

# KA2804

# ZERO VOLTAGE SWITCH

## ZERO VOLTAGE SWITCH

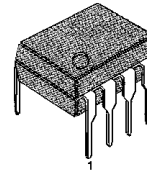
The KA2804 is a TRIAC controller providing a complete solution for temperature controlled electric panel heaters, cookers, film processing baths etc.

Switching occurs at the zero voltage point. In order to minimize radio frequency interference. The device is suitable for mains-on-line operation and regulators minimal components.

## FEATURES

- Easy operation either through the AC line or a DC supply.
- Supply voltage control.
- Very few external components.
- Symmetrical burst control-No DC current components in the load circuit.
- Negative output current pulse up to 250mA-short circuit protection.
- Reference voltage output.

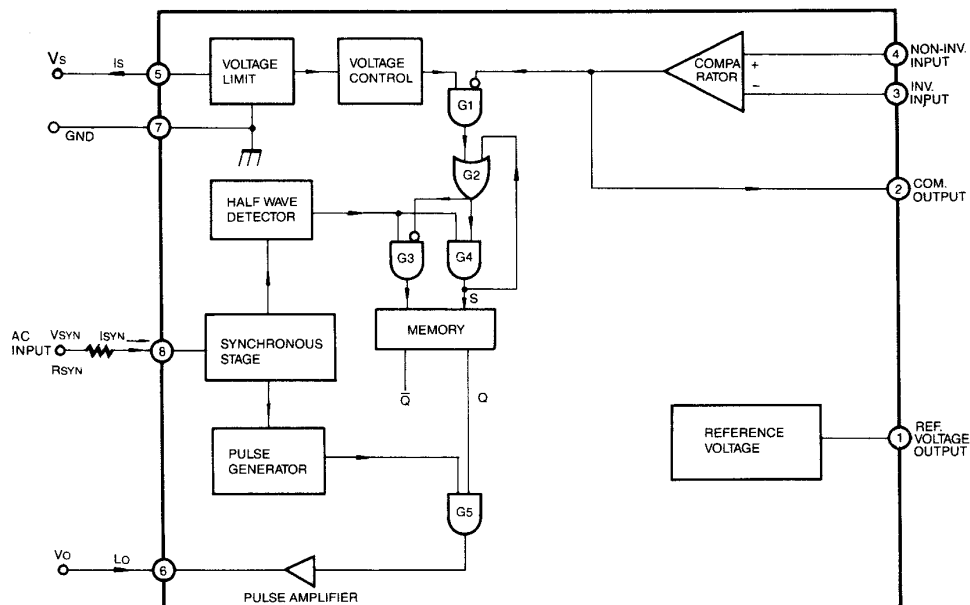
8 DIP



## ORDERING INFORMATION

Device	Package	Operating Temperature
KA2804N	8 DIP	-20 ~ + 70 °C

## BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ )

Characteristic	Symbol	Value	Unit
Supply Voltage	$-V_S$	8.2	V
Supply Current	$-I_S$	40(average)	mA
Synchronous Current	$I_{SYN}$	5.0(rms)	mA
Input Voltage	$V_I$	$\leq  V_S $	V
Power Dissipation	$P_D$	350	mW
Junction Temperature	$T_J$	125	$^\circ\text{C}$
Operating Ambient Temperature	$T_{OPR}$	- 20 ~ + 70	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	- 65 ~ + 150	$^\circ\text{C}$

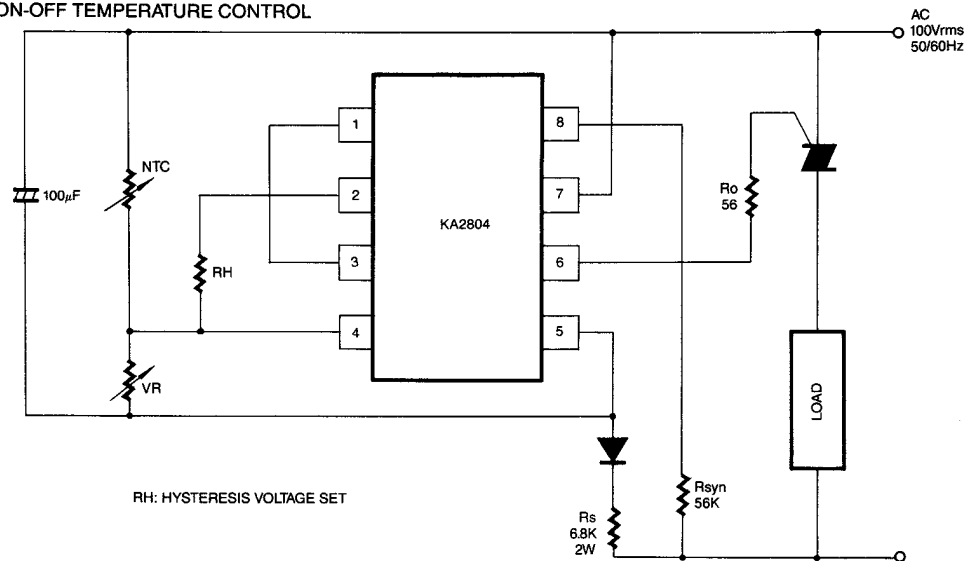
## ELECTRICAL CHARACTERISTICS

( $V_S = 8.0\text{V}$ ,  $V_{SYN} = 100$  to  $115\text{V}_{RMS}$ ,  $T_A = 25^\circ\text{C}$ ,  $f = 50/60\text{Hz}$  unless otherwise specified)

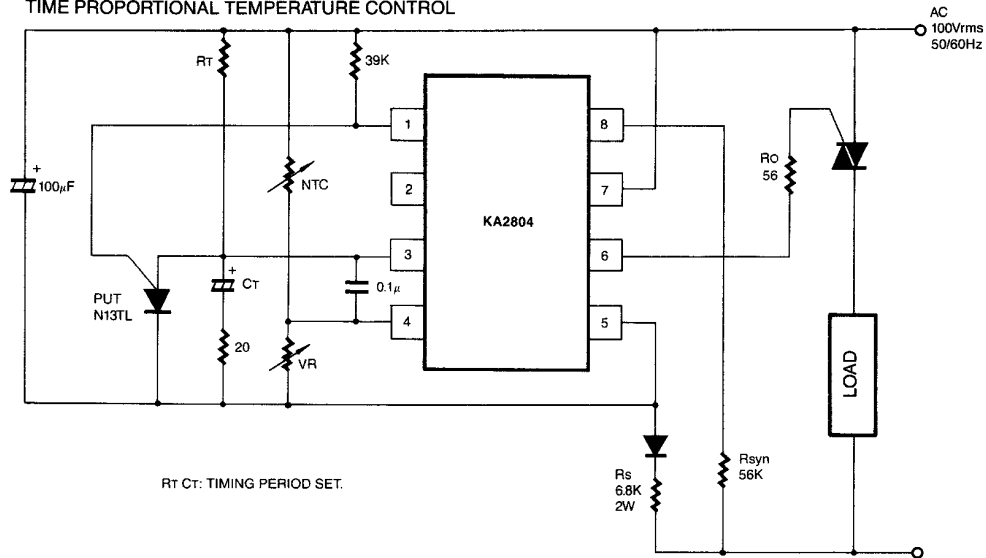
Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Circuit Current	$-I_S$	Pin 5, $R_{SYN} = 56\text{K}$	-	2.0	2.5	mA
Supply Voltage 1	$-V_S 1$	Pin 5, $I_S = 2.5\text{mA}$ $R_{SYN} = 56\text{K}$	7.2	-	8.4	V
Supply Voltage 2	$-V_S 2$	Pin 5, $I_S = 20\text{mA}$ $R_{SYN} = 56\text{K}$	7.2	-	8.6	V
Synchronous Current	$I_{SYN}$	Pin 8	0.3	-	-	mA
Output Pulse Width	$T_P$	Pin 6, $R_{SYN} = 56\text{K}$	-	200	-	$\mu\text{S}$
Output Voltage	$V_O$	Pin 6, $I_O \leq 200\text{mA}$	4.2	5.2	-	V
Output Current	$I_O$	Pin 6, $R_O \leq 25$	200	250	-	mA
Output Leakage Current	$I_{LO}$	Pin 6	-	-	2.0	$\mu\text{A}$
Input Offset Voltage	$V_{IO}$	Pin 3, 4	-	2.0	5.0	mV
Input Bias Current	$I_I$	Pin 3, 4	-	0.5	1.0	$\mu\text{A}$
Common Mode Input Voltage Range	$-V_{ICM}$	Pin 3, 4	0	-	5.7	V
Output Leakage Current	$I_{LC}$	Pin 2	-	-	0.2	$\mu\text{A}$
Reference Voltage	$-V_R$	Pin 1, $I_R \leq 1\mu\text{A}$	-	3.6	-	V

## APPLICATIONS

## ON-OFF TEMPERATURE CONTROL



## TIME PROPORTIONAL TEMPERATURE CONTROL



## TRADEMARKS

The following are registered and unregistered trademarks Fairchild Semiconductor owns or is authorized to use and is not intended to be an exhaustive list of all such trademarks.

ACEx™	ISOPLANAR™	UHC™
CoolFET™	MICROWIRE™	VCX™
CROSSVOLT™	POP™	
E <sup>2</sup> CMOS™	PowerTrench™	
FACT™	QS™	
FACT Quiet Series™	Quiet Series™	
FAST®	SuperSOT™-3	
FASTr™	SuperSOT™-6	
GTO™	SuperSOT™-8	
HiSeC™	TinyLogic™	

## DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

## LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, or (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

## PRODUCT STATUS DEFINITIONS

### Definition of Terms

Datasheet Identification	Product Status	Definition
Advance Information	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	This datasheet contains preliminary data, and supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
Obsolete	Not In Production	This datasheet contains specifications on a product that has been discontinued by Fairchild semiconductor. The datasheet is printed for reference information only.