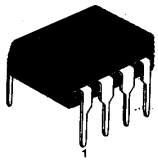
KA7552/3 SMPS CONTROLLER

PWM CONTROLLER

The KA7552/3 are switching power control IC for wide operating frequency range. The internal circuits include pulse by pulse current limiting, protection, on/off control by external trigger, low standby current, soft start, and high current totempole output for driving a POWER MOS-FET.
Maximum duty of the KA7552 is 70% and the KA7553 is 46%.
When duty is maximum, the input threshold voltage of pin2 & pin8 are not same in KA7552 and KA7553.

8 DIP



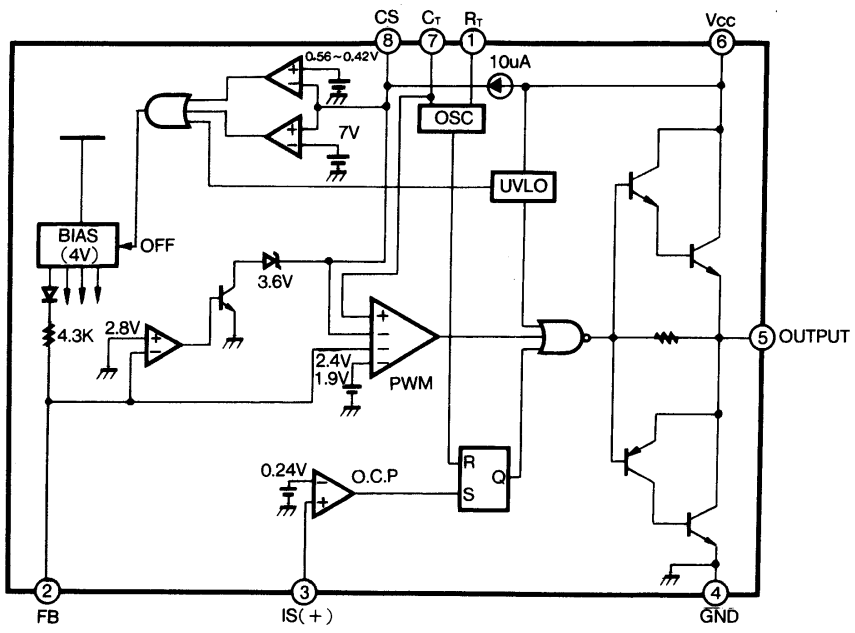
FEATURES

- Built-in Drive Circuits for Direct Connection POWER MOSFET (I_O= ± 1.5A)
- Wide Operating Frequency Range (5KHz ~ 600KHz)
- Pulse By Pulse Over Current Limiting
- Over Load Protection
- On/Off Control By External Trigger
- Internal UVLO
- Low Standby Current (Typ. 90uA)
- Soft Start Circuit

ORDERING IN FORMATION

Device	Package	Operating Temperature
KA7552/3	8 DIP	-25 ~ + 85℃

BLOCK DIAGRAM



FAIRCHILD SEMICONDUCTOR™

ABSOLUTE MAXIMUM RATINGS

Characteristic	Symbol	Value	Unit
Supply Voltage	V_{CC}	30	V
Output Current	I_O	± 1.5	A
Input Voltage at Overcurrent Detection Pin	$V_{IN(IS)}$	- 0.3 to 4	V
Input Voltage at FB Pin	$V_{IN(FB)}$	4	V
Input Current at CS Pin	$I_{IN(CS)}$	2	mA
Total Power Dissipation(Ta = 25℃)	P_D	800	mW
Operating Temperature	T_{OPR}	- 25 to 85	℃

ELECTRICAL CHARACTERISTICS

(V_{CC} = 18V, F_{OSC} = 135KHz, T_A = 25℃, unless otherwise specified)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
OSCILLATOR SECTION						
Initial Accuracy	F_{OSC}	C_T = 360pF, T_J = 25℃	125	135	145	KHz
Frequency Variation 1	Δ F/Δ V	V_{CC} = 10V to 30V	-	± 1	± 3	%
Frequency Variation 2 *	Δ F/Δ V	T_A = 25℃ to 85℃	-	± 1.5	-	%
Ramp High Voltage	V_{RH}	C_T = 360pF, T_{jJ}= 25℃	2.80	3.08	3.30	V
Ramp Low Voltage	V_{RL}	C_T = 360pF, T_J = 25℃	0.6	0.9	1.2	V
Amplitude	V_{OSC}	V_{PIN7}, Peak to Peak	1.80	2.18	2.50	V
PULSE WIDTH MODULATION SECTION						
Input Threshold Voltage(Pin2)	$V_{TH(FBD)}$	Duty Cycle = 0%	0.6	0.75	0.95	V
Input Threshold Voltage(Pin2) *	$V_{TH(FB1)}$(KA7552)	Duty Cycle = Dmax 1	2.1	2.3	2.6	V
	$V_{TH(FB2)}$(KA7553)	Duty Cycle = Dmax 2	1.6	1.8	2.1	V
Max. Duty Cycle	$D_{(Max 1)}$(KA7552)	-	66	70	74	%
	$D_{(Max 2)}$(KA7553)	-	43	46	49	%
Source Current(Pin2)	$I_{SOURCE(FB)}$	V_{PIN2} = 0V	- 660	- 800	- 960	uA

ELECTRICAL CHARACTERISTICS(Continued)

(V_{CC} = 18V, F_{OSC} = 135Khz, T_A = 25℃, unless otherwise specified)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
OVERCURRENT LIMIT SECTION						
Input Threshold Voltage	$V_{TH(IS)}$	-	0.21	0.24	0.27	V
Source Current(Pin3)	$I_{SOURCE(IS)}$	VPIN3 = 0V	-300	-200	-100	uA
Deley Time *	T_D	-	-	150	-	ns
SOFT START SECTION						
Charging Current	I_{CHG}	V_{PIN8} = 0V	-15	-10	-5	uA
Input Threshold Voltage(Pin8)	$V_{TH(CSO)}$	Duty Cycle = Dmax 1	0.7	0.9	1.1	V
Input Threshold Voltage(Pin8) *	$V_{TH(CS1)}$(KA7552)	Duty Cycle = Dmax 2	2.2	2.4	2.6	V
	$V_{TH(CS2)}$(KA7553)		1.7	1.9	2.1	V
LATCH MODE SHUTDOWN CIRCUIT SECTION						
Sink Current(Pin8)	$I_{SINK(CS)}$	V_{PIN8} = 6V, V_{PIN2} = 1V	25	45	65	uA
Shutdown Threshold Voltage	$V_{TH(SD,CS)}$	-	6.7	7.2	7.7	V
OVERLOAD SHUTDOWN SECTION						
Shudown Threshold Voltage	$V_{TH(SD,FB)}$	-	2.6	2.8	3.1	V
UNDER VOLTAGE LOCKOUT SECTION						
Start-Up Threshold Voltage	$V_{TH(ST)}$	-	15.5	16.0	16.5	V
Minimum Operating Voltage	$V_{OPR(Min)}$	-	8.20	8.70	9.20	V
Hysteresis	V_{HYS}	-	6.40	7.30	8.20	V
ON/OFF CONTROL SECTION						
Source Current(Pin8)	$I_{SOURCE(CS)}$	V_{PIN8} = 0V	- 15	- 10	- 5	uA
On Threshold Voltage	$V_{TH(ON)}$	V_{PIN8} : OFF->ON	0.45	0.56	0.70	V
Off Threshold Voltage	$V_{TH(OFF)}$	V_{PIN8} : ON -> OFF	0.30	0.42	0.55	V

ELECTRICAL CHARACTERISTICS(Continued)

(V_{CC} = 18V, F_{OSC} = 135KHz, T_A = 25℃, unless otherwise specified)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
OUTPUT SECTION						
Low Output Voltage	V_{OL}	I_O = 100mA, V_{CC} = 18V	-	1.3	1.8	V
High Output Voltage	V_{OH}	I_O = -100mA, V_{CC} = 18V	16.0	16.5	18.0	V
Rise Time *	T_R	NO LOAD	-	50	-	ns
Fall Time *	T_F	NO LOAD	-	50	-	ns
OVERALL						
Stard-by Current	I_{SB}	V_{CC} = 14V	-	90	150	uA
Operating Current	$I_{CC(OPR)}$	V_{PIN2} = 0V	-	9	15	mA
Power Supply Current off	$I_{CC(OFF)}$	V_{PIN8} = 0V	-	1.1	1.8	mA
Power Supply Current Shutdown	$I_{CC(SD)}$	V_{PIN8} = 7.6V	-	1.1	1.8	mA

* These parameters, although guaranteed, are not 100% tested in production.
NOTE : Recommend Operating Condition
R_T = 3.3KΩ ~ 10KΩ , Oscillation Frequency = 5KHz ~ 600KHz
Soft Start Condensor(CS) = 0.1uF ~ 1uF

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PRODUCT STATUS DEFINITIONS

Definition of Terms

Datasheet Identification	Product Status	Definition
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