
High Accuracy 30mA CMOS LDO

In SOT-23 Package

General Description

The EMP8738 features low output voltage noise, low dropout voltage, low quiescent current and fast transient response. It guarantees delivery of 30mA output current and supports preset output voltages ranging from 0.8V to 4.5V with 0.05V increment.

Based on its low quiescent current consumption, the EMP8738 is ideal for battery-powered applications. The high power supply rejection ratio of the EMP8738 holds well for low input voltages typically encountered in battery-operated systems. The regulator is stable with small ceramic capacitive loads (1 μ F typical). The EMP8738 is available in miniature 3-pin SOT-23-3 package.

EMP products are Halogen free and RoHS compliant.

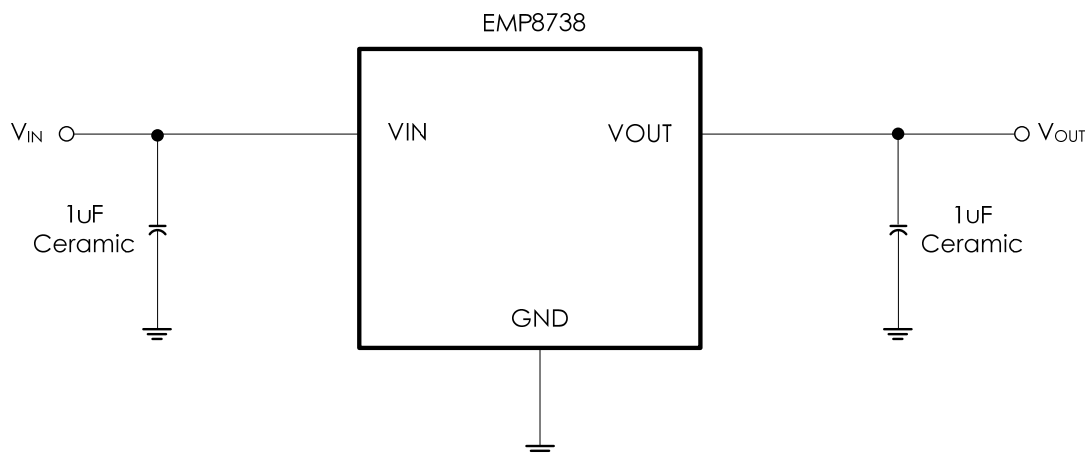
Features

- 30mA guaranteed output current
- 170 μ V RMS output voltage noise (10Hz to 100kHz)
- 31mV typical dropout at 30mA
- 61 μ A typical quiescent current
- Fast line and load transient response
- 4.75V to 5.25V input range
- Stable with small ceramic output capacitors
- Over temperature and over current protection
- \pm 35mV output voltage tolerance

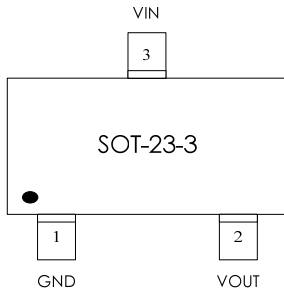
Applications

- Keep-Alive Supply
- Battery-powered systems
- Portable information appliances

Typical Application



CONNECTION DIAGRAM SOT-23-3 (TOP View)



ORDER INFORMATION

EMP8738-XXVB03NRR

XX Output Voltage

VB03 SOT-23-3 Package

NRR RoHS & Halogen free package

Rating: -40 to 85°C

Package in Tape & Reel

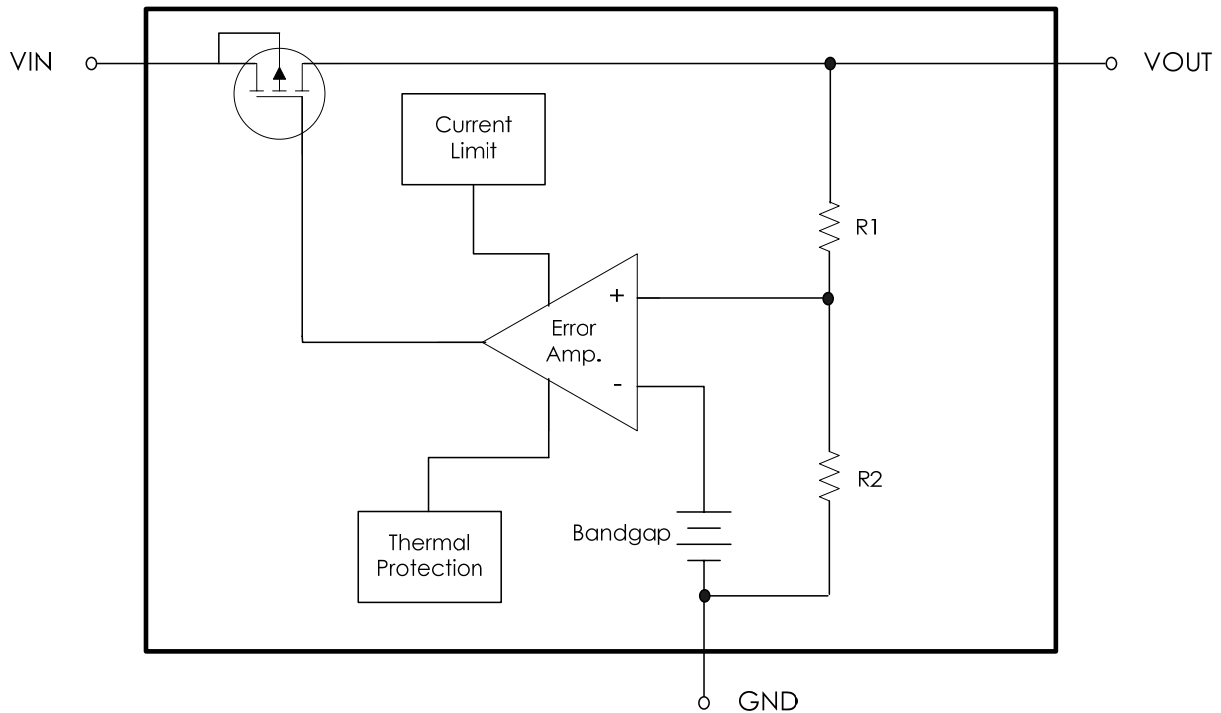
Pin Functions

Name	No.	Function
GND	1	Ground Pin.
VOUT	2	Output Voltage Feedback.
VIN	3	Supply Voltage Input. Require a minimum input capacitor of close to 1 μ F to ensure stability and sufficient decoupling from the ground pin.

Order, Mark & Packing Information

VOUT	Marking	Product ID	Packing
4.5V		EMP8738-45VB03NRR	3K units Tape & Reel

Functional Block Diagram



Absolute Maximum Ratings (Notes 1, 2)

V _{IN} , V _{OUT}	-0.3V to 6V	Thermal Resistance (θ _{JA})	
Storage Temperature Range	-65°C to 160°C	3-pin SOT-23-3	250°C/W
Junction Temperature (T _J)	150°C		
Lead Temperature (10 sec.)	240°C	Operating Ratings (Note 1, 2)	
ESD Rating		Temperature Range	-40°C to 85°C
Human Body Model	2kV	Supply Voltage	4.75V to 5.25V
MM	200V		

Electrical Characteristics

Unless otherwise specified, all limits guaranteed for C_{IN} = C_{OUT} = 2.2μF, T_A = 25°C.

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V _{IN}	Input Voltage		4.75		5.25	V
V _{OUT}	Output Voltage			4.5		V
ΔV _{OTL}	Output Voltage Tolerance	I _{OUT} = 30mA	-35		+35	mV
I _{OUT}	Maximum Output Current	Average DC Current Rating	30			mA
I _{LIMIT}	Output Current Limit		300	450		mA
I _Q	Supply Current	I _{OUT} = 0mA		61		μA
		I _{OUT} = 30mA		64		
V _{DO}	Dropout Voltage (Note3)	I _{OUT} = 30mA		31		mV
e _n	Output Voltage Noise	V _{OUT} =4.5V, I _{OUT} = 30mA, 10Hz ≤ f ≤ 100kHz		170		μV _{RMS}
T _{SD}	Thermal Shutdown Temperature			165		°C
	Thermal Shutdown Hysteresis			35		

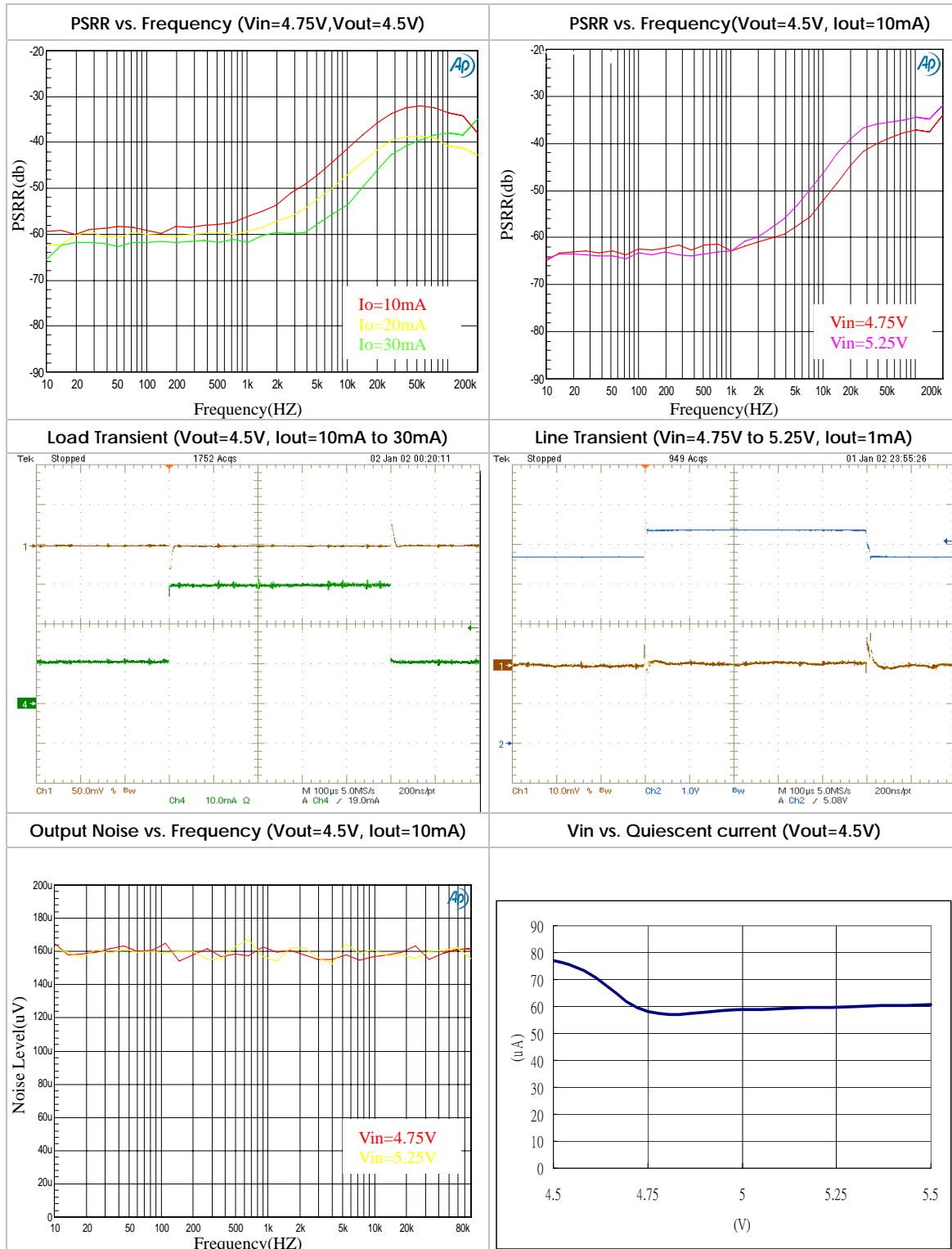
Note 1: Absolute Maximum ratings indicate limits beyond which damage may occur. Electrical specifications do not apply when operating the device outside of its rated operating conditions.

Note 2: All voltages are with respect to the potential at the ground pin.

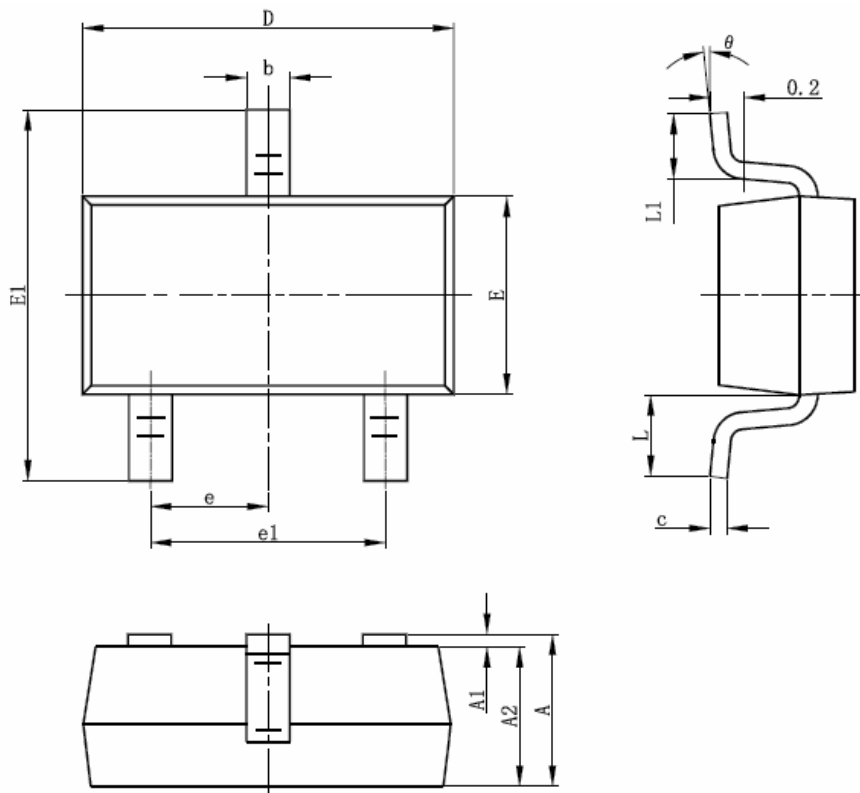
Note 3: Dropout voltage is measured by reducing V_{IN} until V_{OUT} drops 100mV from its nominal value at V_{IN} - V_{OUT} = 1V.

Typical Performance Characteristics

Unless otherwise specified, $C_{IN} = C_{OUT} = 1.0\mu F$, $T_A = 25^\circ C$.



Package Outline Drawing SOT-23-3



Symbol	Dimensions Millimeters		Dimensions Inches	
	Min	Max	Min	Max
A	1.000	1.400	0.039	0.055
A1	0.000	0.150	0.000	0.006
A2	0.900	1.250	0.035	0.049
b	0.250	0.500	0.010	0.020
c	0.080	0.220	0.003	0.009
D	2.750	3.050	0.108	0.120
E	1.500	1.700	0.059	0.067
E1	2.600	3.000	0.102	0.118
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.700REF		0.028REF	
L1	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

Revision History

Revision	Date	Description
1.0	2011.08.29	Original

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