



General Description

TPS7A05xxPDBZR series are a highly precise, lower consumption, 3 terminal, positive voltage regulators manufactured using CMOS and laser trimming technologies. The series provides large currents with a significantly small dropout voltage.

The TPS7A05xxPDBZR consists of a current limiter circuit, a driver transistor, a precision reference voltage and an error correction circuit. The series is compatible with low ESR ceramic capacitors. The current limiters fold back circuit operates as a short circuit protection as well as the output current limiter for the output pin. Output voltages are internally by laser trimming technologies. It is selectable in 0.1V increments within a range of 1.2V to 3.6V. TPS7A05xxPDBZR series are available in SOT-23 package.

Features

- Low Power Consumption
- Low Voltage Drop
- Low Temperature Coefficient
- Low Quiescent Current: 1uA at 6V
- Output voltage accuracy: tolerance $\pm 2\%$

Application

- Battery-powered Equipments
- Reference Voltage Sources
- Cameras, video cameras
- Portable AV systems
- Mobile phones
- Portable games

Pin Configuration And Descriptions

SOT-23-3L (Top View)

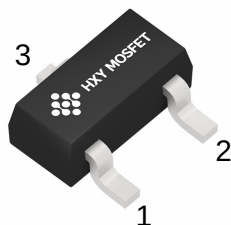


Table1: TPS7A05xxPDBZR series

PIN NO.	PIN NAME	FUNCTION
1	GND	GND pin
2	VIN	Input voltage pin
3	VOUT	Output voltage pin

Order Information

Orderable Device	Package	Output Voltage	Packing Option
TPS7A05xxPDBZR	SOT-23-3L	1.2V-3.6V	3000/Reel

xx: From 12-36

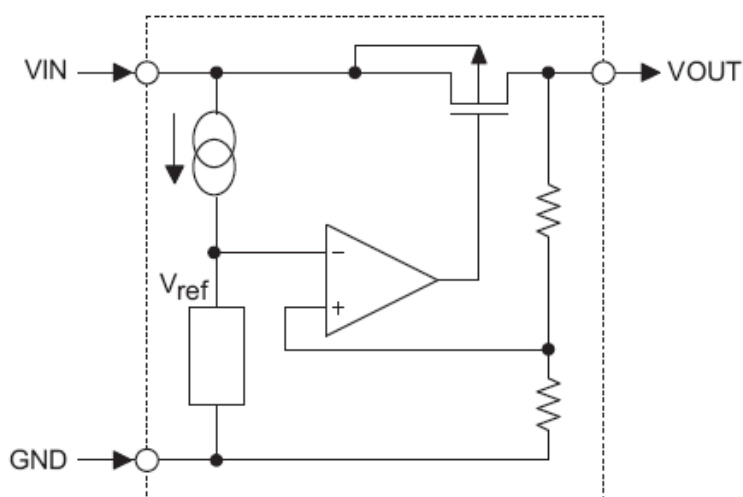


Absolute Maximum Ratings

Description	Symbol	Value Range	Unit
Input Voltage	V_{IN}	8	V
Storage Temperature Range	T_{STG}	-55~+125	°C
Operating Free-air Temperature Range	T_A	-40~+85	°C
Power Dissipation	P_d	0.2	W
Output Current	I_{OUT}	300	mA
Output Voltage	V_{OUT}	$V_{SS} - 0.3 \sim V_{IN} + 0.3$	V

Note: Stresses greater than those listed under “ Absolute Maximum Ratings may” cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “ Recommended Operating Conditions” not implied. Exposure to “ Absolute Maximum Ratings” for extended periods may affect device reliability.

Block Diagram





DC Characteristics (unless otherwise noted $T_A = 25^\circ\text{C}$)

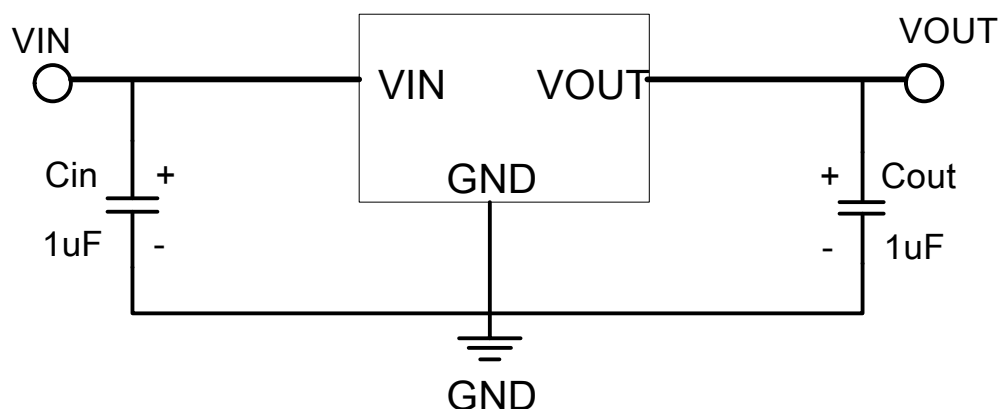
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Output Voltage	V_{out}	$V_{in}=V_{out}+1V$ $1.0mA \leq I_{out} \leq 30mA$	$V_{out} \times 0.98$	--	$V_{out} \times 1.02$	V
Output Current*1	I_{out}	$V_{in}-V_{out}=1V$	--	300	--	mA
Low dropout*2	V_{drop}	Refer to the next table				
Line Regulation	$\frac{\Delta V_{out1}}{\Delta (V_{in}-V_{out})}$	$1.6V \leq V_{in} \leq 6.5V$ $I_{out}=40mA$	--	0.05	0.2	%/V
Load Regulation	$\Delta V_{out} / \Delta I_{out}$	$V_{in}=V_{out}+1V$ $1.0mA \leq I_{out} \leq 80mA$	--	12	30	mV
Output voltage Temperature Coefficiency	$\Delta V_{out} / (T_A \cdot V_{out})$	$I_{out}=30mA$ $0^\circ\text{C} \leq T_A \leq 70^\circ\text{C}$	--	± 75	--	Ppm/ $^\circ\text{C}$
Supply Current	I_{ss}	--	--	1	1.5	μA
Input Voltage	V_{in}	--	--	6	8	V

Electrical Characteristics by Output Voltage:

Output Voltage $V_{out}(V)$	Dropout Voltage V_{dif} (V)		
	Conditions	Typ.	Max.
$V_{out} \leq 1.5V$	$I_{out}=100\text{ mA}$	0.39	0.66
$V_{out}=1.6V$		0.35	0.57
$V_{out}=1.7V$		0.32	0.50
$1.8 \leq V_{out} \leq 2$		0.30	0.45
$2.1 \leq V_{out} \leq 2.7$		0.28	0.42
$2.8 \leq V_{out} \leq 3.6$		0.25	0.35

Application Circuit

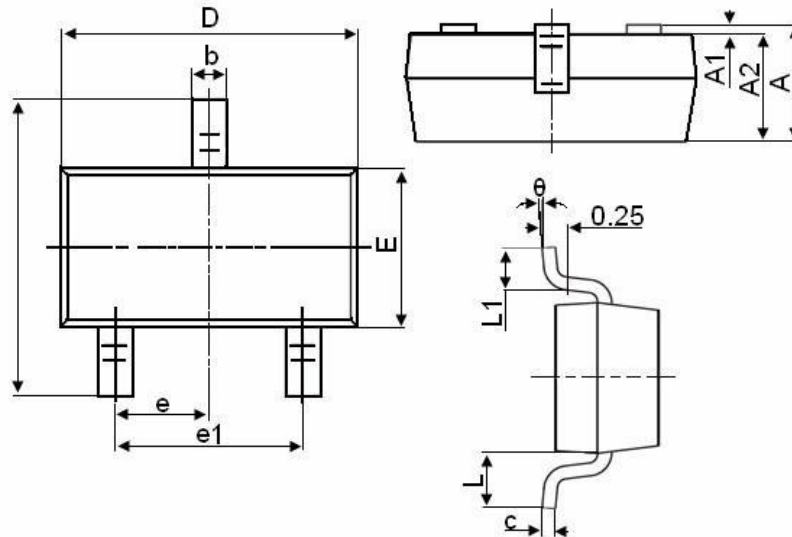
Basic Circuits





Package Outline Dimensions

SOT-23-3L



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	1.050	1.250
A1	0.000	0.100
A2	1.050	1.150
b	0.300	0.500
c	0.100	0.200
D	2.800	3.000
E	1.500	1.700
E1	2.650	2.950
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.600
θ	0°	8°



Attention

- Any and all HUA XUAN YANG ELECTRONICS products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your HUA XUAN YANG ELECTRONICS representative nearest you before using any HUA XUAN YANG ELECTRONICS products described or contained herein in such applications.
- HUA XUAN YANG ELECTRONICS assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein.
- Specifications of any and all HUA XUAN YANG ELECTRONICS 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.
- HUA XUAN YANG ELECTRONICS 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 HUA XUAN YANG ELECTRONICS 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 HUA XUAN YANG ELECTRONICS CO.,LTD.
- Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. HUA XUAN YANG ELECTRONICS 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.
- 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 HUA XUAN YANG ELECTRONICS product that you intend to use.