

FEATURES

- Up to 3.2Gbps operation
- Modulation current to 60mA
- Rise/fall times 65ps typical
- Input 50Ω internally terminated to V_{CC}
- TTL /EN with internal 75kΩ pull-down
- Designed for use with MIC3000 optical transceiver management IC
- Voltage programmable laser modulation current
- Single 3.3V power supply
- Operating temperature range of -40°C to 85°C
- Available in tiny 16-pin MLF™ package

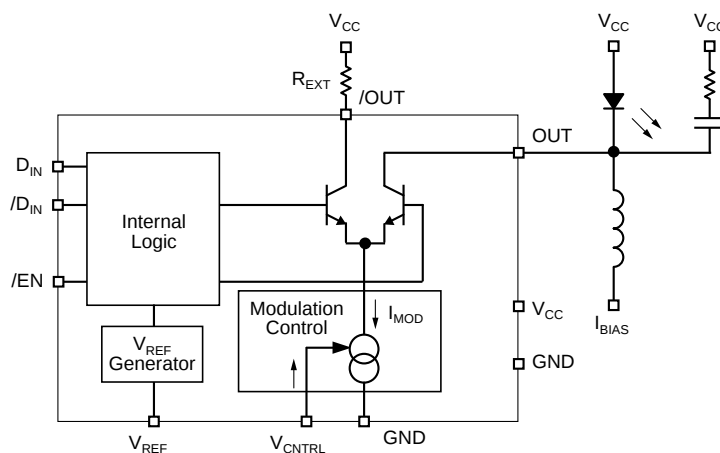
DESCRIPTION

The SY88932L is the smallest laser driver with programmable modulation current for SONET/SDH applications up to 3.2Gbps. The device accepts either CML level or AC-coupled PECL inputs. The SY88932L provides modulation current of up to 60mA for FP (Fabry-Perot) or DFB (Distributed Feedback) lasers. The device incorporates an active low TTL /EN function which shuts off modulation current when high.

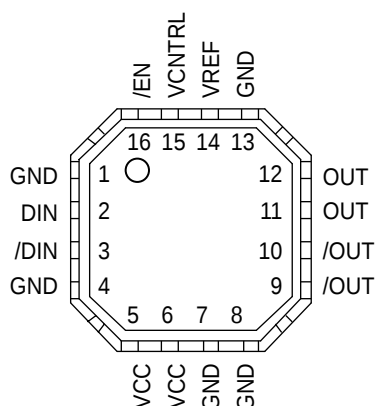
APPLICATIONS

- Fiber optical module
- Transponder
- XAUI CWDM
- SONET/SDH transmission system
- Add-drop mux
- Metro area network
- 2.5Gbps optical transmitter

BLOCK DIAGRAM



PACKAGE/ORDERING INFORMATION



16-Pin MLF™

Ordering Information

Part Number	Package Type	Operating Range	Package Marking
SY88932LMI	MLF-16	Industrial	932L
SY88932LMITR*	MLF-16	Industrial	932L

*Tape and Reel

PIN DESCRIPTION

Pin Number	Pin Name	Pin Function
2, 3	DIN, /DIN	NRZ differential data (inputs), CML terminated interface with 50Ω to V_{CC} .
1, 4, 7, 8, 13	GND	Ground.
5, 6,	VCC	Positive power supply.
9, 10, 11, 12,	OUT, /OUT	Open collector (outputs) from the modulation driver.
14	VREF	Voltage reference, nominally 1.25V.
15	VCNTL	Voltage control of I_{MOD} . 5kΩ input impedance. See "Typical Operating Characteristics."
16	/EN	Enable: TTL compatible active low input with 75kΩ pull-down resistor.

TRUTH TABLE(NOTE 1)

D	/D	/EN	OUT(NOTE 2)	/OUT
L	H	L	H	L
H	L	L	L	H
X	X	H	H	L

Note 1. L = LOW, H = HIGH, X = don't care.

Note 2. $I_{OUT} \leq I_{MOD_OFF}$ when /EN is HIGH.

Absolute Maximum Ratings(Note 1)

Supply Voltage (V_{CC})	–0.5V to +4.0V
CML Input Voltage (V_{IN})	$V_{CC} - 1.0V$ to $V_{CC} + 0.5V$
TTL Control Input Voltage (V_{IN})	0V to V_{CC}
Lead Temperature (soldering, 10 sec.)	+300°C
Storage Temperature (T_S)	–65°C to +150°C

Operating Ratings(Note 2)

Supply Voltage (V_{CC})	+3.0V to +3.6V
Ambient Temperature (T_A)	–40°C to +85°C
Junction Temperature (T_J)	120°C
Package Thermal Resistance	
MLF™	
(θ_{JA}) still air	59°C/W
(ψ_{JB}) still air	32°C/W

Note 1. Permanent device damage may occur if ABSOLUTE MAXIMUM RATINGS are exceeded. This is a stress rating only and functional operation is not implied at conditions other than those detailed in the operational sections of this data sheet. Exposure to ABSOLUTE MAXIMUM RATING conditions for extended periods may affect device reliability.

Note 2. The data sheet limits are not guaranteed if the device is operated beyond the operating ratings.

DC ELECTRICAL CHARACTERISTICS

$V_{CC} = 3.0$ to $3.6V$, $GND = 0V$, $T_A = -40^\circ C$ to $+85^\circ C$; Typical values at $V_{CC} = 3.3V$, $T_A = 25^\circ C$.

Symbol	Parameter	Condition	Min	Typ	Max	Units
I_{CC}	Power Supply Current	Note 1		65	90	mA
I_{MOD}	Modulation Current Range		10		60	mA
I_{MOD_OFF}	Modulation Off Current	/EN = V_{IHEN}			200	μA
V_{IDDIN}	Input Differential Voltage (D_{IN} , / D_{IN})	Note 2	400	800	1600	mVpp
V_{IHEN}	Input HIGH Voltage (/EN)		2.0			V
V_{ILEN}	Input LOW Voltage (/EN)				0.8	V
V_{OUT}	Voltage (OUT, /OUT)	Note 3	$V_{CC} - 1.5$		V_{CC}	V
V_{REF}	Reference Voltage	Note 4	1.2	1.25	1.3	V

Note 1. Excluding I_{MOD} . I_{MOD} set for 60mA.

Note 2. V_{IDDIN} is the voltage required to guarantee a stable logic level. For logic "1", D_{IN} must be $\frac{V_{IDDIN}}{2}$ above / D_{IN} . For stable logic "0", D_{IN} must be $\frac{V_{IDDIN}}{2}$ below / D_{IN} .

Note 3. OUT and /OUT are current outputs. This specification defines the voltage range that the user must guarantee these pins remain within for proper operation.

Note 4. V_{REF} intended to source/sink $\leq |5mA|$.

AC ELECTRICAL CHARACTERISTICS(NOTE 1)

$V_{CC} = 3.0$ to $3.6V$, $GND = 0V$, $T_A = -40^{\circ}C$ to $+85^{\circ}C$; Typical values at $V_{CC} = 3.3V$, $T_A = 25^{\circ}C$.

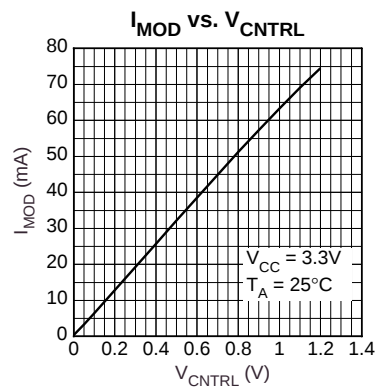
Symbol	Parameter	Condition	Min	Typ	Max	Units
D_J	Deterministic Jitter	Notes 2, 3			20	ps _{p-p}
t_r, t_f	Output Rise/Fall Times (20% to 80%)	Note 2		65	100	ps

Note 1. AC characteristics are guaranteed by design and characterization.

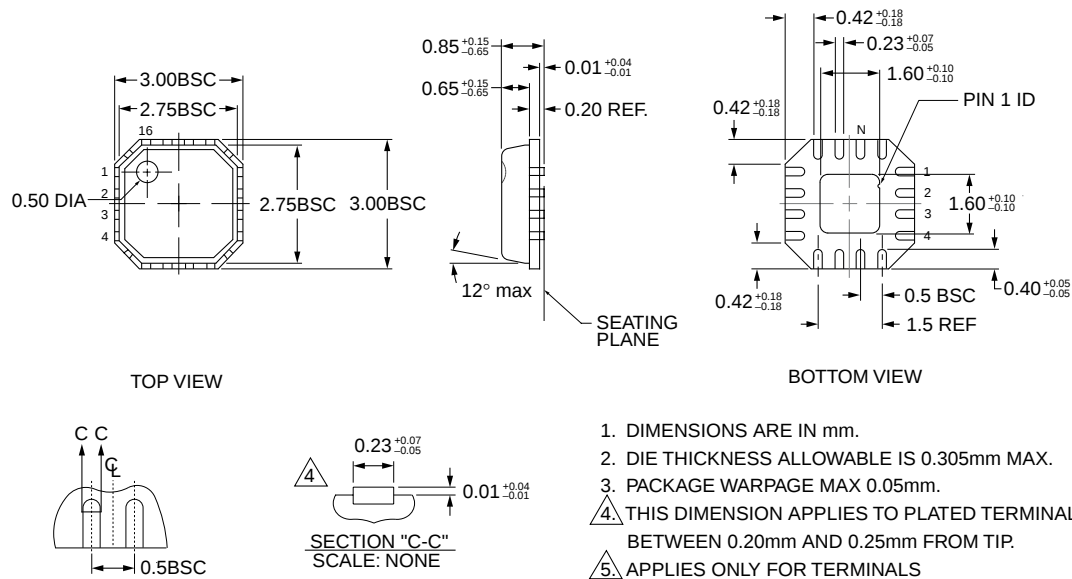
Note 2. $I_{MOD} = 40mA$, 25Ω resistors each tied from OUT and /OUT to V_{CC} .

Note 3. $I_{MOD} = 40mA$, 2.5Gbps, 0-1 pattern, BW = 12KHz to 20MHz.

TYPICAL OPERATING CHARACTERISTICS



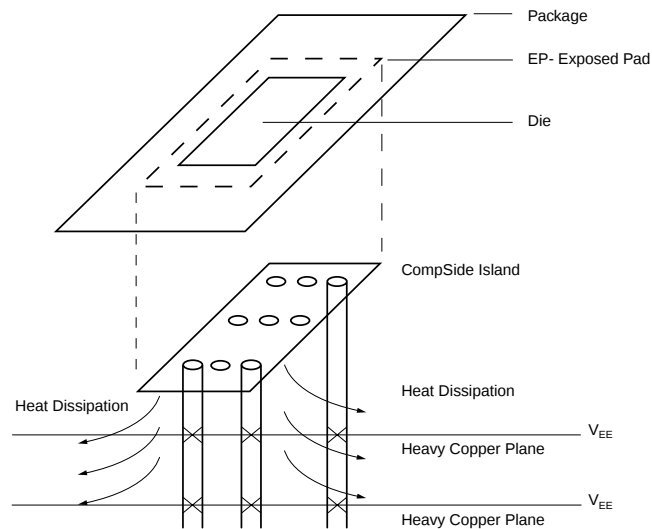
16 LEAD EPAD-MicroLeadFrame™ (MLF-16)



FOR EVEN TERMINAL/SIDE

Rev. 02

Rev. 01



PCB Thermal Consideration for 16-Pin MLF™ Package

MICREL, INC. 1849 FORTUNE DRIVE SAN JOSE, CA 95131 USA

TEL + 1 (408) 944-0800 FAX + 1 (408) 944-0970 WEB <http://www.micrel.com>

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