

## 3A\* 34V Input PWM/VFM Step-down DC/DC Converter with PLL Synchronization

The R1270S Series are 34V input (Absolute maximum rating: 36V), CMOS-based PWM/VFM step-down DC/DC converters capable of outputting the maximum 3A\* current. The R1270S is selectable from two control types - PWM control or PWM/VFM auto switching control in which mode automatically switches to high-efficiency VFM mode in low output current. The R1270S includes a soft start circuit, a fold-back protection circuit and a latch protection circuit (only A Version). By simply using an inductor, resistors, and capacitors as external components, a high-efficiency step-down DC/DC converter can be easily configured. The R1270S can be synchronized externally by PLL.

\*\*\*) These products are suitable for automotive applications. For details, please refer to our "ELECTRONIC DEVICE PRODUCT CATALOG FOR AUTOMOTIVE" or contact us.

### FEATURES

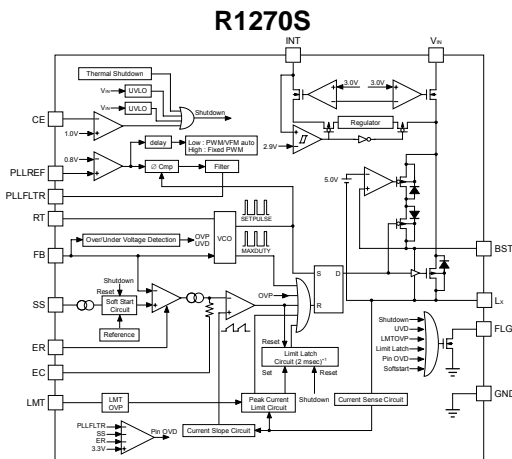
- Supply Current (I<sub>IN1</sub>) ..... Typ. 1mA (No switching, PWM)
- Supply Current (I<sub>IN2</sub>) ..... Typ. 18μA (No switching, VFM)
- Standby Current (I<sub>standby</sub>) ..... Typ. 0μA (CE="L")
- Input Voltage Range (V<sub>IN</sub>) ..... 3.6V to 34.0V (Absolute maximum rating: 36V)
- Output Voltage Range (V<sub>OUT</sub>) ..... 0.8V to 31.6V (Externally adjustable)  
(Feedback voltage : 0.8V)
- Feedback Voltage Accuracy ..... ± 8mV
- Output Current (I<sub>OUT</sub>) ..... 3A\*
- Oscillator Frequency (f<sub>osc</sub>) ..... 300kHz to 2.4MHz settable by external resistor  
Synchronized externally by PLL
- Oscillator Maximum Duty Cycle (Maxduty) .. Min. 93% (300kHz), 67% (2.4MHz)
- Minimum Off Time (t<sub>OFF</sub>) ..... Typ. 120ns
- UVLO Detect Voltage (V<sub>UVLO1</sub>) ..... Typ. 2.45V
- OVLO Detect Voltage (V<sub>OVLO1</sub>) ..... Typ. 38V

- Products for high temperature environment ... -40°C to 105°C  
(Operating Temperature Range)
- Soft Start Time (t<sub>SS</sub>) ..... Typ. 0.4ms, as a lower limit,
- Externally-adjustable by using capacitor
- High Side Switch Limit Current ..... Typ. 4.5A, as a upper limit,  
Externally-adjustable by using resistor
- 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 f<sub>osc</sub> × 1/2,  
Operated with V<sub>FB</sub> < 0.64V
- FLAG Output Function (Nch open drain)
- Package ..... HSOP-18

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

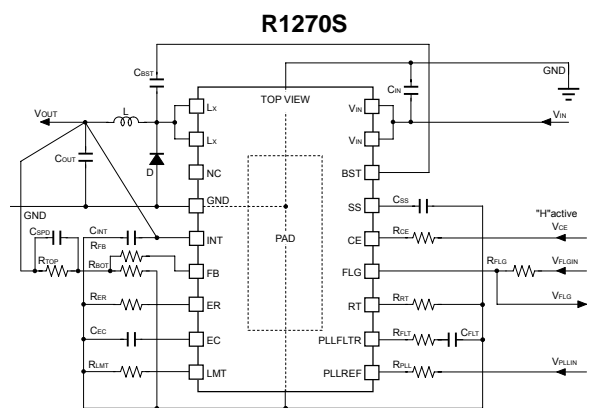
(The above shows specification at Ta=25°C. Design assurance value at -40°C ≤ Ta ≤ 105°C is also available. For details, please refer to the datasheet.)

### BLOCK DIAGRAM



\*\* R1270S001A equips the limit latch circuit.

### TYPICAL APPLICATION



### SELECTION GUIDE

Halogen Free	Package	Q'ty per Reel	Part No.
H/F	HSOP-18	1,000 pcs	R1270S001* -E2-FE

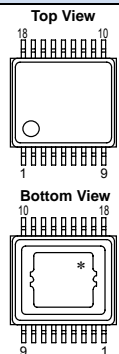
\* : Select the presence or absence of the latch type protection function.

A : with Latch type protection function

B : without Latch type protection function

### PACKAGE

#### HSOP-18



1	Lx	10	PLLREF
2	Lx	11	PLLFLTR
3	NC**	12	RT
4	GND	13	FLG***
5	INT	14	CE
6	FB	15	SS
7	ER	16	BST
8	EC	17	V <sub>IN</sub>
9	LMT	18	V <sub>IN</sub>

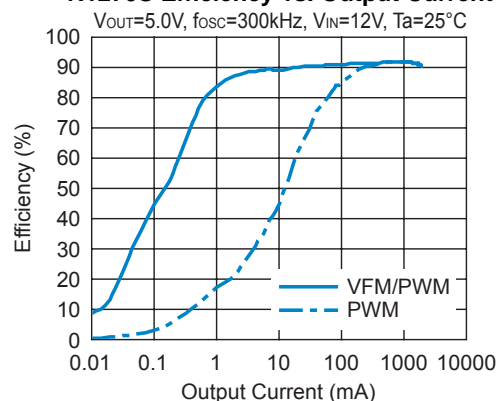
\*) The tab is substrate level (GND).

\*\*) The NC pin should be open.

\*\*\*) The FLAG pin connected to the GND level or should be GND.

### TYPICAL CHARACTERISTIC

#### R1270S Efficiency vs. Output Current



### APPLICATIONS

- Digital home appliances such as digital TVs and DVD players
- Industrial equipment

- Office automation equipment such as MFPs and printers, fax machines
- Electric home appliances



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