Ordering number : ENA0589B

SANYO Semiconductors
DATA SHEET

Monolithic Linear IC

LA5734MP — 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 Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Input voltage	V_{IN}		34	V
Maximum output current	I_O max		3	A
SW pin application reverse voltage	V_{SW}		-1	V
Allowable power dissipation	Pd max	Mounted on a circuit board.*	3.9	W
Operating temperature	Topr		-30 to +125	°C
Storage temperature	Tstg		-40 to +150	°C

* Specified circuit board : 76.1×114.3×1.6mm^3, Copper foil ratio 60% FR4

Recommended Operating Conditions at Ta = 25°C

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

SANYO Semiconductor Co., Ltd.
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

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

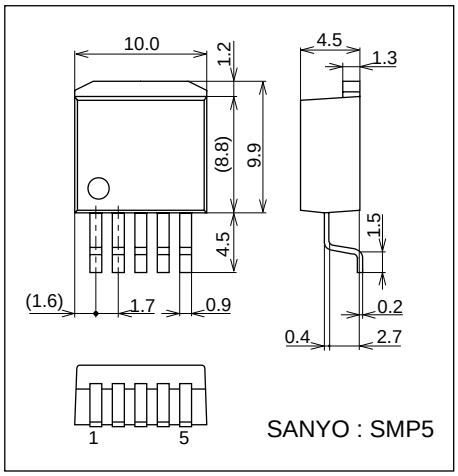
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Reference voltage	V_{OS}	V_{IN} = 5V, I_O = 1.0A	0.775	0.79	0.805	V
Switching frequency	f	V_{IN} = 5V, I_O = 1.0A	128	160	192	kHz
Line regulation	ΔV_OLINE	V_{IN} = 5 to 8V, I_O = 1.0A		10	30	mV
Load regulation	ΔV_OLOAD	V_{IN} = 5V, I_O = 0.5 to 1.5A		10	30	mV
Output voltage temperature coefficient	$\Delta V_O/\Delta Ta$	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} = 15V	3.1			A
Thermal shutdown operating temperature	TSD	Designed target value. *		165		°C
Thermal shutdown Hysteresis width	ΔTSD	Designed target value. *		15		°C

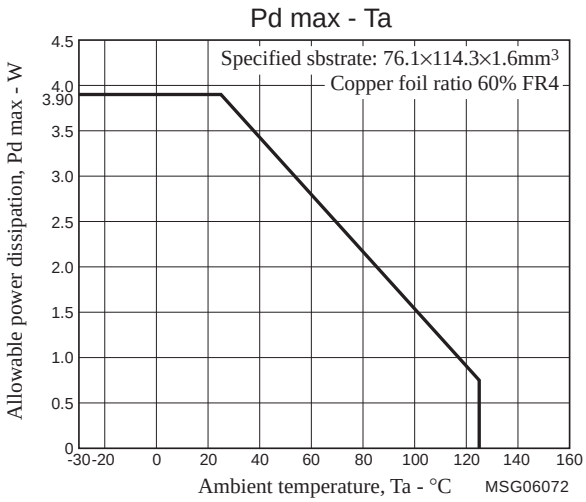
* Design target value : No measurement made.

Package Dimensions

unit : mm (typ)

3275

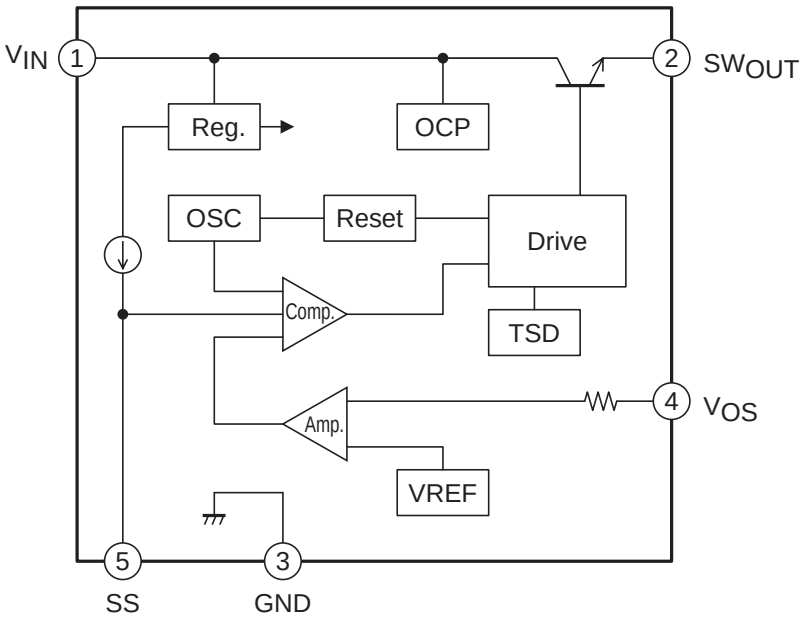




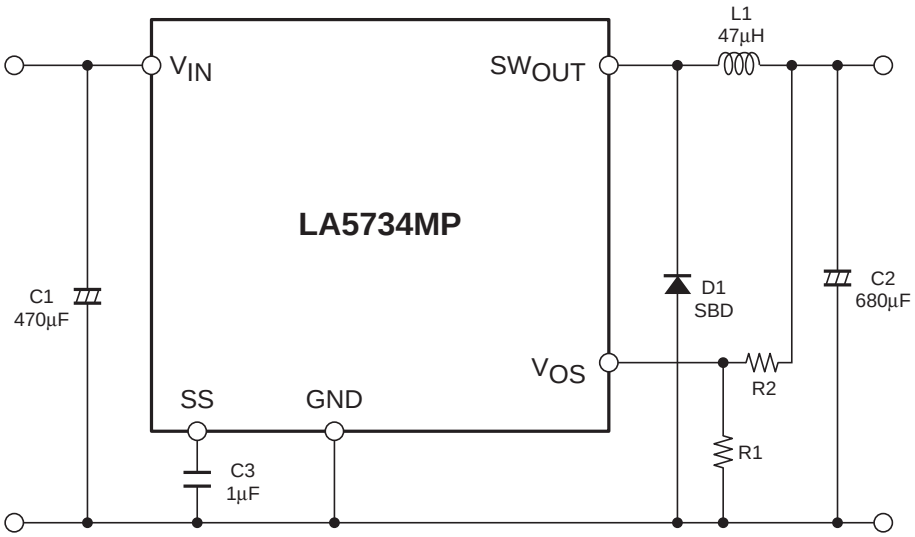
Pin Assignment

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

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 :

$$V_O = \left(1+\frac{R2}{R1}\right) \times 0.8V(typ)$$

   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