



SANYO Semiconductors

DATA SHEET

LA5777

Monolithic Linear IC Separately-excited Step-down Switching Regulator (5V)

Overview

The LA5777 is a Separately-excited step-down switching regulator (5V).

Functions

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

Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum Input voltage	V_{IN} max		30	V
Maximum Output current	I_O max		3	A
SW pin application reverse voltage	V_{SW}		-1	V
Allowable power dissipation	P_d max1	Infinitely large heat sink.	7.5	W
	P_d max2	Independent IC.	1.75	W
Operating temperature	T_{opr}		-30 to +125	°C
Storage temperature	T_{stg}		-40 to +150	°C

Recommended Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Input voltage range	V_{IN}		8 to 28	V

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SANYO Semiconductor Co., Ltd.

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

Electrical Characteristics at $T_a = 25^\circ\text{C}$, $V_O = 3.3\text{V}$

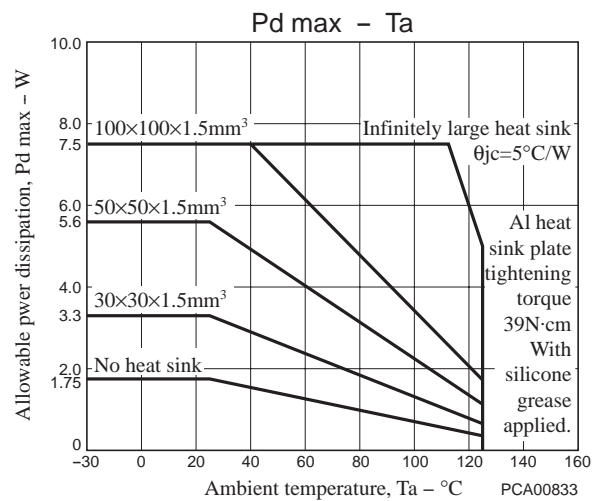
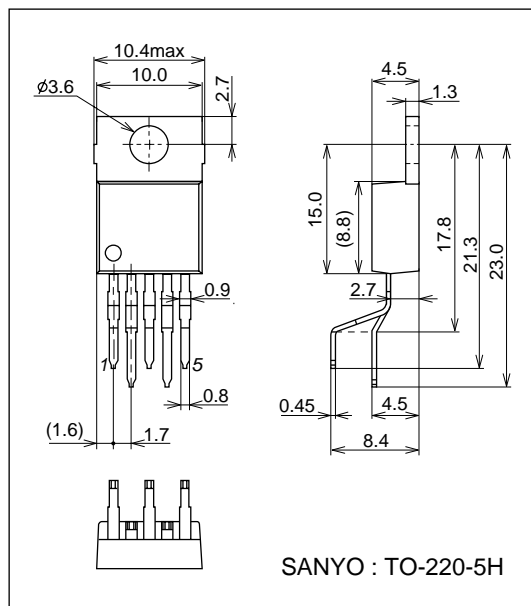
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Reference voltage	V_O	$V_{IN} = 15\text{V}$, $I_O = 1.0\text{A}$	4.80	5.00	5.20	V
Efficiency	η	$V_{IN} = 15\text{V}$, $I_O = 1.0\text{A}$		84		%
Switching frequency	f	$V_{IN} = 15\text{V}$, $I_O = 1.0\text{A}$	128	160	192	kHz
Switching frequency when short-circuit protection is active	f_{short}	$V_{IN} = 15\text{V}$, $V_{OS} = 0\text{V}$	15	30	45	kHz
Line regulation	$\Delta V_{O\text{LINE}}$	$V_{IN} = 8$ to 20V , $I_O = 1.0\text{A}$		40	100	mV
Load regulation	$\Delta V_{O\text{LOAD}}$	$V_{IN} = 15\text{V}$, $I_O = 0.5$ to 1.5A		10	30	mV
Output voltage temperature coefficient	$\Delta V_O / \Delta T_a$	Designed target value. *		± 0.5		mV/ $^\circ\text{C}$
Ripple attenuation factor	RREJ	$f = 100$ to 120Hz		45		dB
Output leak current	$I_{O\text{leak}}$	$V_{IN} = 15\text{V}$, $SW_{OUT} = -0.4\text{V}$			50	μA
Current limiter operating voltage	I_S	$V_{IN} = 15\text{V}$	3.1			A
Operating current	I_{VIN}	$V_{IN} = 15\text{V}$		5.6		mA
Standby current	I_{STBY}	$V_{IN} = 15\text{V}$, $\text{ENA} = 5\text{V}$		50	100	μA
ENA pin LOW voltage range	V_{ENAL}				0.6	V
ENA pin HIGH voltage range	V_{ENAH}		2.4		V_{IN}	V
Thermal shutdown operating temperature	TSD	Designed target value. *		165		$^\circ\text{C}$
Thermal shutdown Hysteresis width	ΔTSD	Designed target value. *		15		$^\circ\text{C}$

* Design target value: No measurement made.

Package Dimensions

unit : mm (typ)

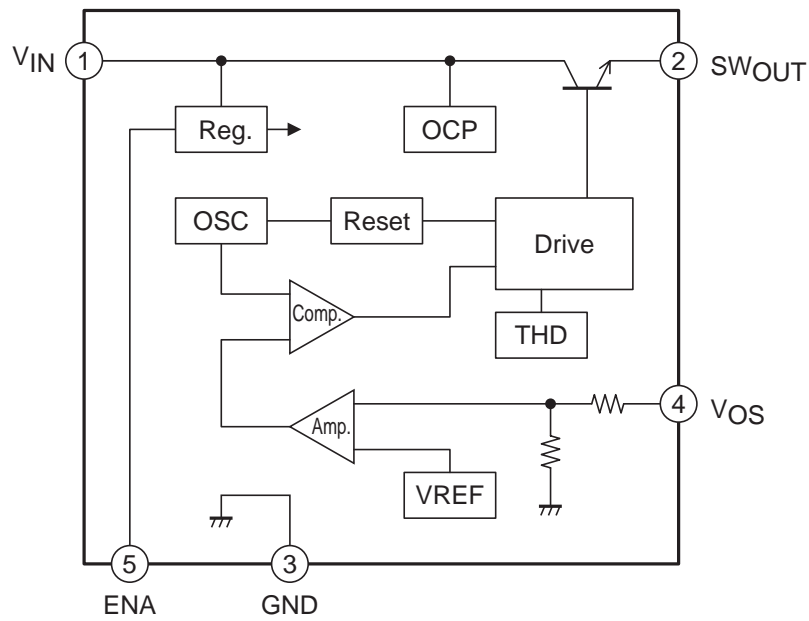
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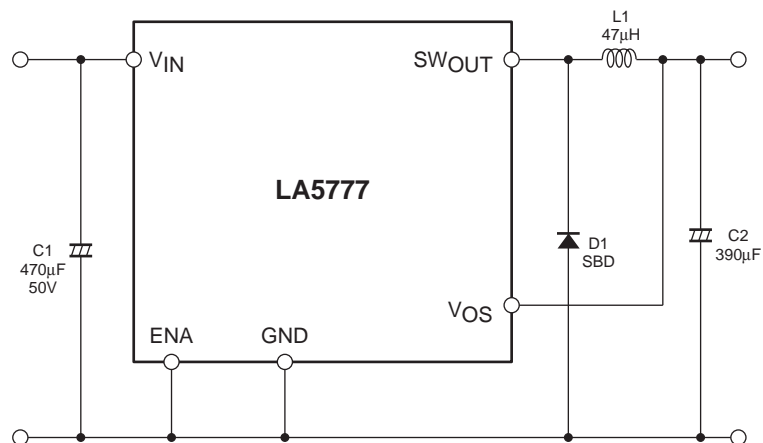
Pin Assignment

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

Block Diagram



Application Circuit Example



Note: ENA pin starts operation with LOW voltage input.

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