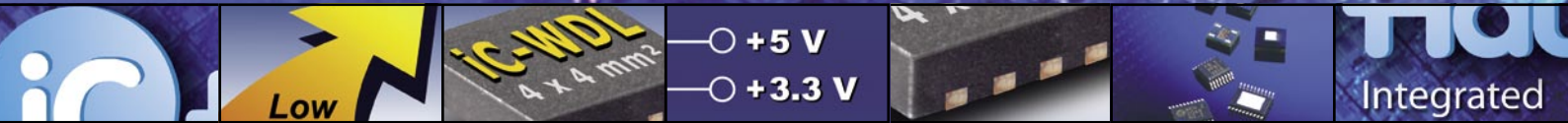
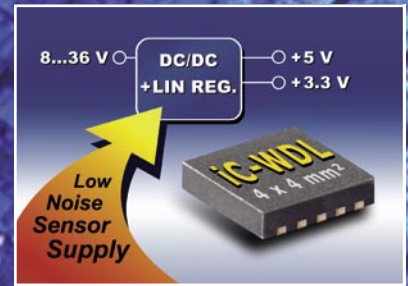


iC-WD A/B/C SWITCHED-MODE DUAL VOLTAGE REGULATOR



The device iC-WD is a monolithic switching regulator with two downstream 5 V resp. 3.3 V linear regulators. In view of the high efficiency of the down converter for an input voltage range of 8 to 36 V, the iC-WD family is well-suited for industrial applications which require a stabilised 5 V resp. 3.3 V power supply with minimal power dissipation and few components.

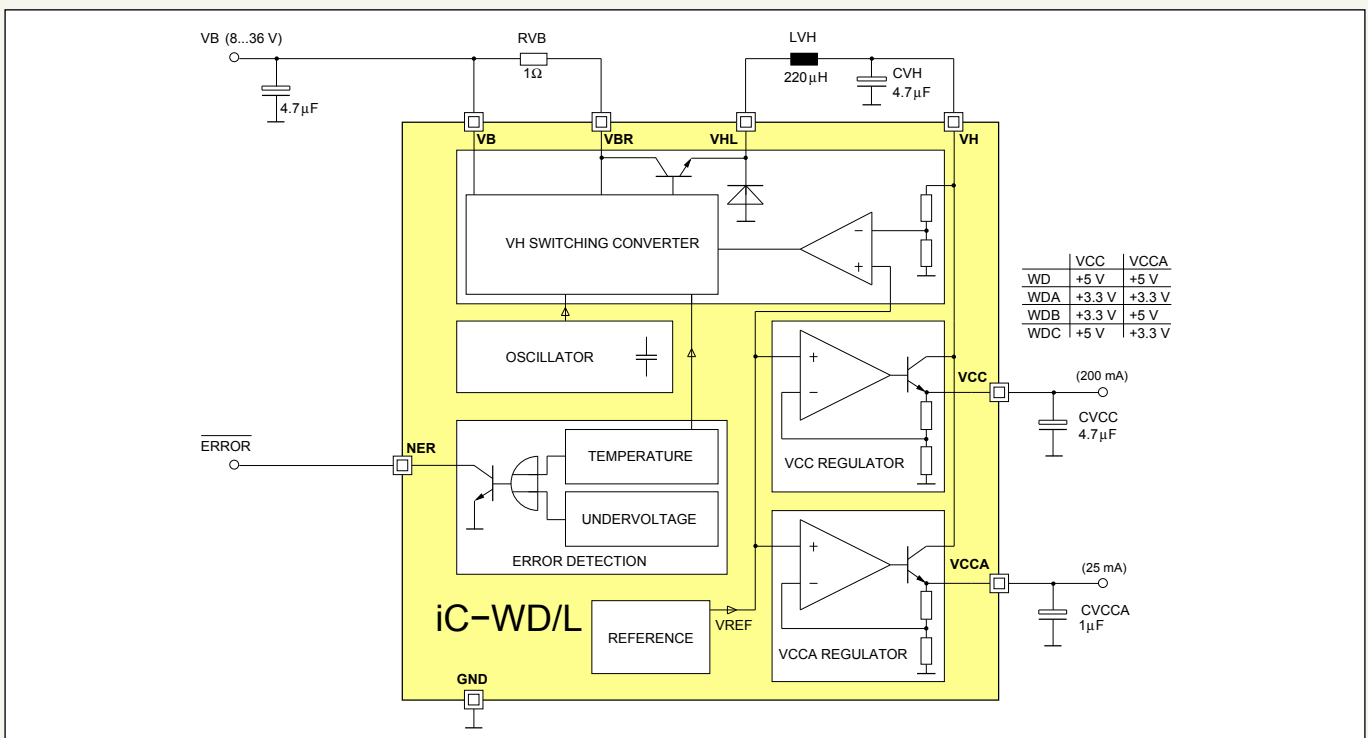
Switching transistor, free-wheeling diode and oscillator are integrated, limiting the necessary external elements for the switching regulator to the inductor, the back-up capacitor and one resistor. This resistor determines the regulator's cut-off current and thus its efficiency in the particular application at hand.

Features

- Input voltage 8 to 36 Vdc
- Highly efficient down converter
- Switching transistor and free-wheeling diode integrated
- Adjustment of the regulator cut-off current with external resistor
- Integrated 100 kHz oscillator without external components
- Switching frequency above the audible range
- Two downstream linear regulators with 200 mA/25 mA output current
- Small residual ripple with low capacitances in the μF range
- Fault message at overtemperature and undervoltage at current-limited open-collector output
- Shutdown of switching regulator at overtemperature
- Internal reference voltages
- Low space requirement with SO8 resp. tiny DFN10 package and only few external components
- Option: enhanced temperature range of -40 to 85°C

Applications

- 5 V resp. 3.3 V supply e.g. from 24 V industrial network





iC-WD A/B/C SWITCHED-MODE DUAL VOLTAGE REGULATOR

The downstream linear regulators feature a low residual ripple even with relatively small smoothing capacitors in the μF range. The output voltages have an internal reference and are specified $\pm 5\%$ in the entire operating and temperature range. The use of two mutually independent linear regulators makes it possible to isolate the voltage supply of sensitive analogue circuits or sensors from the supply for digital and driver devices.

The chip temperature and the output voltages are monitored. A fault is signalled via the current-limited open-collector output NER, for example by an LED display or a logical link with other error signals from the system. In the event of overtemperature, the switching regulator is disabled to reduce the power dissipation of the chip.

Ordering Information

Typ	(VCC/VCCA)	Package	Order Designation
iC-WD	(5/5 V)	S08 S08 thermal pad DFN10 (on request)	iC-WD S08 iC-WD S08-TP iC-WD DFN10
iC-WDA	(3.3/3.3 V)	DFN10	iC-WDA DFN10
iC-WDB	(3.3/5 V)	DFN10	iC-WDB DFN10
iC-WDC	(5/3.3 V)	DFN10	iC-WDC DFN10

Pin Functions for DFN10

No.	Name	Function
1	NER	Error Output (low active)
2	n.c.	
3	VBR	Pin for shunt
4	VHL	Pin for inductor
5	GND	Ground (reference voltage)
6	GND	Ground (reference voltage)
7	VH	Intermediate Voltage
8	VCC	Output (200 mA)
9	VCCA	Output (25 mA)
10	VB	Supply Voltage

Pin Functions for S08, S08-tp

No.	Name	Function
1	NER	Error Output (low active)
2	VBR	Pin for shut
3	VHL	Pin for inductor
4	GND	Ground (reference voltage)
5	VH	Intermediate Voltage
6	VCC	Output (200 mA)
7	VCCA	Output (25 mA)
8	VB	Supply Voltage

Key Specifications

General	
Supply Voltage Range	8 to 36 V
Switching Regulator	
Quiescent Current in VB VB = 12 V VB = 24 V VB = 30 V	typ. 4.5 mA typ. 3.0 mA typ. 2.5 mA
Current in VB with full load WD, WDB, WDC VB = 12 V VB = 24 V VB = 30 V WDA VB = 12 V VB = 24 V VB = 30 V	typ. 132 mA typ. 69 mA typ. 55 mA typ. 116 mA typ. 62 mA typ. 43 mA
Switching Frequency no load full load	min. 20 kHz typ. 90 kHz
Voltage at VH no load WD, WDB, WDC WDA full load WD, WDB, WDC WDA	typ. 7 V typ. 5.4 V typ. 6.3 V typ. 5.0 V

Linear Regulators	
Output Voltage VCC WD, WDC WDA, WDB	5.00 V $\pm 5\%$ 3.30 V $\pm 5\%$
Load Current VCC	200 mA max.
Residual Ripple at VCC	typ. 35 mVpp
Output Voltage VCCA WD, WDB WDA, WDC	5.00 V $\pm 5\%$ 3.30 V $\pm 5\%$
Load Current VCCA	25 mA max.
Residual Ripple at VCCA	typ. 30 mVpp

Error Detection	
Thermal Shutdown Threshold	130 to 150 °C
Undervoltage Threshold at VCC, VCCA	typ. 400 mV

Pin Configuration DFN10, S08

