KA7630/KA7631

Fixed Multi-Output Regulator

Features

- Output Currents up to 0.5A (Output1 & 2)
- Output Current up to 1A with External Transistor (Output3)
- Fixed Precision Output 1 Voltage 5.1V ±2%
- Fixed Precision Output 2 Voltage 8V ±2% (KA7630)
- Fixed Precision Output 2 Voltage 9V ±2% (KA7631)
- Control Signal Generator for Output 3 Voltage (12V ±2%)
- Reset Facility for Output Voltage1
- Output 2,3 with Disable by TTL Input
- Current Limit Protection at Each Output
- Thermal Shut Down

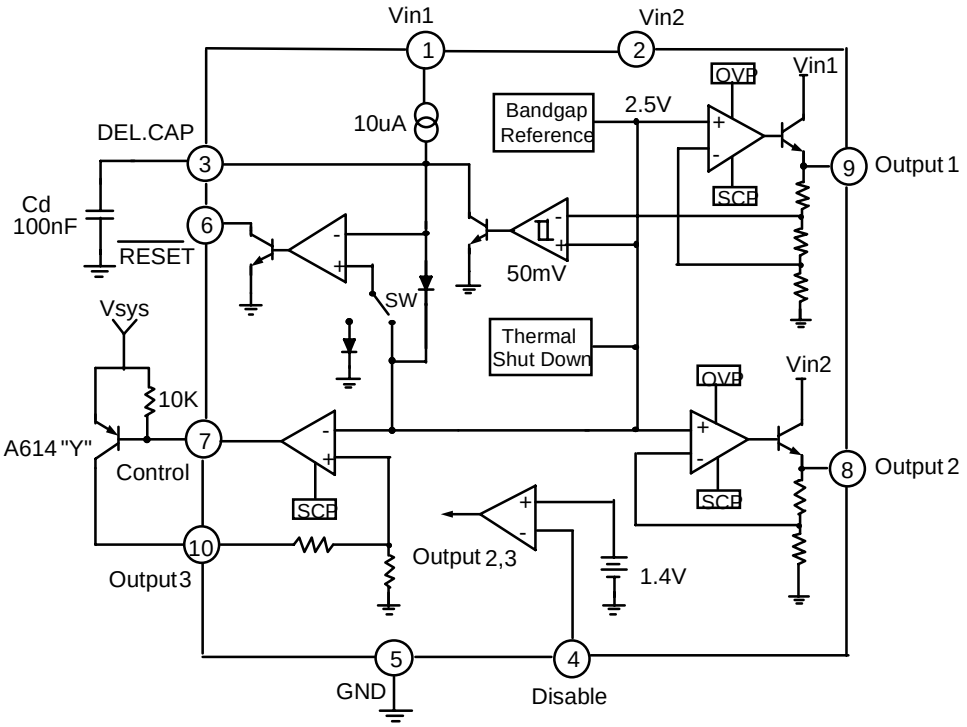
Description

The KA7630/KA7631 is a multi-output positive voltage regulator designed to provide fixed precision output voltages of 5.1V, 8V (7630) / 9V(7631) at current up to 0.5Aand 12V at current up to 1A with external PNP transistor.

An internal reset circuit generates a reset pulse when the output 1 decreases below the regulated value. Output2 & 3 can be disabled by TTL input. Protection features include over voltage protection, short circuit protection and thermal shutdown.

10-SIP H/S

Internal Block Diagram



Rev. 1.0.1

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit	Remark
DC Input Voltage	Vin	20	V	-
Disable Input Voltage	Vc	20	V	-
Output Current	Io	0.5	A	-
Power Dissipation	Pd	1.5	W	No Heatsink
Junction Temperature	Tj	+150	°C	-
Operating Temperature	Topr	0 ~ +125	°C	-

Electrical Characteristics(KA7630)

(Refer to test circuit Vin1=7.5V ,Vin2=10.5V ,Tj = +25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Output Voltage 1	Vo1	Io1 = 10mA 7.5V<Vin1<14V 5mA < Io1< 500mA	5 4.9	5.1 5.1	5.2 5.3	V
Output Voltage 2	Vo2	Io2 = 10mA 10.5V < Vin2< 18V 5mA < Io2 < 500mA	7.84 7.7	8 8	8.16 8.3	V
Dropout Output Voltage 1,2	Vd1,2	Io1,2 = 500mA	-	-	2.5	V
Line Regulation 1,2	ΔVo 1,2	7.5V < Vin1<14V 10.5V < Vin2 < 18V Io1,2 = 200mA	-	-	50 80	mV
Load Regulation 1,2	ΔVo 1,2	5mA < Io1< 500mA 5mA < Io2< 500mA	-	-	100 160	mV
Output Voltage 3	Vo3	Vsys=13V, Io3=100mA	11.7	12	12.3	V
Line Regulation 3	ΔVo3	13V< Vin2 < 18V, Io3 =100mA	-	-	120	mV
Load Regulation 3	ΔVo3	5mA < Io3 < 1A	-	-	250	mV
Reset Pulse Delay	Trd	Cd = 100nF, Note1	-	25	-	ms
Saturation Voltage in Reset Condition	VrL	I6 = 5mA	-	-	0.4	V
Leakage Current at Pin 6	IrH	V6 = 10V	-	-	10	μA
Output Voltage Thermal Drift	STt	0°C <Tj < +125°C , Note2	-	100		ppm/°C
Short Circuit Output Current	Isc1,2	Vin1 = 7.5V ,Vin2 = 10.5V	-	-	1.6	A
Disable Voltage High	VdisH	Output 2 Active	0.8	-	2.0	V
Disable Voltage Low	VdisL	Output 2 Disabled	0.8	-	2.0	V
Disable Bias Current	Idis	0V < Vdis < 7V	-100	-	2	μA
Junction Temperature for TSD	Ttsd	Note 2	-	145	-	°C
Quiescent Current	Iq	Io1 = 10mA, Output2 Disabled	-	-	2	mA
Reset Threshold Voltage	Vr	K = Vo1	K-0.4	K-0.25	K -0.1	V
Reset Threshold Hysteresis	Vrth	Note1	20	50	100	mA

Notes:

1. To check the reset circuit ,the reset output is low to discharge the delay capacitor(=Cd). it's less than Vo1-0.25V. And the reset output is high when the delay capacitor voltage linearly increased by the internal current source(10μA) if it's more than Vo1- 0.2V. The equation of delay time is same as below. Trd = (Cd × 2.5) / 10μA
2. These parameters, although guaranteed, are not 100% tested in production.

Electrical Characteristics(KA7631) (Continued)

(Refer to test circuit Vin1=7.5V ,Vin2=11.5V ,T_j = +25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Output Voltage 1	Vo1	Io1 = 10mA 7.5V < Vin1 < 14V 5mA < Io1 < 500mA	5 4.9	5.1 5.1	5.2 5.3	V
Output Voltage 2	Vo2	Io2 = 10mA 11.5V < Vin2 < 18V 5mA < Io2< 500mA	8.82 8.65	9 9	9.18 9.35	V
Dropout Output Voltage 1,2	Vd1,2	Io1,2 = 500mA	-	-	2.5	V
Line Regulation 1,2	ΔVo 1,2	7.5V < Vin1< 14V 11.5V < Vin2< 18V Io1,2 = 200mA	-	-	50 80	mV
Load Regulation 1,2	ΔVo 1,2	5mA < Io1< 500mA 5mA < Io2 < 500mA	-	-	100 160	mV
Output Voltage 3	Vo3	Vsys =13V, Io3 = 100mA	11.7	12	12.3	V
Line Regulation 3	ΔVo3	13V < Vin2 <18V, Io3 =100mA	-	-	120	mV
Load Regulation 3	ΔVo3	5mA < Io3 < 1A	-	-	250	mV
Reset Pulse Delay	Trd	Cd = 100nF, Note1	-	25	-	ms
Saturation Voltage in Reset Condition	VrL	I6 = 5mA	-	-	0.4	V
Leakage Current at Pin 6	IrH	V6 = 10V	-	-	10	μA
Output Voltage Thermal Drift	STt	0°C < Tj < +125°C , Note2	-	100	-	ppm/°C
Short Circuit Output Current	Isc1,2	Vin1 = 7.5V ,Vin2 = 11.5V	-	-	1.6	A
Disable Voltage High	VdisH	Output 2 Active	0.8	-	2.0	V
Disable Voltage Low	VdisL	Output 2 Disabled	0.8	-	2.0	V
Disable Bias Current	Idis	0V < Vdis < 7V	-100	-	2	μA
Junction Temperature for TSD	Ttsd	Note2	-	145	-	°C
Quiescent Current	Iq	Io1=10mA, Output2 Disabled	-	-	2	mA
Reset Threshold Voltage	Vr	K = Vo1	K-0.4	K-0.25	K -0.1	V
Reset Threshold Hysteresis	Vrth	Note1	20	50	100	mA

Notes:

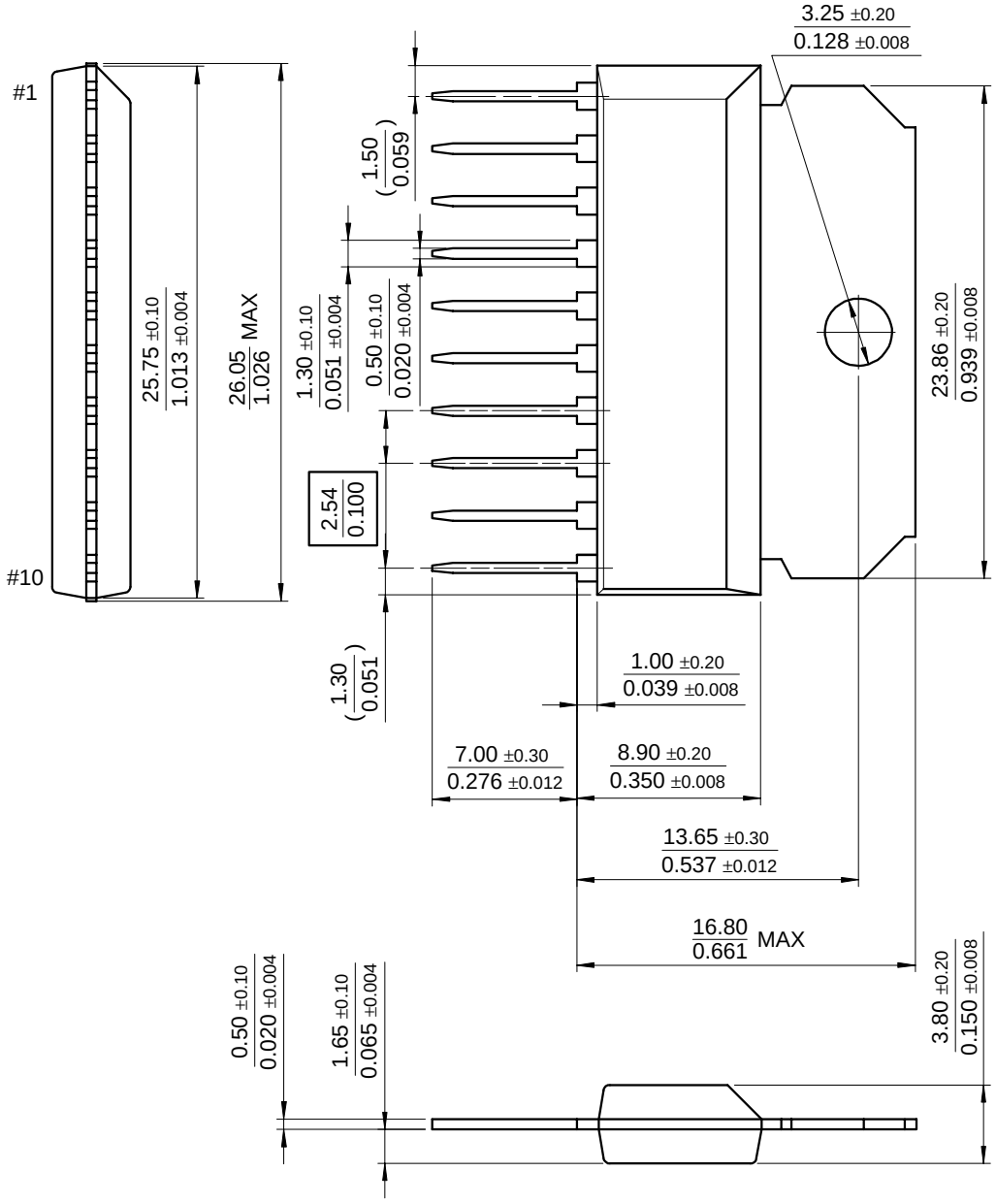
1. To check the reset circuit ,the reset output is low to discharge the delay capacitor(=Cd). if it's less than Vo1-0.25V. And the reset output is high when the delay capacitor voltage linearly increased by the internal current source(10μA) if it's more than Vo1- 0.2V. The equation of delay time is same as below. Trd = (Cd × 2.5) / 10μA
2. These parameters, although guaranteed, are not 100% tested in production.

Mechanical Dimensions

Package

Dimensions in millimeters

10-SIP-H/S



Ordering Information

Product Number	Package	Operating Temperature
KA7630	10-SIP-H/S	0°C to +125°C
KA7631		

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