Dual Low Noise LDO in 3mm×3mm MLF™

FEATURES

- 300mA+300mA dual channel high accuracy LDO
- Ultra low output noise: 140μV_{RMS}
- Low ground current: 200μA
- Very low dropout: 150mV @300mA
- Zero shutdown supply current
- TTL-logic-controlled independent enable input
- Thermal and current limit protections
- Ultra low droop load transient response
- Ultra fast line transient response
- Tiny 10 pin 3mm x 3mm MLF (10L- TDLMF) package
- Fixed options 1.5V, 1.8V, 2.5V, 2.8V, 3.0V & 3.3V

APPLICATIONS

- Dual supply handheld products
- Cellular and cordless phones
- Wireless LAN cards
- Digital camera
- MP3 / MP4 / CD player
- Pen drives
- USB Hubs and USB 2.0
- Mini PCI & PCI express cards

DESCRIPTION

The PIC6211 is a dual CMOS low dropout linear regulator with ultra-low-noise output, very low dropout voltage and very low ground current.

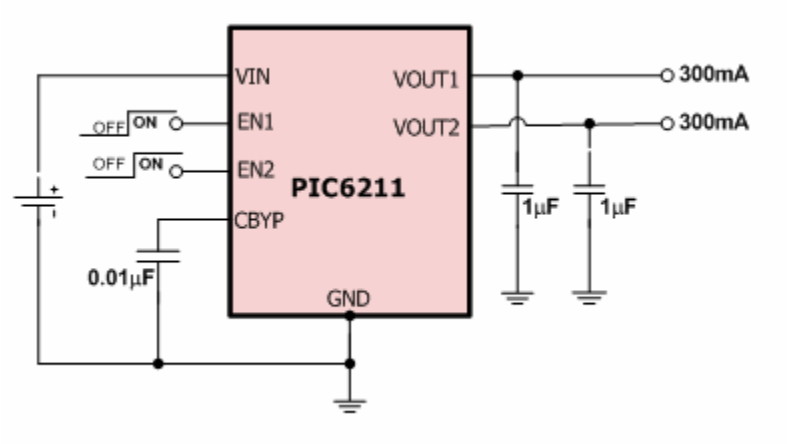
The PIC6211 operates from a 2.5V to 5.5V input voltage range and delivers up to 300mA, with low dropout of 150 mV at 300mA. The other features of PIC6211 include short-circuit protection and thermal-shutdown protection.

Its dual channel and low noise feature is ideal for microcontroller and DSP based handheld applications. Other key application areas for PIC6211 also include palmtop computers, PCMCIA cards and WLAN cards.

The PIC6211 has a special feature that if both EN pin is enabled simultaneously the output of LDO2 delays 20μs from output of LDO1 which helps to minimize inrush startup current.

The PIC6211 is available in tiny 10pin 3mm x 3mm MLF (10L-TDLMF) package with fixed output voltage versions.

TYPICAL APPLICATION CIRCUIT



ELECTRICAL CHARACTERSTICS

(V_{IN} = V_{OUT} +1.0V for higher output of the regulator pair; C_{OUT} = 1.0µF, I_{OUT} = 100µA, T_A=25°C, **bold** values indicate –40°C ≤ T_J ≤ +125°C, unless otherwise noted.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_{IN}	Supply voltage		2.5		5.5	V
ΔV_{OUT}	Output voltage accuracy	I_O = 1mA (both regulator)	-1.0 **-2.0**		1.0 **2.0**	%
ΔV_{LOAD}	Load regulation	I_O=1mA to 300mA (both regulator)			0.6	%
ΔV_{LINE}	Line regulation (Note 1) dV_{OUT}/ (dV_{IN}*$V_{OUT(NOMINAL)}$)*100%	V_{IN} =$V_{OUT(NOMINAL)}$ + 1V to 5.5V		0.02	0.025 **0.04**	%/V
V_{DP}	Dropout voltage (Note 2)	I_{LOAD} = 300mA (both regulator)		175	220 **250**	mV
		I_{LOAD} = 150mA (both regulator)		90	105 **125**	mV
I_O	Maximum output current	Continuous (both regulator)	300			mA_{RMS}
I_{LIM}	Current limit/output Current	V_{OUT} = 0V (regulator 1)	465	560	780	mA
		V_{OUT} = 0V (regulator 2)	465	560	780	
I_G	Ground pin current	I_{LOAD1} = I_{LOAD2} = 0mA		205	275 **300**	µA
		I_{LOAD1} = I_{LOAD2} = 300mA		210		µA
PSRR	Ripple rejection	f = 1kHz, C_{OUT}= 1µF, C_{BYP}=10nF		62		dB
		f = 20KHz, C_{OUT}= 1µF, C_{BYP}=10nF		60		dB
	Output voltage noise	C_{OUT} = 1µF, C_{BYP} = 10nF, F = 10Hz to 100K Hz (Vp-p/2/√2)		115		μV_{RMS}
	Ground pin current in shutdown	VEN ≤ 0.4V			1	µA
	Output voltage temperature coefficient			60		ppm/°C
V_{IH}	Logic input high voltage (EN)	(both regulator)	1.2			V
V_{IL}	Logic input low voltage (EN)	(both regulator)			0.4	V
I_{EN}	Logic input current (SHDN/EN)	(both regulator)	-1	0.01	1	µA

Note 1: Minimum input for line regulation test is set to VOUT + 1V relative to the highest output voltage.
Note 2: Dropout voltage is defined as the input-to-output differential at which the output voltage drops 2% below its nominal value measured at 1V differential. For outputs below 2.25V, dropout voltage is the input-to-output voltage differential with the minimum input voltage 2.25V. Minimum input operating voltage is 2.25V.