



SANYO Semiconductors

## DATA SHEET

# LA5734MP

## Monolithic Linear IC Separately-Excited Step-Down Switching Regulator (Variable Type)

### Overview

The LA5734MP is a separately-excited step-down switching regulator (variable type).

### Functions

- High efficiency.
- Six external parts.
- Time-base generator (160kHz) incorporated.
- Current limiter incorporated.
- Thermal shutdown circuit incorporated.
- ON/OFF function.

### Specifications

**Maximum Ratings** at  $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Input voltage	$V_{IN}$		34	V
Maximum output current	$I_O \text{ max}$		3	A
SW pin application reverse voltage	$V_{SW}$		-1	V
Allowable power dissipation	$P_d \text{ max}$	Mounted on a circuit board.*	3.9	W
Operating temperature	$T_{opr}$		-30 to +125	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-40 to +150	$^\circ\text{C}$

\* Specified circuit board :  $76.1 \times 114.3 \times 1.6 \text{ mm}^3$ , Copper foil ratio 60% FR4

**Recommended Operating Conditions** at  $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Input voltage range	$V_{IN}$		4.5 to 32	V

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LA5734MP

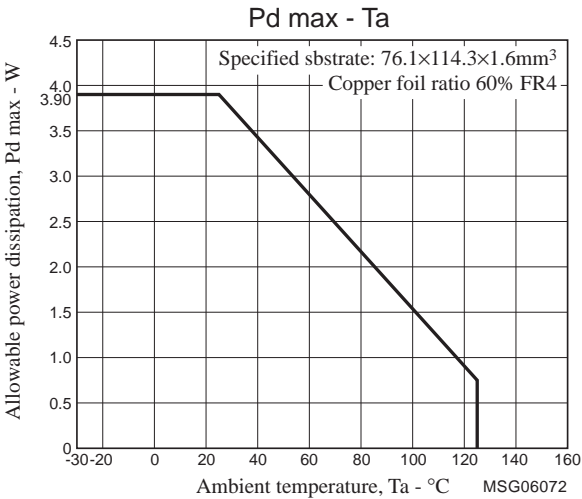
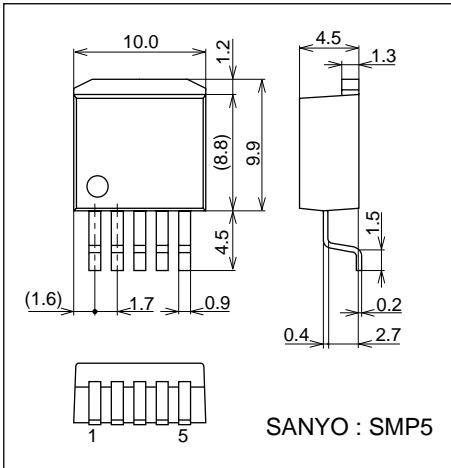
Electrical Characteristics at Ta = 25°C, VO = 1V

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Reference voltage	VOS	VIN = 5V, IO = 1.0A	0.775	0.79	0.805	V
Switching frequency	f	VIN = 5V, IO = 1.0A	128	160	192	kHz
Line regulation	ΔVOLINE	VIN = 5 to 8V, IO = 1.0A		10	30	mV
Load regulation	ΔVOLoad	VIN = 5V, IO = 0.5 to 1.5A		10	30	mV
Output voltage temperature coefficient	ΔVO/ΔTa	Designed target value. *		±0.5		mV/°C
Ripple attenuation factor	RREJ	f = 100 to 120Hz		45		dB
Current limiter operating voltage	IS	VIN = 15V	3.1			A
Thermal shutdown operating temperature	TSD	Designed target value. *		165		°C
Thermal shutdown Hysteresis width	ΔTSD	Designed target value. *		15		°C

\* Design target value : No measurement made.

Package Dimensions

unit : mm (typ)  
3275

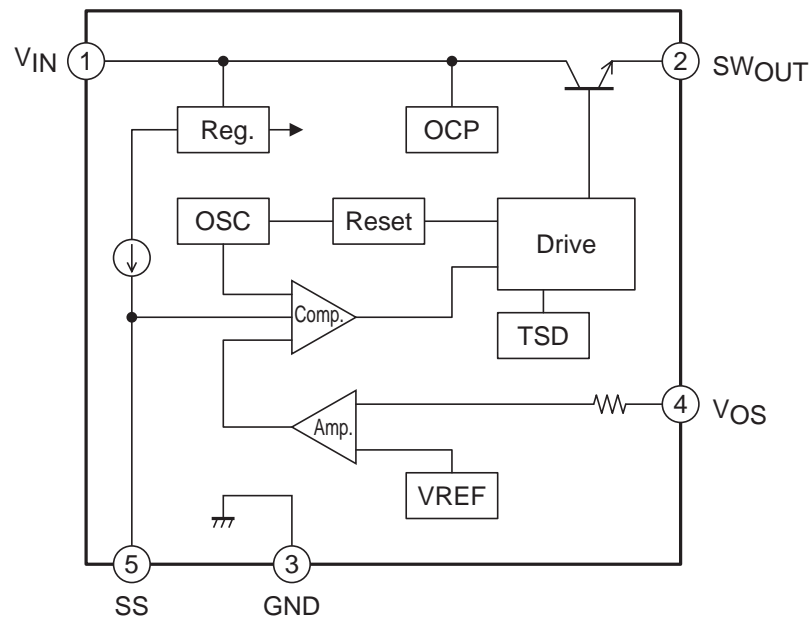


Pin Assignment

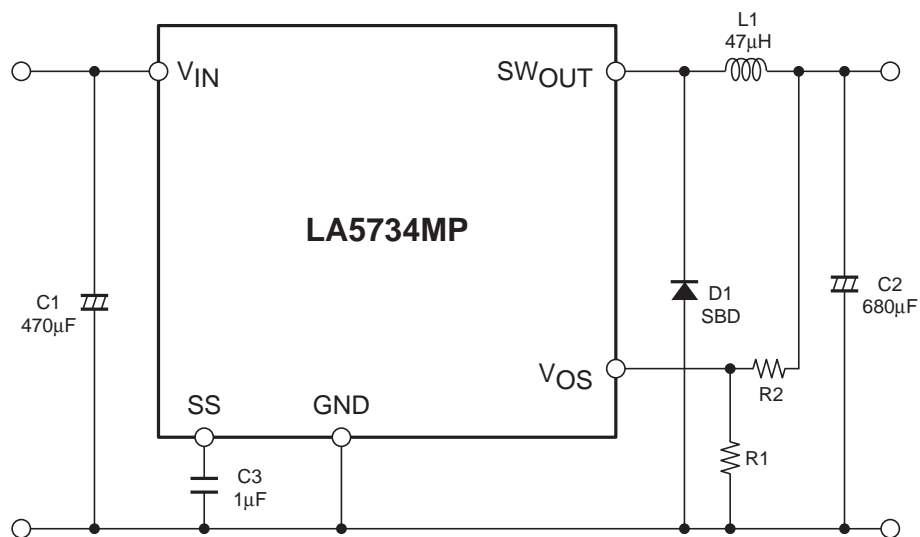
(1) VIN (2) SWOUT (3) GND (4) VOS (5) SS

## LA5734MP

### Block Diagram



### Application Circuit Example



## Description of Functional Settings

### 1. Calculation equation to set the output voltage

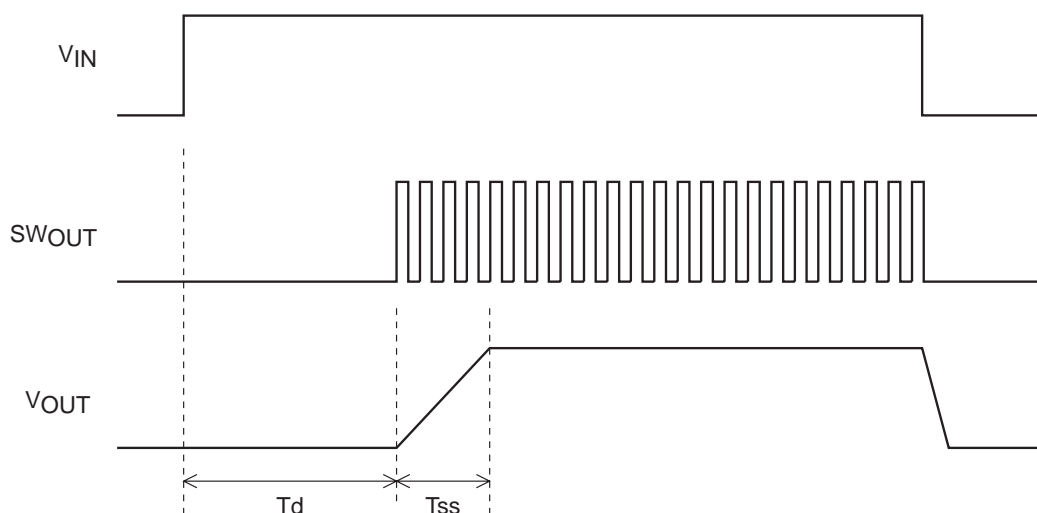
This IC controls the switching output so that the  $V_{OS}$  pin voltage becomes 0.8V (typ).

The equation to set the output voltage is as follows :

$$V_O = \left(1 + \frac{R_2}{R_1}\right) \times 0.8V(\text{typ})$$

The  $V_{OS}$  pin has the inrush current of 1μA (typ). Therefore, the error becomes larger when R1 and R2 resistance values are large.

## Timing Chart



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