Features

Switching Regulator

- Designed for 4-20mA loop operation and energy scavenging applications
- Open frame SMD design
- -40°C to +105°C operating temperature @ full load
- Continuous short circuit protection
- No minimum load required
- 5000m operating altitude

RECOM
DC/DC Converter

R420-1.8/PL

Low Current Regulator

3 YEAR warranty

EN60950-1 certified
EN55032 compliant

Description

The R420 has been designed for auxiliary power from 4-20mA loops and other low power budget applications that require a maximum input current <3.6mA. This low profile SMD converter delivers a regulated, short-circuit protected output that can be adjusted between 1.8V and 5V with a single external resistor and delivers three times the output current of equivalent linear regulators to power microprocessors, data-loggers and HART digital modems without affecting the analog 4-20mA signal. The R420 will also find many applications in energy scavenging and indoor solar powered circuits.

Selection Guide

Part Number	Input Voltage Range [VDC]	Adjustable Output Voltage Range [VDC]	Output Current [mA]	Efficiency typ. (1) [%]	Max. Capacitive Load (2) [µF]
R420-1.8/PL	10-36	1.8-5.0	10	76	1000

Notes:

Note1: Efficiency is tested at 10-36VDC, full load and +25°C ambient

Note2: Max cap load is tested at nominal input and full resistive load

Model Numbering

R420-1.8/PL__
└ Packaging (3)

Notes:

Note3: add suffix "-R" for tape and reel packaging

Ordering Examples:

R420-1.8/PL, standard tray packaging (40pcs/Tray)
R420-1.8/PL-R, tape and reel packaging (400pcs/T&R)

Specifications (measured @ Ta= 25°C, full load, nominal input voltage and after warm-up)

BASIC CHARACTERISTICS				
Parameter	**Condition**	**Min.**	**Typ.**	**Max.**
Internal Input Filter				1µF capacitor
Input Voltage Range	nom. Vin= 24VDC	10VDC	24VDC	36VDC
Quiescent Current			0.5mA	1mA
Under Voltage Lockout	DC-DC ON DC-DC OFF		6VDC 5VDC	
Output Voltage Trimming	with 3.75kΩ			5VDC
Minimum Load		0%		
ON/OFF CTRL	DC-DC ON DC-DC OFF			Open or 2V<Vr<5V Short or 0V<Vr<0.2Vr
Internal Operating Frequency		45kHz	50kHz	52kHz
Output Ripple and Noise	20MHz BW, 0-100% load			30mVp-p

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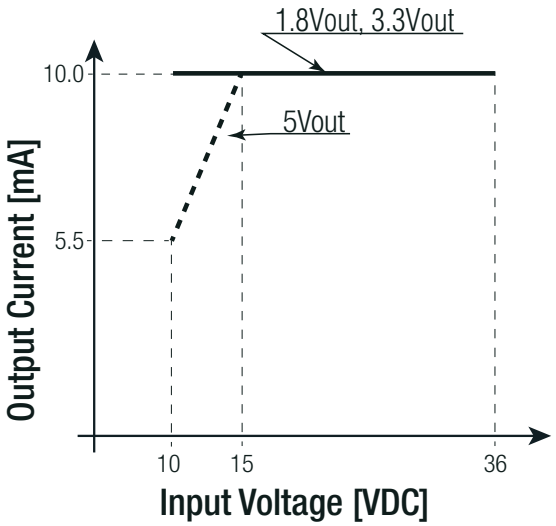
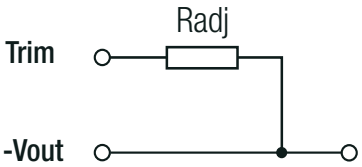
Specifications (measured @ Ta= 25°C, full load, nominal input voltage and after warm-up)

Ouput Current vs. Input Voltage



Output Voltage Trimming



Radj (kΩ)	Vout
Open	1.8V
8	3.3V
3.75	5.0V

REGULATIONS		
Parameter	**Condition**	**Value**
Output Voltage Accuracy	100% load	±2.0% typ.
Line Voltage Regulation	low line to high line, full load	0.2% typ. / 0.5% max.
Load Voltage Regulation	10% to 100% load	0.5% typ. / 0.8% max.
Transient Response	with 100µF output capacitor, 100% <-> 50% load	±75mV typ. / ±100mV max.

PROTECTIONS		
Parameter	**Condition**	**Value**
Short Circuit Protection (SCP)		continuous, automatic recovery

ENVIRONMENTAL			
Parameter	**Condition**		**Value**
Operating Temperature Range	without derating (see graph)		-40°C to +105°C
Operating Altitude			5000m
Operating Humidity	non-condensing		95% RH max.
Pollution Degree			PD2
Vibration			10-55Hz, 2G, 30min along X, Y and Z
MTBF	MIL-HDBK 217F, G.B. MIL-HDBK 217F, G.B.	+25°C +71°C	7395 x 10^3 hours 1242 x 10^3 hours

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