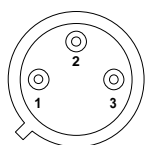


0.5 AMP NEGATIVE ADJUSTABLE VOLTAGE REGULATOR



Pin 1 – ADJ.
 Pin 2 – V_{OUT}
 Pin 3 – V_{IN}

H Package – TO-39

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
T_J	Lead temperature		300°C

Parameter	Test Conditions	IP137MAHV IP137MA			IP137MHV , IP137M LM137HV , LM137			Units	
		Min.	Typ.	Max.	Min.	Typ.	Max.		
V _{REF} Reference Voltage	I _{OUT} = 10mA	-1.238	-1.25	-1.262	-1.225	-1.25	-1.275	V	
	I _{OUT} = 10mA to I _{MAX} V _{IN} - V _{OUT} = 3V to V _{MAX} P ≤ P _{MAX} T _J = -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 _{IN} - V _{OUT} = 3V to V _{MAX} T _J = -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 _{OUT} = 10mA to I _{MAX} V _{OUT} ≤ 5V	5	25		15	25		mV	
		0.1	0.5		0.3	0.5		%	
	I _{OUT} = 10mA to I _{MAX} T _J = -55 to 150°C	V _{OUT} ≤ 5V	10	50		20	50		mV
		V _{OUT} ≥ 5V	0.2	1		0.3	1		%
Thermal Regulation	t _p = 10ms T _A = 25°C		0.002	0.020		0.002	0.02	%/W	
Ripple Rejection	V _{OUT} = -10V f = 120Hz	C _{ADJ} = 0	60	66		60		dB	
		C _{ADJ} = 10μF T _J = -55 to 150°C	70	80		66	77		dB
I _{ADJ} Adjust Pin Current	T _J = -55 to 150°C		65	100		65	100	μA	
ΔI _{ADJ} Adjust Pin Current Change	T _J = -55 to +150°C	I _{OUT} = 10mA to I _{MAX}	0.2	2		0.5	5	μA	
		V _{IN} - V _{OUT} = 3V to 40V	1.0	5		2	5		
		V _{IN} - V _{OUT} = 3V to 50V (HV SERIES)	2.0	6		3	6		
I _{MIN} Minimum Load Current	T _J = -55 to 150°C	V _{IN} - V _{OUT} ≤ 40V	2.5	5		2.5	5	mA	
		V _{IN} - V _{OUT} ≤ 10V	1.2	3		1.2	3		
I _{CL} Current Limit	T _J = -55 to 150°C	V _{IN} - V _{OUT} ≤ 15V	0.50	0.80	1.5	0.50	0.80	1.5	A
		V _{IN} - V _{OUT} = 40V	0.15	0.17		0.15	0.17		
		V _{IN} - V _{OUT} = 50V (HV SERIES)	0.10	0.17	0.5	0.10	0.17	0.5	
$\frac{\Delta V_{OUT}}{\Delta TEMP}$ Temperature Stability	T _J = -55 to 150°C		0.6	1.5		0.6		%	
$\frac{\Delta V_{OUT}}{\Delta TIME}$ Long Term Stability	T _A = +125°C t = 1000 Hrs		0.3	1		0.3	1	%	
e _n RMS Output Noise (% of V _{OUT})	f = 10 Hz to 10 kHz T _A = 25°C		0.003			0.003		%	
R _{θJC} Thermal Resistance Junction to Case	H Package		12	15		12	15	°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. Load regulation is measured at a point 1/8" from the bottom of the package for the TO-3 and TO-66 packages, at the junction of the wide and narrow portion of the output lead for the SMD1 package, and 1/8" below the base of the package on the output pin of the TO-257 package.

2) Test Conditions unless otherwise stated: V_{IN} - V_{OUT} = 5V, I_{OUT} = 0.1A, P_{MAX} = 2W, I_{MAX} = 0.5A
V_{MAX} = 40V for standard series, 50V for HV series.