

Micropower SOT-23, 120mA Low-Dropout Voltage Regulator ON/OFF Switch



CLM2805

FEATURES

- Smallest Possible Size (SOT-23-5)
- 5V, 4.8V, 4.5V, 4V, 3.5V, 3.3V, 3V, 2.5V Fixed Output
- Guaranteed Output Current in Excess of 120mA
- Available in Adjustable Output With ON/OFF Switch
- Internal Thermal Overload Protection
- Voltage Dropout is Less Than 100mV at 50mA Output
- Reverse Battery Protection
- Short Circuit Protection
- Low Cost Solution

APPLICATIONS

- Cellular Phone
- Palmtop/Laptop Computer
- Personal Digital Assistance (PDA)
- Radio Control Systems
- Camcorder, Camera
- Portable Instrumentation
- Radio Control Systems
- Cordless Telephones

DESCRIPTION

The CLM2805 is a low power voltage regulator. This product is designed for battery-powered applications such as cordless telephones, radio control systems and portable computers. The CLM2805 features very low quiescent current (0.4mA) and very low dropout put voltage (typ. 50mV at a light load of 300mV at 100mA). Other features include the logic-compatible on/off input which enables the regulator to be switched on and off. The CLM2805 is offered in an ultra small package, 5-pin SOT-23 as a fixed, adjustable with ON/OFF Switch.

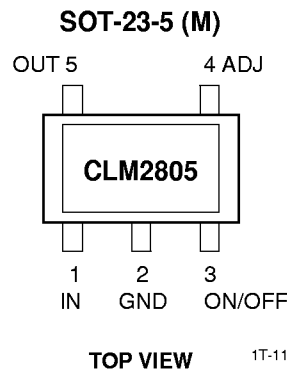
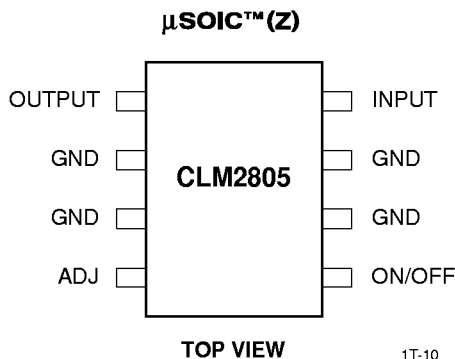
The regulator output voltage may be internally pin-strapped for a 5V, 4.8V, 4.5V, 4V, 3.5V, 3.3V, 3V, 2.5V or programmed from 3V to 24V with an external pair of resistors. For other fix voltages consult the factory.

ORDERING INFORMATION

Part	Package	Temperature Range
CLM2805A-X	SOT-23 5-Pin	-40°C to 85°C
CLM2805C-X	SOT-23 5-Pin	-40°C to 85°C
CLM2805AZ-X	μSOIC 8-Pin	-40°C to 85°C
CLM2805CZ-X	μSOIC 8-Pin	-40°C to 85°C

X = Output Voltage (for other output voltages consult with factory).
No need for adjustable output.

PIN CONNECTIONS



ABSOLUTE MAXIMUM RATINGS

Power Dissipation Internally Limited
 Lead Temp. (soldering, 5 seconds) 260°C
 Storage Temperature Range -65°C to +150°C

Operating Junction Temperature Range -40°C to +85°C
 Input Supply Voltage -3V to +26V
 ESD Rating 2KV

DC ELECTRICAL CHARACTERISTICS $V_S = 14V, T_A = 25^\circ C, I_O = 10mA, C_2 = 100\mu F$, unless otherwise specified (Note 1).

PARAMETERS	CLM2805A			CLM2805C			UNITS	CONDITIONS
	MIN	TYP	MAX	MIN	TYP	MAX		
3.0 VOLT VERSION								
CLM2805A-3			CLM2805C-3					
Output Voltage	2.94	3.00	3.06	2.91	3.00	3.09	V	6V < V _{IN} < 26V, I _O = 120mA Over Temp.
	2.88	3.00	3.12	2.85	3.00	3.15		
3.3 VOLT VERSION								
CLM2805A-3.3			CLM2805C-3.3					
Output Voltage	3.23	3.30	3.36	3.20	3.30	3.39	V	6V < V _{IN} < 26V, I _O = 120mA Over Temp.
	3.20	3.30	3.39	3.16	3.30	3.43		
5 VOLT VERSION								
CLM2805A-5			CLM2805C-5					
Output Voltage	4.81	5.00	5.19	4.75	5.00	5.25	V	6V < V _{IN} < 26V, I _O = 120mA Over Temp.
	4.75		5.25	4.5		5.5		
ALL VOLTAGE OPTIONS								
Long Term Stability		20			20		mV/1000	
Line Regulation		2.0	10		4.0	30	mV	9V < V _{IN} < 16V
		4.0	30					6V < V _{IN} < 26V
Load Regulation		14	50		14	50		5mA < I _O < 120mA
Dropout Voltage		0.05	0.2		0.05	0.2	V	I _O = 10mA
		0.07	0.1		0.07	0.1		I _O = 50mA
		0.3	0.6		0.3	0.6		I _O = 120mA
Quiescent Current		0.4	1.0		0.4	1.0	mA	I _O = 10mA, 6V < V _{IN} < 26V, -40°C < T _J < 125°C
		15			15			I _O = 120mA, V _{IN} = 14V, T _J = 25°C
Maximum Operational Input Voltage	26	33		26	33		V	
Maximum Line Transient	60	70		70	50			R _L = 500Ω, V _O < 5.5V, 100ms
Reverse Polarity Input Voltage, DC	-15	-30		-15	30			V _O > -3V, R _L = 500Ω
Reverse Polarity Input Voltage, Transient	-50	-80		-50	-80			1% Duty Cycle, τ < 100ms, R _L = 500Ω
Output Noise Voltage		500			500		μVrms	10Hz-100kHz, C _{OUT} = 100μF
Ripple Rejection		80			80		dB	f _o = 12Hz

ADJUSTABLE $V_{IN} = 14V$, $V_O = 3V$, $I_O = 10mA$, $R_1 = 27k$, $C_2 = 100\mu F$, $T_J = 25^\circ C$

PARAMETERS	CLM2805A/C			UNITS	CONDITIONS
	MIN	TYP	MAX		
Reference Voltage	1.14	1.20	1.26	V	$I_O \leq 120mA$, over Tem. $R_1 = 27k$
	1.08		1.32		

ADJUSTABLE VERSION ONLY $V_{IN} = 14V$, $V_O = 3V$, $I_O = 10mA$, $R_1 = 27k$, $C_2 = 100\mu F$, $T_J = 25^\circ C$

PARAMETERS	CLM2805C			UNITS	CONDITIONS
	MIN	TYP	MAX		
Output Voltage Range	3.0		24	V	
Line Regulation		0.2	1.5	mV	$V_{OUT} + 0.6V < V_{IN} < 26V$
Load Regulation		0.3	1.0	% max	$5mA < I_O < 100mA$
Output Impedance		40		$m\Omega/V$	100mA DC and 10mA rms, 100Hz - 10kHz
Quiescent Current		0.4	1.0	mA	$I_O = 10mA$
		15			$I_O = 120mA$
		0.8	1.0		During Shutdown $R_L = 500\Omega$
Output Noise Voltage		100		$\mu V_{rms}/V$	10Hz - 100kHz
Long Term Stability		0.4		%/1000h	
Ripple Rejection		0.02		%/V	$f_O = 120Hz$
Dropout Voltage		0.05	0.2	V	$I_O = 10mA$
		0.3	0.6		$I_O = 120mA$
Maximum Operational Input Voltage	26	33			
Maximum Line Transient	60	70			$I_O = 10mA$, Reference Voltage $< 1.5V$
Reverse Polarity Input Voltage, DC	-15	-30			$V_O > 0.3V$, $R_L = 500\Omega$
Reverse Polarity Input Voltage, Transient	-50	-80			1% Duty Cycle, $T < 100ms$, $R_L = 500\Omega$
On/Off Threshold Current		20	50	μA	
Threshold Voltage On		2.0	1.2	V	$V_O = 3V$
Threshold Voltage Off	3.25	2.2			

Notes:

1. See TYPICAL APPLICATIONS notes to ensure constant junction temperature, low duty cycle pulse testing used.
2. All limits are at $125^\circ C$ or over the full operating temperature junction range of $-40^\circ C$ to $+125^\circ C$.
3. The maximum power dissipation is a function of maximum junction temperature, total thermal resistance and ambient temperature.
4. Human body model, $100\mu F$ discharged through $1.5k\Omega$.