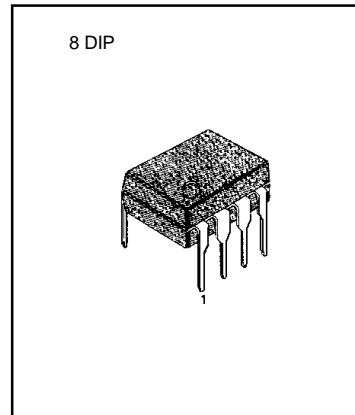


CONTROL IC FOR SMPS

The KA7515 provides the necessary features to implement switching mode power supply with a minimal external parts count. Internally implemented circuits include 3V reference voltage block, supply voltage monitoring block to control output through supply voltage and overload amplifier block to control output by external road variation. The KA7515 controls the power MOSFET and performs all necessary regulation and monitoring function in free running flyback converters.



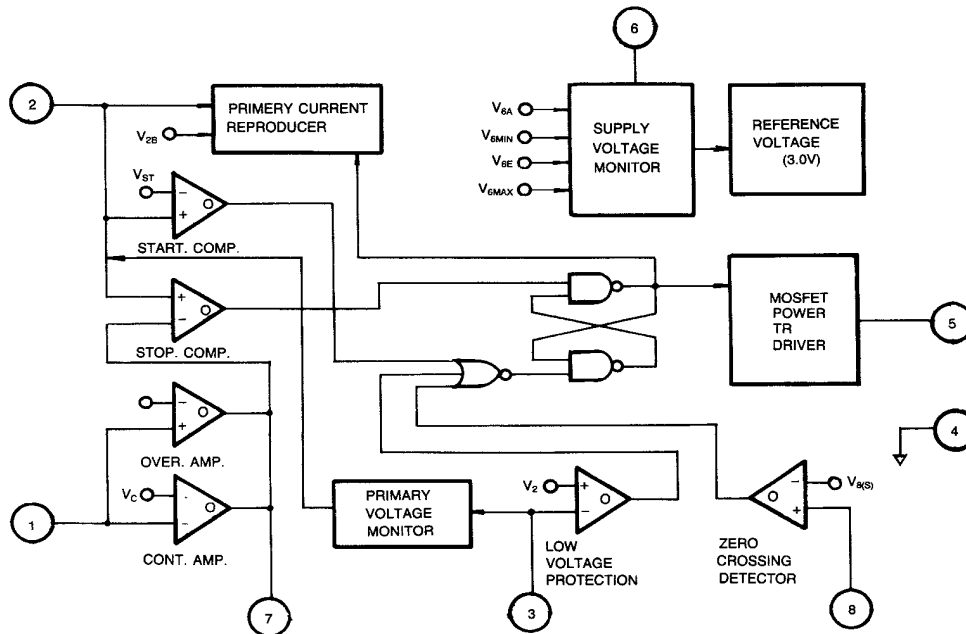
FEATURES

- Good load regulation over a wide load for external components.
- Internal soft-start for quiet start-up.
- Start-up supply current less than 1.6mA.
- Switch-off supply current less than 10mA.
- Burst operation under short-circuit conditions
- Thermal shutdown through over-temperature.

ORDERING INFORMATION

Device	Package	Operating temperature
KA7515	8 DIP	-20 ~ + 85°C

BLOCK DIAGRAM



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

Characteristic	Symbol	Value	Unit
Supply Voltage	$V_{CC}$	20	V
Collector Supply Voltage	$V_C$	13	V
Output current, Sink or Source	$I_O$	12	mA
Operating Temperature	$T_{OPR}$	-20 ~ + 85	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-65 ~ + 150	$^\circ\text{C}$

**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$ )

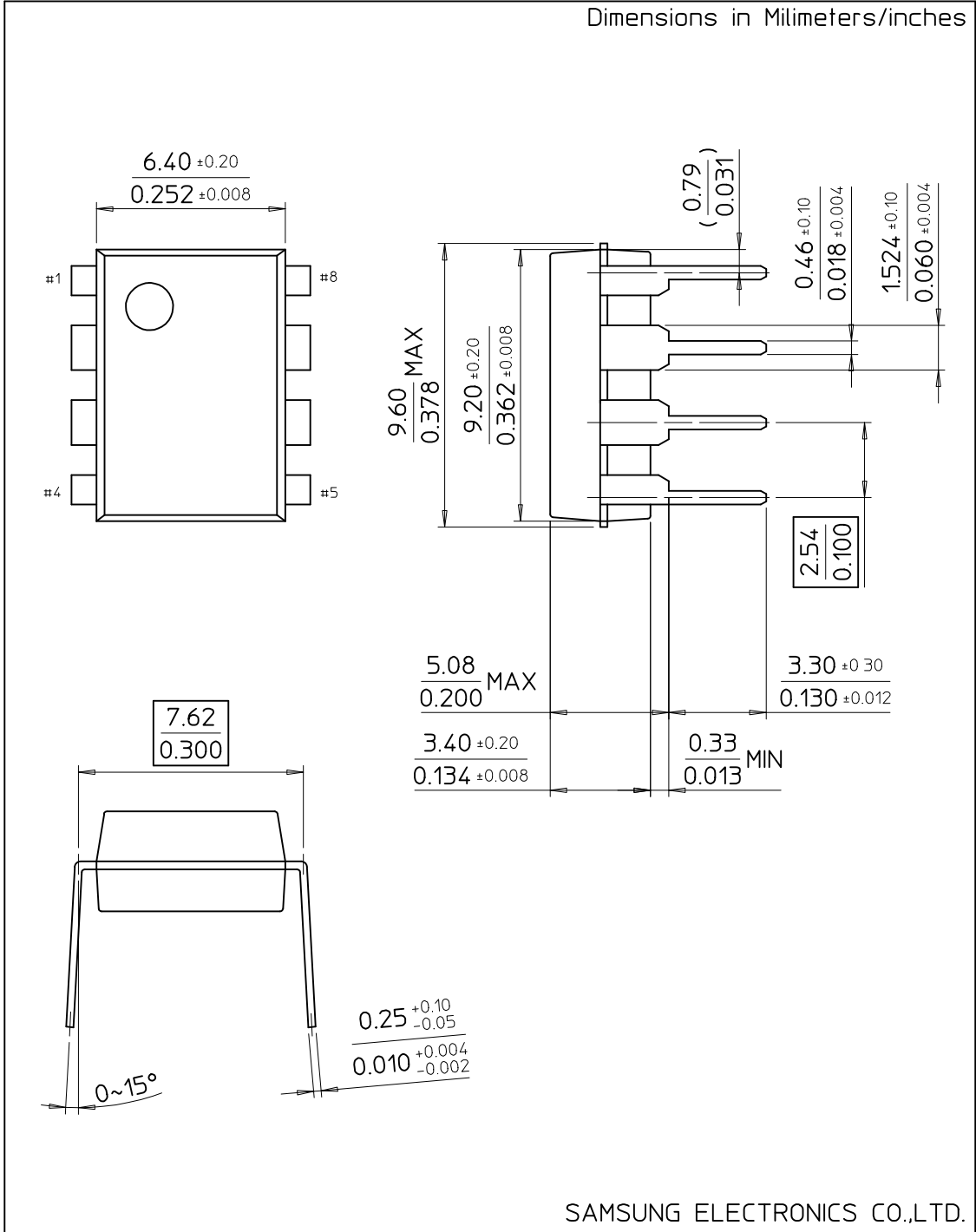
Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Start-up Hysteresis</b>						
Start-up Current (1)	$I_{ST1}$	$V_6 = 5V$	-	0.5	0.75	mA
Start-up Current (2)	$I_{ST2}$	$V_6 = 8V$	-	1.0	1.5	mA
Start-up Current (3)	$I_{ST3}$	$V_6 = V_{6E}$	-	1.1	1.6	mA
Switch On Voltage	$V_{6E}$	$V_1 = V_4 = V_8 = \text{GND}$	11	12	13	V
Switch Off Voltage	$V_{6A}$	$V_1 = V_4 = V_8 = \text{GND}$	6	6.5	7	V
Switch On Current	$I_{6E}$	$V_1 = V_4 = V_8 = \text{GND}$	-	9.0	12.0	mA
Switch Off Current	$I_{6A}$	$V_1 = V_4 = V_8 = \text{GND}$	-	8.0	10.0	mA
Voltage Limiter (Pin 2)	$V_{2(\text{MAX})}$	$V_6 = 10V$ (IC Switch-Off)	5.8	6.8	7.8	V
Voltage Limiter (Pin 3)	$V_{3(\text{MAX})}$	$V_6 = 10V$ (IC Switch-Off)	5.8	6.8	7.8	V
Control Input Voltage	$V_{I(\text{CTRL})}$	$V_6 = 10V$ (IC Switch-On)	370	400	430	mV
Gain In Control Range	$G_{V(\text{CTRL})}$	$V_6 = 10V$ (IC Switch-On)	48	51	54	dB
Basic Value	$V_{2B}$	$V_6 = 10V$ (IC Switch-On)	0.9	1.0	1.15	V
Maximum Peak Value	$V_{2(\text{MAX})}$	$V_6 = 10V$ (IC Switch-On)	2.8	3.0	3.4	V
Overload Range Upper Limit	$V_{IH}$	$V_6 = 10V$ (IC Switch-On)	370	400	430	mV
Overload Range Lower Limit	$V_{IL}$	$V_6 = 10V$ (IC Switch-On)	60	200	290	mV
Gain In Overload Range	$G_{V(\text{OVER})}$	$V_6 = 10V$ (IC Switch-On)	1	2	3	dB
Input Current	$I_1$	$V_6 = 10V$ (IC Swithc-On)	90	140	180	$\mu\text{A}$
<b>In Short-Circuit Operation</b>						
Peak Value (1)	$V_{2(\text{PK})1}$	$V_1 = 3.5V$	2.8	3.0	3.4	V
Peak Value (2)	$V_{2(\text{PK})2}$	$V_1 = 0V$	2.35	2.65	2.95	V
Output Pulse Width	$t_{W1}$	$V_1 = 3.5V$	3.5	5	6.5	$\mu\text{S}$
Output Pulse Width	$t_{W2}$	$V_1 = 0V$	2.5	4	5.5	$\mu\text{S}$
Current Consumption (1)	$I_{61}$	$V_1 = 3.5V$	-	12	15	mA
Current Consumption (2)	$I_{62}$	$V_1 = 0V$	-	12	15	mA
Overload Point	$-I_2$	$V_3 = V_4, V_2 = 0V$	400	660	850	$\mu\text{A}$

**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$ )

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Correction Current</b>						
Positive Value	$V_{8(P)}$	$I_8 = 1\text{mA}$	0.7	0.75	0.8	V
Negative Value	$V_{8(N)}$	$I_8 = -1\text{mA}$	0.15	0.22	0.25	V
Threshold Value	$V_{8(S)}$		40	50	60	mV
Delay Time	$t_D$		-	0.4	0.7	$\mu\text{S}$
Saturation Voltage (1)	$V_{SAT1}$	$I_5 = -1.0\text{A}$	-	2.5	3.0	V
Saturation Voltage (2)	$V_{SAT2}$	$I_5 = 1.0\text{A}$	-	2.5	3.0	V
Rising Edge	$+dV_5/dt$	$V_1 = 3.5\text{V}$	4.0	50	-	$\text{V}/\mu\text{S}$
Falling Edge	$-dV_5/dt$	$V_1 = 3.5\text{V}$	50	75	-	$\text{V}/\mu\text{S}$
Under VTG. Protection (1)	$\Delta V_{6(UV)}$	$V_{6MIN} = V_{6a} + \Delta V_6$	0.3	0.5	1	V
Over VTG. Protection	$V_{6(MAX)}$		14	15	16	V
Under VTG. Protection (2)	$V_{3(UV)}$		0.925	1	1.075	V
Overtemperature	$T_J$		150	175	200	$^\circ\text{C}$
<b>Protection</b>						
Voltage Pin 3	$V_3$	$I_3 = 1\text{mA}$	-	0.35	0.5	V

# 8-DIP-300

Dimensions in Millimeters/inches



SAMSUNG ELECTRONICS CO.,LTD.