

iC-WKP

15 V P-TYPE CW LASER DIODE DRIVER



iC-WKP is a driver for laser diodes in continuous wave operation with laser currents of up to 350 mA which requires only four external components. The driver is optimised for use with P-type laser diodes and allows the connection of the laser diode case to ground.

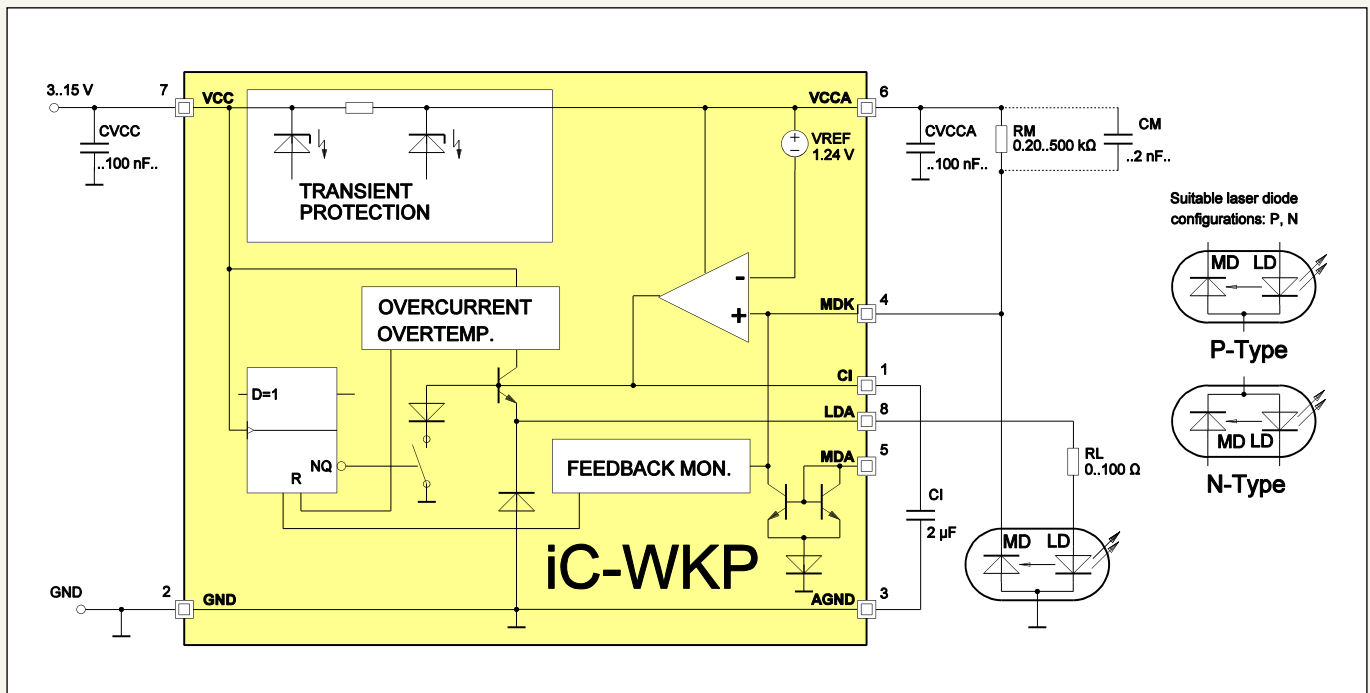
The iC includes integrated circuitry protecting against destruction by ESD, excessive temperature and overcurrent plus a soft start of the regulator to protect the laser diode when the power supply is switched on. The iC also filters the laser diode power supply for transients.

Applications

- Laser diode modules
- Laser diode pointers
- Leveling lasers
- Barcode readers

Features

- CW operation up to 350 mA from 3 to 15 V supply voltage
- Rapid soft start after power-on
- Simple power adjustment via an external resistor
- Control loop accuracy better than 2 % with changes in temperature, supply voltage and load current
- Integrated reverse polarity protection for the iC and laser diode
- Strong suppression of transients with small external capacitors; integrated flyback path
- Permanent shutdown with excessive chip temperature and overcurrent (i.e. if the laser diode is damaged or the feedback current path fails)
- Second feedback input permits also operation of N-type laser diodes
- Modulation via the feedback inputs possible
- Wide monitor current range from 2.5 μ A to 6.25 mA



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The regulator is adapted to the laser diode by an external resistor at MDK. The monitor current acts as a reference and is regulated independent of the influence of temperature and supply voltage (range: 2.5 μ A to 6.25 mA). The capacitor at CI determines the control time constants and start-up time.

A second monitor input, pin MDA, allows the driver to be used for N-type laser diode configurations; alternatively, it can be used as an analog modulation input (DC to a few kHz).

In the event of failure, such as overcurrent in the laser path with a lack of feedback, for example, a quick power lockout is activated. The shutdown persists until power is reapplied, permitting a restart. The strain on power packs and batteries is relieved and the laser class is retained even in the event of a disturbance.

iC-WKP offers additional protection by means of spike detection at pin MDK. Should spikes or oscillation occur at pin MDK the power lockout is activated after a certain timeout.

Key Specifications

General

Supply Voltage Range	3 to 15 V
Laser Drive Current	10 to 350 mA
Turn-on Delay $C_I = 3.3 \mu\text{F}$	600 μs max.

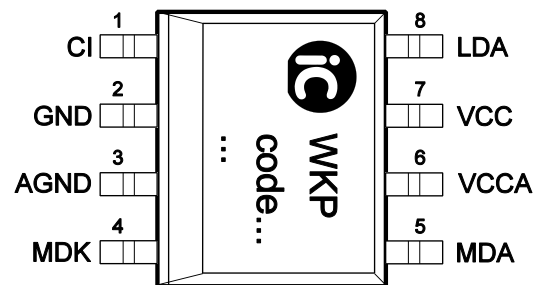
Control Circuit

Control Error $R_M = 10 \text{ k}\Omega, T_j = 0..80 \text{ }^\circ\text{C}$	0.5 %
$R_M = 10 \text{ k}\Omega, T_j = -40..125 \text{ }^\circ\text{C}$	2 %
Supply Voltage Suppression	$\pm 0.2 \text{ %/V}$
Load Balancing Error	$\pm 0.01 \text{ %/mA}$
Reference Voltage at MDK	typ. 1.24 V

Laser Driver

Saturation Voltage at LDA $I(\text{LDA}) = -40 \text{ mA}$	0.9 V max.
(referenced to VCC) $I(\text{LDA}) = -350 \text{ mA}$	1.3 V max.
Overcurrent Threshold in LDA	360 to 700 mA
Overcurrent Reset Delay $C_I = 1 \mu\text{F}$	600 μs max.

Pin Configuration S08Ntp



Low R_{th} package (typ. 30 K/W)

Pin Functions

No.	Name	Function
1	CI	Capacitor for Power Control
2	GND	Ground
3	AGND	Reference Ground for CI
4	MDK	APC Setup, Monitor Input 1 (MD Cathode)
5	MDA	Monitor Input 2 (MD Anode, modulation)
6	VCCA	Driver Supply
7	VCC	+3 to 15 V Supply Voltage
8	LDA	Driver Output (LD Anode)

Alternative Laser Diode Configuration

N-Type Laser Diode

