

## Features

- Low Quiescent Current: 1.6 $\mu$ A
- Low Dropout Voltage: 500mV@100mA
- High Accuracy:  $\pm 2\%$
- Excellent Line and Load Transient Response
- Output Current-Limit Protection
- Output Short-Circuit Protection
- Over-Temperature Protection
- ESD Protected up to 4KV(HBM),200V(CDM)<sup>(Note 1)</sup>
- Moisture Sensitivity Level 3
- Halogen Free. "Green" Device <sup>(Note 2)</sup>
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)

## Applications

- Battery-Powered Equipment
- Smoke Detectors and Sensors
- Micro-controller Applications
- Household Electric Appliances

## Description

The MC5200K3 is a high-performance low drop-out linear regulator with input voltage at 30V and output current to 200mA. despite of the already low quiescent current at 1.6 $\mu$ A. operation integrity is further fortified with full suite of protection features (thermal shut-down, short-circuit handling, current limiting). The device delivers accurate ( $\pm 2\%$ ) output voltage at fixed 3.3V.

## Part Number and Marking Code

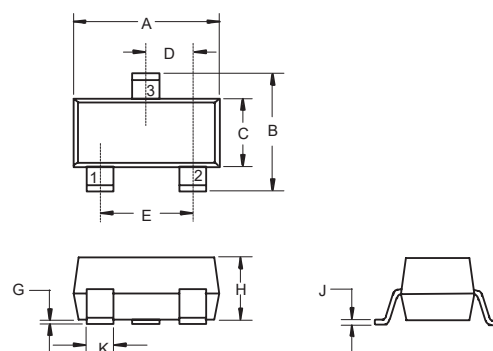
Part Number	Marking Code
MC5200K3-3.3	5233

Note:

1. Devices are ESD sensitive. Handling precaution recommended
2. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

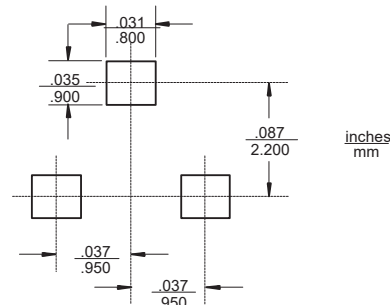
# 200mA Low Drop-out Voltage Regulators

## SOT-23-3L

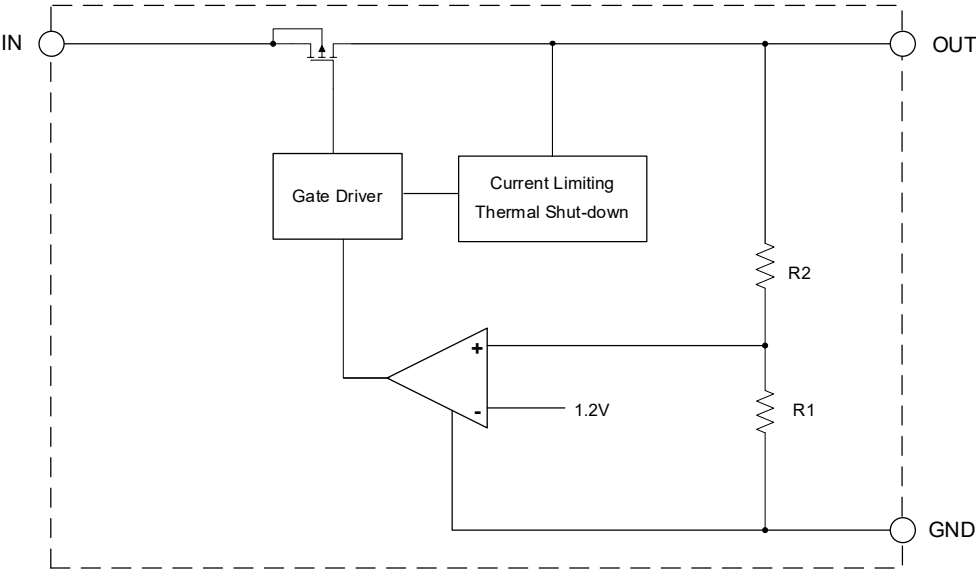


DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.113	0.117	2.87	2.97	
B	0.108	0.112	2.75	2.85	
C	0.061	0.065	1.55	1.65	
D	0.036	0.038	0.914	0.965	
E	0.073	0.077	1.85	1.95	
G	0.0016	0.0039	0.04	0.100	
H	0.041	0.045	1.05	1.15	
J	0.006	0.007	0.14	0.17	
K	0.012	0.020	0.30	0.50	

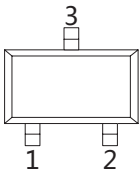
## Suggested Solder Pad Layout



Functional Block Diagram

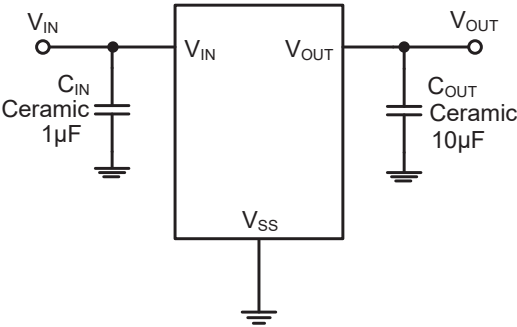


Pin Configuration and Functions (Top View)



Number	Name	Pin Function
1	V <sub>SS</sub>	Ground
2	V <sub>OUT</sub>	Output
3	V <sub>IN</sub>	Power Input

Typical Application Circuit



## Absolute Maximum Ratings

- Operating Junction Temperature Range: -40~+125°C
- Storage Temperature Range: -40~+150°C
- Thermal Resistance: 200°C/W Junction to Ambient

Parameter	Symbol	Ratings	Units
Input Voltage to GND	$V_{IN} \sim V_{SS}$	-0.3 ~ 36	V
Output Voltage to GND	$V_{OUT} \sim V_{SS}$	-0.3 ~ 7	V
Input Voltage to Output Voltage	$V_{IN} \sim V_{OUT}$	-0.3 ~ 31	V
Output Current	$I_{OUT}$	200	mA
Power Dissipation	$P_D$	0.6	W

## Electrical Characteristics

( $V_{IN}=V_{OUT}+1V$ ,  $C_{IN}=1\mu F$ ,  $C_{OUT}=10\mu F$ ,  $T_A=25^\circ C$ , unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Voltage	$V_{IN}$		3		30	V
Quiescent Current	$I_Q$	$V_{IN}=12V$ , $I_{OUT}=0$	1.3	1.6	1.8	$\mu A$
Output Voltage	$V_{OUT}$	$V_{IN}=12V$ , $I_{OUT}=10mA$	$V_{OUT} \times 0.98$	$V_{OUT}$	$V_{OUT} \times 1.02$	V
Output Current	$I_{OUT}$			200		mA
Dropout Voltage <sup>(Note3)</sup>	$V_{DROP}$	$I_{OUT}=100mA$ , $V_{IN}=V_{OUTNOM}-0.1V$		500		mV
		$I_{OUT}=150mA$ , $V_{IN}=V_{OUTNOM}-0.1V$		700		
Line Regulation	$\Delta V_{OUT}/\Delta V_{IN}$	$I_{OUT}=1mA$ , $V_{OUTNOM}+1V \leq V_{IN} \leq 30V$		0.1		mV/V
Load Regulation	$\Delta V_{OUT}/\Delta I_{OUT}$	$V_{IN}=7V$ , $1mA \leq I_{OUT} \leq 150mA$		0.1		mV/mA
Current Limit	$I_{LIMIT}$			370		mA
Short Current	$I_{SHORT}$			120		mA
Thermal Shut-down Threshold	$T_{SHDN}$	Temperature Rising		154		$^\circ C$
		Temperature Falling		125		$^\circ C$

Note3: When the output drops below its nominal value by 2%, the voltage difference between IN and OUT pins equates to  $V_{DROP}$ .

## Curve Characteristics

Fig. 1 - Output Voltage



Fig. 2 - Output Voltage vs Temperature

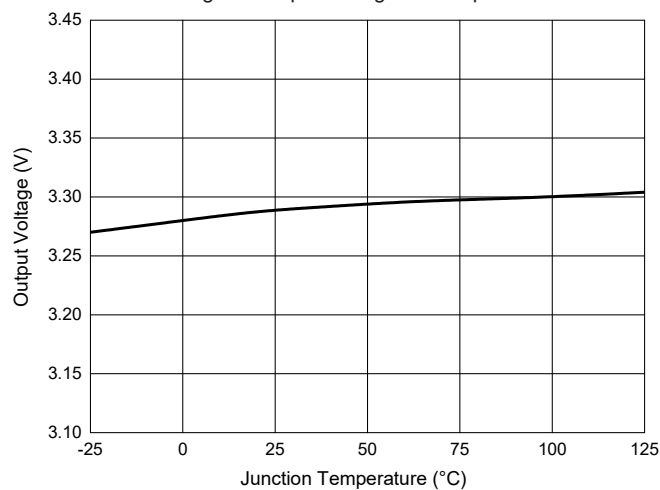


Fig. 3 - Drop-out Voltage

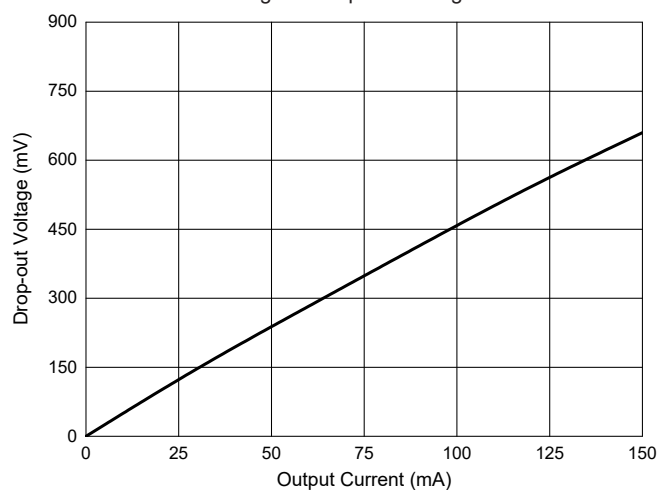


Fig. 4 - Quiescent Current

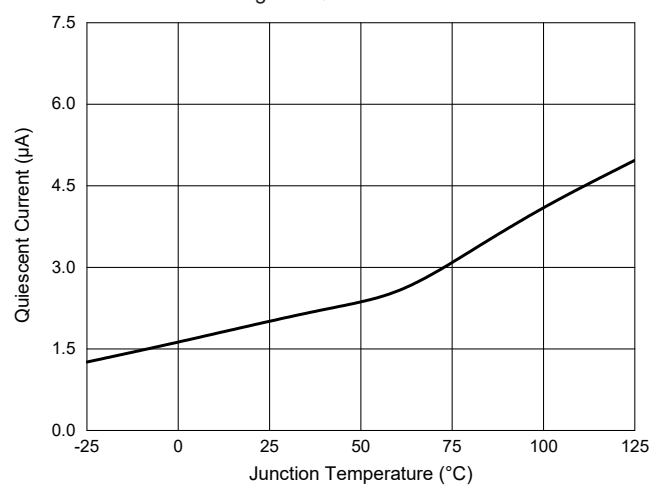


Fig. 5 - Quiescent Current

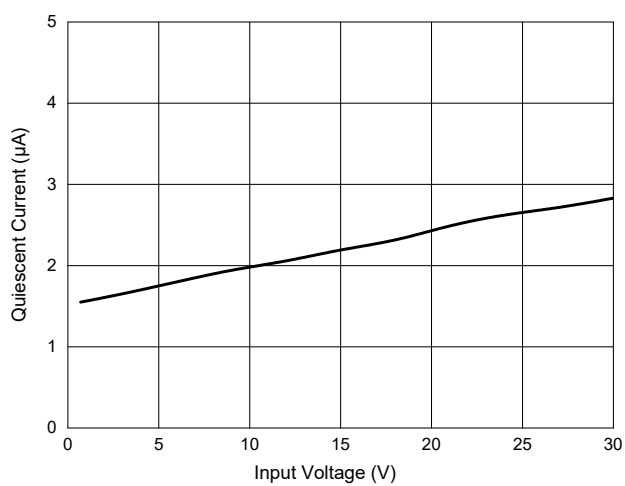
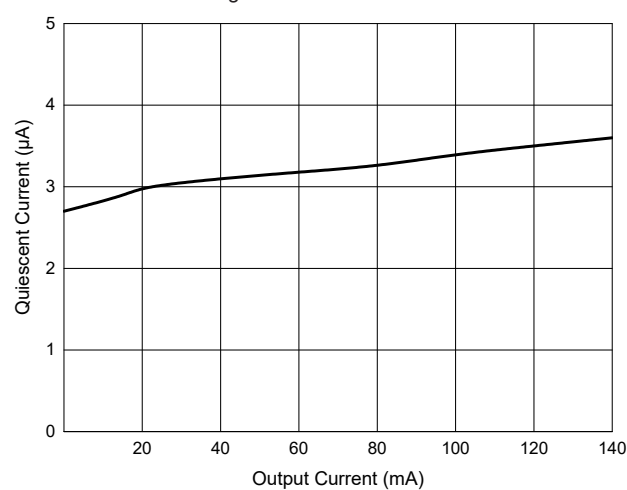


Fig. 6 - Quiescent Current



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel

### \*\*\*IMPORTANT NOTICE\*\*\*

**Micro Commercial Components Corp.** reserves the right to make changes without further notice to any product herein to make corrections, modifications , enhancements , improvements , or other changes . **Micro Commercial Components Corp.** does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights ,nor the rights of others . The user of products in such applications shall assume all risks of such use and will agree to hold **Micro Commercial Components Corp.** and all the companies whose products are represented on our website, harmless against all damages. **Micro Commercial Components Corp.** products are sold subject to the general terms and conditions of commercial sale, as published at <https://www.mccsemi.com/Home/TermsAndConditions>.

### \*\*\*LIFE SUPPORT\*\*\*

MCC's products are not authorized for use as critical components in life support devices or systems without the express written approval of Micro Commercial Components Corporation.

### \*\*\*CUSTOMER AWARENESS\*\*\*

Counterfeiting of semiconductor parts is a growing problem in the industry. Micro Commercial Components (MCC) is taking strong measures to protect ourselves and our customers from the proliferation of counterfeit parts. MCC strongly encourages customers to purchase MCC parts either directly from MCC or from Authorized MCC Distributors who are listed by country on our web page cited below. Products customers buy either from MCC directly or from Authorized MCC Distributors are genuine parts, have full traceability, meet MCC's quality standards for handling and storage. **MCC will not provide any warranty coverage or other assistance for parts bought from Unauthorized Sources.** MCC is committed to combat this global problem and encourage our customers to do their part in stopping this practice by buying direct or from authorized distributors.