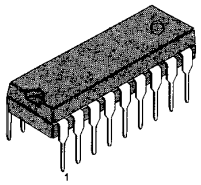
KA3526B SMPS CONTROLLER

VOLTAGE - MODE PWM CONTROLLER

The KA3526B is an excellent PWM controller for SMPS and other power control applications.
Functions included in an 18 dual-in-line package are a temperature stable voltage reference, pulse width modulator, error amplifier, sawtooth oscillator and two low impedance power drivers.
Protective features are included such as under voltage lockout, soft start, digital current limiting, adjustable deadtime and double pulse inhibit.

18 DIP



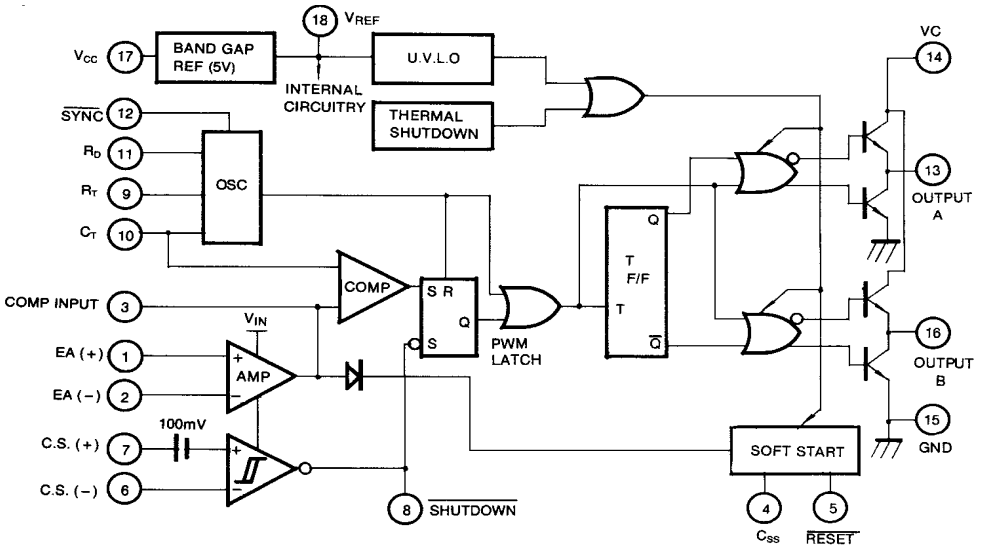
FEATURES

- 8 to 35V Operation
- 5V Bandgap Reference Trimmed to ± 1%
- Dual 100mA Source/Sink Outputs
- Programmable Dead Time
- Under-Voltage Lockout
- Single Pulse Metering
- Programmable Soft-Start
- Wide Current Limit Common Mode Range
- TTL/CMOS Compatible Logic Parts
- Symmetry Correction Capability
- Digital Current Limiting

ORDERING INFORMATION

Device	Package	Operating Temperature
KA3526B	18 DIP	0 ~ +70℃

BLOCK DIAGRAM



Rev. B

FAIRCHILD SEMICONDUCTOR™

ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	Value	Unit
Supply voltage	V_{CC}	40	V
Collector Supply Voltage	V_C	40	V
Output Current, Sink or Source	I_O	200	mA
Reference Output Current	I_{REF}	50	mA
Power Dissipation (T_A = 25℃)	P_D	1000	mW
Operating Temperature	T_{OPR}	0 ~ +70	℃
Storage Temperature	T_{STG}	- 65 ~ +150	℃
Lead Temperature (Soldering, 10sec)	T_{LEAD}	+300	℃

ELECTRICAL CHARACTERISTICS

(V_{CC} = 15V, T_A = 0℃ to + 70℃, unless otherwise specified)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
REFERENCE SECTION						
Reference Output Voltage	V_{REF}	T_J = 25℃	4.9	5.0	5.1	V
Line Regulation	ΔV_{REF}	V_{CC} = 7 to 35V		2.0	15	mV
Load Regulation	ΔV_{REF}	I_{REF} = 0 to 20mA		5.0	20	mV
Temperature Stability (Note)	ST_T	T_J = 0 to + 70℃		15	50	mV
Output Voltage Range (Note)	ΔV_{REF}		4.85	5.0	5.15	V
Short-Circuit Output Current	I_{SC}	V_{REF} = 0V	25	50	100	mA
UNDER-VOLTAGE LOCKOUT SECTION						
$\overline{\text{RESET}}$ Output Voltage	$V_{O(\overline{\text{RESET}})}$	V_{REF} = 3.8V		0.2	0.4	V
$\overline{\text{RESET}}$ Output Voltage	$V_{O(\overline{\text{RESET}})}$	V_{REF} = 4.7V	2.4	4.8		V
OSCILLATOR SECTION (f = 40KHz; R_T = 4.12KΩ ± 1%, C_T = 0.01μF ± 1%, R_D = 0Ω)						
Initial Accuracy	ACCUR	T_J = 25℃		± 3	± 8	%
Frequency Change with Voltage	$\Delta f/\Delta V_{CC}$	V_{CC} = 7 to 35V		0.5	1.0	%
Frequency Change with Temperature(Note)	$\Delta f/\Delta T$	T_J = 0 to 70℃		1.0	3.0	%
Minimum Frequency	$f_{(MIN)}$	R_T = 150KΩ , C_T = 20μF			1.0	Hz
Maximum Frequency	$f_{(MAX)}$	R_T = 2KΩ , C_T = 470pF	550	650		KHz
Sawtooth Peak Volotage	$V_{PK(SAW)}$	V_{CC} = 35V		3.0	3.5	V
Sawtooth Valley Voltage	$V_{VL(SAW)}$	V_{IN} = 7V	0.5	1.0		V
SYNC Pulse Width	$t_{W(SYNC)}$	R_L = 2.7Ω to V_{REF}, T_J =25℃		1.1		μS

ELECTRICAL CHARACTERISTICS (V_{CC} = 15V, T_A = 0℃ to +70℃, unless otherwise specified)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
ERROR AMPLIFIER SECTION (V_{CM} = 0 to 5.2V)						
Input Offset Voltage	V_{IO}	R_S≤ 2KΩ		0.8	10	mV
Input Bias Current	I_{BIAS}			- 90	- 2000	nA
Input Offset Current	I_{IO}			5	200	nA
Open Loop Voltage Gain	G_{VO}	R_1≥ 10MΩ , T_J = 25℃	60	72		dB
High Output Voltage	V_{OH}	V_1-V_2≥ 0.15V I_{SOURCE} = 100μ a	3.6	4.2		V
Low Output Voltage	V_{OL}	V_2-V_1≥ 0.15V I_{SOURCE} = 100μ a		0.2	0.4	V
Common Mode Rejection Ratio	CMRR	R_2≤ 2KΩ	70	94		dB
Power Supply Rejection Ratio	PSRR	V_{CC} = 12 to 18V	66	80		dB
PWM COMPARATOR SECTION (f = 40KHz; R_T = 4.12KΩ ± 1%, C_T = 0.01μ F± 1%, R_D = 0Ω)						
Minimum Duty Cycle	$D_{(MIN)}$	V_3 = 0.4V			0	%
Maximum Duty Cycle	$D_{(MAX)}$	V_3 = 3.6V	45	49		%
DIGITAL PORTS (SYNC, SHUTDOWN and RESET)						
High Output Voltage	V_{OH}	I_{SOURCE} = 40μ A	2.4	4.0		V
Low Output Voltage	V_{OL}	I_{SINK} = 3.6mA		0.2	0.4	V
High Input Current	$I_{I H}$	V_{IH} = 2.4V		-125	- 200	μ A
Low Input Current	$I_{I L}$	V_{IL} = 0.4V		- 225	- 360	μ A
Shutdown Delay	$t_{D(SD)}$	From Pin 8, T_J = 25℃		160		ns
CURRENT LIMIT COMPARATOR SECTION (V_{CM} = 0 to 12V)						
Sense Voltage	V_{SENSE}	R_S≤ 50Ω , T_J = 25℃	80	100	120	mV
Input Bias Current	I_{BIAS}			- 3.0	- 10	μ A
SOFT-START SECTION						
Error Clamp Voltage	V_{EC}	V_5 = 0.4V		0.1	0.4	V
C_S Charging Current	$I_{CHG(CS)}$	V_5 = 2.4V	50	100	150	μ A
OUTPUT DRIVERS (Each Output) (V_C = 15V)						
High Output Voltage 1	V_{OH1}	I_{SOURCE} = 20mA	12.5	13.5		V
High Output Voltage 2	V_{OH2}	I_{SOURCE} = 100mA	12	13		V
Low Output Voltage 1	V_{OL1}	I_{SINK} = 20mA		0.2	0.3	V
Low Output Voltage 2	V_{OL2}	I_{SINK} = 100mA		1.2	2.0	V
Collector Leakage Current	I_{LKG}	V_C = 40V		50	150	μ A
Rise Time	t_R	C_L = 1nF		0.3	0.6	μ S
Fall Time	t_F	C_L = 1nF		0.1	0.2	μ S
Cross Conduction Charge	C_C	Per Cycle, T_J= 25℃		8		nC
POWER CONSUMPTION SECTION(V_{CC} = 35V, R_T = 4.12KΩ)						
Supply Current	I_{CC}	V_8 = 0.4V		14	25	mA

NOTE

- These parameters although guaranteed over the recommended operating conditions are not 100% tested in production.

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PRODUCT STATUS DEFINITIONS

Definition of Terms

Datasheet Identification	Product Status	Definition
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