

1.5A LOW DROPOUT VOLTAGE REGULATOR (Adjustable & Fixed) LM1086

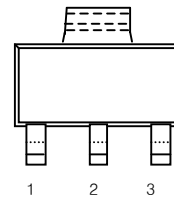
FEATURES

- Low Dropout Voltage 500mV at 1.5A Output Current
- Fast Transient Response
- 0.015% Line Regulation
- 0.1% Load Regulation
- Internal Thermal and Current Limiting
- Adjustable or Fixed Output Voltage(1.5, 2.5, 2.85, 3.0, 3.3, 5.0V)
- Surface Mount Package SOT-223 & TO-263 (D2 Package)
- 100% Thermal Limit Burn-in

APPLICATIONS

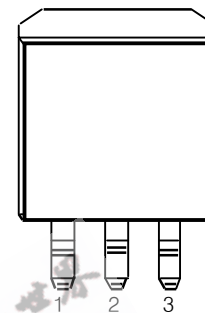
- Battery Charger
- Adjustable Power Supplies
- Constant Current Regulators
- Portable Instrumentation
- High Efficiency Linear Power Supplies
- High Efficiency "Green" Computer Systems
- SMPS Post-Regulator
- Power PC Supplies
- Powering VGA & Sound Card

SOT-223 PKG (FRONT VIEW)



PIN FUNCTION
1. Adj/Gnd
2. Vout
3. Vin

TO-263 (D2 PKG, FRONT VIEW)



PIN FUNCTION
1. Adj/Gnd
2. Vout
3. Vin

ORDERING INFORMATION

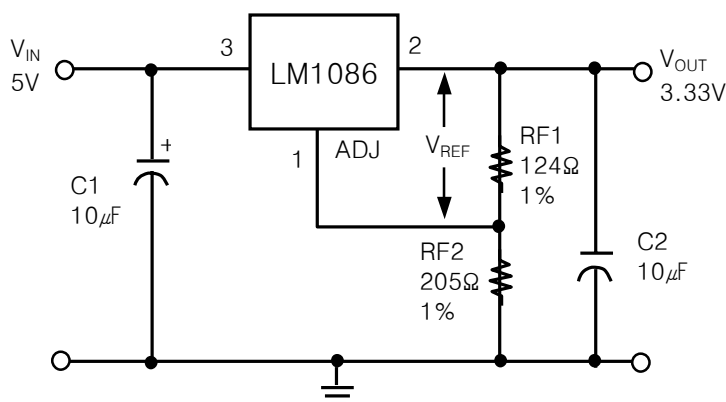
Device & Marking	Package
LM1086S-XX	SOT 223
LM1086T-XX	TO263 (D2)

(XX=Vout=1.5V, 2.5V, 2.85V, 3.0V, 3.3V, 5.0V
Adjustable= AD)

DESCRIPTION

The LM1086 is a low dropout three terminal regulator with 1.5A output current capability. The output voltage is adjustable with the use of a resistor divider. Dropout is guaranteed at a maximum of 500 mV at maximum output current. It's low dropout voltage and fast transient response make it ideal for low voltage microprocessor applications. Internal current and thermal limiting provides protection against any overload condition that would create excessive junction temperature.

TEST & TYPICAL APPLICATION CIRCUIT



Adjustable Voltage Regulator

$$V_{REF} = V_{OUT} - V_{ADJ} = 1.25V(\text{Typ.})$$
$$V_{OUT} = V_{REF} \times (1 + RF2/RF1) + I_{ADJ} \times RF2$$
$$I_{ADJ} = 55\mu A(\text{Typ.})$$

(1) C1 Needed if device is far away from filter capacitors.

(2) C2 Required for stability

ABSOLUTE MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	VALUE	UNIT
Supply Voltage	V_{in}	7	V
Operating Junction Temperature Range	T_{opr}	0~125	°C
Storage Temperature Range	T_{stg}	-65~150	°C
Thermal Resistance Junction to Case TO-263	T_{jc}	3	C/W
Thermal Resistance Junction to Ambient TO-263	T_{ja}	60	C/W
Lead Temperature (Soldering) 10 sec.	T_{sol}	300	°C
Maximum Output Current	I_{max}	1.5	A

ELECTRICAL CHARACTERISTICS $I_{OUT}=100mA$, $T_A=25^\circ C$, unless otherwise specified

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
1.5V Version					
Output Voltage	$0 < I_{OUT} < 1.5A$, $2.75V < V_{IN} < 7V$	1.485	1.5	1.515	V
2.5V Version					
Output Voltage	$0 < I_{OUT} < 1.5A$, $3.5V < V_{IN} < 7V$	2.475	2.5	2.525	V
2.85V Version					
Output Voltage	$0 < I_{OUT} < 1.5A$, $4.35V < V_{IN} < 7V$	2.822	2.85	2.879	V
3.0V Version					
Output Voltage	$0 < I_{OUT} < 1.5A$, $4.5V < V_{IN} < 7V$	2.97	3	3.03	V
3.3V Version					
Output Voltage	$0 < I_{OUT} < 1.5A$, $4.75V < V_{IN} < 7V$	3.27	3.3	3.33	V
5.0V Version					
Output Voltage	$0 \leq I_{OUT} \leq 1.5A$, $5.5V \leq V_{IN} < 7V$	4.95	5	5.05	V
All Voltage Options					
Reference Voltage (V_{REF})	$V_{IN} \leq 7V, P \leq P_{MAX}$	1.225	1.25	1.27	V
	$1.5V \leq (V_{IN} - V_{OUT}) \leq 5.75V$, $10mA \leq I_{OUT} \leq 1.5A$	1.225	1.25	1.27	
Min. Load Current(Note 3)	$1.5V \leq (V_{IN} - V_{OUT}) \leq 5.75V$		5	10	mA
Line Regulation ($\Delta V_{REF}(V_{IN})$)	$2.75V \leq V_{IN} \leq 7V$, $I_{OUT}=10mA$, $T_J=25^\circ C$		0.005	0.2	%
Load Regulation ($\Delta V_{REF}(V_{OUT})$)	$10mA \leq I_{OUT} \leq 1.5A$, $(V_{IN} - V_{OUT})=3V$, $T_J=25^\circ C$		0.05	0.3	%
Dropout Voltage	$\Delta V_{REF}=1\%$, $I_{OUT}=1.5A$		1.1	1.2	V
Current Limit $I_{OUT}(MAX)$	$V_{IN} - V_{OUT}=3V$	1.7	2.5		A
	$1.4V \leq (V_{IN} - V_{OUT})$ Adjustable Only				
Long Term Stability	$T_A=125^\circ C$, 1000Hrs		0.3	1	%
Thermal Regulation ($\Delta V_{OUT}(Pwr)$)	$T_A=25^\circ C$, 30ms pulse		0.01	0.02	%/W
Output Noise, RMS	10Hz to 10KHz $T_A=25^\circ C$	0.003			%/V _O
Thermal Resistance	Junction to Tab			3	°C/W
	Junction to Ambient			60	