

KA7552A/3A

SMPS Controller

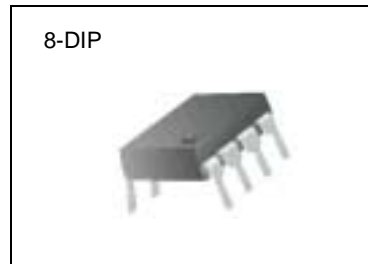
Features

- Built-in Drive Circuits for Direct Connection POWER MOSFET ($I_O = \pm 1.5A$)
- 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

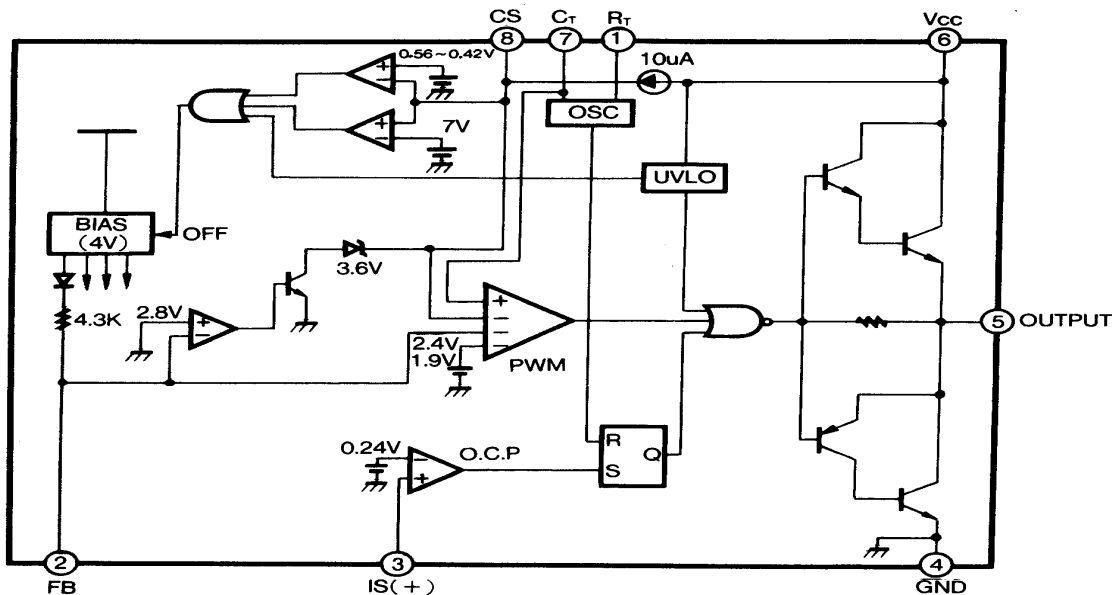
Description

PWM Controller

The KA7552A/3A 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 MOSFET. Maximum duty of the KA7552A is 70% and the KA7553A is 46%. When duty is maximum, the input threshold voltage of pin2 & pin8 are not same in KA7552A and KA7553A.



Internal Block Diagram



Absolute Maximum Ratings

Parameter	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(T _a = 25°C)	P _D	800	mW
Operating Temperature	T _{OPR}	- 25 to 85	°C

Electrical Characteristics

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
OSCILLATOR SECTION						
Initial Accuracy	F _{OSC}	C _T = 360pF, T _J = 25°C	125	135	145	KHz
Frequency Variation 1	ΔF/ΔV	V _{CC} = 10V to 30V	-	±1	±3	%
Frequency Variation 2*	ΔF/ΔV	T _A = 25°C to 85°C	-	±1.5	-	%
Ramp High Voltage	V _{RH}	C _T = 360pF, T _J = 25°C	2.80	3.08	3.30	V
Ramp Low Voltage	V _{RL}	C _T = 360pF, T _J = 25°C	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 = D _{max 1}	2.1	2.3	2.6	V
	V _{TH(FB2)} (KA7553)	Duty Cycle = D _{max 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	μA
OVERCURRENT LIMIT SECTION						
Input Threshold Voltage	V _{TH(IS)}	-	0.21	0.24	0.27	V
Source Current(Pin3)	I _{SOURCE(IS)}	V _{PIN3} = 0V	-300	-200	-100	μA
Deley Time*	T _D	-	-	150	-	ns
SOFT START SECTION						
Charging Current	I _{CHG}	V _{PIN8} = 0V	-15	-10	-5	μA
Input Threshold Voltage(Pin8)	V _{TH(CSO)}		0.7	0.9	1.1	V
Input Threshold Voltage(Pin8) *	V _{TH(CS1)} (KA7552)	Duty Cycle = D _{max 1}	2.2	2.4	2.6	V
	V _{TH(CS2)} (KA7553)	Duty Cycle = D _{max 2}	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	μA
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

Electrical Characteristics (Continued)

(VCC = 18V, FOSC = 135KHz, TA = 25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
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
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						
Stand-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

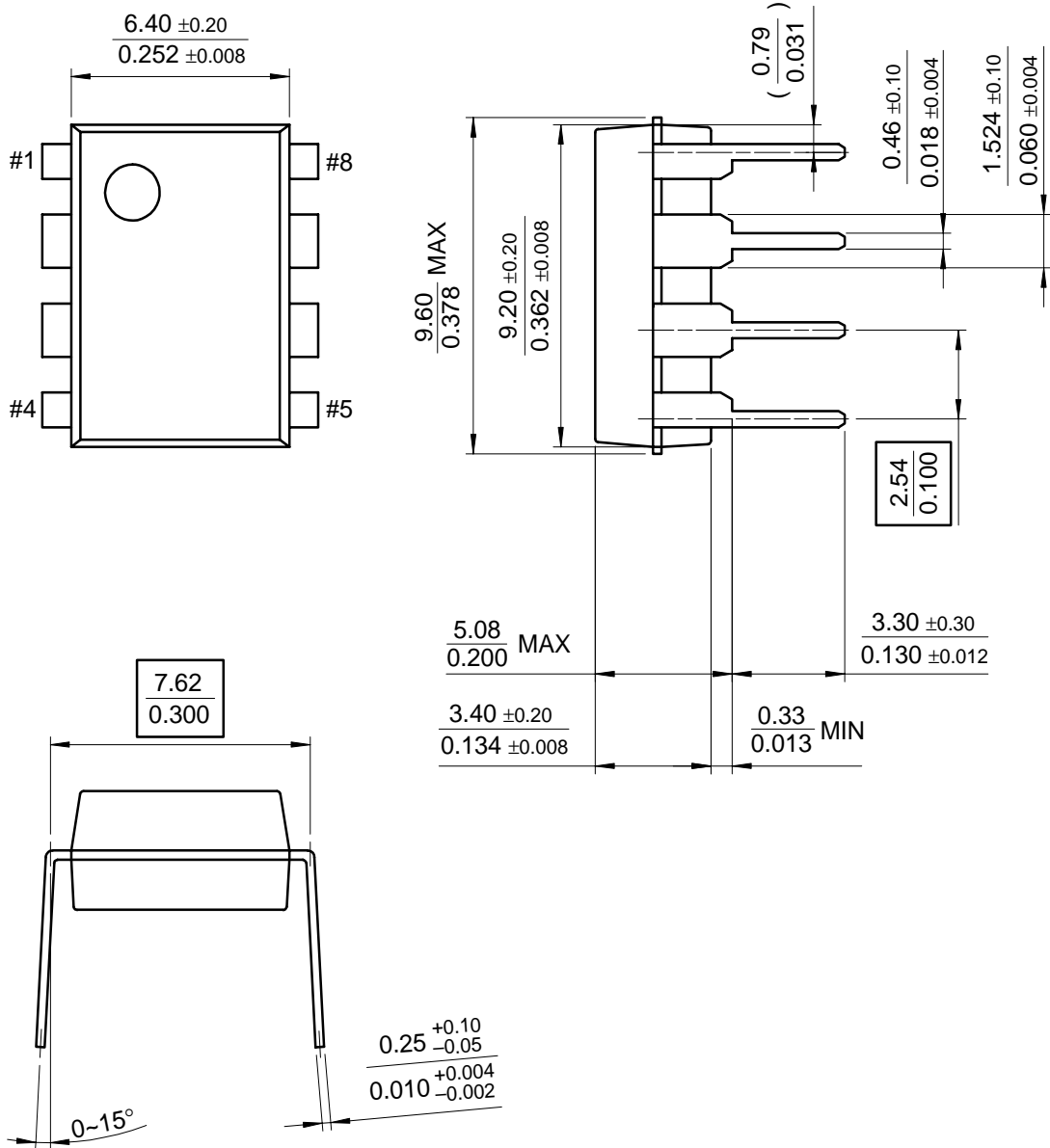
RT = 3.3KΩ ~ 10KΩ, Oscillation Frequency = 5KHz ~ 600KHz

Soft Start Capacitor(C_S) = 0.1uF ~ 1uF

Mechanical Dimensions

Package

8-DIP



Ordering Information

Product Number	Package	Operating Temperature
KA7552A/3A	8 DIP	-25 ~ + 85°C

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