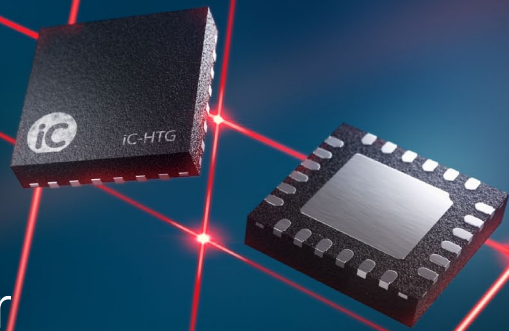


iC-HTG

Power CW Laser Diode Driver



Description

The power CW laser diode driver iC-HTG provides Automatic Current (ACC) or Power (APC) Control functionality operating an external scalable driver. For APC the programmable logarithmic monitor resistor ranges from 100Ω to 500kΩ at a step width <4%. The logarithmic D/A converter sets the operating point better than 1%. A wide range of laser diode current can be measured and controlled (APC) by a shunt resistor. An analog modulation with a frequency of up to 50 kHz is possible. Overcurrent, overtemperature, or standby will disable the laser. All parameters, chip temperature, and all system related voltages are accessible via serial communication (I²C or SPI). An external DC/DC converter can be controlled to optimize the total power dissipation.

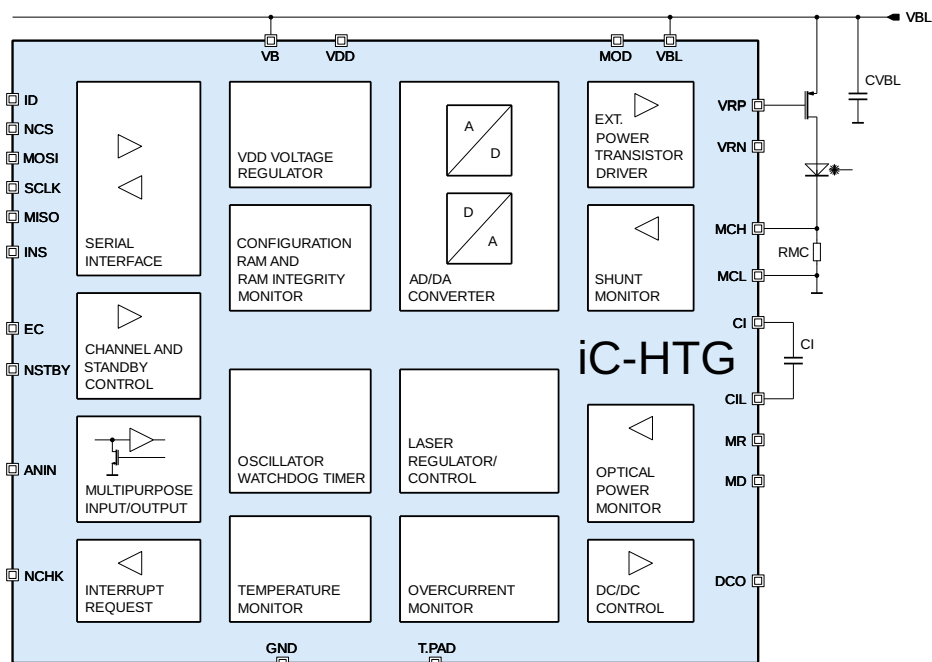
Applications

- Commercial VCSEL/LED/Laser diode modules
- Safety related CW laser diode drivers
- Structured-light 3D illumination
- Laser diode stack control
- Optical amplification, optical pumping

Features

- CW operation with external driver transistor
- ACC mode configurable with shunt
- APC mode configurable with monitor diode
- 3.3 to 24 V power supply
- Optimized for both N-type and P-type laser diodes
- Analog modulation frequency of up to 50 kHz
- Load current monitoring with shunt possible
- Internal programmable logarithmic monitor resistor
- Operating point setup with a 10 bit logarithmic resolution
- Serial programming interface (SPI or I²C compliant)
- Configuration content verifiable and activatable
- A/D converters for analog signal monitoring
- Low drop linear regulator for 3.3V
- Low current standby mode
- Temperature monitor
- Operational Temperature -40 to +85 °C

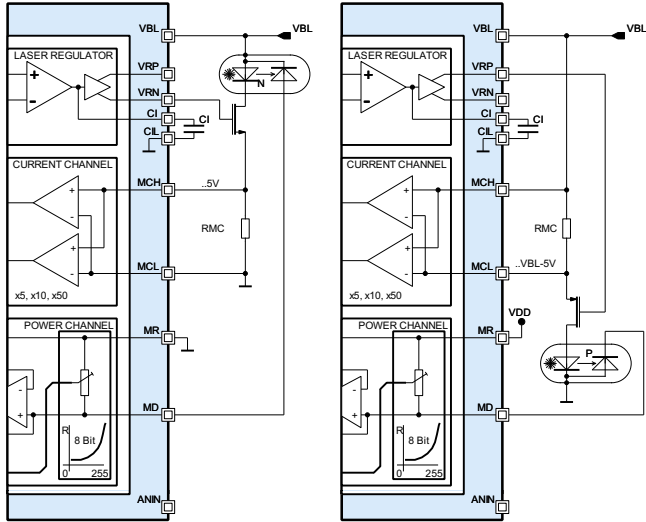
Block Diagram



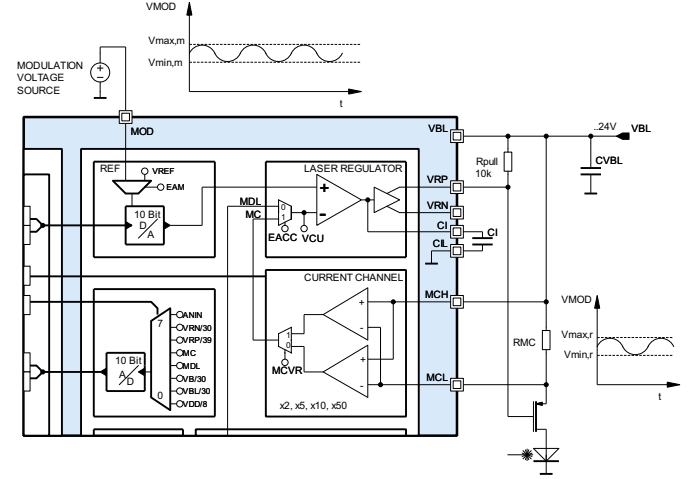
iC-HTG

Power CW Laser Diode Driver

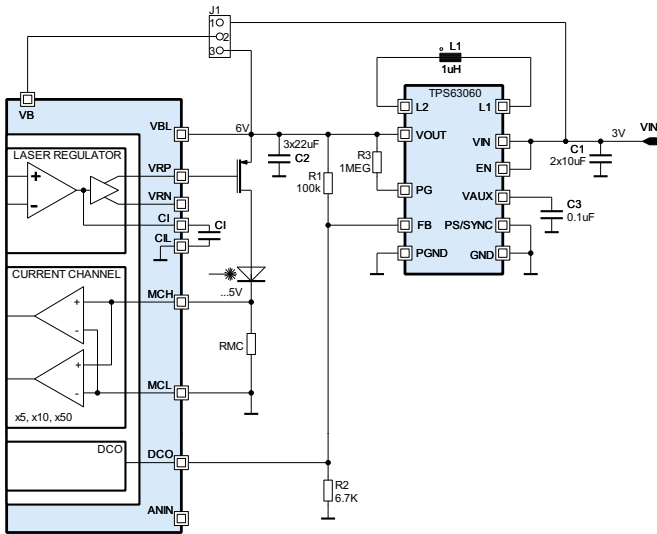
APC with Current Monitoring



Analog Modulation



Optimizing Power Dissipation



Pin Functions

No.	Name	Function
1	NCHK	Check output, active low
2	NSTBY	Standby input, active low
3	NCS/A1	Chip Select, active low/I ² C Address bit 1
4	ID	I ² C address bit 2
5	EC	Enable Channel input
6	MOSI/A0	SPI Master Out Slave In/I ² C Address bit 0
7	SCLK/SCL	SPI Clock/I ² C Clock
8	MISO/SDA	SPI Master In Slave OUT/I ² C Data
9	ANIN	Analog input for ADC
10, 11	MCH, MCL	Current monitor high side/low side
12	MOD	Analog modulation
13	CI	Integration Capacitor high side
14	CIL	Integration Capacitor low side
15	VRN	N transistor regulation
16	VRP	P transistor regulation
17	VBL	Channel supply
18	MD	Monitor diode
19	MR	Monitor resistor
20	GND	Ground
21	DCO	DC/DC converter trimmer
22	INS	I ² C or SPI selection input
23	VDD	3.3V output supply
24	VB	Power supply
	BP(TP)	Backside Paddle (GND)

Pin Configuration QFN24-4x4

