

General Description

The TCS2163 series are precise, low power consumption, high voltage, positive voltage regulators manufactured using CMOS and laser trimming technologies.

The series provides large currents with a significantly small dropout voltage.

The TCS2163 series 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 limiter's foldback circuit also operates as a short protect for the output current limiter and the output pin. Output voltage can be set internally by laser trimming technologies.

It is selectable in 100mV increments within a range of 1.2V to 5.0V. SOT-23, SOT-89, packages are available.

Features

Highly Accurate : $\pm 2\%$

Output voltage range : 1.5V~5.0V (selectable in 0.1V steps)

Low power consumption : 8 μ A(TYP.)

Large output current : 450mA

Input voltage: up to 7 V

Dropout voltage : 0.1V at 100mA and 0.20V at 200mA

Excellent Input Stability

Be available to regulator and reference voltage

Packages: SOT23-3 · SOT89-3 · SOT23

● Applications

Battery powered equipment

Communication tools

Mobile phones

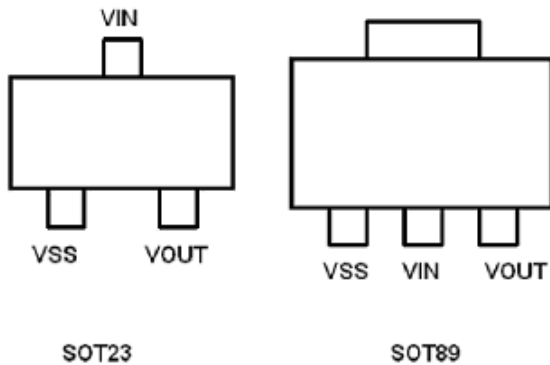
Portable games

Portable AV systems

Cameras, Video systems

Reference voltage source

● PIN CONFIGURATION



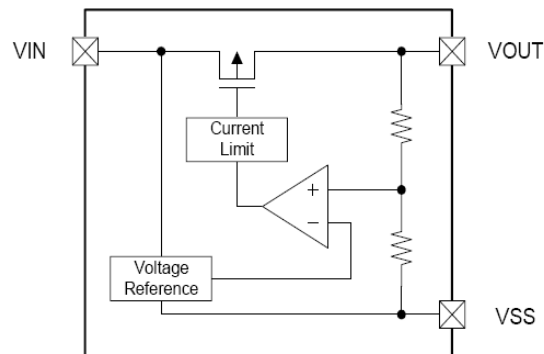
● PIN ASSIGNMENT

Symbol	VSS	VOUT	VIN
Description	Ground	Output Voltage	Input Voltage

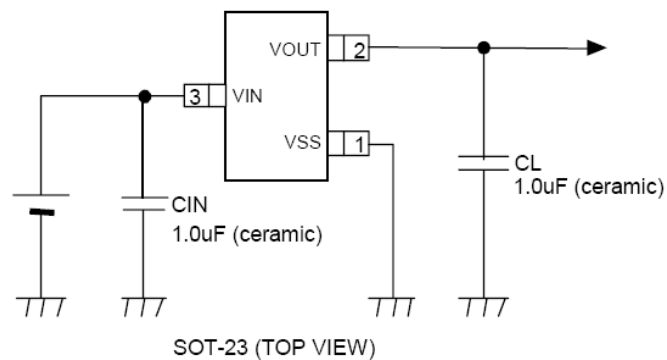
ORDER INFORMATION

Pd-Free Package	Temperature	Order Part Number	Quantity/Reel	Marking
SOT23-3	-40°C to 85°C	TCS2163_CXX	3K	Reference packaging
SOT89-3	-40°C to 85°C	TCS2163_DXX	1K	Reference packaging

Functional Block Diagram



Typical Application Circuit



- **Absolute Maximum Ratings** @ $T_A = 25^\circ\text{C}$ unless otherwise noted

PARAMETER		SYMBOL	DESCRIPTION	UNIT
Input Voltage		VIN	9.0	V
Output Current		Iout	500	mA
Output Voltage		Vout	Vss-0.3 ~ Vout+0.3	V
Power Dissipation	SOT23-3	Pd	300	mW
	SOT89-3	Pd	500	mW
Operating Ambient Temperature		T Opr	-25 ~ +85	$^\circ\text{C}$
Storage Temperature		Tstg	-40 ~ +125	$^\circ\text{C}$
Soldering Temperature And Time		Tsolder	260 $^\circ\text{C}$, 10s	

- **Electrical Characteristics** ($T_a=25^\circ\text{C}$ unless otherwise specified)

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($V_{in}=V_{out}+1V, C_{in}=C_{out}=1\mu, T_a=25^\circ\text{C}$ Unless otherwise stated)

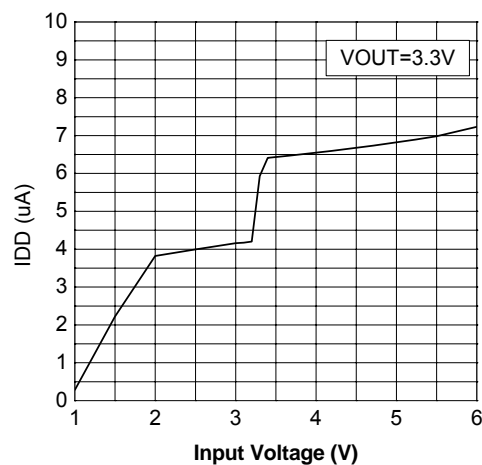
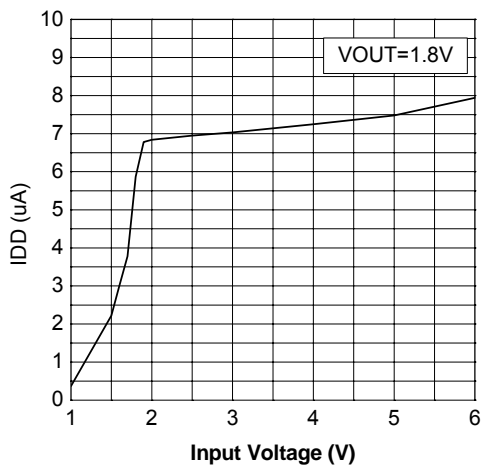
PARAMETER	SYMBOL	CONDITION	MIX	TYP	MAX	UNIT
Input Voltage	Vin			6	7	V
Output Voltage	VOUT(E)	IOUT=40mA, VIN=Vout+1V	X 0.98	VOUT(T)	X 1.02	V
Maximum Output Voltage	IOUT (max)	VIN=Vout+1V		400	450	mA
Load Regulation	ΔV_{OUT}	VIN=Vout+1V, 1mA \leq IOUT \leq 100mA		11		mV
Dropout Voltage	Vdif1	IOUT =30mA		30		mV
	Vdif2	IOUT =100mA		100		mV
Supply Current	ISS	VIN=Vout+1V		6.5		μA
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	IOUT =10mA Vout+1V \leq VIN \leq 5V		0.02		%/V
Power Supply Ripple Rejection Ratio	PSRR	Vin= [Vout+1]V +1Vp-pAC IOUT =10mA, f=1kHz		50		dB

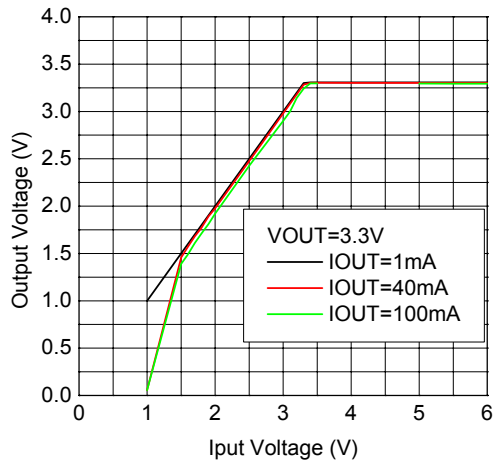
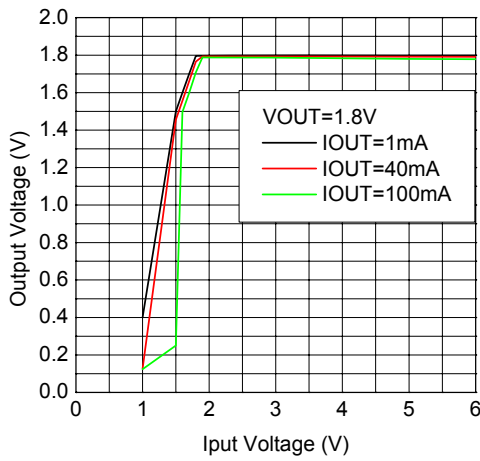
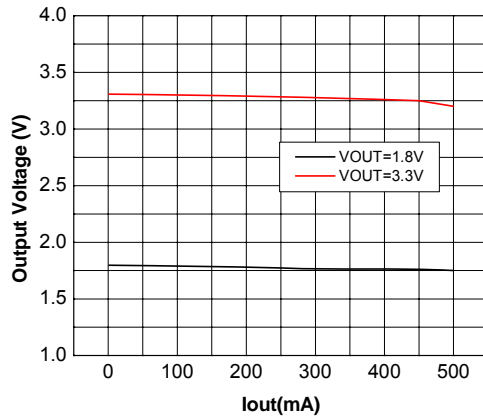
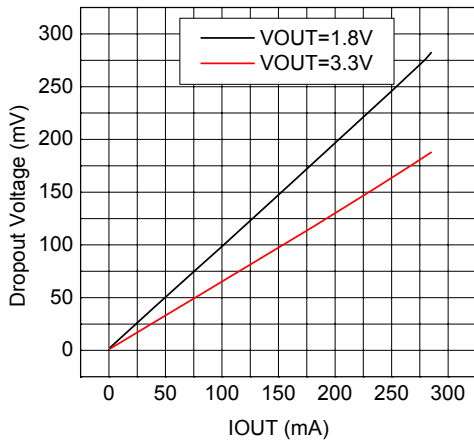
TCS2163_D33

($V_{in}=V_{out}+1V, C_{in}=C_{out}=1\mu, T_a=25^\circ C$ Unless otherwise stated)

PARAMETER	SYMBOL	CONDITION	MIX	TYP	MAX	UNIT
Input Voltage	V_{in}			6	7	V
Output Voltage	$V_{OUT(E)}$	$I_{OUT}=10mA, V_{IN}=V_{out}+1V$	X 0.98	$V_{OUT(T)}$	X 1.02	V
Maximum Output Voltage	$I_{OUT} (max)$	$V_{IN}=V_{out}+1V$		400	450	mA
Load Regulation	ΔV_{OUT}	$V_{IN}=V_{out}+1V, 1mA \leq I_{OUT} \leq 100mA$		12		mV
Dropout Voltage	V_{dif1}	$I_{OUT} = 30mA$		20		mV
	V_{dif2}	$I_{OUT} = 100mA$		66		mV
Supply Current	ISS	$V_{IN}=V_{out}+1V$		9		μA
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	$I_{OUT} = 40mA, V_{out}+1V \leq V_{IN} \leq 6V$		0.02		%/V
Power Supply Ripple Rejection Ratio	PSRR	$V_{in} = [V_{out}+1]V + 1V_{p-pAC}, I_{OUT} = 10mA, f=1kHz$		50		dB

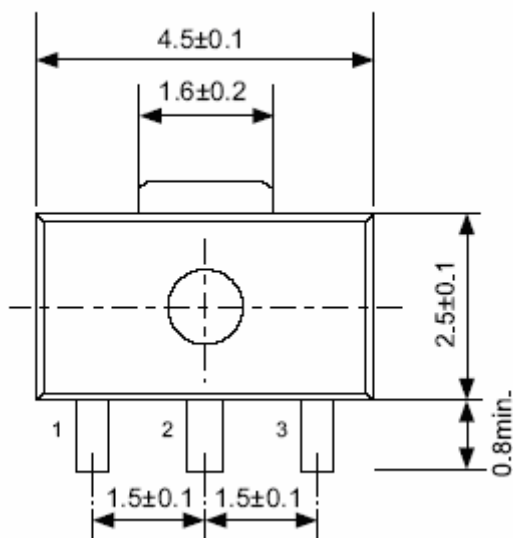
● Typical Operating Characteristics





PACKAGING INFORMATION

SOT-89-3



SOT23-3/SOT23-3B

