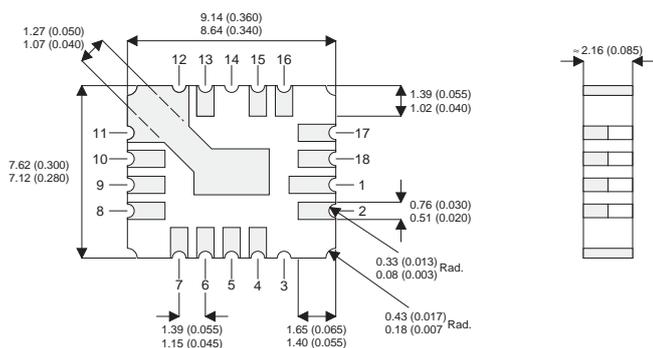


**MECHANICAL DATA**

Dimensions in mm (inches)

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



**LCC4 CERAMIC SURFACE MOUNT**

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

**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

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

Semelab Plc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

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.