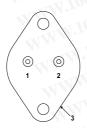
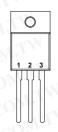


**IP1R18A SERIES IP1R18 SERIES IP3R18A SERIES IP3R18** SERIES



Pin  $1 - V_{IN}$ - VOUT Case - Ground

# K Package – TO–3



Pin 1 - V<sub>IN</sub> Pin 2 - Ground Pin 3 – V<sub>OUT</sub> Case - Ground

V Package - TO-218

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# 5 AMP **POSITIVE** VOLTAGE REGULATORS

#### **FEATURES**

WWW.100Y.CON.T

- 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 K-Pack V-Pack

Number	(TO-3)	(TO-218)	Range
IP1R18Axx-zz	W 1	MAA	-55 to +150°C
IP1R18xx-zz	~	THIN W	
IP3R18Azz-xx		-	0 to +125°C
IP3R18zz-xx	~ ~	V	,,
xx = Voltage Co	ode	zz = Packa	age Code
(05, 12, 15	$\mathbf{b}_{\mathbf{M}}$	(K, V)	

# **ABSOLUTE MAXIMUM RATINGS** (T<sub>case</sub> = 25°C unless otherwise stated)

$\overline{V_{I}}$	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
	WWW.100X.COW.TW	Prelim. 9

Temp.



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IP1R18 SERIES
IP3R18A SERIES
IP3R18 SERIES

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

Parameter		Test Conditions <sup>2</sup>			1R18A- 3R18A-		IP1R18-05 IP3R18-05			
				Min.	Тур.	Max.	Min.	Typ.	Max.	Units
Inn	COM	WWW.to	COMPAN	4.95	5	5.05	4.85		5.15	V
V <sub>O</sub>	Output Voltage $I_{O} = 5\text{mA to 5A}$ $P_{OUT} \le 50\text{W} \qquad V_{IN} = 8\text{V to 20V}$ $T_{J} = \text{Over Temp. Range }^{1}$		4.85	M.100	5.15	4.75	N W	5.25	V	
$\Delta V_{O}$	1001. OM.TW	$V_{IN} = 7.5V \text{ to}$	35V	A	3	15	MO.	6	30	
$\Delta V_{I}$	Line Regulation	$I_0 = 5 \text{mA}^{3}$	T <sub>J</sub> = Over Temp. Range <sup>1</sup>		6	30	COM	12	60	₩V
$\Delta V_{O}$	LANDY COMMENT	$I_O = 5$ mA to 5A $^3$ $T_J = Over Temp. Range ^1$			5	25		10	50	<u> </u>
${\Delta I_{O}}$	Load Regulation				10	50	Y.CO	20	100	mV
IQ	Quiescent Current	I <sub>O</sub> = 5mA	T <sub>J</sub> = Over Temp. Range <sup>1</sup>	V	WV	7	ONICE	TI	7	mA
Δl <sub>Q</sub>	Quiescent Current Change	$I_O = 5$ mA to 5A $T_J = $ Over Temp. Range <sup>1</sup>		W	W	10	00Y.C	COM:	10	
		$I_O = 5mA$ $T_J = Over Ter$	$V_{IN} = 7.5V$ to 35V mp. Range <sup>1</sup>	TW		3	N.1007	CON	3	mA
V <sub>D</sub>	Dropout Voltage	$I_O = 5A$ $T_J = Over Ter$	$\Delta V_{OUT}$ = 100mV mp. Range <sup>1</sup>	M.TV	2.5	3	M.100	2.5	3	V
	Ripple Rejection	$I_O = 1A$ $T_J = Over Ter$	f = 120Hz mp. Range <sup>1</sup>	60	80	A.	60	80	COM.	dB
	Thermal Regulation	t <sub>p</sub> = 20ms	$\Delta P = 50W$	Co	0.002	0.01	MM	0.002	0.02	%/W
I <sub>PEAK</sub>	Peak Output Current	V <sub>IN</sub> = 10V	T <sub>J</sub> = Over Temp. Range <sup>1</sup>	I.CON	8	12	MM	8	12	Α
	Short Circuit Current	Current $ \frac{V_{IN} = 10V}{V_{IN} = 35V} $		V.CO. 7		WWW.7,00Y.CO				
I <sub>SC</sub>				N.CC	2	N	W	2	NY.C	Α
e <sub>n</sub>	Output Noise Voltage	f = 10Hz to 10	00kHz	ov C	40		<b>1</b>	40	ONY.	μV
В	Thermal Resistance	K Package	VIII	100 -	1.0	1.5		1.0	1.5	°C/W
$R_{\theta JC}$	Junction to Case	V Package			1.0	1.5		1.0	1.5	1 .C/VV

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

#### **ELECTRICAL CHARACTERISTICS** (T<sub>J</sub> = 25°C unless otherwise stated)

Parameter		MMM.too.COM.TM M			1R18A- 3R18A-		IP1R18–12 IP3R18–12			
		Test Conditi	ons <sup>2</sup>	Min.	Typ.	Max.	Min.	Тур.	Max.	Units
100	COM	MMMito	ON COMP	11.88	12	12.12	11.64	12	12.36	V
Vo	Output Voltage	$I_O$ = 5mA to 5A $P_{OUT} \le 50W$ $V_{IN}$ = 15V to 27V $T_J$ = Over Temp. Range <sup>1</sup>			W.10 WW.10	12.36	11.40	N	12.60	V
$\Delta V_{O}$	1007	$V_{IN} = 14.5 V to$	35V	W	5	30	OM.	10	60	\/
$\overline{\Delta V_I}$	Line Regulation	$I_0 = 5 \text{mA}^{3}$	T <sub>J</sub> = Over Temp. Range <sup>1</sup>		10	60	COM	20	120	mV
$\Delta V_{O}$	LANDY COM	$I_O = 5$ mA to 5A $^3$			10	60		20	120	
$\overline{\Delta I_O}$	Load Regulation	V W	T <sub>J</sub> = Over Temp. Range <sup>1</sup>		20	120	Y.Co.	40	240	mV
IQ	Quiescent Current	I <sub>O</sub> = 5mA	T <sub>J</sub> = Over Temp. Range <sup>1</sup>	N.	WV	7	OY.CO	TI	7	mA
W	Quiescent Current	$I_O = 5$ mA to 5A $T_J = $ Over Temp. Range <sup>1</sup>		N	W	10	00X.C	COM.	10	A
$\Delta I_Q$	Change	$I_O = 5mA$ $T_J = Over Ter$	$V_{IN} = 14.5V$ to 35V mp. Range <sup>1</sup>	TW		3	V.100Y	CON,	3	mA
V <sub>D</sub>	Dropout Voltage	$I_O = 5A$ $T_J = Over Ter$	ΔV <sub>OUT</sub> = 250mV mp. Range <sup>1</sup>	M.TV	2.5	3	W.100	2.5	3	V
	Ripple Rejection	$I_O = 1A$ $f = 120Hz$ $T_J = Over Temp. Range 1$		52	72	A.	52	72	COM.	dB
	Thermal Regulation	t <sub>p</sub> = 20ms	$\Delta P = 50W$		0.002	0.01	MM.	0.002	0.02	%/W
I <sub>PEAK</sub>	Peak Output Current	V <sub>IN</sub> = 17V	T <sub>J</sub> = Over Temp. Range <sup>1</sup>	COM	8	12	MINA	8	12	Α
	Short Circuit Current	V <sub>IN</sub> = 17V		V.CO. 4		4 4				
I <sub>SC</sub>		V <sub>IN</sub> = 35V	MAN.TO	N.CC	CO 2		wV	2	Α	
e <sub>n</sub>	Output Noise Voltage	In T COM	II.WWI	V C	75			75	ONY.	μV
<u> </u>	Thermal Resistance	K Package	U.T.	00 .	1.0	1.5	4	1.0	1.5	2004
$R_{\theta JC}$	Junction to Case	V Package			1.0 1.5		1.0 1.5			°C/W

#### **Notes**

1) Applies over full temperature range:-

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

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

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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IP3R18A SERIES
IP3R18 SERIES

### **ELECTRICAL CHARACTERISTICS** (T<sub>J</sub> = 25°C unless otherwise stated)

Parameter		Test Conditions <sup>2</sup>			1R18A- 3R18A-		IF IF			
				Min.	Тур.	Max.	Min.	Тур.	Max.	Units
100	COM	WWW.IO	ON COMP	14.85	15	15.15	14.55	15	15.45	V
$V_{O}$ Output Voltage $I_{O} = 5mA \text{ to } 5A$ $P_{OUT} \le 50W  V_{IN} = 18V \text{ to } 30V$ $T_{J} = Over \text{ Temp. Range } ^{1}$			14.55	W.100	15.45	14.25	N	15.75	V	
$\Delta V_{O}$	1007. CM.TW	$V_{IN} = 17.5V \text{ to}$	o 35V	14	8	40	OM.	16	80	>/
$\overline{\Delta V_I}$	Line Regulation	$I_0 = 5 \text{mA}^{3}$	T <sub>J</sub> = Over Temp. Range <sup>1</sup>		16	80	Mon	32	160	mV
$\Delta V_{O}$	LANDY COST	I <sub>O</sub> = 5mA to 5A <sup>3</sup>			16	80		32	160	,,
$\overline{\Delta I_O}$	Load Regulation	N W	T <sub>J</sub> = Over Temp. Range <sup>1</sup>		32	160	Y.Co.	64	320	mV
IQ	Quiescent Current	I <sub>O</sub> = 5mA	T <sub>J</sub> = Over Temp. Range <sup>1</sup>	Ĭ.	W	7	ON.CO	TI	7	mA
W	Quiescent Current	$I_O = 5$ mA to 5A $T_J = $ Over Temp. Range <sup>1</sup>		N	W	10	00X.C	COMIT	10	A
$\Delta I_{Q}$	Change	$I_O = 5mA$ $T_J = Over Ter$	V <sub>IN</sub> = 17.5V to 35V mp. Range <sup>1</sup>	TW		3	4.100X	COM	3	mA
V <sub>D</sub>	Dropout Voltage	$I_O = 5A$ $T_J = Over Ter$	ΔV <sub>OUT</sub> = 300mV mp. Range <sup>1</sup>	M.TV	2.5	3	W.100	2.5	3	V
	Ripple Rejection	$I_O = 1A$ $f = 120Hz$ $T_J = Over Temp. Range 1$		50	70	1	50	70	COM!	dB
	Thermal Regulation	t <sub>p</sub> = 20ms	$\Delta P = 50W$		0.002	0.01	MAL	0.002	0.02	%/W
I <sub>PEAK</sub>	Peak Output Current	V <sub>IN</sub> = 20V	T <sub>J</sub> = Over Temp. Range <sup>1</sup>	COM	8	12	MMA	8	12	Α
	Short Circuit Current	V <sub>IN</sub> = 20V	CM MMM. 100	N.CO	3.5		WW	3.5	M.Cu	•
I <sub>SC</sub>		V <sub>IN</sub> = 35V	TWW.IO	N.CC	2	N	WV	2	MY.C	Α
e <sub>n</sub>	Output Noise Voltage	IOO X COM	I.WW.II	V.C	90		11	90	ONY.C	μV
D	Thermal Resistance	K Package	V.L.	00 -	1.0	1.5		1.0	1.5	°C ^^/
$R_{\theta JC}$	Junction to Case	V Package	W.I.M.	700 1.	1.0	1.5		1.0	1.5	°C/W

#### Notes

1) Applies over full temperature range:-

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

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

All other specifications apply at  $T_J = 25^{\circ}$ 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.