

Preliminary

Radiation Hardened

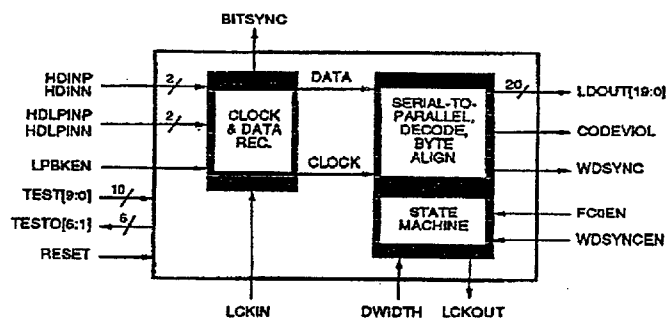
204ARPQ

Fibre Channel Receiver

For Space Applications

SEI's 204ARPQ (RP for RAD-PAK®) high speed Fibre Channel Receiver integrated circuits features a minimum 100 kilorad (Si) total dose tolerance. Fully equivalent to the commercial

AT&TDA204A, the 204ARPQ combines AT&T advanced technology and SEI's radiation hardened RAD-PAK® packaging. The 204ARPQ Receiver receives high speed serial data at its differential ECL input port. This data is fed to the clock recovery section which generates a recovered clock and retimes the data. The retimed data is deserialized and word aligned before being sent to the decoder. Depending on user's choice of either 8B/10B decoded, the data passes straight through to the TTL parallel output port. A divided down version of the recovered clock, synchronous with the parallel data bytes, is also available as a TTL output. Capable of surviving space environments, the 204ARPQ is ideal for satellite, spacecraft, and space probe missions. It features the same system performance and architecture as the commercial AT&T counterpart. The RAD-PAK® technology incorporates radiation shielding in the microcircuit package. It eliminates box shielding while providing lifetime in orbit. The 204ARPQ is offered in Class S packaging and screening.



**SPACE
ELECTRONICS
INCORPORATED**

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SEI 204 ARPQ RAD-PAK HARKER

204ARPQ ABSOLUTE MAXIMUM CHARACTERISTICS

PARAMETER	SYMBOL	MIN	MAX	UNIT
Power Supply Voltage	V_{CC}	4.5	5.5	V
Ambient Operating Temperature	T_A	-25	+95	°C
Storage Temperature	T_{STG}	-40	+125	°C

204ARPQ DC ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	MAX	UNIT
Input Low Voltage, TTL Inputs ¹	V_{IL}		0.8	V
Input High Voltage, TTL Inputs ¹	V_{IH}	2.0		V
Output Low Voltage, TTL Outputs $I = 4mA$	V_{OL}		0.4	V
Output High Voltage, TTL Outputs $I = -400\mu A$	V_{OH}	2.4		V
Input Low Leakage Current $V_{IN} = 0.4V$	I_{IL}		-400	μA
Input High Leakage Current $V_{IN} = 2.7V$	I_{IH}		20	μA
Differential PECL Input Voltage ¹	V_{DIFF}	200		mV
PECL Common-mode Bias ^{1,2}	V_{COM}	$V_{CC} - 1.6$	$V_{CC} - 1.0$	V
PECL Terminating Resistor	R_{TERM}	67.0	84.0	Ohm
Power Supply Current $V_{CC} = 5.25$	I_{CC}	437	600	mA

Notes:

1. Tested by application of the signal. No value was recorded.
2. Common-mode bias is the DC average of the input signal.



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204ARPQ AC ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	MAX	UNIT
LCKOUT Period	t_{CKLCKL}	18.822	18.825	ns
LCKOUT Low	t_{CKLCKH}	7.0	11.8	ns
LCKOUT High	t_{CKHCKL}	7.0	11.8	ns
LCKOUT to DO Valid	t_{CKLDOV}	0	3.0	ns
RESET Pulse Width High	t_{RHRL}	20		ns
WDSYNCEN High	t_{SYHSYL}	20		ns
LCKIN Period	t_{INLINL}	18.73	18.92	ns



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204ARPQ RECEIVER PACKAGE

PIN	DESCRIPTION	PIN	DESCRIPTION
1	QGND	41	NGND
2	TEST1	42	LDOUT3
3	QVCC	43	LDOUT2
4	TEST2	44	VCC
5	QGND	45	LDOUT1
6	TEST3	46	LDOUT0
7	QVCC	47	GND
8	TEST4	48	LCKOUT
9	QGND	49	VCC
10	TEST01	50	GND
11	QVCC	51	DWDTH
12	TEST02	52	WDSYNC
13	QGND	53	WDSYNCEN
14	TEST5	54	FCOEN
15	QVCC	55	VCC
16	LCKIN	56	TEST03
17	QGND	57	TEST04
18	NVCC	58	GND
19	LDOUT19	59	TEST6
20	LDOUT18	60	TEST7
21	NGND	61	VCC
22	LDOUT17	62	CODEVIOL
23	LDOUT16	63	BITSYNC
24	NVCC	64	GND
25	NGND	65	VCC
26	LDOUT15	66	TEST05
27	LDOUT14	67	TEST06
28	LDOUT13	68	TEST8
29	LDOUT12	69	TEST9
30	NVCC	70	HDINP
31	LDOUT11	71	HDINC
32	LDOUT10	72	HDINN
33	LDOUT9	73	VCC
34	LDOUT8	74	HDLPINP
35	NGND	75	HDLPINP
36	LDOUT7	76	HDLPINN
37	LDOUT6	77	LPBKEN
38	LDOUT5	78	TEST0
39	LDOUT4	79	RESET
40	NVCC	80	QVCC

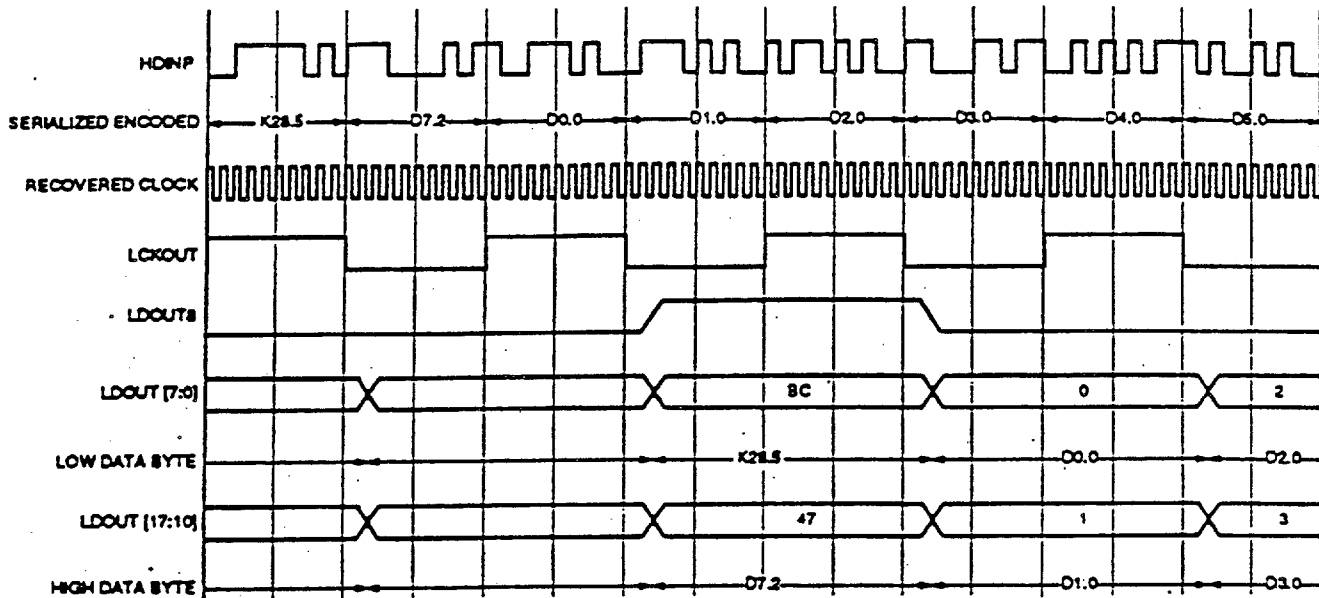


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204ARPQ RECEIVER IC TIMING



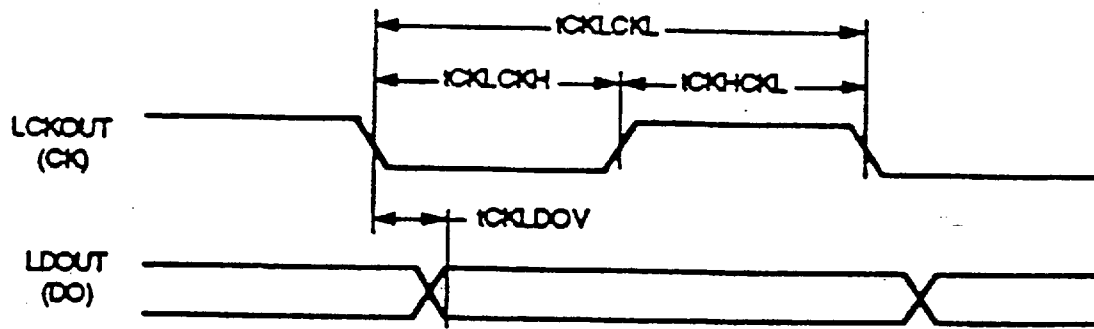
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204ARPQ RECEIVER PORT TIMING



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