



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 $T_a = 25^\circ\text{C}$, $V_O = 1\text{V}$

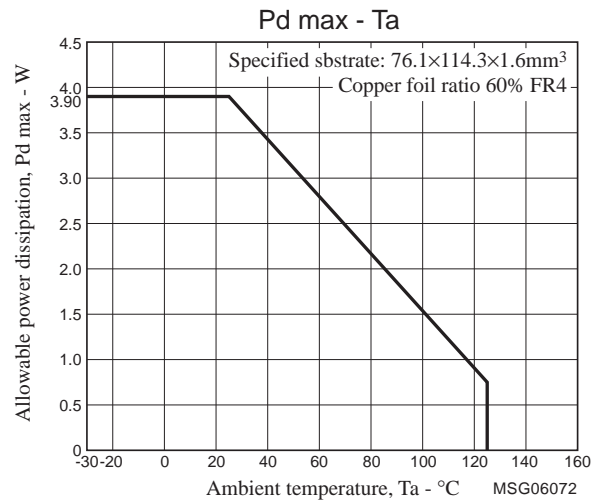
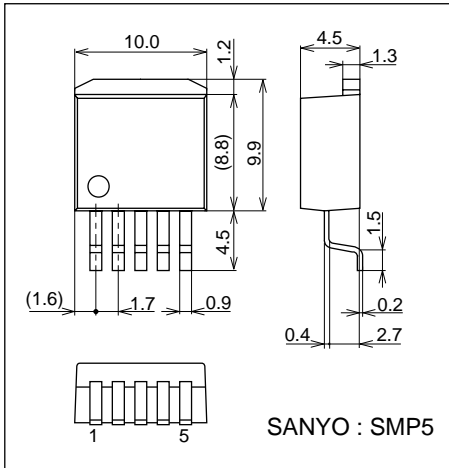
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Reference voltage	V_{OS}	$V_{IN} = 5\text{V}$, $I_O = 1.0\text{A}$	0.775	0.79	0.805	V
Switching frequency	f	$V_{IN} = 5\text{V}$, $I_O = 1.0\text{A}$	128	160	192	kHz
Line regulation	$\Delta V_{O\text{LINE}}$	$V_{IN} = 5$ to 8V , $I_O = 1.0\text{A}$		10	30	mV
Load regulation	$\Delta V_{O\text{LOAD}}$	$V_{IN} = 5\text{V}$, $I_O = 0.5$ to 1.5A		10	30	mV
Output voltage temperature coefficient	$\Delta V_O/\Delta T_a$	Designed target value. *		± 0.5		mV/°C
Ripple attenuation factor	RREJ	f = 100 to 120Hz		45		dB
Current limiter operating voltage	I_S	$V_{IN} = 15\text{V}$	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

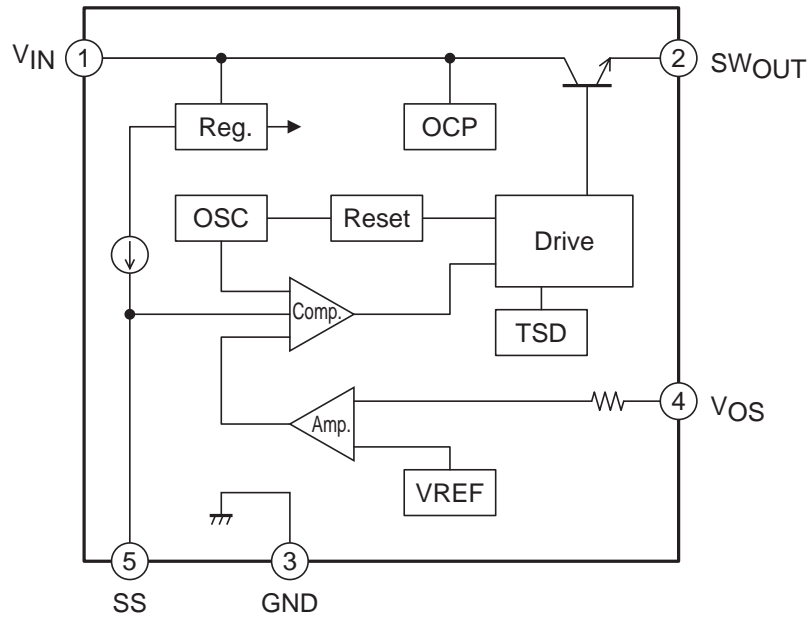


Pin Assignment

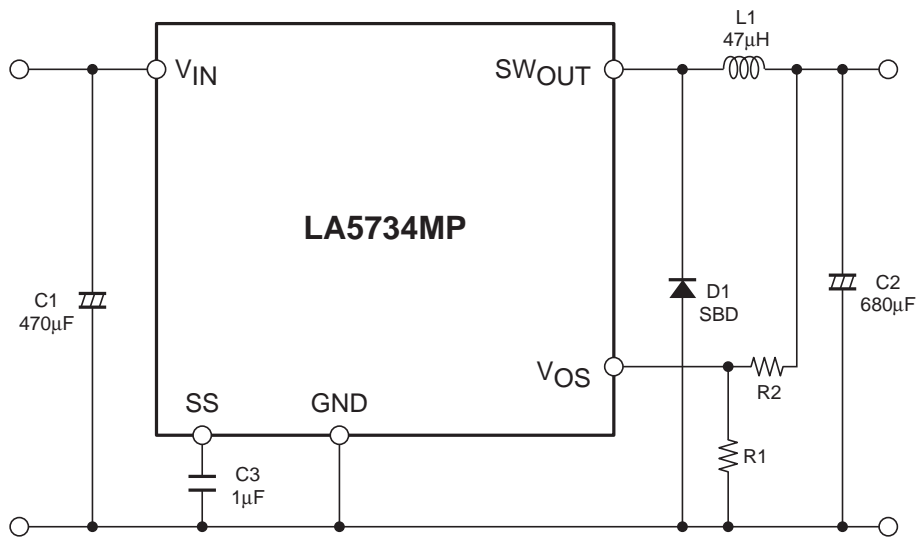
(1) V_{IN} (2) SW_{OUT} (3) GND (4) V_{OS} (5) SS

LA5734MP

Block Diagram



Application Circuit Example



Description of Functional Settings

1. Calculation equation to set the output voltage

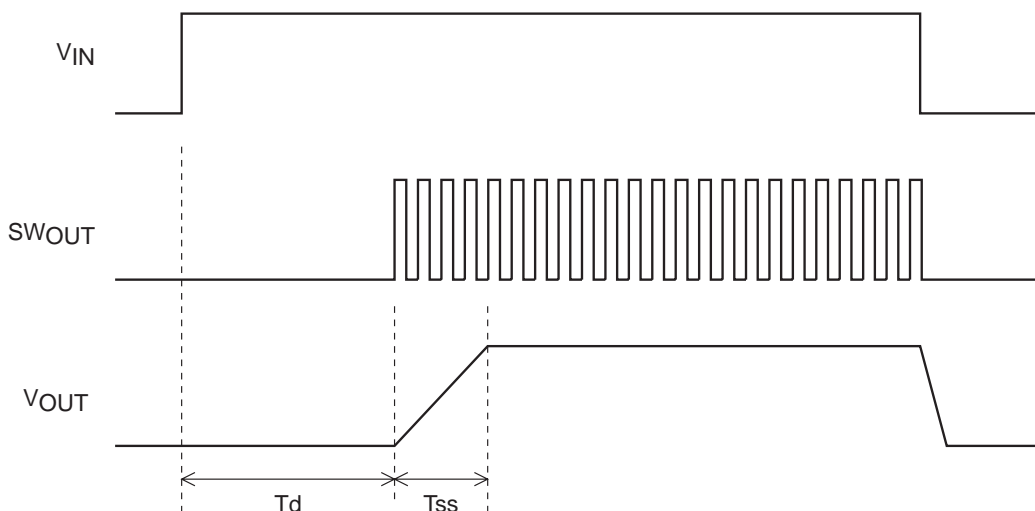
This IC controls the switching output so that the V_{OS} pin voltage becomes 0.8V (typ).

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 1 μ A (typ). Therefore, the error becomes larger when R1 and R2 resistance values are large.

Timing Chart



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