

KA7511

SMPS Controller

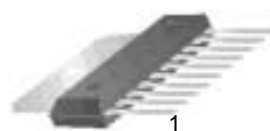
Features

- Wide Operating Range
- Under Voltage Lockout
- Direct Switching TR Drive
- Low Start-Up Current

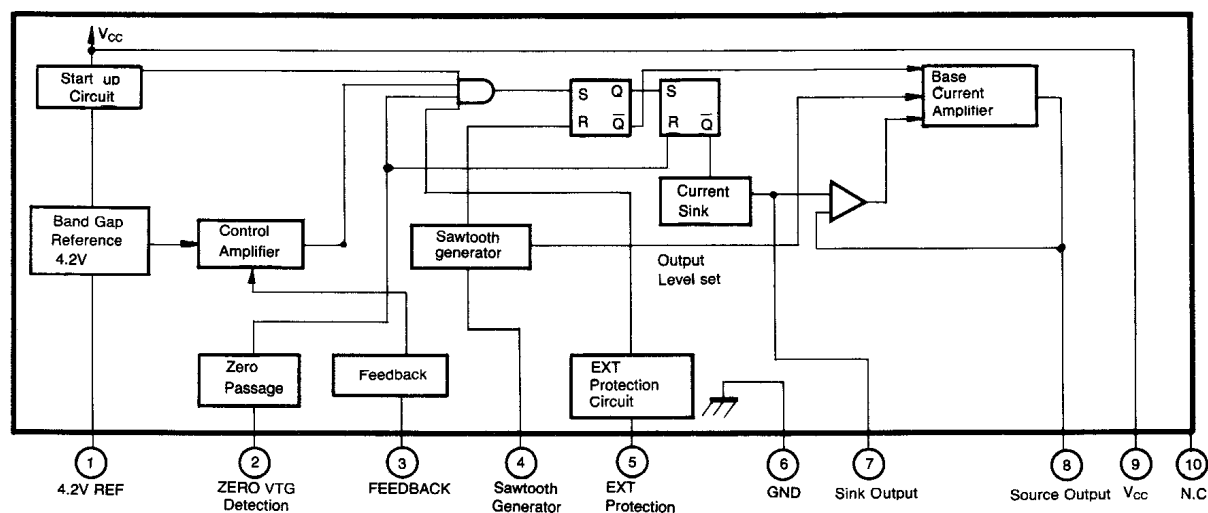
Description

The KA7511 drives, regulates and monitors the main switching element in a SMPS based on the nonsynchronous flyback theory. Because of the wide regulating range and the high voltage stability during large load changes, the power supplies for TV receivers and video recorders can be realized.

10-SIP H/S



Internal Block Diagram



Absolute Maximum Ratings (TA=25°C)

Parameter	Symbol	Value	Unit
Supply Voltage	V _{CC}	20	V
Reference Output Voltage	V _{REF}	6	V
Zero Passage Identification Voltage	V ₂	± 0.6	V
Control Amplifier Voltage	V ₃	3	V
Collector Current Simulation Voltage	V ₄	8	V
Blocking Input Voltage	V ₅	8	V
Base Current Cut-Off Point Voltage	V ₇	V ₉	V
Base Current Amplifier Output Voltage	V ₈	V ₉	V
Collector Current Simulation Current	I ₄	5	mA
Blocking Input Current	I ₅	5	mA
Base Current Cut-Off Point Current	I ₇	1.5	A
Base Current Amplifier Output Current	I ₈	-1.5	A
Operating Temperature Range	T _A	0 ~ +70	°C

Electrical Characteristics

(T_A = 25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Supply Voltage	V _{CC}	-	-	15	18	V
Start Operation						
Supply Current (1) (2) (3)	I _{CC1}	V ₉ = 2V	-	-	0.5	mA
	I _{CC2}	V ₉ = 5V	-	1.5	2.0	mA
	I _{CC3}	V ₉ = 10V	-	2.4	3.2	mA
Switch On V ₁	V ₉	-	11.0	11.8	12.3	V

Electrical Characteristics

($T_A = +25^{\circ}\text{C}$, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Normal Operation ($V_{CC} = 10\text{V}$, $V_{(CTRL)} = -10\text{V}$, $V_{(CLK)} = \pm 0.5\text{V}$, $f = 20\text{KHz}$, $D = 0.5$)						
Supply Current (4) (5)	I_{CC4}	$V_{(CTRL)} = -10\text{V}$	110	135	160	mA
	I_{CC5}	$V_{(CTRL)} = 0\text{V}$	50	75	100	mA
Reference Voltage(1) (2)	V_{REF1}	$I_1 \leq 0.1\text{mA}$	4.0	4.2	4.5	V
	V_{REF2}	$I_1 = 5\text{mA}$	4.0	4.2	4.4	V
Temperature Coefficient Of V_{REF}	$\Delta V_{REF}/\Delta T$	-	-	0.1	-	%
Control Voltage	V_3	$V_{(CTRL)} = 0\text{V}$	2.3	2.6	2.9	V
Collector Current Simulation Voltage	V_4	$V_{(CTRL)} = 0\text{V}$	1.8	2.2	2.5	V
	ΔV_4	$V_{(CTRL)} = 0 \sim -10\text{V}$	0.3	0.4	0.5	V
Clamping Voltage	V_5	-	6	7	8	V
Output Voltage	V_7	$V_{(CTRL)} = 0\text{V}$	2.7	3.3	4.0	V
	V_8	$V_{(CTRL)} = 0\text{V}$	2.7	3.4	4.0	V
	ΔV_8	$V_{(CTRL)} = 0 \sim -10\text{V}$	1.6	2.0	2.4	V
Feedback Voltage	V_2	-	-	0.2	-	V
Protective Operation ($V_{CC} = 10\text{V}$, $V_{(CTRL)} = -10\text{V}$, $V_{(CLK)} = \pm 0.5\text{V}$, $f = 20\text{KHz}$, $D = 0.5$)						
Supply Current (6)	I_{CC6}	$V_5 \leq 1.9\text{V}$	14	22	28	mA
Switch-Off Voltage (1) (2)	$V_{7(OFF)}$	$V_5 \leq 1.9\text{V}$	1.3	1.5	1.8	V
	$V_{4(OFF)}$	$V_5 \leq 1.9\text{V}$	1.8	2.1	2.5	V
Blocking Input Voltage	$V_{5(B)}$	$V_{(CTRL)} = 0\text{V}$	$V_1/2 - 0.1$	$V_1/2$	-	V
V_8 Off Voltage	$V_{9(OFF)}$	$V_{(CTRL)} = 0\text{V}$	6.7	7.4	7.8	V
V_1 Off Voltage	$\Delta V_{9(OFF)}$	$V_{(CTRL)} = 0\text{V}$	0.3	0.6	1	V

Note :

* After Switch-On

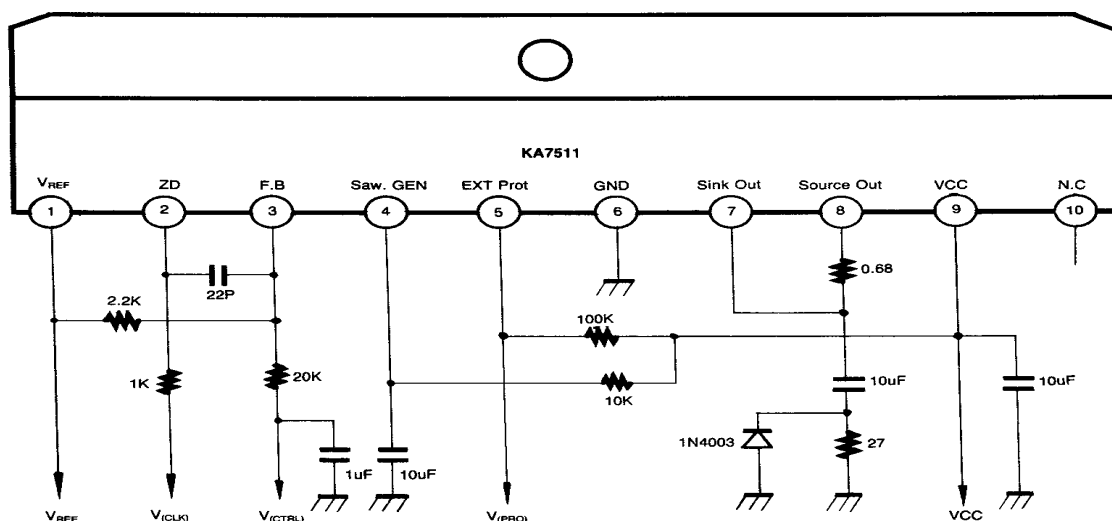
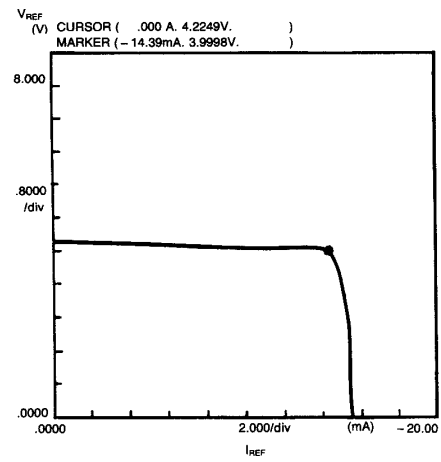
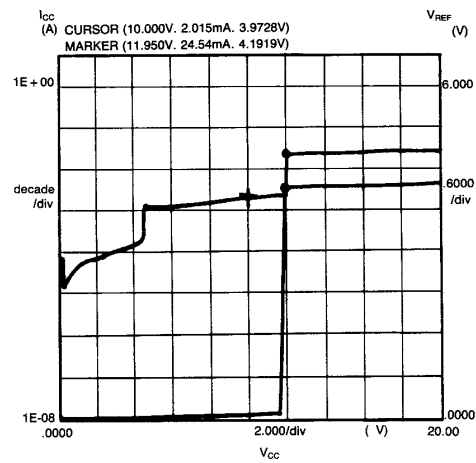


Figure 1. Test Circuit

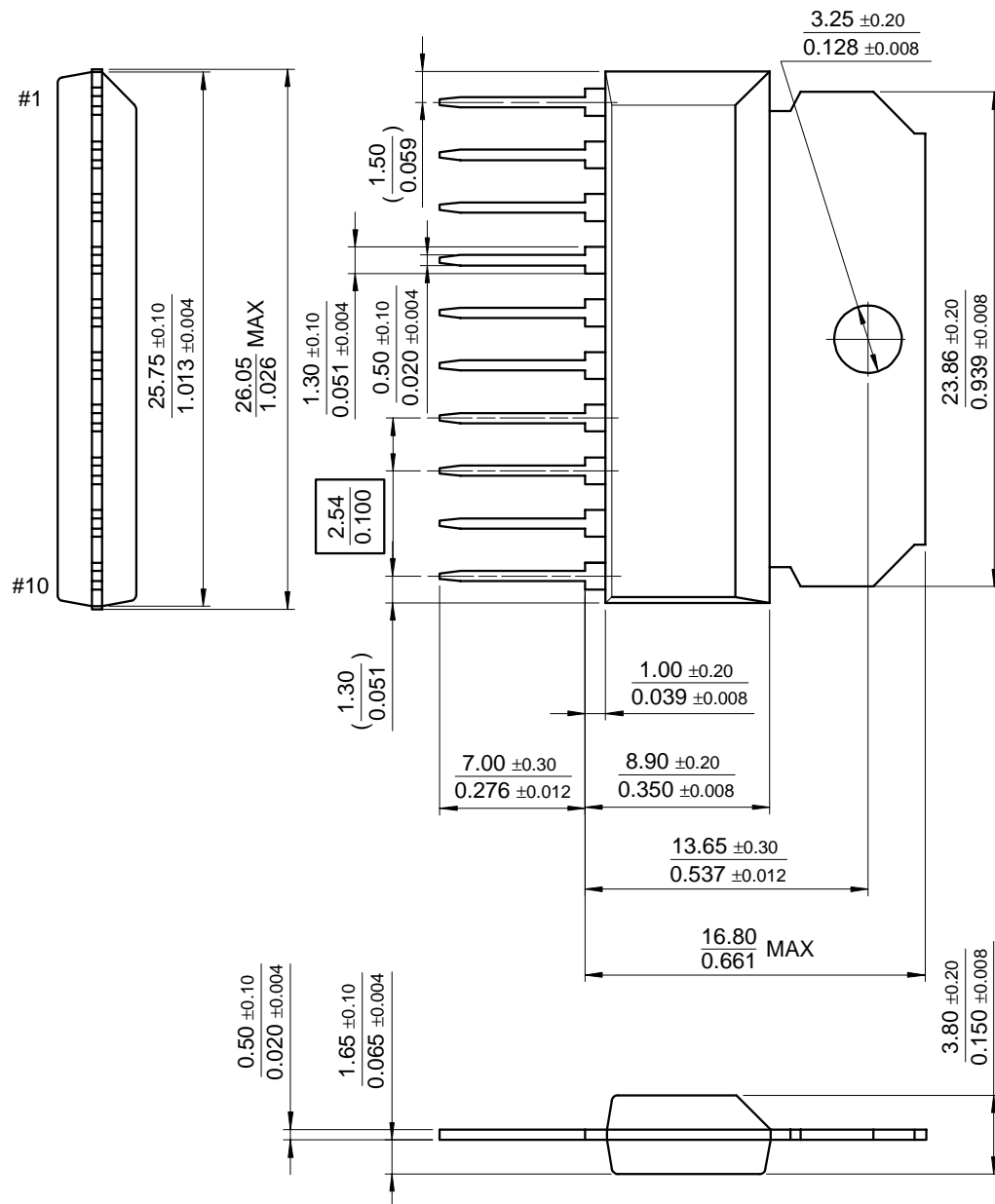
Figure 2. V_{REF} Vs I_{REF} ($T_A=25^\circ\text{C}$)Figure 3. I_{CC} Vs V_{REF} ($T_A=25^\circ\text{C}$)

Mechanical Dimensions

Package

Dimensions in millimeters

10-SIP H/S



Ordering Information

Product Number	Package	Operating Temperature
KA7511	10-SIP H/S	0 ~ +70°C

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