RICOH

R1510S Series

Automatic Mode shift 300mA 36V Input VR with VD

The R1510S Series are CMOS-based auto mode switching voltage regulators featuring 300mA output current with voltage detector. The R1510S has a 36V maximum input voltage VR and VD on a single chip. As the voltage regulator is an automatic mode shift type, the operation can switch automatically to a fast response mode or a low power mode of the ECO function according to output current. (Automatic switching to fast response mode under I_{OUT} > 12mA conditions or to low power mode under I_{OUT} < 3mA conditions.) R1510S with a built-in voltage detector is available in four versions. The differences between these versions are in CE pin, points to be detected, and delay function.

FEATURES

- Supply Current (I_{SS2}) ····· Typ. 110µA (Fast mode, V_{IN}=14.0V)
- Supply Current (I_{SS1}) ····· Typ. 12.5µA (Low power mode, same as above)
- Standby Current ($I_{standby}$) ····· Typ. 10µA (Same as above, CE="L", A Version)
- Dropout Voltage (V_{DIF}) ····· Typ. 1.0V (I_{OUT}=300mA, V_{OUT}=5.0V)
- Input Voltage Range (V_{IN}) ····· 3.5V to 36.0V
- Output Voltage Range (V_{OUT}) ····· 2.5V to 12.0V * (internally fixed)
- Output Voltage Accuracy ····· ± 1.6%
- Temp. coeff. of Output Voltage ····· Typ. ± 150ppm/°C
- Line Regulation ····· Typ. 0.01%/V
- Fold-back Protection Circuit ····· Current limit Typ. 50mA
- Thermal Shutdown Circuit ····· Stops at 140°C

< Voltage Detector >

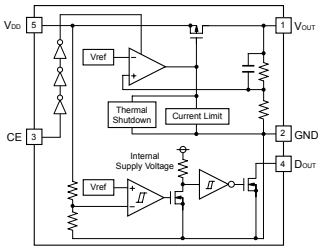
- Detector Threshold Range (-V_{DET}) ··· 2.3V to 12.0V * (internally fixed) (D Version : 2.3V to 10.6V)
- Detector Threshold Accuracy ····· ± 1.7%
- Temp. coeff. of Detector Threshold ··· Typ. ± 100ppm/°C
- Output Delay Time Setting Pin (C/D Versions)
- Output Delay Time (t_{delay}) =7.0 × C_D (F) × 10^5 (s)
- Operating Temperature Range (Absolute Maximum Rating) ····· -40°C to 110°C
- Package ····· HSOP-8E
- Ceramic capacitors can be used. ··· 6.8µF or more

(The above shows specification at Topt=25°C. Design assurance value at -40°C ≤ Topt ≤ 110°C is also available. For details, please refer to the datasheet.)

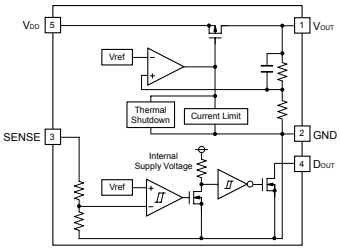
*) For information about combination of output voltage and detector threshold, please check our website.

BLOCK DIAGRAMS

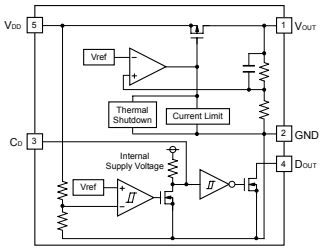
R1510SxxxA
(With CE pin, V_{IN} detect)



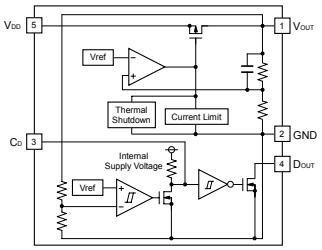
R1510SxxxB
(with SENSE pin)



R1510SxxxC
(With C_D pin, V_{IN} detect)



R1510SxxxD
(With C_D pin, V_{OUT} detect)



SELECTION GUIDE

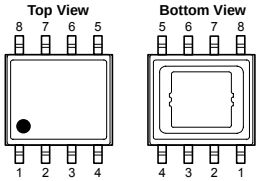
Halogen Free	Package	Q'ty per Reel	Part No.
H/F	HSOP-8E	1,000 pcs	R1510S xxx * -E2-FE

xxx : Specify a combination of output voltage and detector threshold using serial numbers.

* : Select from (A) with CE pin and V_{IN} detect, (B) with SENSE pin, (C) with C_D pin and V_{IN} detect, or (D) with C_D pin and V_{OUT} detect.

PACKAGE

HSOP-8E

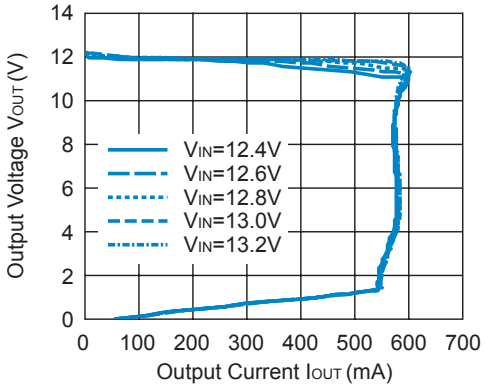


1	V_{OUT}	5	CE or SENSE or C_D
2	NC	6	TP (Test pin)
3	TP (Test pin)	7	GND
4	D_{OUT}	8	V_{DD}

*) The tab is substrate level (GND).

TYPICAL CHARACTERISTIC

R1510S (VR=12.0V) Output Voltage vs. Output Current



APPLICATIONS

- Power source for home appliances (refrigerators, rice cookers, electric water warmers, etc.) and reset circuits
- Power source for in-car audio systems, in-car navigation systems, ETC systems, and reset circuits
- Power source for laptop personal computers, digital TVs, cordless phones, and private LAN systems for home, and reset circuits
- Power source for copiers, printers, facsimiles, scanners, and reset circuits

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RICOH COMPANY., LTD. Electronic Devices Company

■Ricoh presented with the Japan Management Quality Award for 1999.
Ricoh continually strives to promote customer satisfaction, and shares the achievements of its management quality improvement program with people and society.

■Ricoh awarded ISO 14001 certification.
The Ricoh Group was awarded ISO 14001 certification, which is an international standard for environmental management systems, at both its domestic and overseas production facilities. Our current aim is to obtain ISO 14001 certification for all of our business offices.

RoHS Compliant
Ricoh completed the organization of the Lead-free production for all of our products. After Apr. 1, 2006, we will ship out the lead free products only. Thus, all products that will be shipped from now on comply with RoHS Directive.

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