

GENERAL DESCRIPTION

The CM2862 family is a positive voltage linear regulator developed utilizing CMOS technology featured low quiescent current (30μ A typ.), low dropout voltage, and high output voltage accuracy. Built-in low on-resistance transistor provides low dropout voltage and large output current. A 2.2 μ F or greater can be used as an output capacitor.

The SOT-89 packages are attractive for "Pocket" and "Hand Held" applications.

These robust devices are designed to prevent device failure under the worst operation condition with both Thermal Shutdown and Current Fold-back.

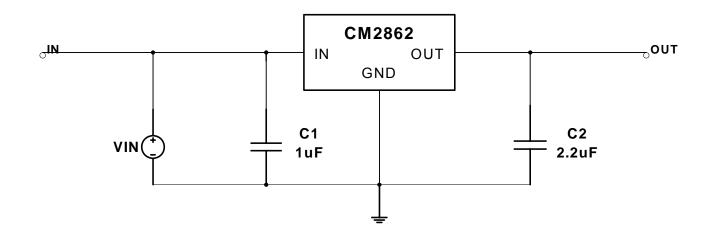
APPLICATIONS

- Battery-powered devices
- Personal communication devices
- Home electric/electronic appliances
- PC peripherals

TYPICAL APPLICATIONS

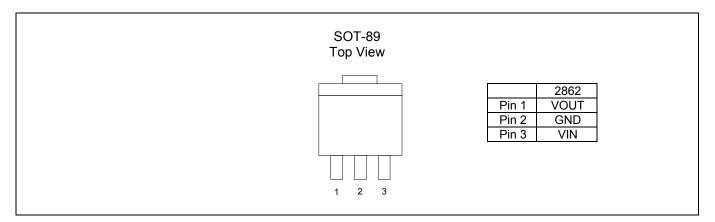
FEATURES

- Very Low Dropout Voltage
- Low Current Consumption: Typ. 30μA, Max. 35μA
- High Accuracy Output Voltage: +/- 1.5%
- Guaranteed 600mA Output
- Thermal Shutdown
- Current Limiting
- Compact Package: SOT-89
- Factory Pre-set Output Voltages
- Short Circuit Current Fold-Back
- Low Temperature Coefficient

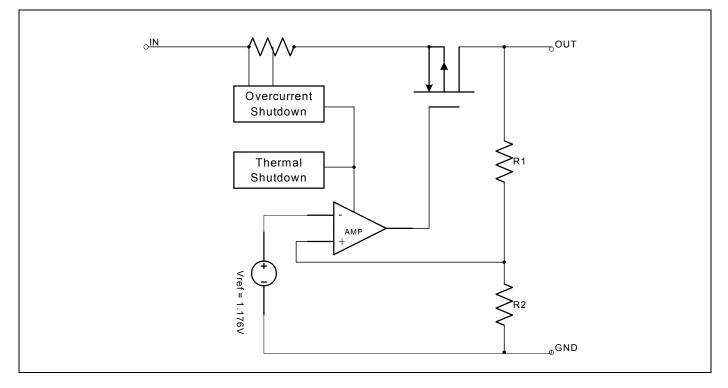




PIN CONFIGURATION



BLOCK DIAGRAM



ORDERING INFORMATION

Part Number	Output Voltage	Temperature Range	Package
CM2862KIM89	2.5V	-40° C ~ +85° C	SOT-89
CM2862SIM89	3.3V	-40° C ~ +85° C	SOT-89

Note: For other pre-set output voltage, please contact Champion Sales office.



ABSOLUTE MAXIMUM RATINGS

Input Voltage	+7V
Output Current	1A
Output Voltage \dots GND-0.3V to V _{IN} +	0.3V
ESD Classification	В

THERMAL INFORMATION

OPERATING RATINGS

Supply Voltage	. 4.5V to 5.5V
Ambient Temperature Range (T _A)4	40°C to +85°C
Junction Temperature Range40	°C to +125℃

Parameter		Maximum	Unit
Thermal Resistance (Θ_{jc})	SOT-89	100	°C/W
Thermal Resistance (Θ_{ja})	SOT-89	180	°C/W
Internal Power Dissipation (P_D) ($\Delta T = 100^{\circ}C$, No Heatsink)	SOT-89	400	mW
Maximum Junction Temperature	150	°C	
Maximum Lead Temperature (10 Sec)	300	°C	

ELECTRICAL CHARACTERISTICS

 T_{A} = +25°C; V_{IN} = $V_{\text{IN}(\text{MIN})}$ unless otherwise noted

Devementer		Test Conditions		CM2862					
Parameter	Symbol			Min.	Тур.	Max.	Unit		
Input Voltage	V _{IN}			Note 1		7	V		
Output Voltage Accuracy	V _{OUT}	I _O = 1mA		-1.5		1.5	%		
	V _{DROPOUT}	$I_0 = 600 \text{mA},$	1.5	/ <v<sub>O(NOM)<=2.0V</v<sub>			1000	mV	
Dropout Voltage			2.0	/ <v<sub>O(NOM)<=2.8V</v<sub>			800		
		$V_{OUT}=V_{O(NOM)}-1.5\%$,	2.8	V <v<sub>O(NOM)<3.8V</v<sub>			600	mV	
Output Current	Ι _ο	V _{OUT} > 1.2V		600			mA		
Current Limit	I _{LIM}	$V_{OUT} > 1.2V, V_{IN} = V_{IN(MIN)}$		600	1000		mA		
Short Circuit Current	I _{SC}	V _{OUT} < 0.8V			250		mA		
Quiescent Current	Ι _Q	I _O = 0mA			30	50	μA		
Ground Pin Current		I _O = 1mA to 600mA			30	50	μA		
Line Degulation		$_{OUT}$ =5mA, V_{IN} = V_{OUT} +1 to V_{OUT} <= 2.0V				0.15	%		
Line Regulation	REG _{LINE}	V _{OUT} +2		V _{OUT} > 2.0V		0.02	0.1	%	
Load Regulation	REGLOAD	I _o =1mA to 600mA			0.2	1	%		
Over Temperature Shutdown	OTS				150		°C		
Over Temperature Hystersis	OTH				30		°C		
V _{OUT} Temperature Coefficient	TC				30		ppm/ ℃		
Power Supply Rejection		1 100		f=1kHz		50			
	PSRR	$I_0 = 100 \text{mA}$	•	f=10kHz		20		dB	
		$C_0=2.2\mu F$ ceramic		f=100kHz		15			
		f=10Hz to 100kHz	z	C ₀ =2.2µF		30			
Output Voltage Noise	eN	I _O = 10mA, C _{VBG} =0	μF	C _o =100µF		20		μ Vrms	

Note 1. $V_{IN(MIN)} = V_{OUT} + V_{DROPOUT}$ **Note 2.** As V_{IN} is larger than $V_{IN(MIN)}$, the Current Limit and output short current Spec value will increase



DETAILED DESCRIPTION

The CM2862 family of CMOS regulators contain a PMOS pass transistor, voltage reference, error amplifier, over-current protection, thermal shutdown, and short circuit protection.

The P-channel pass transistor receives data from the error amplifier, over-current shutdown, short output protection, and thermal protection circuits. During normal operation, the error amplifier compares the output voltage to a precision reference. Over-current and Thermal shutdown circuits become active when the junction temperature exceeds 150° C, or the current exceeds 600mA. During thermal shutdown, the output voltage remains low. Normal operation is restored when the junction temperature drops below 120° C.

The CM2862 switches from voltage mode to current mode when the load exceeds the rated output current. This prevents over-stress. The CM2862 also incorporates current fold-back to reduce power dissipation when the output is short-circuited. This feature becomes active when the output drops below 0.8V, and reduces the current flow by 65%. Full current is restored when the voltage exceeds 0.8V.

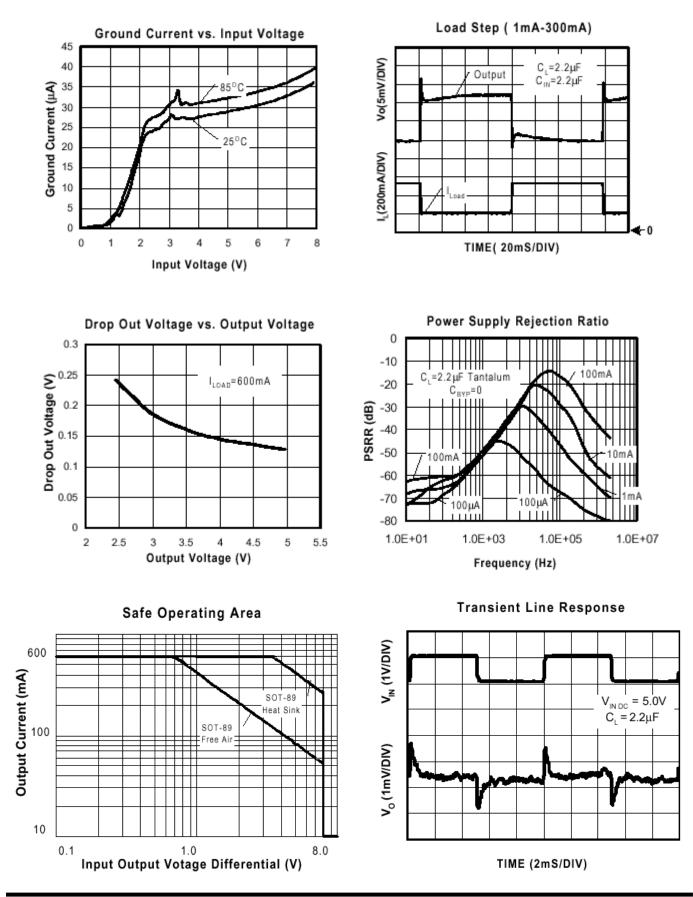
EXTERNAL CAPACITOR

The CM2862 is stable with an output capacitor to ground of 2.2μ F or greater. It can keep stable even with higher or poor ESR capacitors. A second capacitor is recommended between the input and ground to stabilize VIN. The input capacitor should be larger than 0.1μ F to have a beneficial effect. All capacitors should be placed in close proximity to the pins. A "quiet" ground termination is desirable.



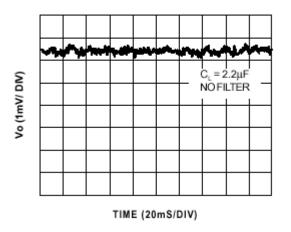


TYPICAL ELECTRICAL CHARACTERISTICS



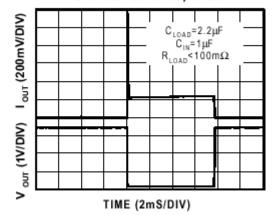


Noise Measurement



Overtemperature Shutdown

Short Circuit Response

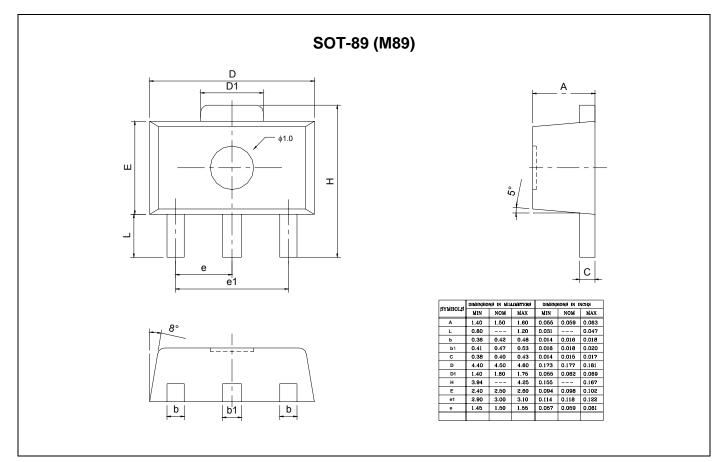


Current Limit Response





PACKAGE DIMENSION





NUMBERING SCHEME

Ordering Number: CM2862XYZ (note1)

note1:

CM2862: 600mA CMOS LDO <u>X</u> : Suffix for voltage output (note 2) <u>Y</u> : Suffix for Temperature Range (note 3) <u>Z</u> : Suffix for Package Type (note 4)

note 2: see CMOS LDO Voltage Suffix Table

note 3:

 $Y=I:-40^{\circ}C \sim +85^{\circ}C \quad (only \ I \ grade \ support \ for \ all \ CMOS \ LDOs)$

note 4:

Z is single alphabet with or without digits M89 : SOT-89 (TR only)

CMOS LDO Voltage Suffix Table

Output Voltage	Suffix	Output Voltage	Suffix
1.5V	A	3.0V	Р
1.6V	В	3.1V	Q
1.7V	С	3.2V	R
1.8V	D	3.3V	S
1.9V	E	3.4V	Т
2.0V	F	3.5V	U
2.1V	G	3.6V	V
2.2V	Н	3.7V	W
2.3V	I	3.8V	Х
2.4V	J	3.9V	Y
2.5V	K	4.0V	Z
2.6V	L		
2.7V	M		
2.8V	N		
2.9V	0		



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