Ordering number: EN7258

Monolithic Linear IC

LA5636M

DC/DC Converter Secondary Side Control IC

Overview

The LA5636M is a DC/DC Converter Secondary Side Control IC that draws power from a car battery and is ideal for use in rechargers for lithium ion batteries, etc. Because this IC incorporates only the basic functions (constant voltage control and constant current control) that are needed in an IC for charging, it can be easily used in combination with other ICs for charging.

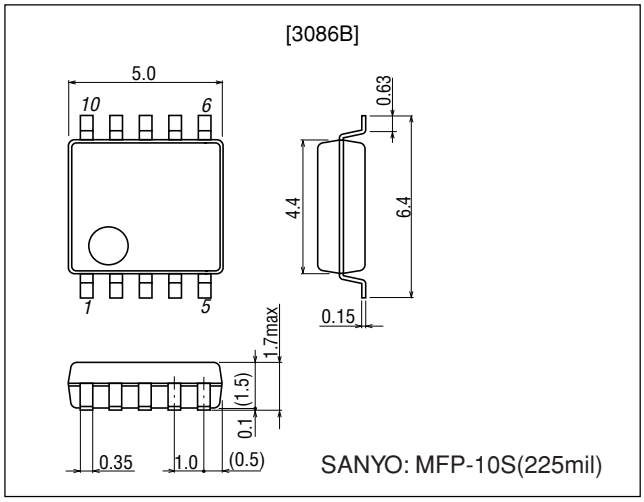
Features

- Includes integrated circuitry for preventing the malfunction of the system in the event that the input voltage (car battery voltage) drops.
- Produces constant voltage output in proportion to the PWM input signal. (Permits output voltage control by microcontroller.)
- High-precision reference current (current control amp): 92.5 µA±2.7%
- Output voltage can be set through an external resistor.
- Each loop of the voltage amp and current amp is independent.

Package Dimensions

unit: mm

3086B



Specifications

Maximum Ratings at Ta = 25°C

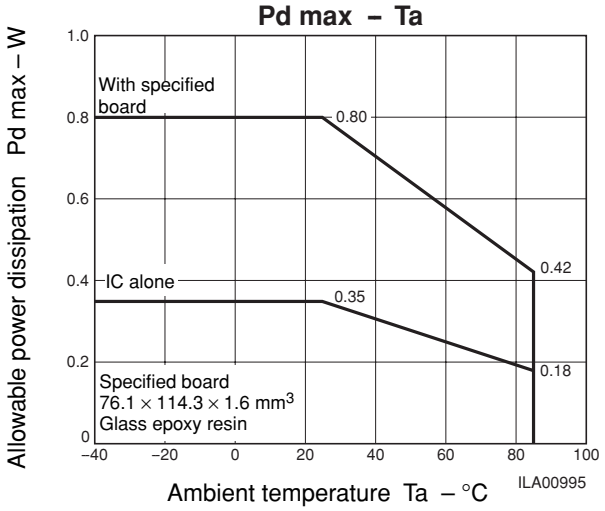
Parameter	Symbol	Conditions	Ratings	Unit
Supply voltage	V_{CC} max		14.5	V
Allowable power dissipation	Pd max		350	mW
DOUT terminal current/voltage	Idtmax/Vdtmax		1/ –0.2 to V_{CC}	mA/V
PWM input voltage	V_{pwm}		–0.2 to 3.0	V
ICONST terminal voltage	VICONST		–0.2 to V_{CC}	V
C1 terminal voltage	VC1		–0.2 to V_{CC}	V
Operating temperature	Topr1		–40 to +85	°C
Performance garanteed temperature	Topr2		–25 to +75	°C
Storage temperature	Tstg		–40 to +150	°C

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

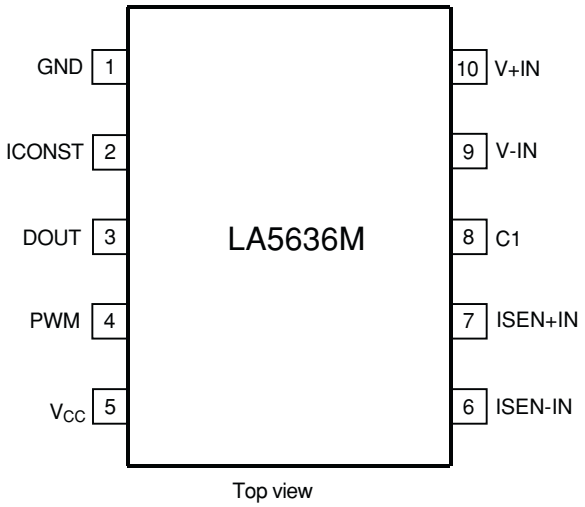
Electrical Characteristics at Ta = 25°C, V_{CC}=12V

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Operating voltage	V_{CC}		10.3		13.0	V
Current drain	I_{CC}	Dout = off, V_{pwm} = off, R = 27 kΩ		4		mA
PWM input high voltage	$V_{pwm}H$		1.7		2.9	V
PWM input low voltage	$V_{pwm}L$		0		0.8	V
PWM input current	I_{pwm}	V_{pwm} = 0.0 V		30		nA
PWM input frequency	F_{pwm}		30	32	37	Hz
Reference voltage 1	V-IN1	V_{CC} = 10.5 to 13 V, PWM = L * Ta = –25 to 75°C	–4 (1.92 V)	2.0 V	+4 (2.08 V)	%
Reference voltage 2	V-IN2	V_{CC} = 10.5 to 13 V, PWM = H * Ta = –25 to 75°C	–6 (0.68 V)	0.72 V	+6 (0.76 V)	%
Reference voltage 3	V-IN3	V_{CC} = 8.5 V, PWM = L * Ta = –25 to 75°C	1.56	—	—	V
Reference voltage 4	V-IN4	V_{CC} = 8.5 V, PWM = H * Ta = –25 to 75°C	0.59	—	—	V
Reference current	IREF	V_{CC} = 10.5 to 13 V, when 27 kΩ is connected * Ta = –25 to 75°C	90.0	92.5	95.0	μA

* The design is guaranteed over the temperature range, so the temperature is not measured.

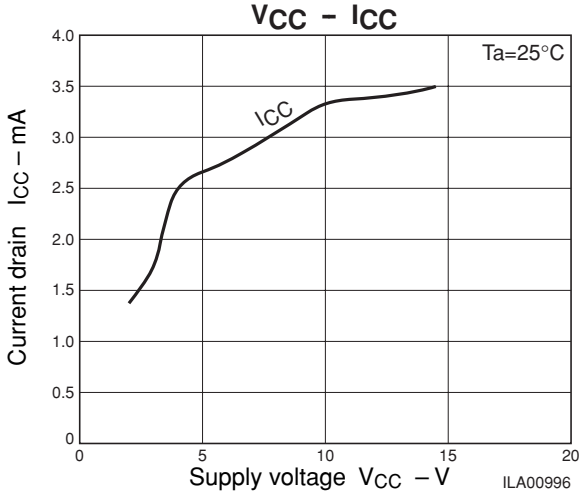


Pin Assignment

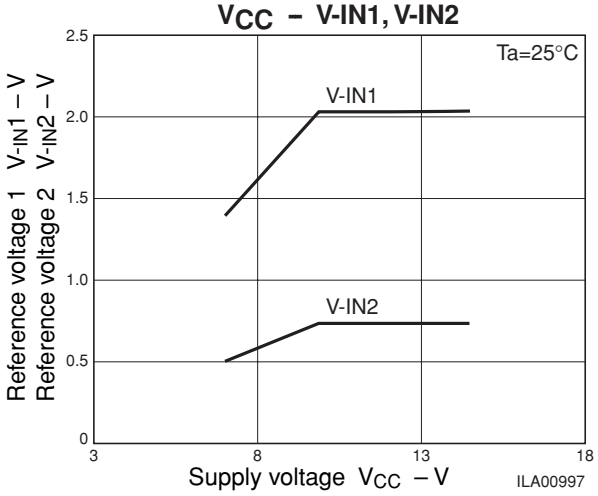


Top view

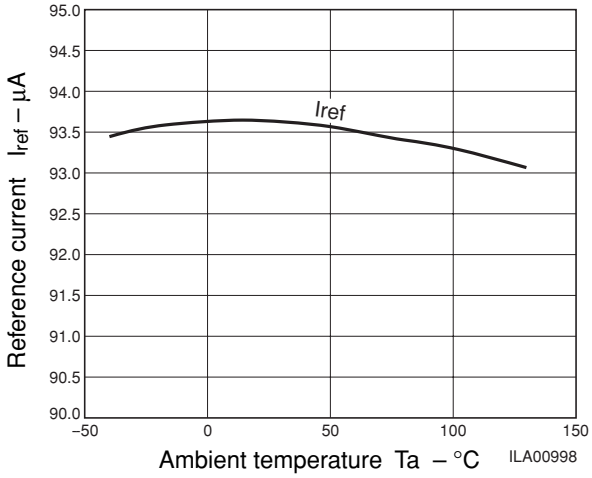
V_{CC} – I_{CC}



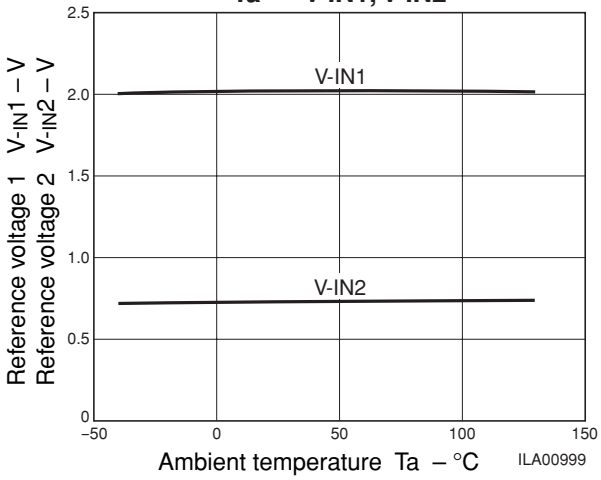
V_{CC} – V-IN1, V-IN2



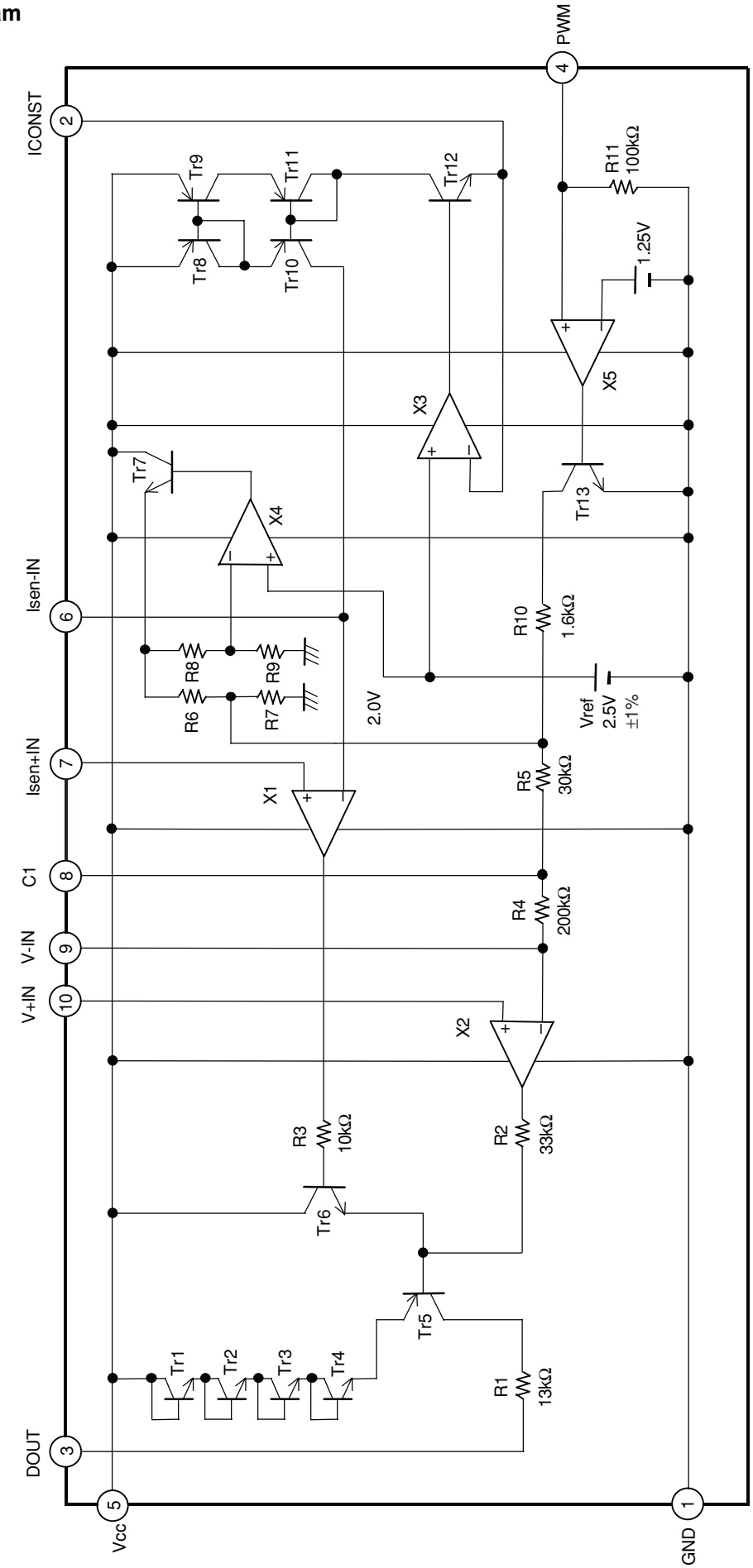
Ta – Iref



Ta – V-IN1, V-IN2

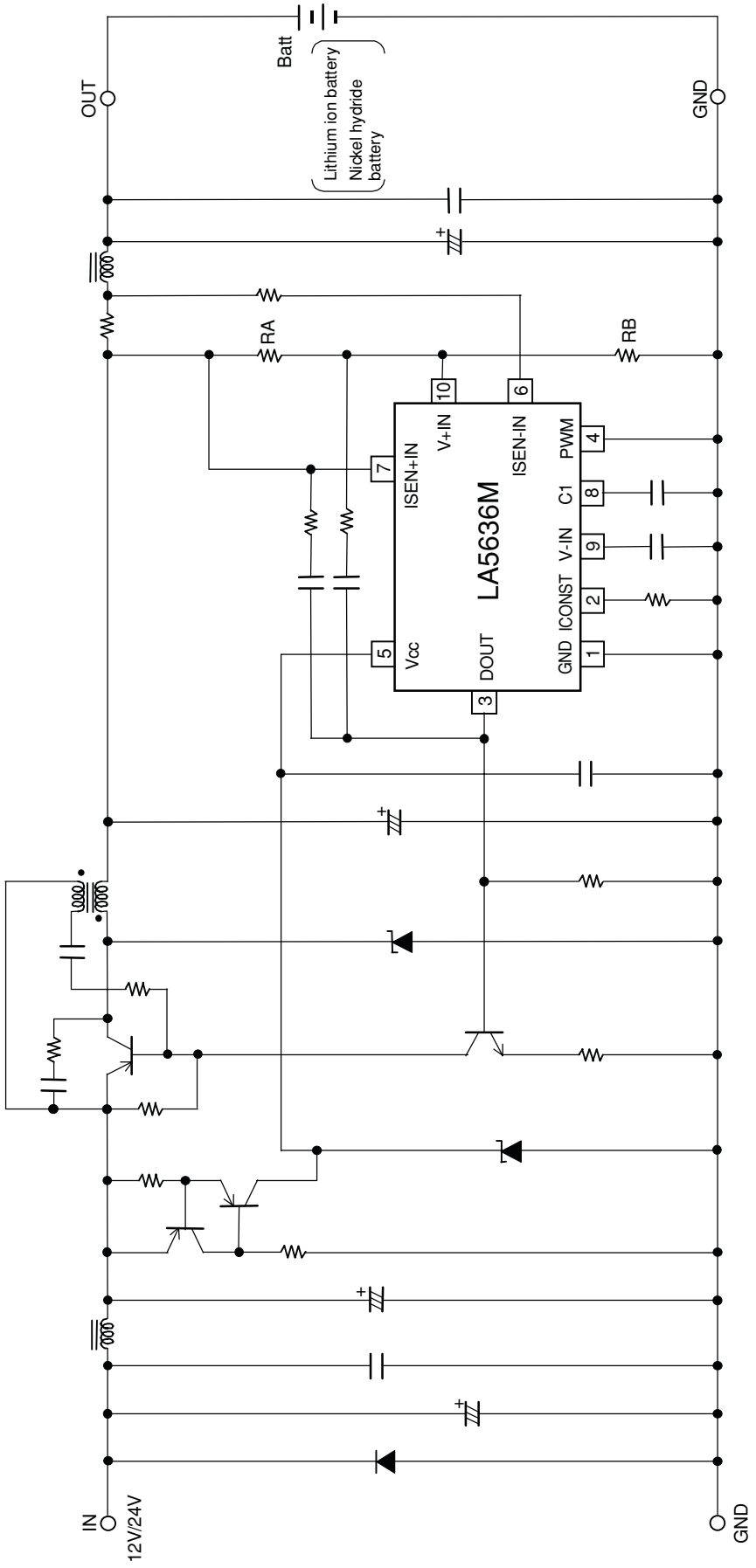


Block Diagram

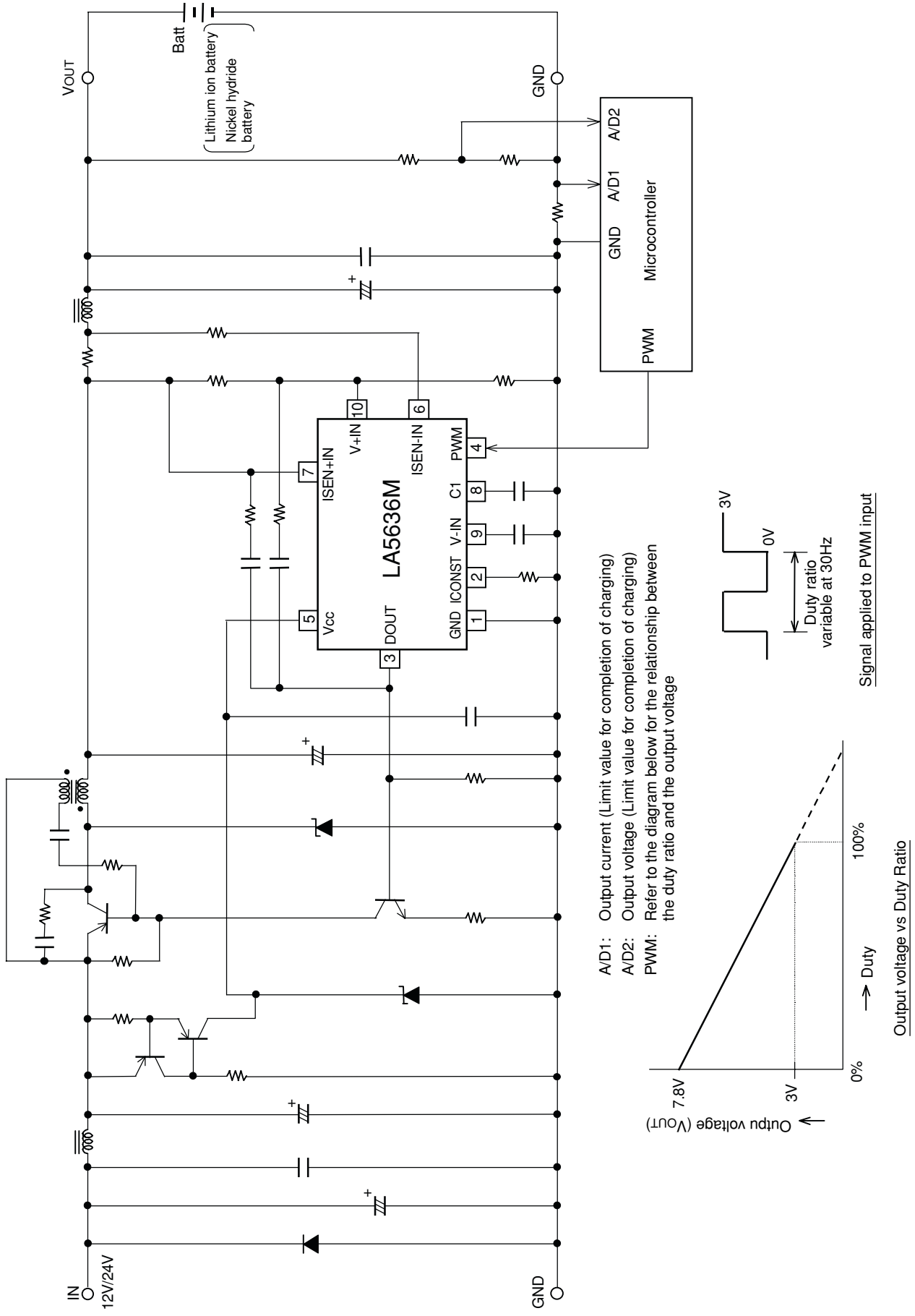


Application Circuit Diagram 1 (DC Mode)

1. OUT voltage can be set as desired by varying RA and RB.



Application Circuit Diagram 2 (PWM Mode)



- Specifications of any and all SANYO products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.
- SANYO Electric Co., Ltd. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.
- In the event that any or all SANYO products (including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.
- No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of SANYO Electric Co., Ltd.
- Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the SANYO product that you intend to use.
- 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.

This catalog provides information as of May, 2003. Specifications and information herein are subject to change without notice.