Ordering number : ENN4281

Monolithic Linear IC

LA5602

Low-Dropout Voltage Regulator with Reset and On-Off Function

Overview

The LA5602 incorporates both a 5.0V voltage regulator function and reset generator function into a single-chip for micro controller power supply application. The LA5602 supports improvements in efficiency and set compactness by permitting operation at low input-output voltage differences.

Functions

- Low dropout regulator with 350mA and 5.0V output
- Power supply reset generator function
- Supports on-off control of 5V using equipped enable pin (high active)

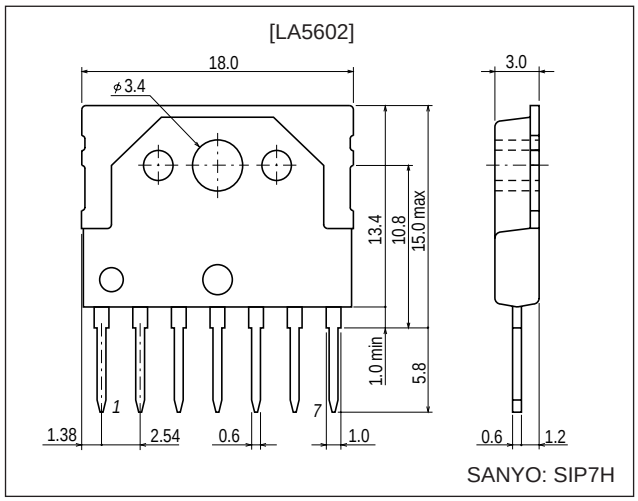
Features

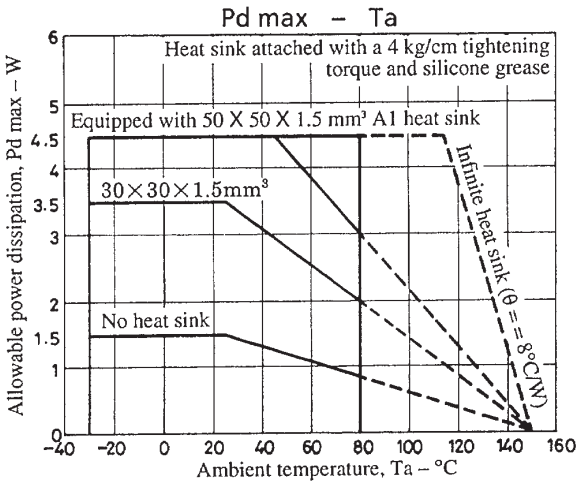
- Low minimal input-output voltage difference (0.5V typ.)
- Supports setting of reset output delay time using external capacitor
- Built-in fold back current limiting circuit and excessive heat protection circuit
- Reset output using active pull-up for simpler noise reduction

Package Dimensions

unit : mm

3075-SIP7H





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D2599TH (OT)/10293TS A8-8788, A8-9716 No.4281-1/5

Specifications

Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum input voltage	V_{IN} max		18	V
Enable pin voltage	V_{EN} max		V_{IN} max	V
Reset output pin voltage	$V_{\overline{RES}}$ max		18	V
Allowable power dissipation	Pd max		1.5	W
Operating temperature	Topg		–30 to +80	°C
Storage temperature	Tstg		–55 to +150	°C

Operating Conditions at Ta = 25°C

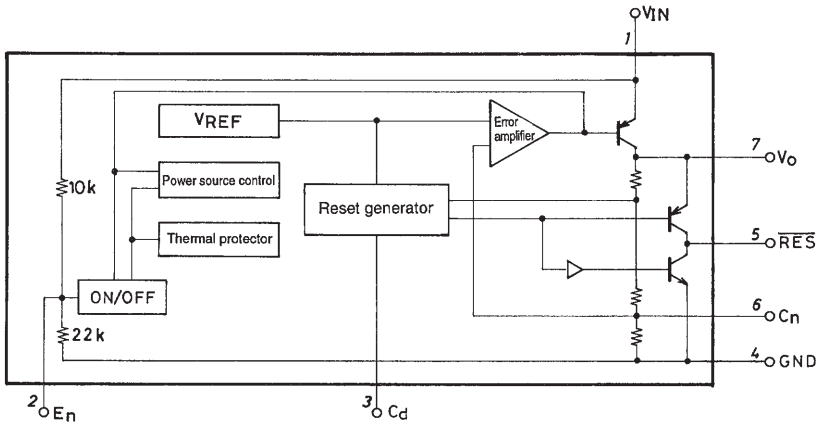
Parameter	Symbol	Conditions	Ratings	Unit
Input voltage	V_{IN}		5.6 to 17	V
Output current	I_{OUT}		0 to 350	mA
Reset output source current	I_{ORH}		0 to 200	µA
Reset output synch current	I_{ORL}		0 to 2	mA

Operating Characteristics at Ta = 25°C, V_{IN} = 8 V, I_{OUT} = 350 mA, C_{OUT} = 47µF, according to specified Test Circuit

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[Power Supply Section]						
Output voltage	V_{OUT}		4.75	5.0	5.25	V
Drop-out voltage	V_{DROP}			0.5	1.0	V
Line regulation	ΔV_{OLN}	$5.6 \le V_{IN} \le 17V$		20	100	mV
Load regulation	ΔV_{OLD}	$5mA \le I_O \le 350mA$		50	150	mV
Peak output current	I_{OP}		350	500		mA
Output short current	I_{OSC}			100	400	mA
Current dissipation	I_Q1	I_{OUT} = 0		2.1	4	mA
	I_Q2			10	50	mA
Output noise voltage	V_{N5}	10Hz≤f≤100kHz		70		µVrms
Temperature coefficient of output voltage	$\Delta V_O/\Delta Ta$	Tj = 25 to 125°C		1.6		mV/°C
Ripple rejection	Rref	f = 120Hz, $6V \le V_{IN} \le 17V$		60		dB
Output on-control voltage	V_{ENH}		2.6			V
Output off-control voltage	V_{ENL}				1.0	V
Low output voltage	$V_{O\ OFF}$				0.3	V
[Reset Section]						
High reset output voltage	V_{ORH}	I_{ORH} = 200µA, Cd pin open	4.73	4.98	5.23	V
Low reset output voltage	V_{ORL}	I_{SRL} = 2mA, Cd - GND shorted		100	200	mV
Reset threshold voltage	V_{RT}		3.95	4.2	4.45	V
Reset hysteresis voltage	Vhys		50	100	200	mV
Reset output delay time	td	Cd = 0.1µF	7.5	10	12.5	ms

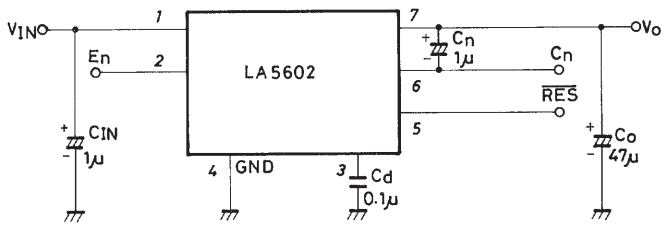
Equivalent Circuit Block Diagram

Unit (resistance: Ω)



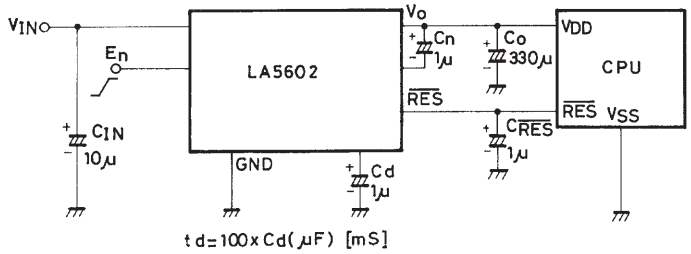
Specified Test Circuit

Unit (capacitance: F)



Application Circuit Example

Unit (capacitance: F)

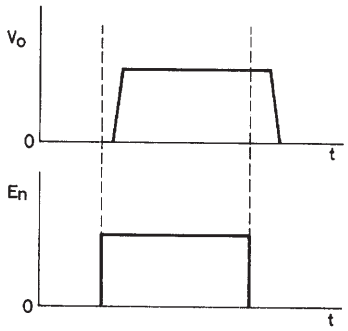


Notes: 1) Capacitors Cn and $C_{\overline{RES}}$ are only required if problems are experienced with noise from external sources. If capacitor Cn is present, ensure that C_O is at least more than one-third of the value of Cin in order to prevent output noise at power-down due to capacitor discharge timing.
2) Use a low temperature coefficient capacitor for the delay time capacitor Cd.
3) The minimum recommended value of output capacitor Co is 47µF.

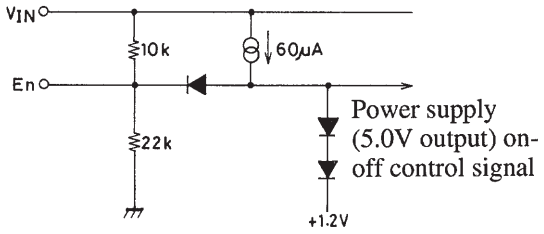
Function Table

V_{IN}	V_O
L	L
H	H

* V_{EN} = high or open



Enable Input Equivalent Circuit



Unit (resistance: Ω)

Reset Operation