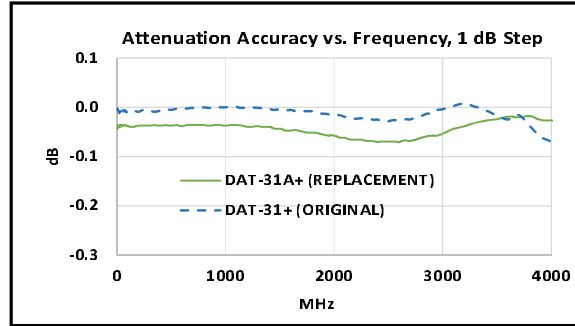
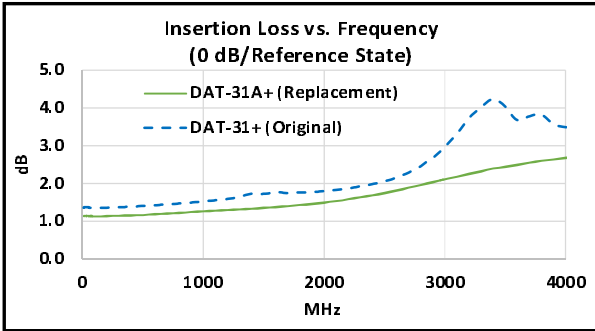
Notes:
a. Suitability for model replacement within a particular system must be determined by and is solely the responsibility of the customer based on, among other things, electrical performance criteria, stimulus conditions, application, compatibility with other components and environmental conditions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

2) Typical Performance Comparison^a

Parameter	Frequency (GHz)	DAT-31-SP+ (Original Part)	DAT-31A-SP+ (Replacement Part)
		Average	Average
I.Loss(dB)	0.01 to 1	1.39	1.20
	1 to 2.4	1.75	1.46
	2.4 to 4	2.97	2.16
Step Accuracy 1.0 dB Step (dB)	0.01 to 1	0.00	0.03
	1 to 2.4	0.01	0.04
	2.4 to 4	0.02	0.04
Step Accuracy 2.0 dB Step (dB)	0.01 to 1	0.03	0.03
	1 to 2.4	0.08	0.05
	2.4 to 4	0.12	0.07
Step Accuracy 4.0 dB Step (dB)	0.01 to 1	0.04	0.03
	1 to 2.4	0.06	0.07
	2.4 to 4	0.02	0.10
Step Accuracy 8.0 dB Step (dB)	0.01 to 1	0.04	0.02
	1 to 2.4	0.04	0.13
	2.4 to 4	0.07	0.37
Step Accuracy 16 dB Step (dB)	0.01 to 1	0.03	0.06
	1 to 2.4	0.03	0.23
	2.4 to 4	0.06	0.43
Input R.Loss (dB)	0.01 to 1	17.3	18.2
	1 to 2.4	19.6	18.5
	2.2 to 4	18.2	18.2
Output R.Loss (dB)	0.01 to 1	17.7	18.7
	1 to 2.4	19.7	18.7
	2.2 to 4	20.7	17.8

Notes:
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3) PERFORMANCE COMPARISON CURVES (TYPICAL)^a:



Note: DAT-31+ is same as DAT-31-SP+ and
DAT-31A+ is same as DAT-31A-SP+

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.