

## Features

- Low Quiescent Current: 50 $\mu$ A
- Low Output Noise: 40 $\mu$ VRMS(10Hz~100kHz)
- Operating Voltage Range: 1.8V ~ 6.0V
- Low Dropout Voltage: 50mV@100mA
- High Accuracy:  $\pm$ 2%(Typ.)
- Output Voltage: 1.05~ 5.0V
- TTL-Logic-Controlled Shutdown Input
- Excellent Line and Load Transient Response
- Built-in Current Limiter, Short-Circuit Protection
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)

## Applications

- Cellular and Smart Phones
- Radio control systems
- Laptop, Palmtops and PDAs
- Digital Still and Video Cameras
- MP3, MP4 Player
- Battery-Powered Equipment

## Description

The MC6225K3 series are a group of positive voltage regulators manufactured by CMOS technologies with high ripple rejection, ultra-low noise, low power consumption and low dropout voltage, which can prolong battery life in portable electronics. The MC6225K3 series work with low-ESR ceramic capacitors, reducing the amount of board space necessary for power applications. The MC6225K3 series consume less than 0.1 $\mu$ A in shutdown mode and have fast turn-on time less than 50 $\mu$ S. The series are very suitable for the battery-powered equipments, such as RF applications and other systems requiring a quiet voltage source.

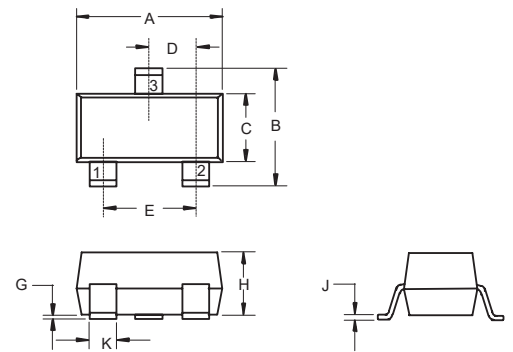
MCC Part Number	Device Marking
MC6225K3-1.2	ACdXX <sup>(1)</sup>
MC6225K3-1.8	ACjXX <sup>(1)</sup>
MC6225K3-2.5	ACqXX <sup>(1)</sup>
MC6225K3-3.3	ACyXX <sup>(1)</sup>

### Note:

1. "XX" indicate DateCode.

# Low Noise CMOS Voltage Regulators

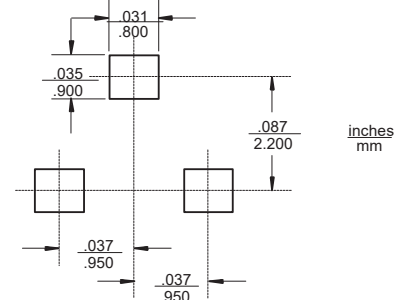
## SOT-23-3L



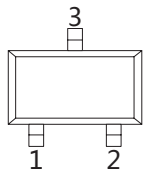
### DIMENSIONS

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

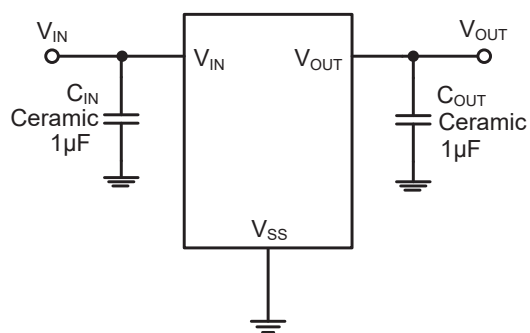


### Pin Configuration and Functions (Top View)



Number	Name	Function
1	$V_{SS}$	Ground
2	$V_{out}$	Output Pin
3	$V_{in}$	Power Input Pin

### Typical Application Circuit



### Absolute Maximum Ratings

- Operating Free Air Temperature Range: -40~+85°C
- Operating Junction Temperature Range: -40~+125°C
- Storage Temperature Range: -40~+125°C
- Thermal Resistance: 400°C/W Junction to Ambient

Parameter	Symbol	Ratings	Units
Input Voltage	$V_{IN}$	$V_{SS}-0.3 \sim V_{SS}+7$	V
Output Voltage	$V_{OUT}$	$V_{SS}-0.3 \sim V_{IN}+0.3$	V
Output Current	$I_{OUT}$	500	mA
Power Dissipation	$P_D$	0.38	W

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Output Voltage	$V_{OUT(E)}^{(2)}$	$I_{OUT}=1mA$	$V_{out} \times 0.98$	$V_{out}$	$V_{out} \times 1.02$	V
Supply Current	$I_{SS}$	$I_{OUT}=0$		50	100	$\mu A$
Standby Current	$I_{STBY}$	$CE = V_{SS}$		0.1	1	$\mu A$
Output Current	$I_{OUT}$	—	500			mA
Dropout Voltage	$V_{dif}^{(3)}$	$I_{OUT} = 100mA$ $V_{OUT} \geq 3.3V$		50		mV
Load Regulation	$\Delta V_{OUT}$	$V_{IN} = V_{OUT} + 1V$ , $1mA \leq I_{OUT} \leq 100mA$		1		mV
Line Regulation		$I_{OUT} = 10mA$ $V_{OUT} + 1V \leq V_{IN} \leq 6V$		0.01	0.2	%/V
Output Voltage Temperature Characteristics		$I_{OUT} = 10mA$ $-40 \leq T \leq +85$		50		ppm
Short Current	$I_{Short}$	$V_{OUT} = V_{SS}$		50		mA
Input Voltage	$V_{IN}$	—	1.8		6.0	V
Power Supply Rejection Rate	100Hz	PSRR	$I_{OUT}=50mA$	75		dB
	1kHz			80		
	10kHz			80		
CE "High" Voltage	$V_{CE"H"}$		1.5		$V_{IN}$	V
CE "Low" Voltage	$V_{CE"L"}$				0.3	V
$C_{OUT}$ Auto-Discharge Resistance	$R_{DISCHRG}$	$V_{IN}=5V, V_{OUT}=3.0V$ , $V_{CE}=V_{SS}$		60		$\Omega$

Note:

- $V_{OUT(E)}$  : Effective Output Voltage ( i.e. The output voltage when  $V_{IN} = (V_{OUT} + 1.0V)$  and maintain a certain  $I_{OUT}$  Value).
- $V_{dif}$  : The Difference Of Output Voltage And Input Voltage When Input Voltage Is Decreased Gradually Till Output Voltage Equals To 98% Of  $V_{OUT(E)}$ .

**Curve Characteristics**

Fig. 1 - Output Voltage vs Input Voltage

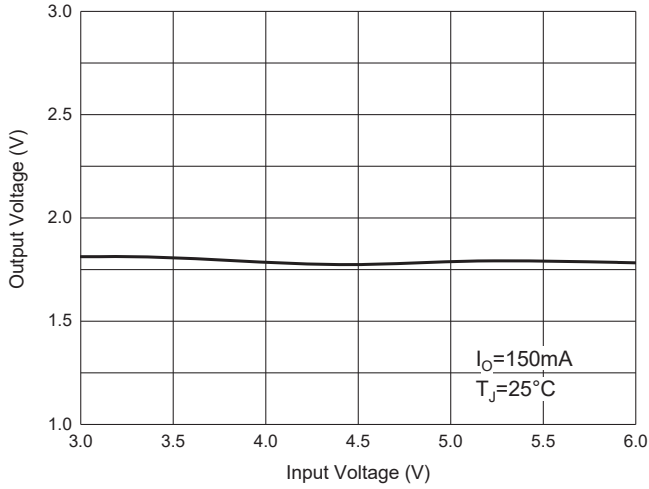


Fig. 2 - Output Voltage vs Temperature

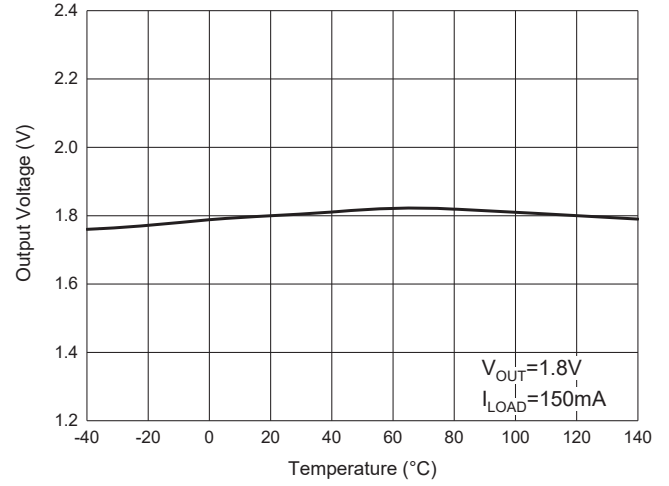


Fig. 3 - Quiescent Current

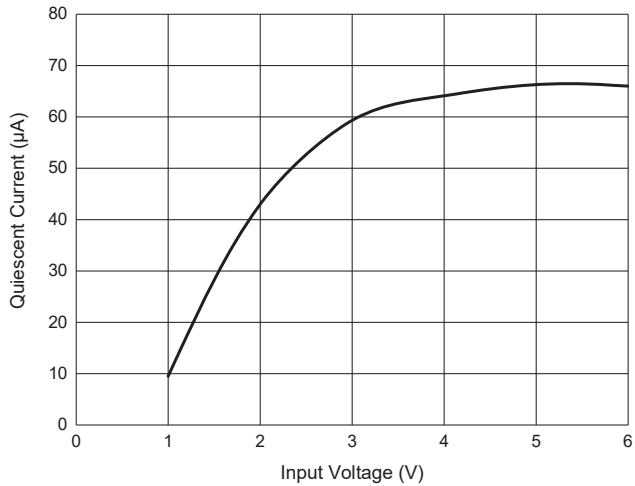


Fig. 4 - Current Cut-off Grid Voltage

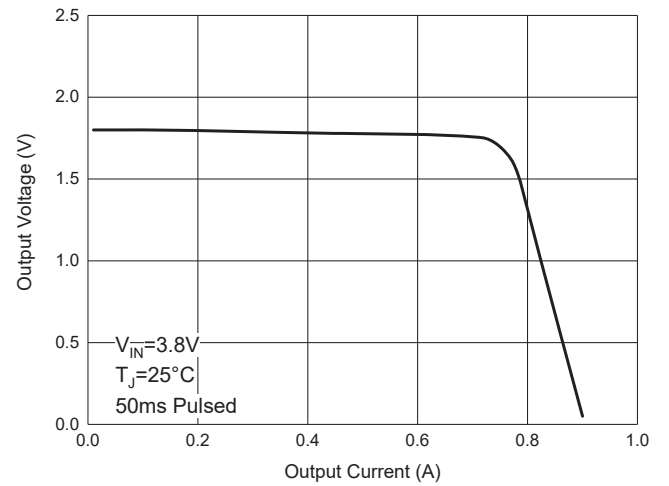
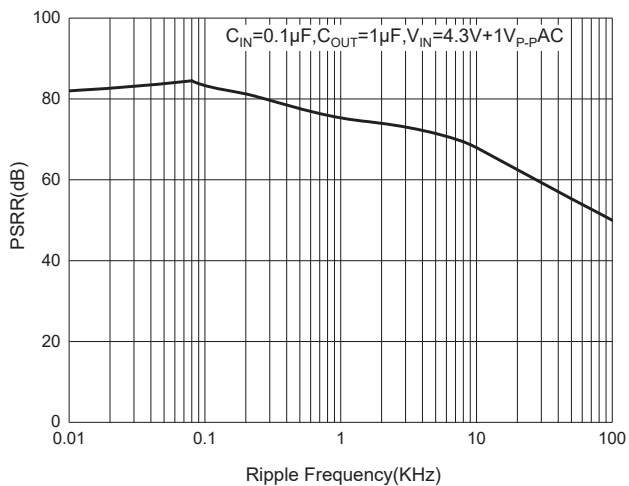


Fig. 5 - PSRR vs. Frequency



## Ordering Information

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

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