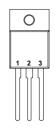


 $\begin{aligned} &\text{Pin 1} - \text{V}_{\text{IN}} \\ &\text{Pin 2} - \text{V}_{\text{OUT}} \\ &\text{Case} - \text{Ground} \end{aligned}$

K Package - TO-3



 $\begin{aligned} &\text{Pin 1} - \text{V}_{\text{IN}} \\ &\text{Pin 2} - \text{Ground} \\ &\text{Pin 3} - \text{V}_{\text{OUT}} \\ &\text{Case} - \text{Ground} \end{aligned}$

V Package – TO–218

5 AMP POSITIVE VOLTAGE REGULATORS

FEATURES

- 0.01%/V LINE REGULATION
- 0.5% LOAD REGULATION
- 1% OUTPUT TOLERANCE (-A VERSIONS)
- AVAILABLE IN 5V, 12V AND 15V OPTIONS
- COMPLETE SERIES OF PROTECTIONS:
 - CURRENT LIMITING
 - THERMAL SHUTDOWN
 - SOA CONTROL

Order Information

Part	K–Pack	V-Pack	Temp.					
Number	(TO-3)	(TO-218)	Range					
IP1R18Axx–zz	~		-55 to +150°C					
IP1R18xx-zz	✓		"					
IP3R18Azz–xx	~	~	0 to +125°C					
IP3R18zz-xx	✓	~	"					
Note:								
xx = Voltage Co (05, 12, 15) eq.		zz = Package Code (K, V)						
IP1R18AK-	-05	IP3R1	18V–12					

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C unless otherwise stated)

V_{I}	DC Input Voltage	35V
P_{D}	Power Dissipation	Internally limited
T_J	Operating Junction Temperature Range	See Table Above
T_{STG}	Storage Temperature Range	−65°C to +150°C
T_L	Lead Temperature (Soldering, 10 sec)	300°C

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Prelim. 9/00



ELECTRICAL CHARACTERISTICS ($T_J = 25$ °C unless otherwise stated)

				IP1R18A-05 IP3R18A-05			IF IF				
Parameter		Test Condition	ons ²	Min.	Тур.	Max.	Min.	Тур.	Max.	Units	
				4.95	5	5.05	4.85		5.15	V	
 ,,	Output Valtage	$I_O = 5$ mA to 5	A								
Vo	Output Voltage	P _{OUT} ≤ 50W	$V_{IN} = 8V$ to $20V$	4.85		5.15	4.75		5.25	V	
		$T_J = Over Ten$	np. Range ¹								
ΔV _O	Line Demulation	$V_{IN} = 7.5V \text{ to } 3$	35V		3	15		6	30	mV	
ΔV_1	Line Regulation	$I_{O} = 5 \text{mA}^{3}$	T _J = Over Temp. Range ¹		6	30		12	60		
ΔV _O	Land Daniel Can	$I_O = 5 \text{mA to } 5 \text{m}$	A 3		5 25			10	50		
ΔI_{O}	Load Regulation		T _J = Over Temp. Range ¹	10 50		50		20	100	mV	
IQ	Quiescent Current	I _O = 5mA	T _J = Over Temp. Range ¹			7			7	mA	
		$I_O = 5$ mA to 5	A		40				40		
l	Quiescent Current Change	$T_J = Over Ten$	np. Range ¹	10				10	^		
ΔI_Q		I _O = 5mA	$V_{IN} = 7.5V \text{ to } 35V$							mA	
		$T_J = Over Ten$	np. Range ¹		3				3		
,	Dropout Voltage	I _O = 5A	$\Delta V_{OUT} = 100 \text{mV}$		2.5	3		2.5	3	V	
V_D		$T_J = Over Ten$	np. Range ¹								
	Dinale Dejection	I _O = 1A	f = 120Hz				60	80		dB	
	Ripple Rejection	$T_J = Over Ten$	np. Range ¹	60	80						
	Thermal Regulation	t _p = 20ms	$\Delta P = 50W$		0.002	0.01		0.002	0.02	%/W	
I _{PEAK}	Peak Output Current	V _{IN} = 10V	T _J = Over Temp. Range ¹		8	12		8	12	Α	
	Short Circuit Current	V _{IN} = 10V			7			7			
I _{SC}		V _{IN} = 35V		2			2		A		
e _n	Output Noise Voltage	f = 10Hz to 100kHz			40			40		μV	
	Thermal Resistance	K Package			1.0	1.5		1.0	1.5	00.44	
$R_{\theta JC}$	Junction to Case	V Package		1.0	1.5		1.0	1.5	°C/W		

Notes

1) Applies over full temperature range:-

 $T_J = -55 \text{ to } +150^{\circ}\text{C for IP1R18A} - 05 / \text{IP1R18} - 05$

 $T_J = 0 \text{ to } +125^{\circ}\text{C for IP3R18A-05} / \text{IP3R18-05}$

All other specifications apply at $T_J = 25$ °C unless otherwise stated.

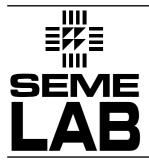
2) Test conditions unless otherwise stated:-

 $V_{IN} = 10V$, $I_{OUT} = 2.5A$.

Although Power Dissipation is internally limited, these specifications apply for Power Dissipation up to 50W.

3) Load and Line regulation are electrically independent and are measured using pulse techniques at low duty cycle in order to maintain constant junction temperature. To determine the effects on the output voltage due to device heating, refer to thermal regulation specification.

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ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise stated)

				IP1R18A-12 IP3R18A-12			IP IP				
Parameter		Test Condition	ons ²	Min.	Тур.	Max.	Min.	Тур.	Max.	Units	
				11.88	12	12.12	11.64	12	12.36	V	
.,	Output Voltage	I _O = 5mA to 5A									
Vo		P _{OUT} ≤ 50W	$V_{IN} = 15V$ to 27V	11.64		12.36	11.40		12.60	V	
		$T_J = Over Ten$	np. Range ¹								
ΔV_{O}	Line Demokriter	$V_{IN} = 14.5V \text{ to}$	35V		5	30		10	60	>/	
ΔV_{I}	Line Regulation	$I_0 = 5 \text{mA}^3$	T _J = Over Temp. Range ¹		10	60		20	120	mV	
ΔV_{O}	Lood Dogulation	$I_O = 5 \text{mA to } 5$	A 3		10 60			20	120		
ΔI_{O}	Load Regulation		T _J = Over Temp. Range ¹		20	120		40	240	mV	
IQ	Quiescent Current	I _O = 5mA	T _J = Over Temp. Range ¹			7			7	mA	
		$I_O = 5$ mA to 5	A	10				40			
	Quiescent Current Change	T _J = Over Temp. Range ¹				10			10	A	
ΔI_{Q}		I _O = 5mA	$V_{IN} = 14.5V \text{ to } 35V$		3				3	- mA	
		$T_J = Over Ten$	np. Range ¹								
V	Dropout Voltage	I _O = 5A	$\Delta V_{OUT} = 250 \text{mV}$		2.5 3	2	3	2.5	3	V	
V_D		$T_J = Over Ten$	np. Range ¹			3					
	Dinnla Bajastian	I _O = 1A	f = 120Hz	5 0	70		52	70		dB	
	Ripple Rejection	$T_J = Over Ten$	np. Range ¹	52 72		52	12	72			
	Thermal Regulation	t _p = 20ms	$\Delta P = 50W$		0.002	0.01		0.002	0.02	%/W	
I _{PEAK}	Peak Output Current	V _{IN} = 17V	T _J = Over Temp. Range ¹		8	12		8	12	Α	
	Short Circuit Current	V _{IN} = 17V		2				4		_	
I _{SC}		V _{IN} = 35V				2		A			
e _n	Output Noise Voltage				75			75		μV	
Б	Thermal Resistance	K Package			1.0	1.5		1.0	1.5	00 111	
$R_{\theta JC}$	Junction to Case	V Package		1.0	1.5	1.0 1	1.5	°C/W			

Notes

1) Applies over full temperature range:-

 $T_J = -55 \text{ to } +150^{\circ}\text{C for IP1R18A} - 12 / IP1R18 - 12$

 $T_J = 0 \text{ to } +125^{\circ}\text{C for IP3R18A} - 12 / \text{IP3R18} - 12$

All other specifications apply at $T_J = 25$ °C unless otherwise stated.

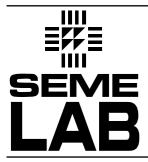
2) Test conditions unless otherwise stated:-

 $V_{IN} = 17V$, $I_{OUT} = 2.5A$.

Although Power Dissipation is internally limited, these specifications apply for Power Dissipation up to 50W.

3) Load and Line regulation are electrically independent and are measured using pulse techniques at low duty cycle in order to maintain constant junction temperature. To determine the effects on the output voltage due to device heating, refer to thermal regulation specification.

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ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise stated)

		IP1R18A-15 IP3R18A-15			IP						
Parameter		Test Conditions ²		Min.	зк тва- Тур.	Max.	Min.	3R18–′ Typ.	Max.	Units	
rarameter		Test Condition	0115 -	14.85	1 yp. 15	15.15	14.55	1 yp. 15	15.45	\ \	
		L Em A to E	Λ	14.03	13	13.13	14.55	13	13.43	V	
Vo	Output Voltage	I _O = 5mA to 5A								,	
			$V_{IN} = 18V \text{ to } 30V$	14.55		15.45	14.25		15.75	V	
		$T_J = Over Ten$									
ΔV_{O}	Line Regulation	$V_{IN} = 17.5V \text{ to}$	35V		8	40		16	80	m∨	
ΔV_{l}	Line regulation	$I_0 = 5 \text{mA}^{3}$	T _J = Over Temp. Range ¹		16	80		32	160	111 V	
ΔV_{O}	Load Dogulation	$I_O = 5 \text{mA to } 5 \text{m}$	Д 3		16 80			32	160	>/	
ΔI_{O}	Load Regulation		T _J = Over Temp. Range ¹		32	160		64	320	mV	
IQ	Quiescent Current	I _O = 5mA	T _J = Over Temp. Range ¹			7			7	mA	
		$I_O = 5 \text{mA to } 5$	A					40			
	Quiescent Current Change	T _J = Over Temp. Range ¹				10			10		
ΔI_{Q}		I _O = 5mA	V _{IN} = 17.5V to 35V							mA	
	-	$T_J = Over Ten$			3				3		
	Dropout Voltage		$\Delta V_{OUT} = 300 \text{mV}$			3		2.5	3	V	
V_D		$T_{J} = Over Ten$			2.5						
	Ripple Rejection	-	f = 120Hz								
		$T_J = Over Ten$		50	50 70		50	70		dB	
	Thermal Regulation	$t_p = 20 \text{ms}$			0.002	0.01		0.002	0.02	%/W	
1		<u>'</u>	$T_J = \text{Over Temp. Range }^1$		8	12		8	12	Α	
PEAK	Short Circuit Current		Tj = Over Temp. Nange			12			12	_ ^	
I _{SC}		V _{IN} = 20V		3.5				3.5		Α	
	<u> </u>	V _{IN} = 35V			2			2		.,	
e _n	Output Noise Voltage				90			90		μV	
$R_{\theta JC}$	Thermal Resistance	K Package			1.0	1.5		1.0	1.5	°C/W	
	Junction to Case	V Package			1.0	1.5		1.0	1.5	2,	

Notes

1) Applies over full temperature range:-

 $T_J = -55 \text{ to } +150^{\circ}\text{C for IP1R18A} - 15 / \text{IP1R18} - 15$

 $T_J = 0 \text{ to } +125^{\circ}\text{C for IP3R18A} -15 / \text{IP3R18} -15$

All other specifications apply at $T_J = 25$ °C unless otherwise stated.

2) Test conditions unless otherwise stated:-

 $V_{IN} = 20V$, $I_{OUT} = 2.5A$.

Although Power Dissipation is internally limited, these specifications apply for Power Dissipation up to 50W.

3) Load and Line regulation are electrically independent and are measured using pulse techniques at low duty cycle in order to maintain constant junction temperature. To determine the effects on the output voltage due to device heating, refer to thermal regulation specification.

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