

## 1.2A\* 30V Input PWM Step-down DC/DC Converter

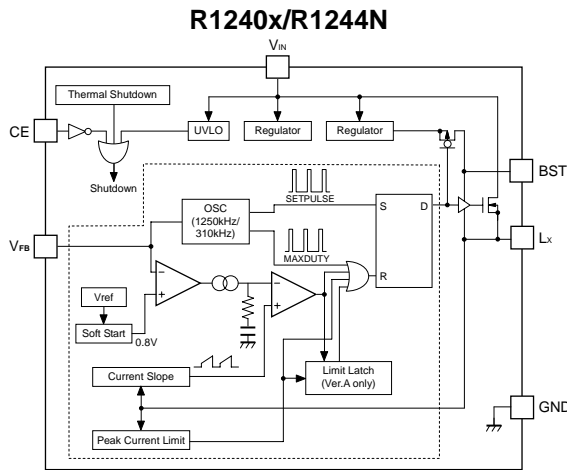
The R1240x/R1244N Series are 30V input, CMOS-based PWM step-down DC/DC converters featuring 1.2A\* output current. R1240x/R1244N include a soft start circuit and a latch or a fold-back protection circuit. (R1244N includes a fold-back Protection Circuit only.) By simply using an inductor, resistors, a diode, and capacitors as external components, a high-efficiency step-down DC/DC converter can be easily configured. Due to current mode PWM control, the R1240x/R1244N provide a fast response and high efficiency. Ceramic output capacitors can be used. Two different pin layout of SOT-23-6W package as R1240N and R1244N are available.

### FEATURES

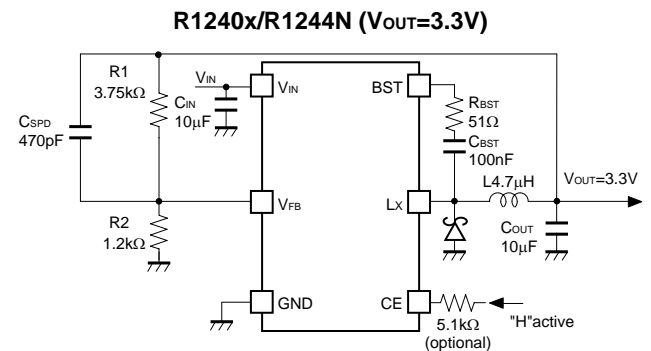
- Supply Current ( $I_{DD}$ ) ..... Typ. 500 $\mu$ A (No switching)
- Standby Current ( $I_{standby}$ ) ..... Max. 5 $\mu$ A (CE="L")
- Input Voltage Range ( $V_{IN}$ ) ..... 4.5V to 30.0V
- Output Voltage Range ( $V_{OUT}$ ) ..... 0.8V to 15.0V (Externally adjustable)  
(Feedback voltage : 0.8V)
- Feedback Voltage Accuracy .....  $\pm 12$ mV
- Output Current ( $I_{OUT}$ ) ..... 1.2A\*
- Oscillator Frequency ( $f_{OSC}$ ) ..... 1.25MHz
- Oscillator Maximum Duty Cycle (Maxduty) ... R1240x : Min. 75%, Typ. 85%  
R1244N : Typ. 85%
- Minimum ON Time ( $t_{MIN}$ ) ..... Typ.100ns
- UVLO Detect Voltage ( $V_{UVLO}$ ) ..... Typ. 3.8V
- Soft Start Time ( $t_{start}$ ) ..... Typ. 0.4ms
- High Side Switch Limit Current ..... Typ. 2A
- Thermal Shutdown Circuit ..... Stops at 160°C.
- Latch Protection Circuit ..... Delay time for protection  
Typ. 2ms (A Version)
- Fold-back Protection Circuit ..... Fold-back frequency  
Typ. 310kHz (B Version)
- Packages ..... DFN(PLP)2527-10,  
SOT-23-6W

\*) This is an approximate value, because output current depending on conditions and external parts.

### BLOCK DIAGRAM



### TYPICAL APPLICATION



- CSPD : Speed-up capacitor
- CIN, COUT : Ceramic capacitors can be used.
- CBST : Bootstrap Capacitor
- R1, R2 : Resistors for setting output voltage
- RBST : Lx slew-rate adjustable resistor

### SELECTION GUIDES

Halogen Free	Package	Q'ty per Reel	Part No.
H/F	DFN(PLP)2527-10	5,000 pcs	R1240K003*-TR
H/F	SOT-23-6W	3,000 pcs	R1240N001*-TR-FE R1244N001B-TR-FE

\* : Select the protection circuit from  
(A) Latch type or (B) Fold-back type.

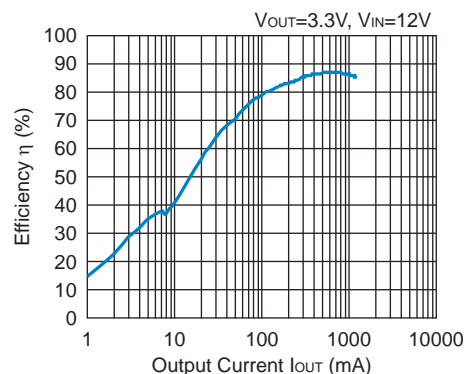
### PACKAGES

DFN(PLP)2527-10		SOT-23-6W	
<b>Top View</b>	<b>Bottom View</b>		
		R1240N	R1244N
1   LX	6   GND	1   CE	1   BST
2   VIN***	7   NC	2   VIN	2   GND
3   VIN***	8   VFB	3   LX	3   VFB
4   CE	9   NC	4   BST	4   CE
5   TEST**	10   BST	5   GND	5   VIN
		6   VFB	6   LX

\*) The tab is substrate level (GND).  
\*\*) TEST pin should be open.  
\*\*\*) The VIN pin must be wired together when it is mounted on board.

### TYPICAL CHARACTERISTIC

R1240x/R1244N Efficiency vs. Output Current



### APPLICATIONS

- Power source for digital home appliances such as digital TVs and DVD players
- Power source for office automation equipment such as printers and fax machines
- Power source for hand-held communication equipment, cameras, and VCRs
- Power source for battery-powered equipment



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**For the conservation of the global environment, Ricoh is advancing the decrease of the negative environmental impact material.**  
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. Basically after Apr. 1, 2012, we will ship out the Power Management ICs of the Halogen Free products only. (Ricoh Halogen Free products are also Antimony Free.)

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