IP117, IP117A
IP317, IP317A
LM117, LM117A

Parameter		Test Conditions		IP117A , IP117AHV LM117A , LM117AHV			IP117 , IP117HV LM117 , LM117HV			Units
				Min.	Typ.	Max.	Min.	Typ.	Max.	
V_{REF}	Reference Voltage	I_{OUT} = 10mA		1.238	1.25	1.262				V
		I_{OUT} = 10mA to I_{MAX} $V_{IN} - V_{OUT}$ = 3V to V_{MAX} $P \le P_{MAX}$ T_J = –55 to +150°C		1.225	1.250	1.270	1.200	1.250	1.300	V
$\frac{\Delta V_{OUT}}{\Delta V_{IN}}$	Line Regulation [1]	$V_{IN} - V_{OUT}$ = 3V to V_{MAX}			0.005	0.010		0.010	0.020	% / V
			T_J = –55 to +150°C		0.010	0.020		0.020	0.050	
$\frac{\Delta V_{OUT}}{\Delta I_{OUT}}$	Load Regulation [1]	I_{OUT} = 10mA to I_{MAX}	$V_{OUT} \le 5V$		5	15		5	15	mV
			$V_{OUT} \ge 5V$		0.1	0.3		0.1	0.3	%
		I_{OUT} = 10mA to I_{MAX} T_J = –55 to +150°C	$V_{OUT} \le 5V$		15	50		20	50	mV
			$V_{OUT} \ge 5V$		0.3	1		0.3	1	%
	Thermal Regulation	t_p = 20ms			0.002	0.020		0.030	0.070	%/W
	Ripple Rejection	V_{OUT} = 10V f = 120Hz	C_{ADJ} = 0		65			65		dB
			C_{ADJ} = 10µF T_J = –55 to +150°C	66	80		66	80		dB
I_{ADJ}	Adjust Pin Current	T_J = –55 to +150°C			50	100		50	100	µA
ΔI_{ADJ}	Adjust Pin Current Change	I_{OUT} = 10mA to I_{MAX} T_J = –55 to +150°C $V_{IN} - V_{OUT}$ = 2.5V to V_{MAX}			0.2	5		0.2	5	µA
I_{MIN}	Minimum Load Current	$V_{IN} - V_{OUT}$ = 40V T_J = –55 to +150°C			3.5	5		3.5	5	mA
		$V_{IN} - V_{OUT}$ = 60V **(HV SERIES)** T_J = –55 to +150°C			3.5	7		3.5	7	
I_{CL}	Current Limit	$V_{IN} - V_{OUT} \le 15V$ T_J = –55 to +150°C		1.5	2.2		1.5	2.2		A
		$V_{IN} - V_{OUT}$ = 40V		0.30	0.50		0.30	0.50		A
		$V_{IN} - V_{OUT}$ = 60V **(HV SERIES)**			0.10			0.10		
$\frac{\Delta V_{OUT}}{\Delta TEMP}$	Temperature Stability	T_J = –55 to +150°C			1	2		1		%
$\frac{\Delta V_{OUT}}{\Delta TIME}$	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			0.001			0.001		%
$R_{\theta JC}$	Thermal Resistance Junction to Case	K Package			2.3	3		2.3	3	°C/W
		R Package			5	7		5	7	
		G, IG Packages			3	5		3	5	

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 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 TO–220 package, and $^1/_8$" below the base of the package on the output pin of the TO–257 package.

2) Test Conditions unless othewise stated: $V_{IN} - V_{OUT}$ = 5V , T_J = 25°C , I_{OUT} = 0.5A , I_{MAX} = 1.5A.
P_{MAX} = 10W for SMD1, 20W for all other package styles.
V_{MAX} = 40V for standard series , 60V for HV series.

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IP117, IP117A
IP317, IP317A
LM117, LM117A

Parameter		Test Conditions	IP317A IP317AHV Min.	IP317A IP317AHV Typ.	IP317A IP317AHV Max.	IP317 IP317HV Min.	IP317 IP317HV Typ.	IP317 IP317HV Max.	Units
V_{REF}	Reference Voltage	I_{OUT} = 10mA	1.238	1.25	1.262				V
		I_{OUT} = 10mA to I_{MAX}, $V_{IN} - V_{OUT}$ = 3V to V_{MAX}, $P \le P_{MAX}$, T_J = 0 to 125°C	1.225	1.25	1.270	1.200	1.250	1.300	V
$\frac{\Delta V_{OUT}}{\Delta V_{IN}}$	Line Regulation [1]	$V_{IN} - V_{OUT}$ = 3V to V_{MAX}		0.005	0.010		0.010	0.040	% / V
		T_J = 0 to 125°C		0.010	0.020		0.020	0.070	% / V
$\frac{\Delta V_{OUT}}{\Delta I_{OUT}}$	Load Regulation [1]	I_{OUT} = 10mA to I_{MAX}, $V_{OUT} \le 5V$		5	25		5	25	mV
		$V_{OUT} \ge 5V$		0.1	0.5		0.1	0.5	%
		I_{OUT} = 10mA to I_{MAX}, $V_{OUT} \le 5V$		15	50		20	70	mV
		T_J = –55 to +150°C, $V_{OUT} \ge 5V$		0.3	1		0.3	1.5	%
	Thermal Regulation	t_p = 20ms		0.002	0.020		0.030	0.070	%/W
	Ripple Rejection	V_{OUT} = 10V, f = 120Hz, C_{ADJ} = 0		65			65		dB
		C_{ADJ} = 10µF, T_J = 0 to 125°C	66	80		66	80		dB
I_{ADJ}	Adjust Pin Current	T_J = 0 to 125°C		50	100		50	100	µA
ΔI_{ADJ}	Adjust Pin Current Change	I_{OUT} = 10mA to I_{MAX}, T_J = 0 to 125°C, $V_{IN} - V_{OUT}$ = 2.5V to V_{MAX}		0.2	5		0.2	5	µA
I_{MIN}	Minimum Load Current	$V_{IN} - V_{OUT}$ = 40V, T_J = 0 to 125°C		3.5	10		3.5	10	mA
		$V_{IN} - V_{OUT}$ = 60V **(HV SERIES)**, T_J = 0 to 125°C		3.5	12		3.5	12	mA
I_{CL}	Current Limit	$V_{IN} - V_{OUT} \le 15V$, T_J = 0 to 125°C	1.5	2.2		1.5	2.2		A
		$V_{IN} - V_{OUT}$ = 40V	0.15	0.40		0.15	0.40		A
		$V_{IN} - V_{OUT}$ = 60V **(HV SERIES)**		0.10			0.10		A
$\frac{\Delta V_{OUT}}{\Delta TEMP}$	Temperature Stability	T_J = 0 to 125°C		1	2		1		%
$\frac{\Delta V_{OUT}}{\Delta TIME}$	Long Term Stability	t = 1000 Hrs		0.3	1		0.3	1	%
e_n	RMS Output Noise (% of V_{OUT})	f = 10 Hz to 10 kHz		0.003			0.003		%
$R_{\theta JC}$	Thermal Resistance Junction to Case	K Package		2.3	3		2.3	3	°C/W
		T Package		4	5		5	7	°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 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 TO–220 package, and $^1/_8$" below the base of the package on the output pin of the TO–257 package.

2) Test Conditions unless othewise stated: $V_{IN} - V_{OUT}$ = 5V , T_J = 25°C , I_{OUT} = 0.5A , P_{MAX} = 20W , I_{MAX} = 1.5A
V_{MAX} = 40V for standard series , 60V for HV series.

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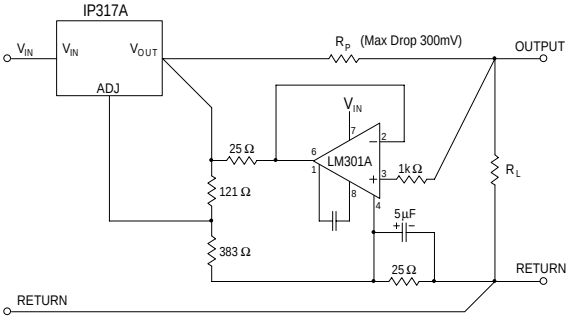
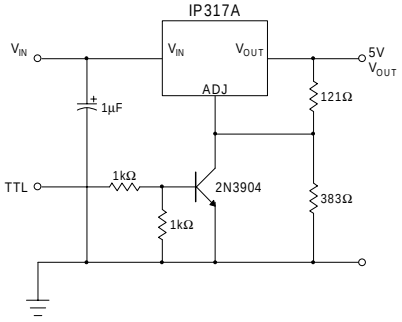
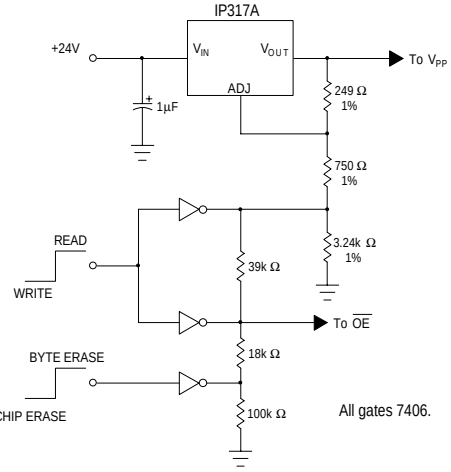
APPLICATIONS INFORMATION



Remote Sensing

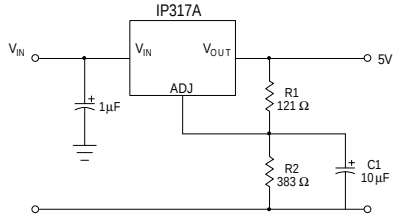


5V Regulator with Shut Down



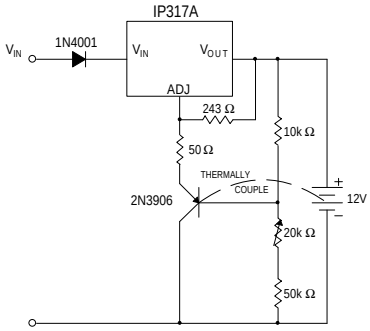
	$\overline{OE}$	V_{PP}
READ	0V	5V
WRITE		
BYTE	5V	21V
CHIP ERASE	12V	21V

2816 EEPROM Supply Programmer for Read/Write Control



C1 improves ripple rejection.
X_C should be small compared to R2.

Improving Ripple Rejection



Temperature Compensated Lead–Acid Battery Charger

Order Information

Part Number	IG–Pack G–Pack (TO257)	SMD1	SMD05	K–Pack (TO3)	R–Pack (TO66)	T–Pack (TO220)	Temp. Range
LM117	✔	✔	✔	✔	✔		-55 to +150°C
LM117HV	✔	✔	✔	✔	✔		”
LM117A	✔	✔	✔	✔	✔		”
LM117AHV	✔	✔	✔	✔	✔		”
IP117	✔	✔	✔	✔	✔		-55 to +150°C
IP117HV	✔	✔	✔	✔	✔		”
IP117A	✔	✔	✔	✔	✔		”
IP117AHV	✔	✔	✔	✔	✔		”
LM317				✔		✔	0 to 125°C
LM317HV				✔		✔	”
IP317				✔		✔	”
IP317HV				✔		✔	”
IP317A				✔		✔	”
IP317AHV				✔		✔	”

Note:
To order, add the package identifier to the part number.
eg. IP117AHVK
IP1175SMD05
IP317T

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