


## REPLACEMENT PART REFERENCE GUIDE, HAT-20+

AN-70-104

ORIGINAL PART:	HAT-20+	
REPLACEMENT PART:	HAT-20A+	

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

### MECHANICAL DIMENSIONS

<b>Case Style: FF747</b>
Replacement part uses same case style as original part.

### CONCLUSION:

#### 1) FORM-FIT-FUNCTIONAL ANALYSIS<sub>a</sub>:

The Replacement Part is Form, Fit compatible.

Following is a summary of changes/improvements in the Specification:

Parameter	Frequency (MHz)	HAT-20+	HAT-20A+
Attenuation (dB)(Nom)	10	20±0.2	20±0.3
Flatness(dB) (Typ)	DC-500	0.05	0.15
Flatness(dB) (Typ)	DC-1000	0.15	0.20
Flatness(dB) (Typ)	DC-2000	0.25	0.30
VSWR(:1) (Typ)	DC-500	1.05	1.20
VSWR(:1) (Typ)	DC-1000	1.10	1.30
VSWR(:1) (Typ)	DC-2000	1.15	1.30
Input Power	DC-2000	0.5W	0.8W *

\* RF power at 25°C is 0.8W; De-rate linearly to 0.6W at 85°C

For typical performance: See paragraph 2

## 2) TYPICAL PERFORMANCE COMPARISON AT ROOM TEMPERATURE:

MODEL: HAT-20+, HAT-20A+ (RF Parameters); Data of 7 samples

Parameter	Frequency (MHz)		HAT-20+			HAT-20A+		
	Low	High	Min	Avg	Max.	Min	Avg	Max.
Attenuation (dB)	10		20.01	20.03	20.05	20.01	20.03	20.05
Flatness (dB)	DC	500	0.11	0.13	0.15	0.09	0.1	0.11
	DC	1000	0.2	0.22	0.26	0.17	0.19	0.2
	DC	2000	0.45	0.48	0.53	0.33	0.36	0.39
Return Loss (dB)	DC	500	30.73	34.13	37.97	21.09	22.50	25.54
	DC	1000	26.31	30.09	35.76	19.77	21.24	24.21
	DC	2000	20.19	21.87	24.40	19.62	20.93	24.09
VSWR (:1)	DC	500	1.03	1.04	1.06	1.11	1.16	1.19
	DC	1000	1.03	1.06	1.10	1.13	1.19	1.23
	DC	2000	1.13	1.18	1.22	1.13	1.20	1.23

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