Ordering number : EN4281

Monolithic Linear IC

No. 4281

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)

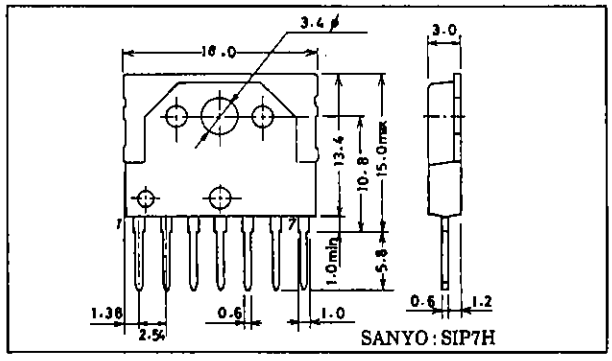
Features

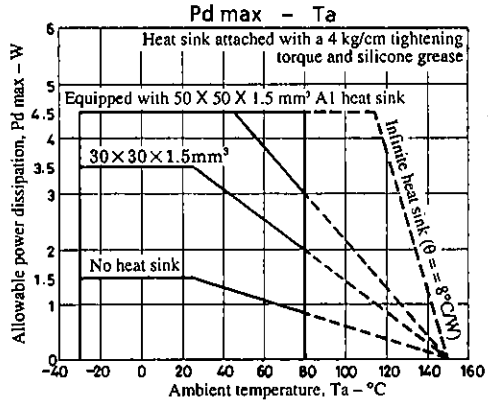
- Low minimal input-output voltage difference (0.5V typ.)
- Supports setting of reset output delay time using external capacitor
- Built-in fold back current limiting circuit and excessive heat protection circuit
- Reset output using active pull-up for simpler noise reduction

Package Dimensions

unit : mm

3075-SIP7H





Specifications

Maximum Ratings at Ta = 25°C

			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	Topr	–30 to +80	°C
Storage temperature	Tstg	–55 to +150	°C

Operating Conditions at Ta = 25°C

			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

[Power Supply Section]

			min	typ	max	unit
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

Continued on next page.

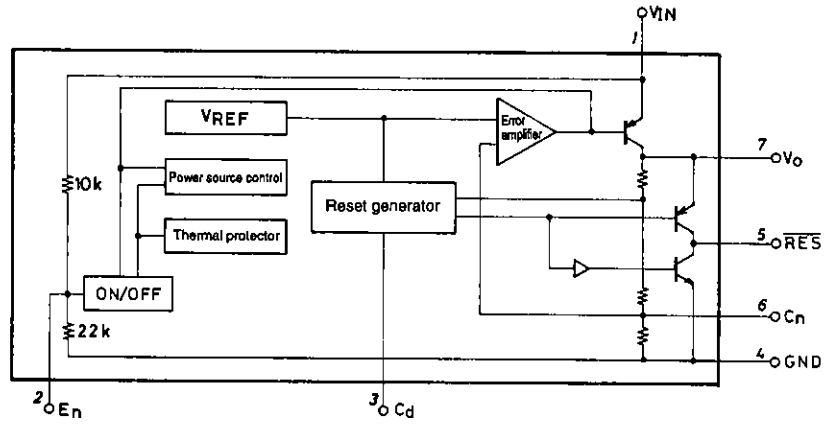
SANYO Electric Co., Ltd. Semiconductor Business Headquarters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110 JAPAN

Continued from preceding page.

			min	typ	max	unit
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_{NS}	10Hz≦f≦100kHz		70		μVrms
Temperature coefficient of output voltage	$\triangle V_O/\triangle Ta$	Tj = 25 to 125°C		1.6		mV/°C
Ripple rejection	Rref	f = 120Hz, 6V≦V_{IN}≦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

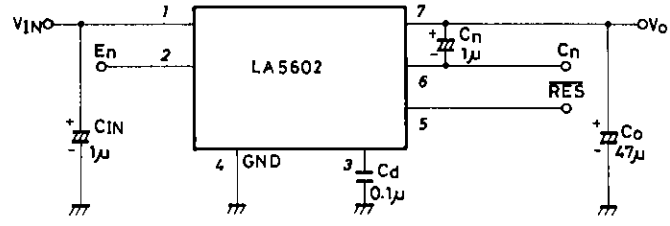
Equivalent Circuit Block Diagram

Unit (resistance: Ω)



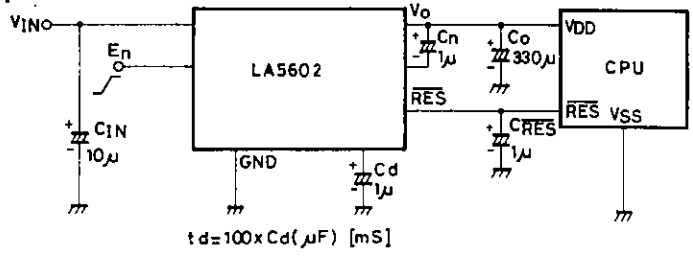
Specified Test Circuit

Unit (capacitance: F)



Application Circuit Example

Unit (capacitance: F)

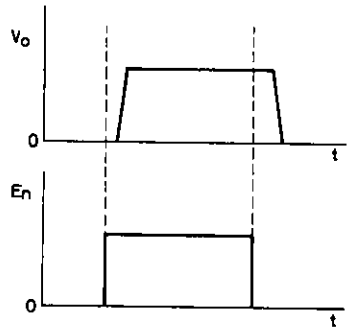


Notes: 1) Capacitors Cn and $C_{\overline{RES}}$ are only required if problems are experienced with noise from external sources. If capacitor Cn is present, ensure that C_O is at least more than one-third of the value of Cin in order to prevent output noise at power-down due to capacitor discharge timing.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

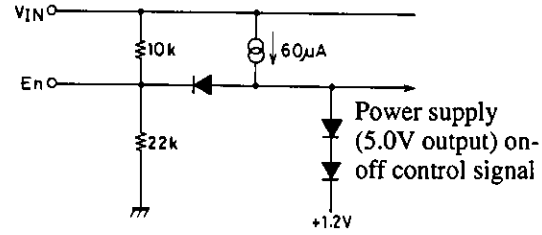
Function Table

V_{IN}	V_O
L	L
H	H

* V_{EN} = high or open

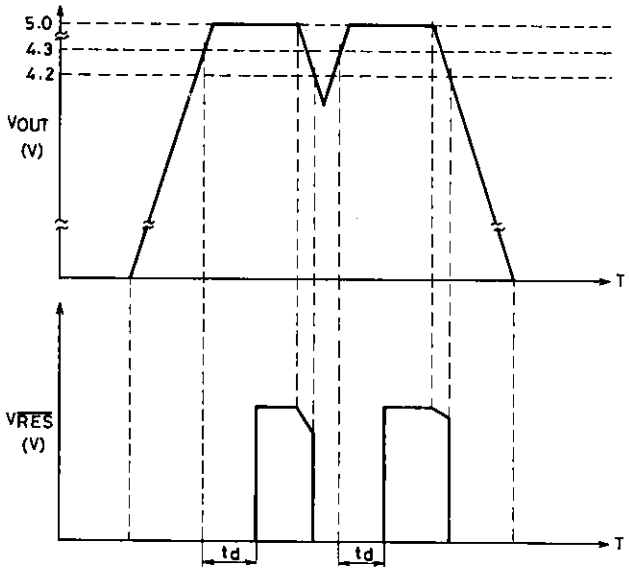


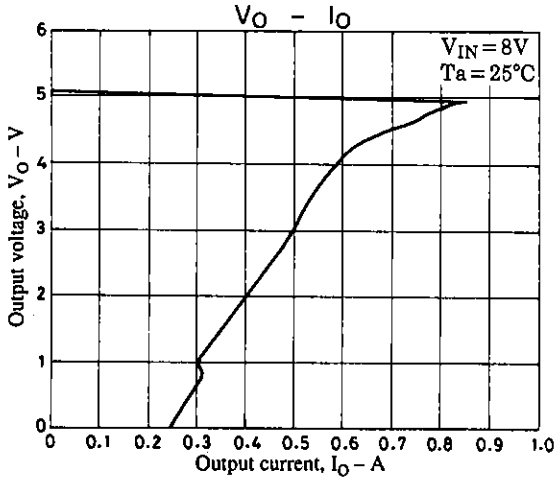
Enable Input Equivalent Circuit

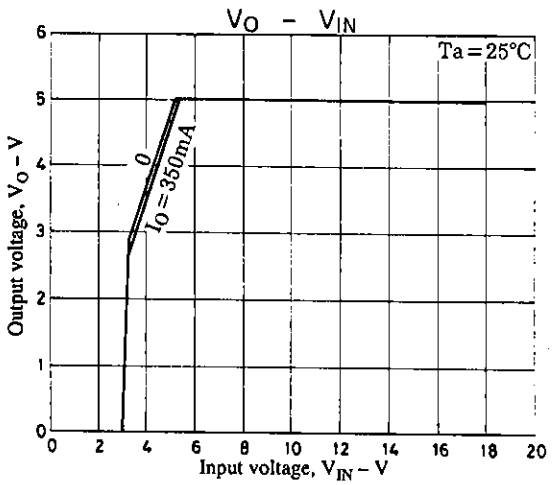


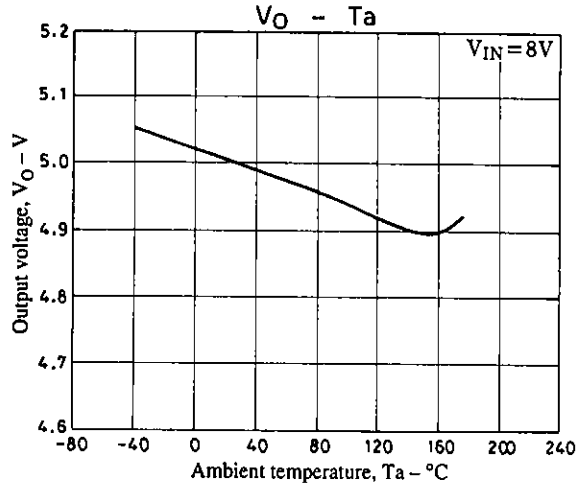
Unit (resistance: Ω)

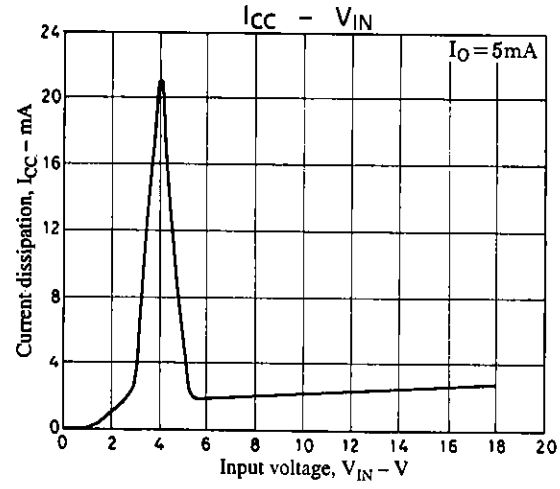
Reset Operation

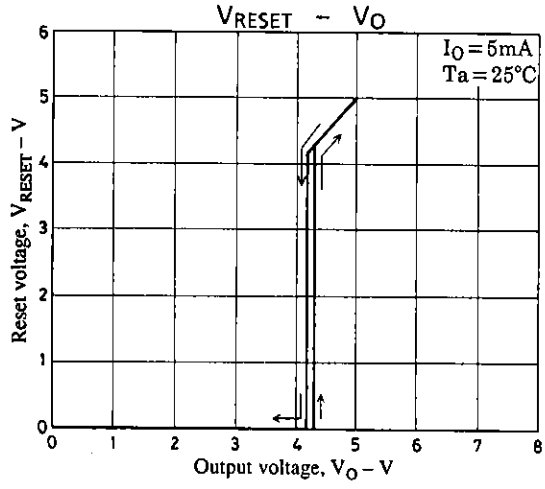


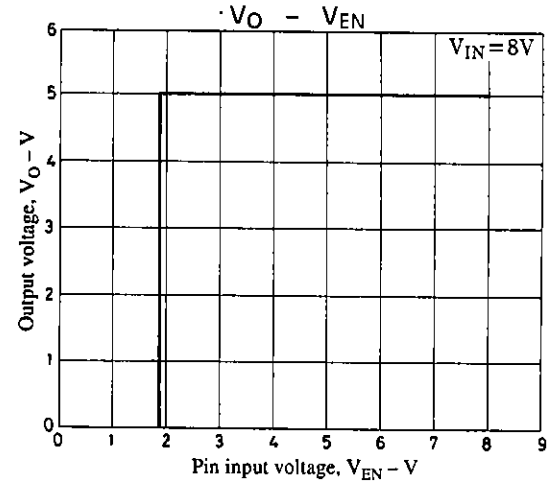












■ No products described or contained herein are intended for use in surgical implants, life-support systems, aerospace equipment, nuclear power control systems, vehicles, disaster/crime-prevention equipment and the like, the failure of which may directly or indirectly cause injury, death or property loss.

■ Anyone purchasing any products described or contained herein for an above-mentioned use shall:
① Accept full responsibility and indemnify and defend SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors and all their officers and employees, jointly and severally, against any and all claims and litigation and all damages, cost and expenses associated with such use:
② Not impose any responsibility for any fault or negligence which may be cited in any such claim or litigation on SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors or any of their officers and employees jointly or severally.

■ Information (including circuit diagrams and circuit parameters) herein is for example only; it is not guaranteed for volume production. SANYO believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.