

# SONY CXB1104Q/Q-Y

*T-46-07-08*

## Dual D Flip-Flop with Set, Reset and Differential I/O

### Description

The CXB1104Q is an ultra high speed monolithic ECL IC, which contains two D type Flip-Flops with separate direct Set (Sn) and Reset (Rn). Data inputs have differential input pins Dn and  $\overline{Dn}$ . Separate clock inputs also have differential input pins Cn and  $\overline{Cn}$ . Built-in reference voltage is provided at V<sub>BB</sub> pin to facilitate single input operation.

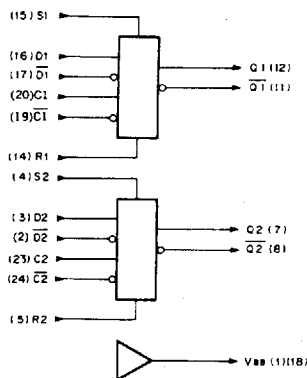
### Features

- Typical clock rate up to 3.2GHz
- Differential Data and Clock inputs
- Internal pull down resistors on input pins to maintain logic LOW level with the pins left open
- ECL 100K compatible I/O levels

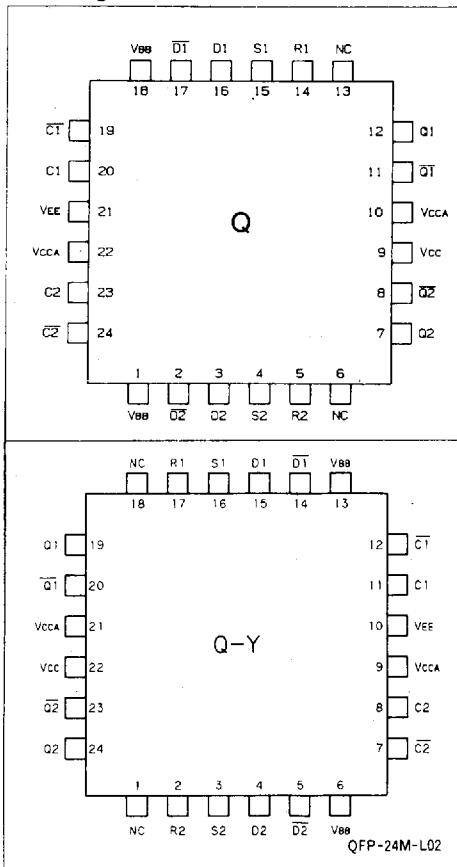
### Pin Names

Dn, $\overline{Dn}$	Data inputs
Qn, $\overline{Qn}$	Data outputs
Sn	Direct Set inputs
Rn	Direct Reset inputs
Cn, $\overline{Cn}$	Clock inputs (positive edge trigger)
V <sub>BB</sub>	Reference voltage output
V <sub>CC</sub>	Circuit ground
V <sub>CCA</sub>	Circuit ground for outputs
V <sub>EE</sub>	Negative power supply

### Logic Symbol



### Pin Assignment



### Truth Table

Input			Output	
S	R	C	Q	$\overline{Q}$
H	L	X	X	H
L	H	X	X	L
H	H	X	X	X
L	L	⌈	L	L
L	L	⌋	H	H

Note: H; HIGH voltage Level  
 L; LOW voltage Level  
 X; Don't care  
 ⌈; Positive transition edge

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CXB1104Q/QV

## DC Characteristics

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 $V_{EE} = -4.5 \pm 0.3V$ ,  $V_{CC} = V_{CCA} = GND$ ,  $V_{TT} = -2.0V$ ,  $T_c = 0^\circ C$  to  $+85^\circ C$ 

Item	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Power supply current	$I_{EE}$		-146	-107	-74	mA

Note: Other DC characteristics; See pages 3-3 and 3-4.

## AC Characteristics

 $V_{EE} = -4.5 \pm 0.3V$ ,  $V_{CC} = V_{CCA} = GND$ ,  $V_{TT} = -2.0V$ ,  $T_c = 0^\circ C$  to  $+85^\circ C$ ,  $R_T = 50\Omega$  to  $V_{TT}$ 

Item	Symbol	Input	Output	Test Condition	Min.	Typ.	Max.	Unit
Propagation delay time	$T_{PLH}$	Cn	Qn		450	610	810	ps
	$T_{PHL}$				460	630	830	
	$T_{PLH}$	Sn			600	760	990	
	$T_{PHL}$				600	760	990	
	$T_{PLH}$	Rn			570	720	940	
	$T_{PHL}$				580	730	950	
Set up time	$T_S$	Dn, Cn			40			
Hold time	$T_H$	Cn, Dn			240			
Release time	$T_R$	Sn, Cn			310			
		Rn, Cn			320			
Min. Pulse width	$T_{PW}$	Sn			270			
		Rn			270			
Max. Clock frequency	$f_{max}$	Cn			2.4	3.2		GHz
Rise time	$T_{TLH}$	Cn	Qn	20% to 80%		200	280	ps
Fall time	$T_{THL}$					160	240	

Note: AC test circuit; See pages 4-4 and 4-5.

# Package Data

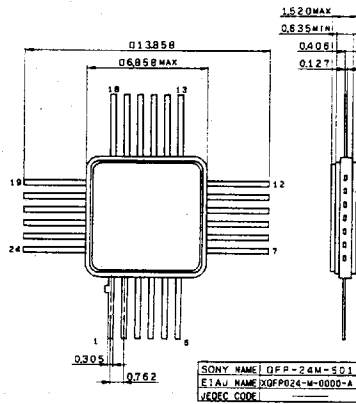
T-90-20

Package Outline

Unit: mm

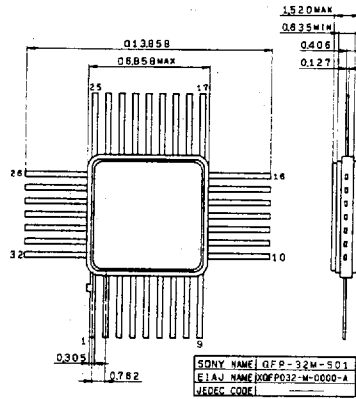
24pin QFP (QFP-24M-S01)

24pin QFP (Metal) 0.3g



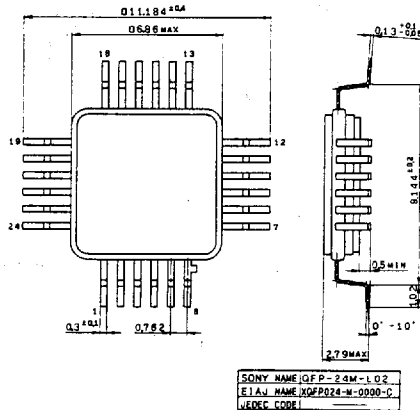
32pin QFP (QFP-32M-S01)

32pin QFP (Metal) 0.2g



24pin QFP (QFP-24M-L02)

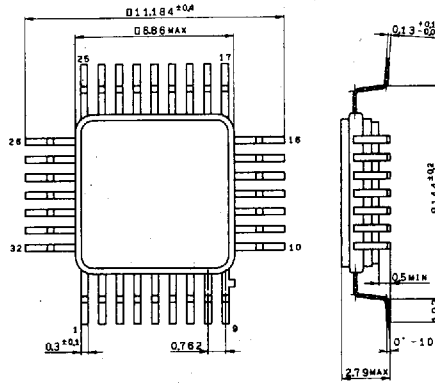
24pin QFP (Metal) 0.3g



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32pin QFP (QFP-32M-L02)

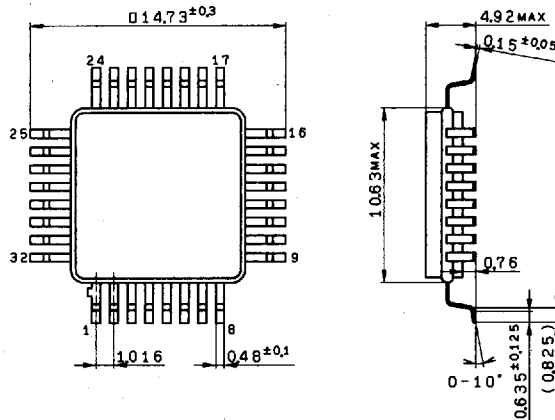
32pin QFP (Metal) 0.2g



SONY NAME	QFP-32M-L02
EIAJ NAME	XQFP032-M-0000-C
JEDEC CODE	

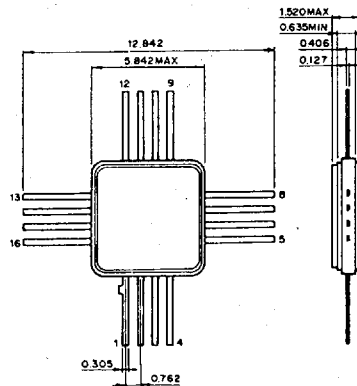
32pin QFP (QFP-32C-L01)

32pin QFP (Ceramic)



SONY NAME	QFP-32C-L01
EIAJ NAME	XQFP032-G-0000-A
JEDEC CODE	

16pin QFP



**Package Data**

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2. 24 pin QFP	6-3
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5. 32 pin QFP with formed lead	6-4

# Package Data

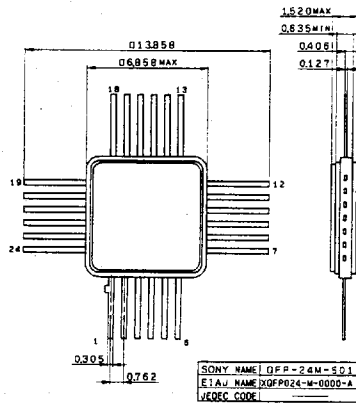
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Package Outline

Unit: mm

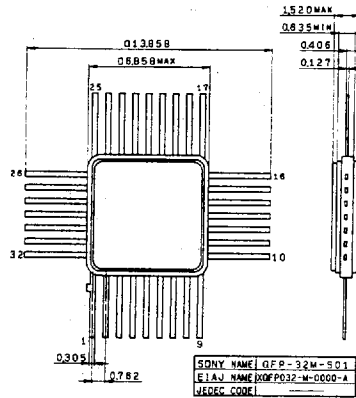
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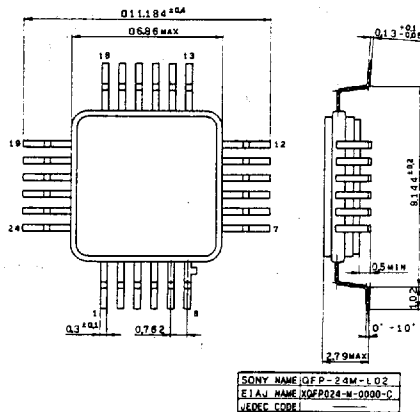
32pin QFP (QFP-32M-S01)

32pin QFP (Metal) 0.2g



24pin QFP (QFP-24M-L02)

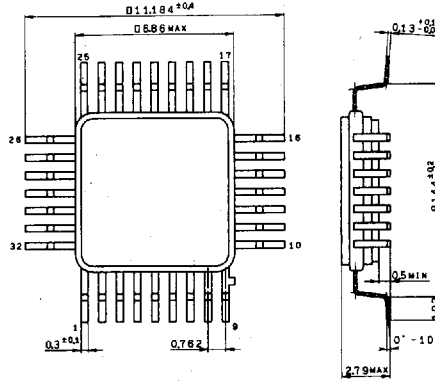
24pin QFP (Metal) 0.3g



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32pin QFP (QFP-32M-L02)

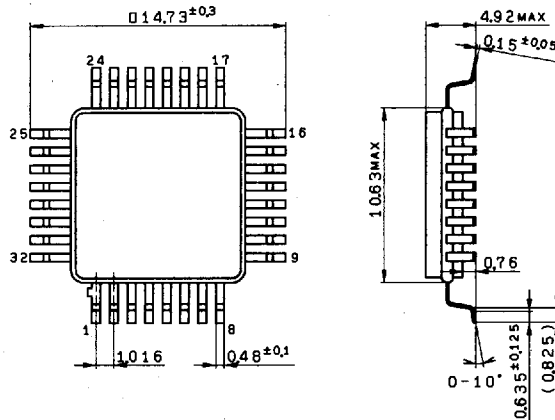
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EIAJ NAME	XQFP032-M-0000-C
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32pin QFP (QFP-32C-L01)

32pin QFP (Ceramic)



SONY NAME	QFP-32C-L01
EIAJ NAME	XQFP032-G-0000-A
JEDEC CODE	

16pin QFP

