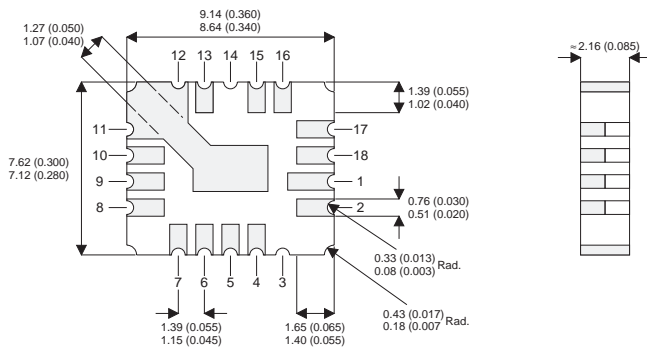


## 0.5 AMP NEGATIVE ADJUSTABLE VOLTAGE REGULATOR IN CERAMIC SURFACE MOUNT PACKAGE



### FEATURES

- -1.2V TO 47V OUTPUT VOLTAGE RANGE
- 0.5A OUTPUT CURRENT
- 1% OUTPUT VOLTAGE TOLERANCE
- 0.5% / A LOAD REGULATION
- 0.01% / V LINE REGULATION
- 0.02% / W THERMAL REGULATION
- INTERNAL PROTECTION

Pins 4,5                               – Adjust  
Pins 6,7,8,9,10,11,12,13       –  $V_{OUT}$   
Pins 15,16,17,18,1,2           –  $V_{IN}$

Internal current and power limiting coupled with true thermal limiting prevents device damage due to overloads or shorts, even if the regulator is not fastened to a heat sink.

### ABSOLUTE MAXIMUM RATINGS ( $T_{case} = 25^{\circ}C$ unless otherwise stated)

$V_{I-O}$	Input - Output Differential Voltage	– Standard	40V
		– HV Series	50V
$I_O$	Output Current		Internally limited
$P_D$	Power Dissipation		Internally limited
$T_J$	Operating Junction Temperature Range		-55 to +150°C
$T_{STG}$	Storage Temperature		-65 to 150°C

Parameter	Test Conditions	IP137MAHV IP137MA			IP137MHV , IP137M			Units	
		Min.	Typ.	Max.	Min.	Typ.	Max.		
V <sub>REF</sub> Reference Voltage	I <sub>OUT</sub> = 10mA	-1.238	-1.25	-1.262	-1.225	-1.25	-1.275	V	
	I <sub>OUT</sub> = 10mA to I <sub>MAX</sub> V <sub>IN</sub> - V <sub>OUT</sub> = 3V to V <sub>MAX</sub> P ≤ P <sub>MAX</sub> T <sub>J</sub> = -55 to 150°C	-1.220	-1.25	-1.280	-1.200	-1.25	-1.300	V	
$\frac{\Delta V_{OUT}}{\Delta V_{IN}}$ Line Regulation 1	V <sub>IN</sub> - V <sub>OUT</sub> = 3V to V <sub>MAX</sub> T <sub>J</sub> = -55 to 150°C	0.005	0.010		0.010	0.020		%V	
		0.010	0.030		0.020	0.050			
$\frac{\Delta V_{OUT}}{\Delta I_{OUT}}$ Load Regulation 1	I <sub>OUT</sub> = 10mA to I <sub>MAX</sub>	V <sub>OUT</sub> ≤ 5V	5	25	15	25		mV	
		V <sub>OUT</sub> ≥ 5V	0.1	0.5	0.3	0.5		%	
	I <sub>OUT</sub> = 10mA to I <sub>MAX</sub> T <sub>J</sub> = -55 to 150°C	V <sub>OUT</sub> ≤ 5V	10	50	20	50		mV	
		V <sub>OUT</sub> ≥ 5V	0.2	1	0.3	1		%	
Thermal Regulation	t <sub>p</sub> = 10ms T <sub>A</sub> = 25°C	0.002	0.020		0.002	0.02		%/W	
Ripple Rejection	V <sub>OUT</sub> = -10V f = 120Hz	C <sub>ADJ</sub> = 0	60	66		60		dB	
		C <sub>ADJ</sub> = 10μF T <sub>J</sub> = -55 to 150°C	70	80		66	77		dB
I <sub>ADJ</sub> Adjust Pin Current	T <sub>J</sub> = -55 to 150°C	65	100		65	100		μA	
ΔI <sub>ADJ</sub> Adjust Pin Current Change	T <sub>J</sub> = -55 to +150°C	I <sub>OUT</sub> = 10mA to I <sub>MAX</sub>	0.2	2		0.5	5	μA	
		V <sub>IN</sub> - V <sub>OUT</sub> = 3V to 40V	1.0	5		2	5		
		V <sub>IN</sub> - V <sub>OUT</sub> = 3V to 50V <b>(HV SERIES)</b>	2.0	6		3	6		
I <sub>MIN</sub> Minimum Load Current	T <sub>J</sub> = -55 to 150°C	V <sub>IN</sub> - V <sub>OUT</sub> ≤ 40V	2.5	5		2.5	5	mA	
		V <sub>IN</sub> - V <sub>OUT</sub> ≤ 10V	1.2	3		1.2	3		
I <sub>CL</sub> Current Limit	T <sub>J</sub> = -55 to 150°C	V <sub>IN</sub> - V <sub>OUT</sub> ≤ 15V	0.50	0.80	1.5	0.50	0.80	1.5	A
		V <sub>IN</sub> - V <sub>OUT</sub> = 40V	0.15	0.17		0.15	0.17		
		V <sub>IN</sub> - V <sub>OUT</sub> = 50V <b>(HV SERIES)</b>	0.10	0.17	0.5	0.10	0.17	0.5	
$\frac{\Delta V_{OUT}}{\Delta TEMP}$ Temperature Stability	T <sub>J</sub> = -55 to 150°C	0.6	1.5		0.6			%	
$\frac{\Delta V_{OUT}}{\Delta TIME}$ Long Term Stability	T <sub>A</sub> = +125°C t = 1000 Hrs	0.3	1		0.3	1		%	
e <sub>n</sub> RMS Output Noise (% of V <sub>OUT</sub> )	f = 10 Hz to 10 kHz T <sub>A</sub> = 25°C	0.003			0.003			%	
R <sub>θJC</sub> Thermal Resistance Junction to Case	LCC4 Package			13			13	°C/W	

1) Regulation is measured at constant junction temperature, using pulse testing at a low duty cycle. Changes in output voltage due to heating effects are covered under thermal regulation specifications.

2) Test Conditions unless otherwise stated: V<sub>IN</sub> - V<sub>OUT</sub> = 5V, I<sub>OUT</sub> = 0.1A, P<sub>MAX</sub> = 10W, I<sub>MAX</sub> = 0.5A  
V<sub>MAX</sub> = 40V for standard series, 50V for HV series.