SONY CXB1108AQ-L/AQ-Y

Laser Driver

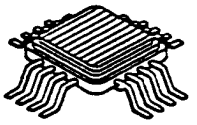
Description

The CXB1108AQ-L/AQ-Y is an ultra high speed monolithic Laser Driver/Current Switch Circuit with ECL input level.

Open collector output is provided at the output pin and has a capability of driving modulation current of 60mApp up to a data rate of 2Gbps (NRZ). AMP input controls the modulation current amplitude, and BIAS input sets a current bias level. Open collector output I_{OUT} sinks current of $2 \times I_{AMP} + I_B$.

Data input has differential input pins (V_{IN} and $\overline{V_{IN}}$). Built-in reference voltage is provided at V_{REF} pin to facilitate the use of single input operation.

CXB1108AQ-L
16pin QFP (Metal)



CXB1108AQ-Y
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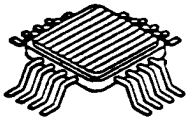


Features

- Typical data rate up to 2.0Gbps (NRZ)
- Differential Data input
- ECL 100K compatible Input level

Structure

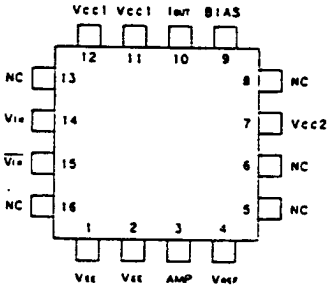
Bipolar silicon monolithic IC

Pin Names

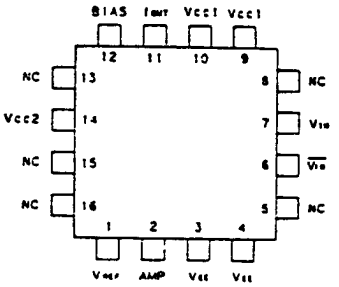
V_{IN}, $\overline{V_{IN}}$	Data input
I_{OUT}	Current output
AMP	Modulation current control input
BIAS	Bias current control input
V_{REF}	Reference voltage output
V_{CC1}	Circuit ground
V_{EE}	Negative power supply
V_{CC2}	Reference voltage generation circuit ground

Pin Assignment

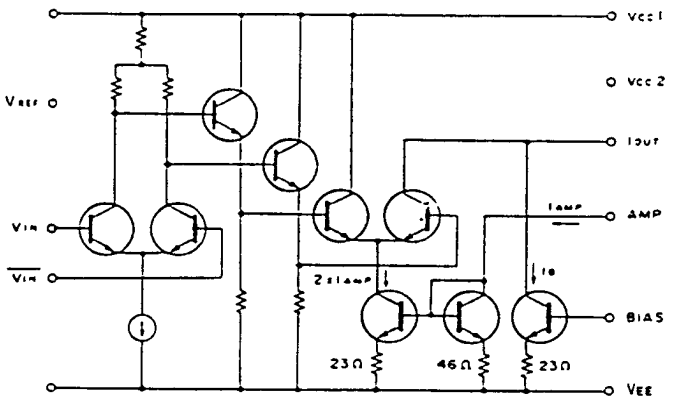
AQ-L



AQ-Y



Circuit Diagram



E93111-HP

Absolute Maximum Ratings $V_{CC}=V_{CCA}=GND$

Characteristic	Symbol	Rating	Unit
Supply voltage	V_{EE}	−7 to +0.3	V
Input voltage	V_I	−4 to 0	V
Differential input voltage : $\lvert V_{IN}-\overline{V_{IN}} \rvert$	V_{ID}	0 to 2.5	V
Output current —Continuous —Surge	I_O	0 to 250 0 to 500	mA
Operating case temperature	T_C	−55 to 125	°C
Storage temperature	T_{stg}	−65 to 150	°C

Stresses greater than these conditions may cause permanent damage to the devices or affect their reliability.

Input terminal should be connected to V_{EE} for logic LOW level. Low voltage level is maintained with input pins left open.

Recommended Operating Conditions $V_{CC}=V_{CCA}=GND$

Item	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	V_{EE}	−4.8	−4.5	−4.2	V
Operating case temperature	T_C	0		85	°C

The devices should be operated under these conditions, beyond which the parametric values are not specified.

DC Characteristics $V_{EE}=-4.5\pm0.3V$, $V_{CC1}=V_{CC2}=GND$, $T_C=0°C$ to $+85°C$, $R_L=10\Omega$ to V_{CC1}

Item	Symbol	Test Condition	Min.	Typ.	Max.	Uni
Input HIGH voltage	V_{IH}		−1165		−810	mV
Input LOW voltage	V_{IL}		−1840		−1475	mV
Input HIGH current	I_{IH}	$V_{IN}=V_{IH}$ (max)			230	μA
Power supply current	I_{EE}	V_{IN}=H, $\overline{V_{IN}}$=L, I_{OUT}=100mA, I_{AMP}=25mA	−224	−164	−150	mA
Output Current	I_{OUT}		0		120	mA
		$I_{AMP}=0$ $V_{AMP}=V_{EE}$	0		60	
		$I_B=0$ $V_{BIAS}=V_{EE}$	0		60	
Output voltage range	V_{OUT}		−1.5		2.0	V
Input voltage range	V_{IN}		−2.0		−0.5	V
Reference bias voltage	V_{REF}		−1400		−1100	mV

AC Characteristics $V_{EE}=-4.5\pm0.3V$, $V_{CC1}=V_{CC2}=GND$, $T_C=0°C$ to $+85°C$, $R_L=50\Omega$ to V_{CC1}

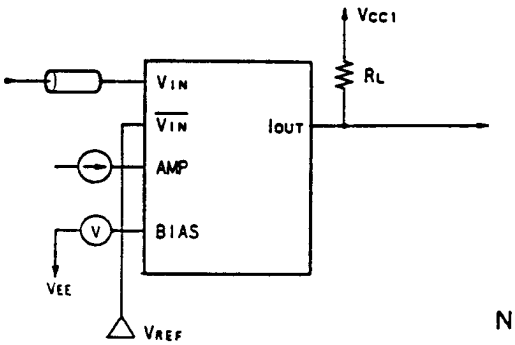
Item	Symbol	Input	Output	Test Condition	Min.	Typ.	Max.	Unit
Max. Data rete	f_{DMAX}	V_{IN}	I_{OUT}	NRZ	1.7	2.0		Gbps
Rise time	T_{TLH}			20% to 80% $I_{AMP}=5mA$ $V_{BIAS}=V_{EE}$		200	240	ps
Fall time	T_{THL}					200	240	

Note: AC test circuit; See page 4.

Notes on Operation

1. Do not use I_{OUT} pin at open.
2. Do not apply voltage over $V_{EE}+2.5V$ because NPN Transistor base is connected to BIAS pin directly.

AC Characteristics Test Circuit



Note) —⊂⊃— : 50Ω coaxial cable

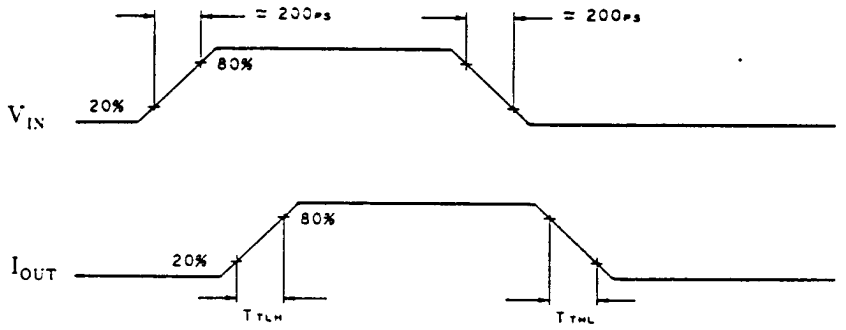
Input signal: $T_{TLH}=T_{THL}\simeq 200ps$ (20% to 80%)

V_{CC1}, V_{CC2} : Connect GND 0.1μF (Ceramic chip) and 25μF (Tantalum) capacitors between GND and V_{EE}

V_{EE} : −4.5V.

V_{REF} : −1.32V

R_L : 50Ω



Propagation delay time, rising and falling times

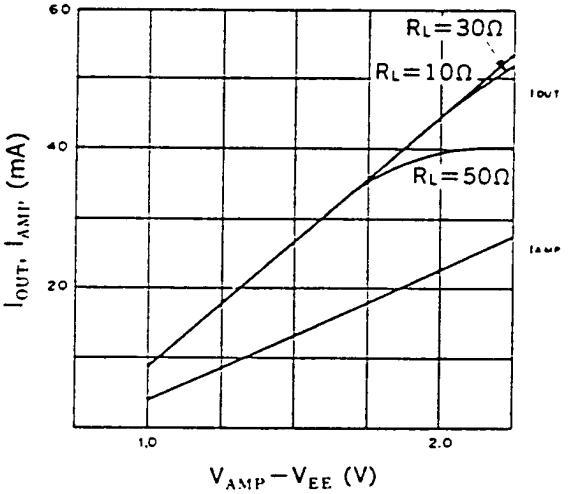


Figure 1. $V_{AMP}-V_{EE}$ vs I_{OUT}, I_{AMP} ($V_{BIAS}=V_{EE}$)

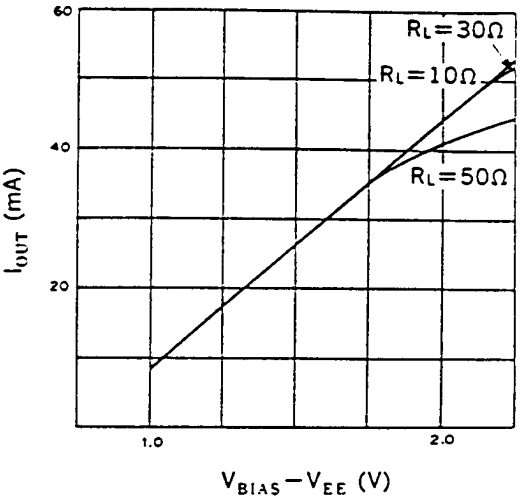


Figure 2. $V_{BIAS}-V_{EE}$ vs I_{OUT} ($V_{AMP}=V_{EE}$)

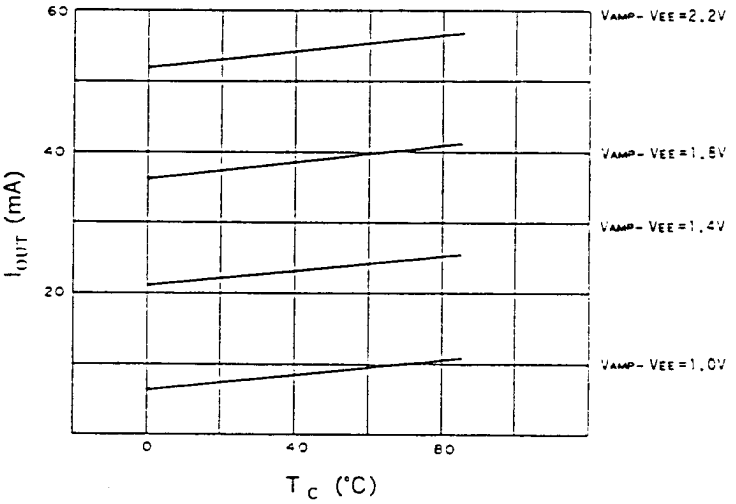
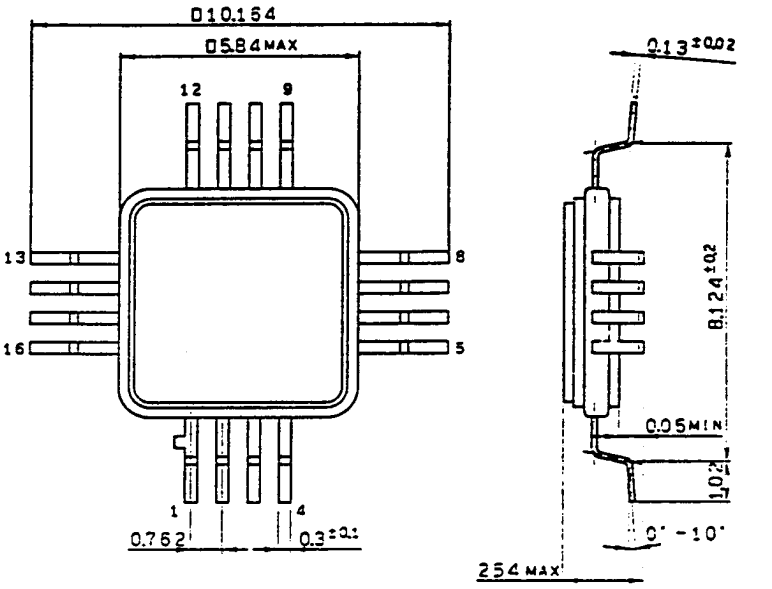


Figure 3. T_C vs I_{OUT}

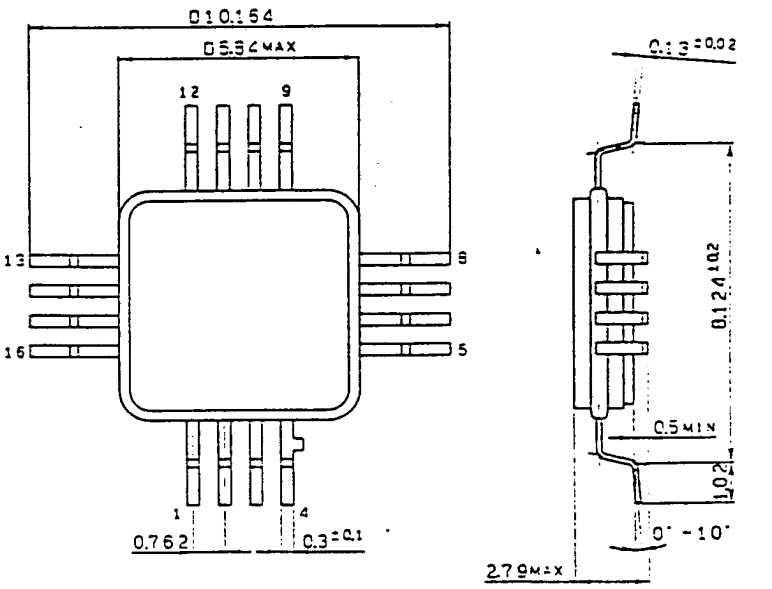
Package Outline Unit : mm

CXB1108AQ-L 16pin QFP (Metal)



SONY NAME	QFP-16M-L01
EIAJ NAME	XQFP016-M-0000-B
JEDEC CODE	———

CXB1108AQ-Y 16pin QFP (Metal)



SONY NAME	QFP-16M-L02
EIAJ NAME	XQFP016-M-0000-C
JEDEC CODE	———