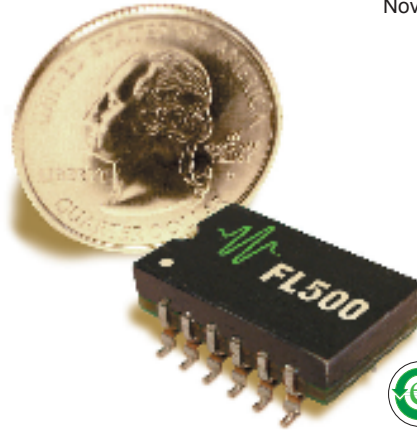




FL500

500 mA laser diode driver or two 250 mA drivers in a small SMT package that is reflow process compatible



GENERAL DESCRIPTION:

The FL500 is ideal for driving low power laser diodes. It operates from 3 to 12 V, so is compatible with Li+ battery operation. It can be configured as two totally independent 250 mA drivers or a single 500 mA driver. Compatible with Type A or B laser diodes.

The FL500 allows for quick and easy operation in Constant Current (CC) mode. For simple CC mode operation the only components that are required are a power supply, an analog control voltage, your laser and optional filtering circuitry.

For additional features, including current limit and photodiode feedback for Constant Power operation, the FL500 can be used with the FL591 evaluation board.

FEATURES:

- Small Package (0.75" x 0.45" x 0.255")
- Low Cost
- Brownout Protection
- 12-pin, SMT package, Reflow Compatible
- Slow Start Laser Diode Protection
- Drive Up to 500 mA Output Current
- Can be configured as two 250 mA drivers
- Voltage Controlled Setpoint
- TTL Compatible Shutdown Pin
- Adjustable Current Limit on Eval boards
- Adjustable Current Range Output
- 500 kHz sinewave Constant Current Bandwidth (100 kHz square wave)

Figure 1
Top View Pin Layout

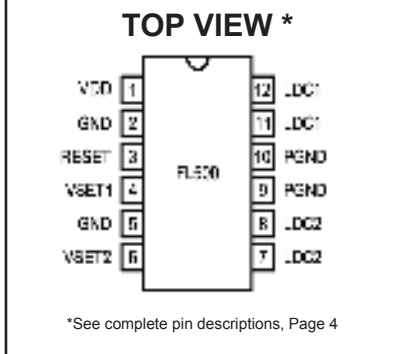
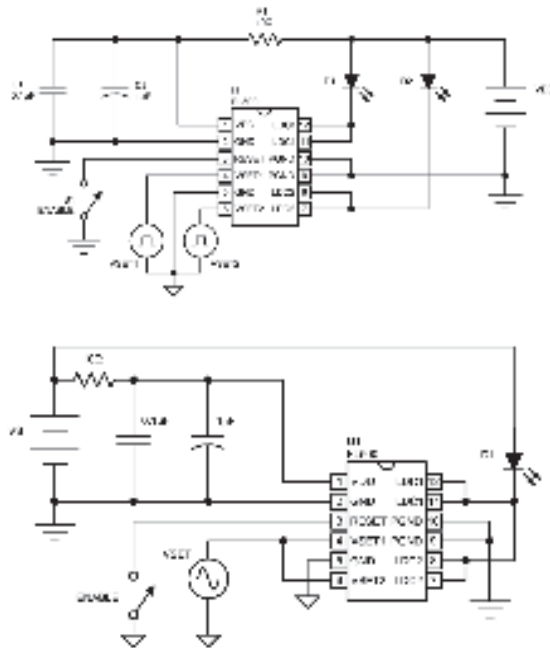


Figure 2
Connection Diagrams for FL500: Top - Dual Configuration, Bottom - Single Operation



* For Details See Page 6

ELECTRICAL AND OPERATING SPECIFICATIONS

ABSOLUTE MAXIMUM RATINGS							
RATING	SYMBOL	VALUE	UNIT				
Supply Voltage (Voltage on Pin 1)	V_{DD}	+3 to +12 **	Volts DC				
Output Current (See SOA Chart)	I_{OUT}	500	mA				
Power Dissipation, $T_{AMBIENT} = +25^{\circ}C$ [1]	P_{MAX}	2	Watts				
Operating Temperature, case	T_{OPR}	- 40 to + 85	$^{\circ}C$				
Storage Temperature	T_{STG}	- 55 to +125	$^{\circ}C$				
Weight	FL500	0.08	oz				
PARAMETER	TEST CONDITIONS			MIN	TYP	MAX	UNITS
CONSTANT CURRENT CONTROL							
Short Term Stability, 1 hour	$T_{AMBIENT} = 25^{\circ}C$				35	40	ppm
Long Term Stability, 24 hours	$T_{AMBIENT} = 25^{\circ}C$			50		75	ppm
CONSTANT POWER CONTROL							
Short Term Stability, 1 hour [3]					0.019		%
Long Term Stability, 24 hours [3]					0.011		%
OUTPUT [2]							
Current, peak, see SOA chart	Per channel			245	250	252	mA
Current, peak, see SOA chart	Two channels operated in parallel			495	500	505	mA
Compliance Voltage, Laser Diode Load	Full Temp. Range, $I_{OUT} = 500$ mA			$V_{DD} - (0.5 \times V_{SET})$			Volts
Rise Time	$I_{OUT} = 500$ mA				300		nsec
Fall Time	$I_{OUT} = 500$ mA				300		nsec
Bandwidth	Constant Current, Sine Wave				500		kHz
Bandwidth	Constant Current, Square Wave				100		kHz
Delayed start				100			msec
Slow Start ramp rate					15		mA / msec
Depth of Modulation	100 kHz sine wave				99		%
Transfer Function - V_{SET} to I_{OUT}	Configured as two 250 mA drivers				0.125		A / V
Transfer Function - V_{SET} to I_{OUT}	Configured as one 500 mA driver				0.25		A / V
POWER SUPPLY							
Voltage, V_{DD}				3		12**	Volts
Current, V_{DD} supply, quiescent				2.2	2.7	4.6	mA
V_S , Maximum to LD Anode						20**	Volts
INPUT							
Offset Voltage, initial, I_{mon}	Pin 2, $T_{AMBIENT} = 25^{\circ}C$, $V_{CM} = 0$ V				2		mV
Bias Current (based on input Res of op amp)	Pin 2, $T_{AMBIENT} = 25^{\circ}C$, $V_{CM} = 0$ V				10	15	nA
Common Mode Range	Pin 2, Full Temp. Range			0		V_{DD}	V
Common Mode Rejection, Set point	Full Temperature Range			-16	64		dB
Power Supply Rejection	Full Temperature Range			60			dB
THERMAL							
Heatspreader Temperature Rise	$T_{AMBIENT} = 25^{\circ}C$				43		$^{\circ}C / W$
Pin Solderability	Solder temp @260 $^{\circ}C$				10		Sec
NOISE							
Noise & Ripple (Rms)	$I_{OUT} = 100$ mA, 100 kHz bandwidth				3		μA
Leakage Current	$V_{SET} = 0$ V				50		μA
(when using the FL591 circuitry)	$V_{SET} = 1$ V				100		μA
	$V_{SET} = 2$ V				150		μA

**The FL591 Evaluation Board revision A or B limits the input voltage to 9 V.
Revision C allows full range operation from +3 V to +12 V.