

**SANYO****LA5668****Multifunctional Voltage Regulator****Overview**

The LA5668 is a multifunctional voltage regulator IC especially suited for use in portable musical instrument applications.

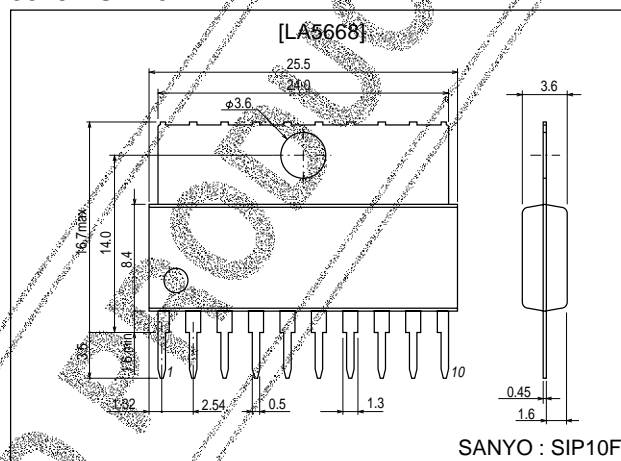
**Functions and Features**

- Power output : 1.0A
- Analog output : 5.5V, 0.1A
- Digital output : 5.0V, 0.1A
- Low  $I_{CC}$  at power-OFF mode (APO=OFF) : 35 $\mu$ A typ

**Package Dimensions**

unit:mm

3046B-SIP10F

**Specifications**Maximum Ratings at  $T_a = 25^\circ\text{C}$ 

Parameter	Symbol	Conditions	Ratings	Unit
Input voltage	$V_{IN\ max}$		18	V
	$V_{DIN\ max}$		18	V
Output current	$I_{CO\ max}$		1.0	A
	$I_{AO\ max}$		100	mA
	$I_{DO\ max}$		100	mA
Allowable power dissipation	$P_{d\ max}$		2.45	W
Operating temperature	$T_{opr}$		-30 to +85	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-40 to +125	$^\circ\text{C}$

Operating Conditions at  $T_a = 25^\circ\text{C}$ 

Parameter	Symbol	Conditions	Ratings	Unit
Input voltage	$V_{IN}$		7.0 to 15	V
	$V_{DIN}$		7.0 to 15	V
APO pin on-state voltage	$V_{APO\_ON}$		2 to $V_{IN}$	V
APO pin off-state voltage	$V_{APO\_OFF}$		-0.3 to +0.3	V

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**SANYO Electric Co.,Ltd. Semiconductor Company**

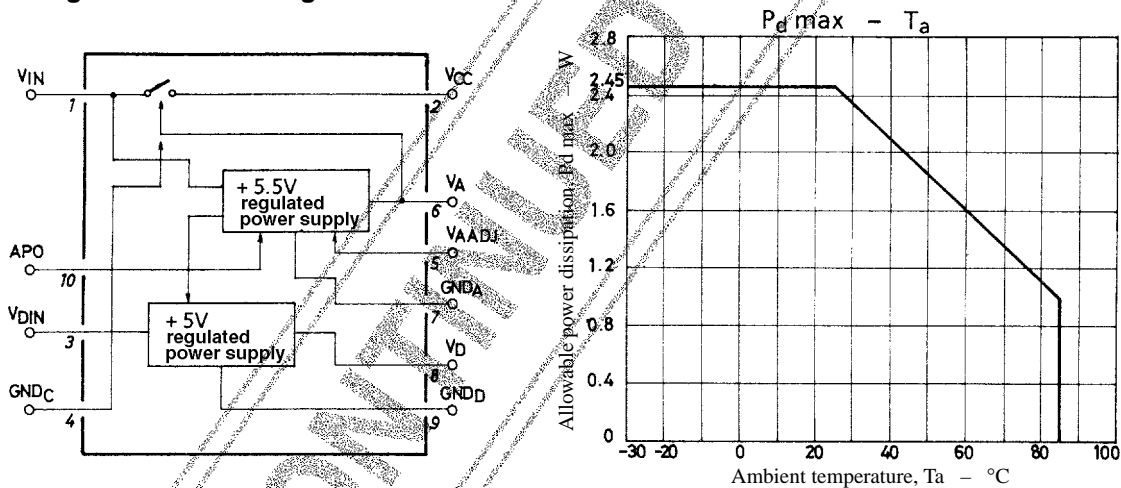
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

# LA5668

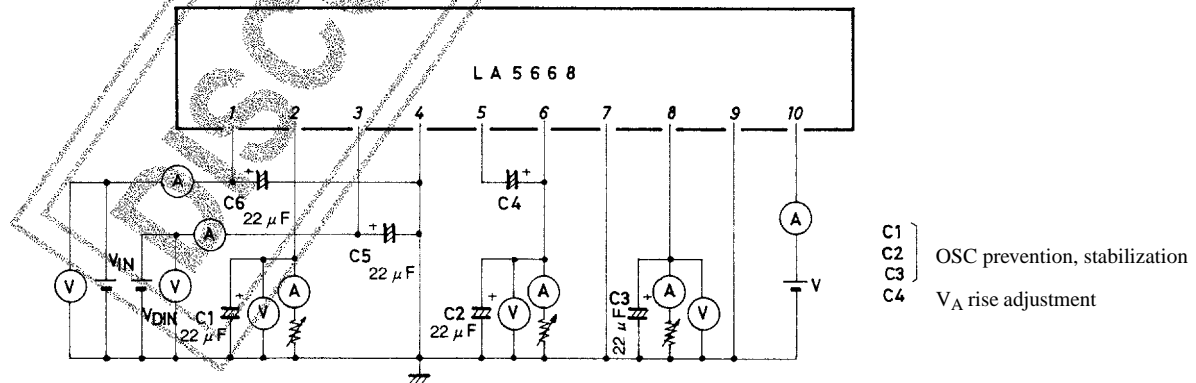
**Operating Characteristics** at  $T_a = 25^\circ\text{C}$  ( $V_{IN}=V_{DIN}=V_{APO}=9\text{V}$ ,  $C1=C2=C3=22\mu\text{F}$  unless otherwise specified)

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current	$I_{CC1}$	$V_{APO}=0\text{V}$		35	50	$\mu\text{A}$
	$I_{CC2}$	$V_{APO}=V_{IN}$		8.0	11.0	$\text{mA}$
Output voltage	$V_{AO}$	$I_{AO}=50\text{mA}$	5.05	5.5	5.95	$\text{V}$
	$V_{D1O}$	$V_{APO}=0\text{V}$ , $I_{DO}=5\text{mA}$	4.55	5.0	5.45	$\text{V}$
	$V_{D2O}$	$V_{APO}=V_{IN}$ , $I_{DO}=50\text{mA}$	4.55	5.0	5.45	$\text{V}$
	$V_{AO}$ Line	$7.0 \leq V_{IN} \leq 13\text{V}$ , $I_{AO}=50\text{mA}$			50	$\text{mV}$
Line regulation	$V_{D1O}$ Line	$7.0 \leq V_{IN} \leq 13\text{V}$ , $V_{APO}=0\text{V}$ , $I_{DO}=5\text{mA}$			50	$\text{mV}$
	$V_{D2O}$ Line	$7.0 \leq V_{IN} \leq 13\text{V}$ , $V_{APO}=V_{IN}$ , $I_{DO}=50\text{mA}$			50	$\text{mV}$
Load regulation	$V_{A1}$ Load	$1 \leq I_{A1O} \leq 40\text{mA}$			50	$\text{mV}$
	$V_{A2}$ Load	$1 \leq I_{A2O} \leq 80\text{mA}$			100	$\text{mV}$
	$V_{D1O}$ Load	$1 \leq I_{DO} \leq 10\text{mA}$ , $V_{APO}=0\text{V}$			50	$\text{mV}$
	$V_{D2O}$ Load	$1 \leq I_{DO} \leq 80\text{mA}$ , $V_{APO}=V_{IN}$			50	$\text{mV}$
Input-output voltage difference	$V_{dA}$	$V_{IN}-V_O$ at $V_d: V_O 5\% \text{ OFF}$ , $I_{AO}=50\text{mA}$		0.9	1.2	$\text{V}$
	$V_{dD}$	$V_{IN}-V_O$ at $V_d: V_O 5\% \text{ OFF}$ , $I_{DO}=50\text{mA}$		0.9	1.2	$\text{V}$
	$V_{dOC}$	$I_{CD}=500\text{mA}$ , $V_{IN}-V_D$ at $V_{IN}=9\text{V}$		1.1	1.6	$\text{V}$
Ripple rejection	$R_{rA}$	$f=50\text{Hz}$ , $120\text{Hz}$ , $I_{AO}=100\text{mA}$		40		$\text{dB}$
	$R_{rD}$	$f=50\text{Hz}$ , $120\text{Hz}$ , $I_{DO}=100\text{mA}$		45		$\text{dB}$
APO input current	$I_{APO}$	$V_{APO}=5\text{V}$	66	86	123	$\mu\text{A}$
$V_C$ on-state voltage	$V_C \text{ ON}$	$V_A$ voltage at $V_{APO}=0\text{V}$	1.5			$\text{V}$
$V_C$ off-state voltage	$V_C \text{ OFF}$	$V_A$ voltage at $V_{APO}=0\text{V}$			0.5	$\text{V}$
$V_A-V_D$ voltage	$V_A-V_D$	$I_{AO}=25\text{mA}$ , $I_{DO}=15\text{mA}$ at $V_{CC}=5.5\text{V}$ , $9\text{V}$	-0.3			$\text{V}$

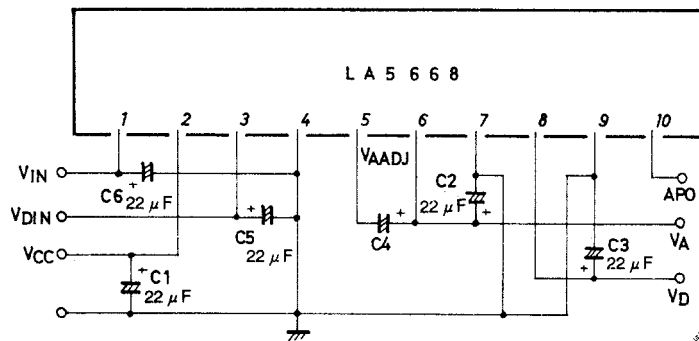
## Block Diagram and Pin Assignment



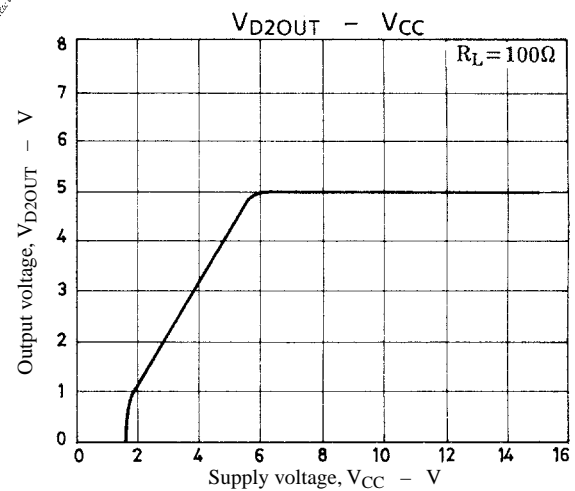
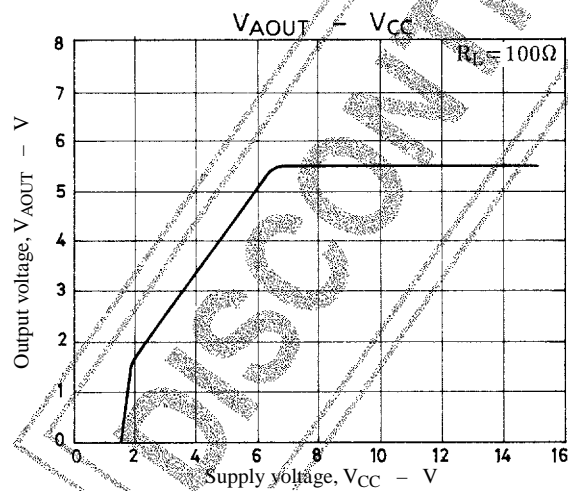
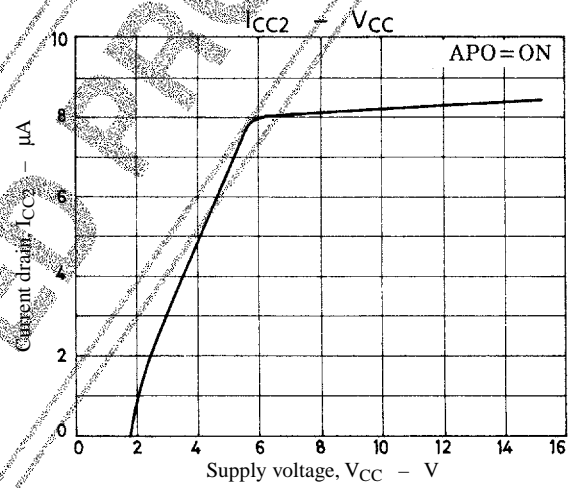
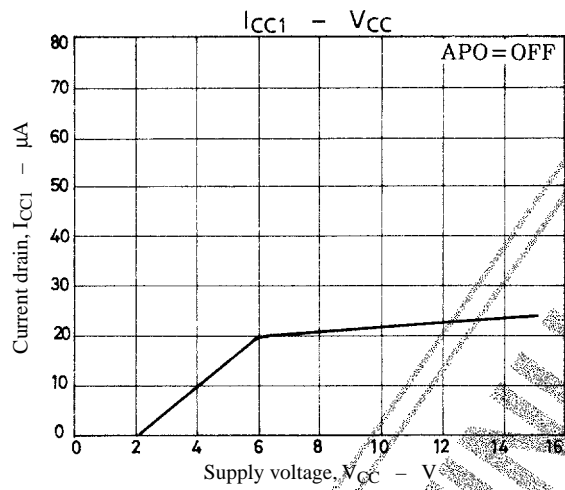
## Test Circuit

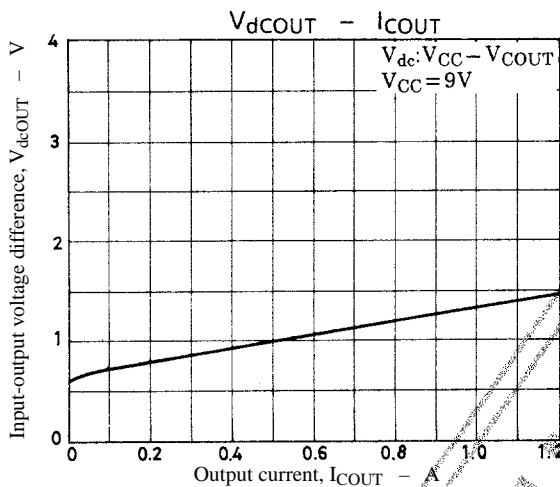
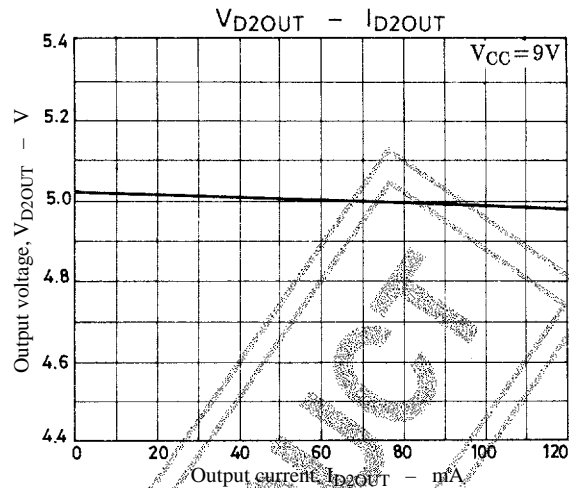
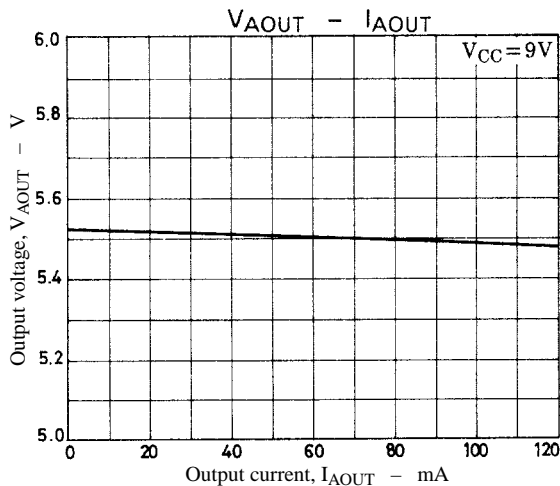


Sample Application Circuit



C1, C2, C3 } OSC prevention, stabilization  
C4 }  $V_A$  rise adjustment





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