

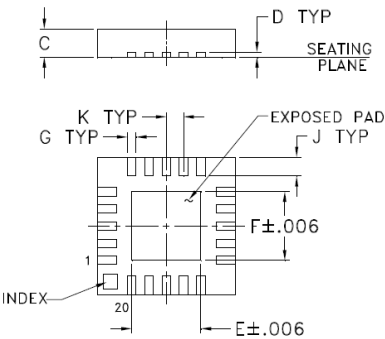
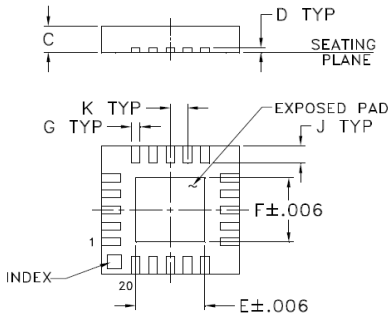
**REPLACEMENT PART REFERENCE GUIDE, DAT-31R5-PN+: AN-70-010**

ORIGINAL PART: DAT-31R5-PN+  
 REPLACEMENT PART: DAT-31R5A-PN+

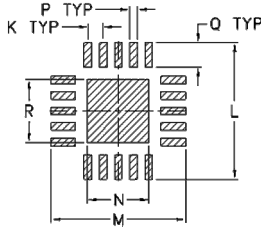


*Replacement Part has been judged by Mini-Circuits Engineering as a suitable replacement to Original Part<sup>a</sup>*

**MECHANICAL DIMENSIONS & PCB LAND PATTERN**

ORIGINAL PART: DAT-31R5-PN+	REPLACEMENT PART: DAT-31R5A-PN+																
<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)
C	E	F	G														
.035 (0.90)	.081 (2.06)	.081 (2.06)	.010 (0.25)														
C	E	F	G														
.033 (0.85)	.085 (2.15)	.085 (2.15)	.009 (0.23)														

**Suggested PCB Land Pattern**



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)

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<sup>a</sup>:

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

Parameter			DAT-31R5-PN+ (Original Part)	DAT-31R5A-PN+ (Replacement Part)	
Frequency (GHz)			DC-2.4	DC-4	
V <sub>DD</sub> (V)			+2.7 to +3.3	+2.3 to +3.6, usable to +5.2V	
V <sub>SS</sub> (V)			-3.3 min to -2.7 max	-3.6 min to -3.2 max	
Control input High (V)			0.7V <sub>DD</sub> to V <sub>DD</sub>	+1.17 to +3.6	
Control input Low (V)			0 to 0.3V <sub>DD</sub>	-0.3 to +0.6	
I <sub>DD</sub> (μA)			100 μA max. During turn-on and transition between attenuation states, device may draw up to 2mA.	100 μA max.	
I <sub>SS</sub> (μA)			100 max	40 max	
Control Current (μA)			1 max	1 max, except 30μA typ for C0.5, C16, PUP1 and 2μA typ. for LE at +3.6V	
Attenuation accuracy	Step (dB)	Freq (GHz)	<u>Spec max</u>	<u>Spec max</u>	
		8	1-2.4	0.25	0.5
			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	
Power-UP: PUP1,PUP2=1 & LE=0			31dB	31.5dB	
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	

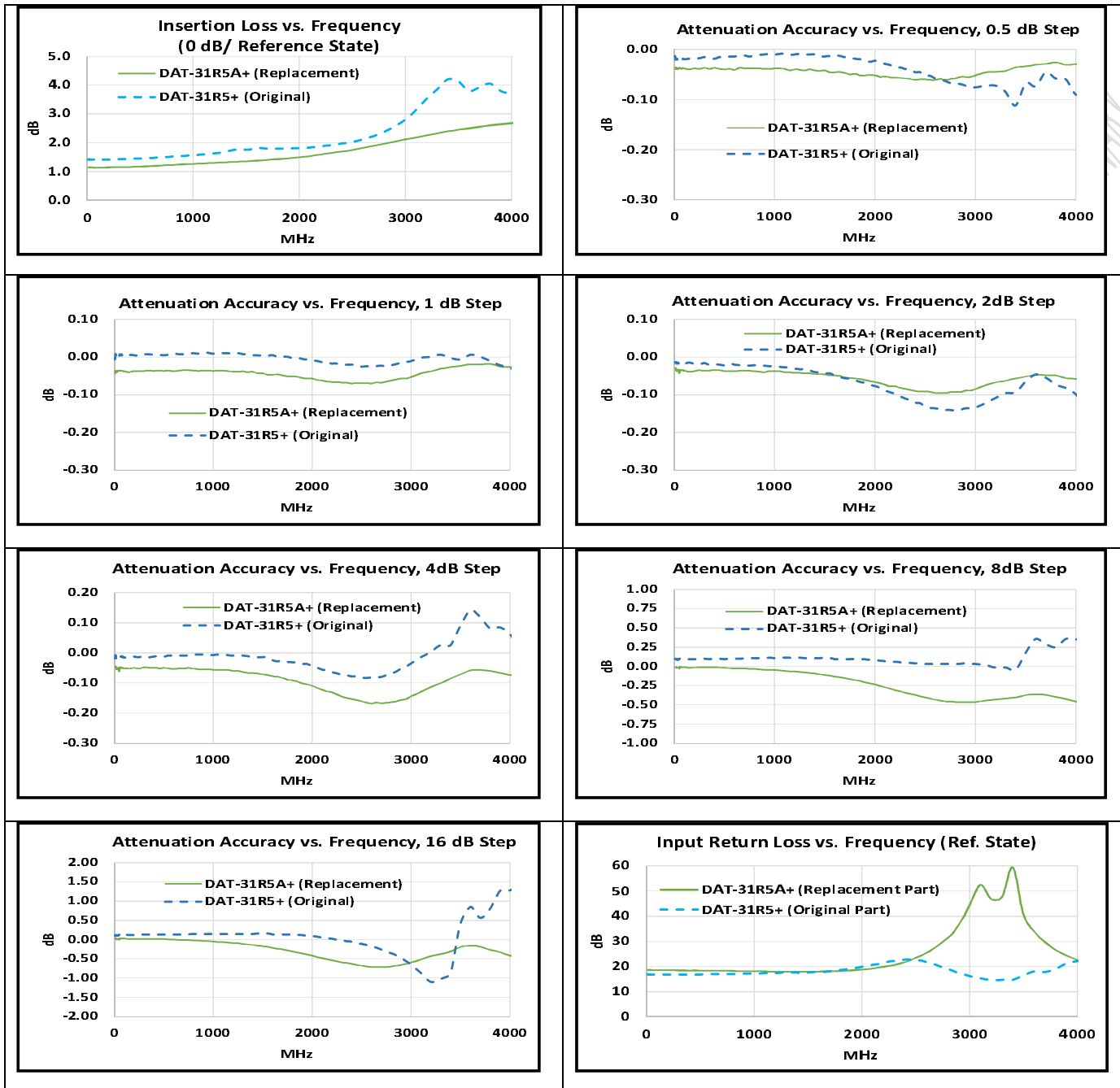
Notes:  
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**2) TYPICAL PERFORMANCE COMPARISON:**

Parameter	Frequency (GHz)	Original Part DAT-31R5-PN+	Replacement Part DAT-31R5A-PN+
		Average	Average
I.Loss(dB)	0.01 to 1	1.42	1.20
	1 to 2.4	1.77	1.46
	2.4 to 4	2.99	2.16
Step Accuracy 0.5 dB Step (+/-dB)	0.01 to 1	0.02	0.03
	1 to 2.4	0.01	0.04
	2.4 to 4	0.06	0.04
Step Accuracy 1.0 dB Step (dB)	0.01 to 1	0.00	0.03
	1 to 2.4	0.00	0.04
	2.4 to 4	0.01	0.04
Step Accuracy 2.0 dB Step (dB)	0.01 to 1	0.02	0.03
	1 to 2.4	0.06	0.05
	2.4 to 4	0.10	0.07
Step Accuracy 4.0 dB Step (dB)	0.01 to 1	0.02	0.03
	1 to 2.4	0.03	0.07
	2.4 to 4	0.00	0.10
Step Accuracy 8.0 dB Step (dB)	0.01 to 1	0.08	0.02
	1 to 2.4	0.08	0.13
	2.4 to 4	0.10	0.37
Step Accuracy 16 dB Step (dB)	0.01 to 1	0.10	0.06
	1 to 2.4	0.08	0.23
	2.4 to 4	0.08	0.43
Step Accuracy 31.5 dB Step (dB)	0.01 to 1	0.28	0.11
	1 to 2.4	0.88	0.18
	2.2 to 4	1.86	1.46
Input R.Loss (dB)	0.01 to 1	17.0	18.2
	1 to 2.4	19.3	18.5
	2.2 to 4	18.8	18.2
Output R.Loss (dB)	0.01 to 1	17.4	18.7
	1 to 2.4	18.94	18.7
	2.2 to 4	18.5	17.8

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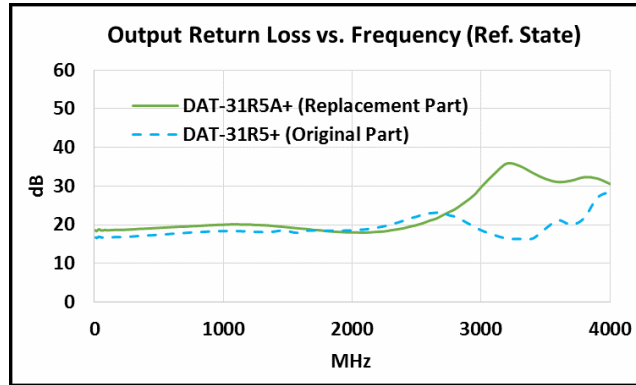
3) COMPARISON PERFORMANCE CURVES (TYPICAL):



Note: DAT-31R5+ is same as DAT-31R5-PN+ and  
 DAT-31R5A+ is same as DAT-31R5A-PN+

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) COMPARISON PERFORMANCE CURVES<sup>a</sup>(TYPICAL) (Continued):



Note: DAT-31R5+ is same as DAT-31R5-PN+ and  
DAT-31R5A+ is same as DAT-31R5A-PN+

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.