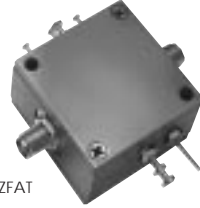


# DIGITAL STEP ATTENUATORS $50\Omega$ Precision

TTL CONTROL, PIN DIODE 10 MHz to 1 GHz



TOAT



ZFAT



ZSAT

MODEL NO.	FREQUENCY MHz		PRIMARY ATTENUATION STEPS dB			ATTENUATION dB LOGIC STATE*		VSWR (:1)			CASE STYLE	PRICE \$
	$f_L$	$f_U$	#1	#2	#3	(1,1,1)** Nom.	(0,0,0) Max.	L	M	U	Note B	
			@TTL CONTROL PORT									
TOAT-R512	10	1000	0.5±0.18	1±0.25	2±0.25	3.5	4.0	1.6	1.4	1.5	OO96	cq 59.95
TOAT-124	10	1000	1±0.25	2±0.25	4±0.3	7.0	4.0	1.6	1.4	1.5	OO96	cq 59.95
TOAT-3610	10	1000	3±0.3	6±0.4	10±0.4	19.0	4.0	1.6	1.4	1.5	OO96	cq 59.95
TOAT-4816	10	1000	4±0.4	8±0.4	16±0.5	28.0	4.0	1.6	1.4	1.5	OO96	cq 59.95
TOAT-51020	10	1000	5±0.4	10±0.4	20±0.5	35.0	4.0	1.6	1.4	1.5	OO96	cq 59.95
ZFAT-R512	10	1000	0.5±0.18	1±0.25	2±0.25	3.5	4.0	1.6	1.4	1.5	SSS173	- 89.95
ZFAT-124	10	1000	1±0.25	2±0.25	4±0.3	7.0	4.0	1.6	1.4	1.5	SSS173	- 89.95
ZFAT-3610	10	1000	3±0.3	6±0.4	10±0.4	19.0	4.0	1.6	1.4	1.5	SSS173	- 89.95
ZFAT-4816	10	1000	4±0.4	8±0.4	16±0.5	28.0	4.0	1.6	1.4	1.5	SSS173	- 89.95
ZFAT-51020	10	1000	5±0.4	10±0.4	20±0.5	35.0	4.0	1.6	1.4	1.5	SSS173	- 89.95
			SIX CONTROL PORTS									
ZSAT-31R5	10	1000	(1) 0.5±0.18 (4) 4±0.3	(2) 1±0.25 (5) 8±0.4	(3) 2±0.25 (6) 16±0.5	31.5	7.0	1.7	1.5	1.6	AR214	- 119.00

L = 10 to 100 MHz

M = 100 to 500 MHz

U = 500 to 1000 MHz

## features

- wide frequency band, 10-1000 MHz
- excellent step accuracy, 0.2 dB typ.
- excellent VSWR, 1.3 typ.
- low DC current, 6 mA typ.
- operates over -55° to 100 °C
- small case, 0.6" dia., TO-8

## ADDITIONAL SPECIFICATIONS

DC Voltage +5V  
 DC current 12mA max.  
 Switching Time (50% TTL to within specified accuracy of the next-selected attenuation step, and to within 0.1 dB of steady-state Thru-Loss) 10  $\mu$ s typ., 15 $\mu$ s max.  
 TTL input High Threshold 2V min.  
 TTL input Low Threshold 0.8V max.  
 TTL Toggle Rate: 50 kHz typ.  
 1dB compression: 0 dBm (10-100MHz)  
 +10dBm (100-1000MHz)

For ZSAT-31R5:  
 1dB compression: +10 dBm (10-100 MHz)  
 +15 dBm (100-1000 MHz)

## Logic function:

TTL High activates associated in-line attenuation  
 TTL Low bypasses this attenuation

## NSN GUIDE

MCL NO.	NSN
TOAT-124	5985-01-416-9021
TOAT-51020	5985-01-416-9020

## pin connections

see case style outline drawing

PORT	cq
RF IN	4
RF OUT	11
TTL CONTROL #1	2
TTL CONTROL #2	3
TTL CONTROL #3	1
+5V DC	12
CASE GND	5,6,7,8,9,10

## NOTES:

- \* For ZSAT-31R5: Total attenuation (1,1,1,1,1,1)  
 Thru-Loss (0,0,0,0,0,0)
- \*\* Total attenuation above thru-loss.
- A. General Quality Control Procedures, Environmental Specifications, Hi-Rel and MIL description are given in section 0, see "Mini-Circuits Guarantees Quality" article.
- B. Connector types and case mounted options, case finishes are given in section 0, see "Case Styles & Outline Drawings".
- C. Prices and Specifications subject to change without notice.
1. Absolute maximum power, voltage and current rating:  
 1a. Input power, 15 dBm  
 1b. DC voltage, 5.5 Volts  
 1c. TTL, 5.5 Volts  
 1d. Storage temperature -55°C to +125°C for TOAT models.
2. Step accuracy is specified for basic steps. For combination of steps accuracy is additive.
3. Thru-loss is minimum insertion loss with all attenuation elements bypassed (All TTL controls state are Low).
4. For optimum operation of TOAT models, ensure the device case is properly connected to the ground plane (of PC board).



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