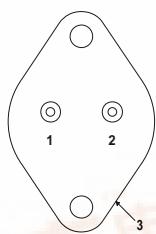
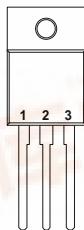


IP1R18A SERIES
IP1R18 SERIES
IP3R18A SERIES
IP3R18 SERIES



Pin 1 – V_{IN}
Pin 2 – V_{OUT}
Case – Ground

K Package – TO-3



Pin 1 – V_{IN}
Pin 2 – Ground
Pin 3 – V_{OUT}
Case – Ground

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 Number	K-Pack (TO-3)	V-Pack (TO-218)	Temp. Range
IP1R18Axx–zz	✓		-55 to +150°C
IP1R18xx–zz	✓		"
IP3R18Azz–xx	✓	✓	0 to +125°C
IP3R18zz–xx	✓	✓	"

Note:

xx = Voltage Code
(05, 12, 15)

eg.

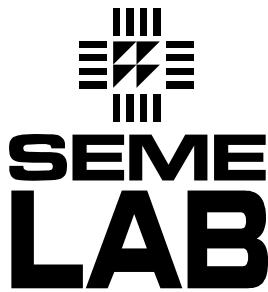
IP1R18AK-05

zz = Package Code
(K, V)

IP3R18V-12

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

V_I	DC Input Voltage	35V
P_D	Power Dissipation	Internally limited
T_J	Operating Junction Temperature Range	See Table Above
	Storage Temperature Range	-65°C to +150°C
	Lead Temperature (Soldering, 10 sec)	300°C



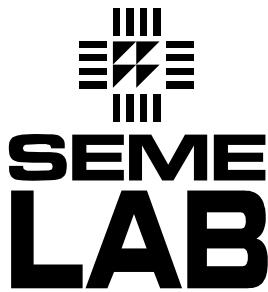
**IP1R18A SERIES
IP1R18 SERIES
IP3R18A SERIES
IP3R18 SERIES**

ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise stated)

Parameter	Test Conditions ²	IP1R18A-05 IP3R18A-05			IP1R18-05 IP3R18-05			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
V_O Output Voltage	$I_O = 5\text{mA to } 5\text{A}$ $P_{\text{OUT}} \leq 50\text{W}$ $V_{\text{IN}} = 8\text{V to } 20\text{V}$ $T_J = \text{Over Temp. Range } ^1$	4.95	5	5.05	4.85		5.15	V
ΔV_O Line Regulation	$V_{\text{IN}} = 7.5\text{V to } 35\text{V}$		3	15		6	30	mV
ΔV_I	$I_O = 5\text{mA } ^3$ $T_J = \text{Over Temp. Range } ^1$		6	30		12	60	
ΔV_O Load Regulation	$I_O = 5\text{mA to } 5\text{A } ^3$		5	25		10	50	mV
ΔI_O	$T_J = \text{Over Temp. Range } ^1$		10	50		20	100	
I_Q Quiescent Current	$I_O = 5\text{mA}$ $T_J = \text{Over Temp. Range } ^1$			7			7	mA
ΔI_Q Quiescent Current Change	$I_O = 5\text{mA to } 5\text{A}$ $T_J = \text{Over Temp. Range } ^1$			10			10	mA
	$I_O = 5\text{mA}$ $V_{\text{IN}} = 7.5\text{V to } 35\text{V}$ $T_J = \text{Over Temp. Range } ^1$			3			3	
V_D Dropout Voltage	$I_O = 5\text{A}$ $\Delta V_{\text{OUT}} = 100\text{mV}$ $T_J = \text{Over Temp. Range } ^1$		2.5	3		2.5	3	V
Ripple Rejection	$I_O = 1\text{A}$ $f = 120\text{Hz}$ $T_J = \text{Over Temp. Range } ^1$	60	80		60	80		dB
Thermal Regulation	$t_p = 20\text{ms}$ $\Delta P = 50\text{W}$		0.002	0.01		0.002	0.02	%/W
I_{PEAK} Peak Output Current	$V_{\text{IN}} = 10\text{V}$ $T_J = \text{Over Temp. Range } ^1$		8	12		8	12	A
I_{SC} Short Circuit Current	$V_{\text{IN}} = 10\text{V}$		7			7		A
	$V_{\text{IN}} = 35\text{V}$		2			2		
e_n Output Noise Voltage	$f = 10\text{Hz to } 100\text{kHz}$		40			40		μV
$R_{\theta\text{JC}}$ Thermal Resistance Junction to Case	K Package		1.0	1.5		1.0	1.5	$^\circ\text{C/W}$
	V Package		1.0	1.5		1.0	1.5	

Notes

- Applies over full temperature range:-
 - $T_J = -55$ to $+150^\circ\text{C}$ for IP1R18A-05 / IP1R18-05
 - $T_J = 0$ to $+125^\circ\text{C}$ for IP3R18A-05 / IP3R18-05
 - All other specifications apply at $T_J = 25^\circ\text{C}$ unless otherwise stated.
- Test conditions unless otherwise stated:-
 - $V_{\text{IN}} = 10\text{V}$, $I_{\text{OUT}} = 2.5\text{A}$.
Although Power Dissipation is internally limited, these specifications apply for Power Dissipation up to 50W.
- 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.



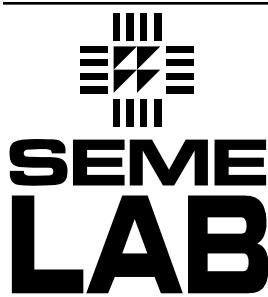
**IP1R18A SERIES
IP1R18 SERIES
IP3R18A SERIES
IP3R18 SERIES**

ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise stated)

Parameter	Test Conditions ²	IP1R18A-12 IP3R18A-12			IP1R18-12 IP3R18-12			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
V_O	$I_O = 5\text{mA to } 5\text{A}$ $P_{\text{OUT}} \leq 50\text{W}$ $V_{\text{IN}} = 15\text{V to } 27\text{V}$ $T_J = \text{Over Temp. Range } ^1$	11.88	12	12.12	11.64	12	12.36	V
V_O	$I_O = 5\text{mA to } 5\text{A}$ $P_{\text{OUT}} \leq 50\text{W}$ $V_{\text{IN}} = 15\text{V to } 27\text{V}$ $T_J = \text{Over Temp. Range } ^1$	11.64		12.36	11.40		12.60	V
ΔV_O	$V_{\text{IN}} = 14.5\text{V to } 35\text{V}$		5	30		10	60	mV
ΔV_I	$I_O = 5\text{mA } ^3$ $T_J = \text{Over Temp. Range } ^1$		10	60		20	120	
ΔV_O	$I_O = 5\text{mA to } 5\text{A } ^3$		10	60		20	120	mV
ΔI_O	$T_J = \text{Over Temp. Range } ^1$		20	120		40	240	
I_Q	$I_O = 5\text{mA}$ $T_J = \text{Over Temp. Range } ^1$			7			7	mA
ΔI_Q	$I_O = 5\text{mA to } 5\text{A}$ $T_J = \text{Over Temp. Range } ^1$			10			10	mA
	$I_O = 5\text{mA}$ $V_{\text{IN}} = 14.5\text{V to } 35\text{V}$ $T_J = \text{Over Temp. Range } ^1$			3			3	
V_D	$I_O = 5\text{A}$ $\Delta V_{\text{OUT}} = 250\text{mV}$ $T_J = \text{Over Temp. Range } ^1$		2.5	3		2.5	3	V
	$I_O = 1\text{A}$ $f = 120\text{Hz}$ $T_J = \text{Over Temp. Range } ^1$	52	72		52	72		dB
Thermal Regulation	$t_p = 20\text{ms}$ $\Delta P = 50\text{W}$		0.002	0.01		0.002	0.02	%/W
I_{PEAK}	$V_{\text{IN}} = 17\text{V}$ $T_J = \text{Over Temp. Range } ^1$		8	12		8	12	A
I_{SC}	$V_{\text{IN}} = 17\text{V}$		4			4		A
	$V_{\text{IN}} = 35\text{V}$		2			2		
e_n	$V_{\text{IN}} = 17\text{V}$		75			75		μV
$R_{\theta\text{JC}}$	K Package		1.0	1.5		1.0	1.5	$^\circ\text{C/W}$
Junction to Case	V Package		1.0	1.5		1.0	1.5	

Notes

- Applies over full temperature range:-
 $T_J = -55$ to $+150^\circ\text{C}$ for IP1R18A-12 / IP1R18-12
 $T_J = 0$ to $+125^\circ\text{C}$ for IP3R18A-12 / IP3R18-12
All other specifications apply at $T_J = 25^\circ\text{C}$ unless otherwise stated.
- Test conditions unless otherwise stated:-
 $V_{\text{IN}} = 17\text{V}$, $I_{\text{OUT}} = 2.5\text{A}$.
Although Power Dissipation is internally limited, these specifications apply for Power Dissipation up to 50W.
- 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.



IP1R18A SERIES
IP1R18 SERIES
IP3R18A SERIES
IP3R18 SERIES

ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise stated)

Parameter	Test Conditions ²	IP1R18A-15 IP3R18A-15			IP1R18-15 IP3R18-15			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
V_O Output Voltage		14.85	15	15.15	14.55	15	15.45	V
	$I_O = 5\text{mA to } 5\text{A}$ $P_{\text{OUT}} \leq 50\text{W}$ $V_{\text{IN}} = 18\text{V to } 30\text{V}$ $T_J = \text{Over Temp. Range } ^1$	14.55		15.45	14.25		15.75	V
ΔV_O Line Regulation	$V_{\text{IN}} = 17.5\text{V to } 35\text{V}$		8	40		16	80	mV
	$I_O = 5\text{mA } ^3$ $T_J = \text{Over Temp. Range } ^1$		16	80		32	160	
ΔV_O Load Regulation	$I_O = 5\text{mA to } 5\text{A } ^3$		16	80		32	160	mV
	$T_J = \text{Over Temp. Range } ^1$		32	160		64	320	
I_Q Quiescent Current	$I_O = 5\text{mA}$ $T_J = \text{Over Temp. Range } ^1$			7			7	mA
ΔI_Q Quiescent Current Change	$I_O = 5\text{mA to } 5\text{A}$ $T_J = \text{Over Temp. Range } ^1$			10			10	mA
	$I_O = 5\text{mA}$ $V_{\text{IN}} = 17.5\text{V to } 35\text{V}$ $T_J = \text{Over Temp. Range } ^1$			3			3	
V_D Dropout Voltage	$I_O = 5\text{A}$ $\Delta V_{\text{OUT}} = 300\text{mV}$ $T_J = \text{Over Temp. Range } ^1$		2.5	3		2.5	3	V
Ripple Rejection	$I_O = 1\text{A}$ $f = 120\text{Hz}$ $T_J = \text{Over Temp. Range } ^1$	50	70		50	70		dB
Thermal Regulation	$t_p = 20\text{ms}$ $\Delta P = 50\text{W}$		0.002	0.01		0.002	0.02	%/W
I_{PEAK} Peak Output Current	$V_{\text{IN}} = 20\text{V}$ $T_J = \text{Over Temp. Range } ^1$		8	12		8	12	A
I_{SC} Short Circuit Current	$V_{\text{IN}} = 20\text{V}$			3.5			3.5	A
	$V_{\text{IN}} = 35\text{V}$			2			2	
e_n Output Noise Voltage				90			90	μV
$R_{\theta\text{JC}}$ Thermal Resistance Junction to Case	K Package		1.0	1.5		1.0	1.5	$^\circ\text{C/W}$
	V Package		1.0	1.5		1.0	1.5	

Notes

1) Applies over full temperature range:-

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

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

All other specifications apply at $T_J = 25^\circ\text{C}$ unless otherwise stated.

2) Test conditions unless otherwise stated:-

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

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.