

KA7552A/KA7553A

SMPS Controller

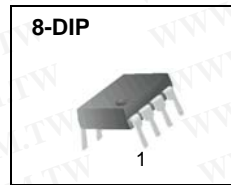
勝特力材料 886-3-5753170
 勝特力电子(上海) 86-21-34970699
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Features

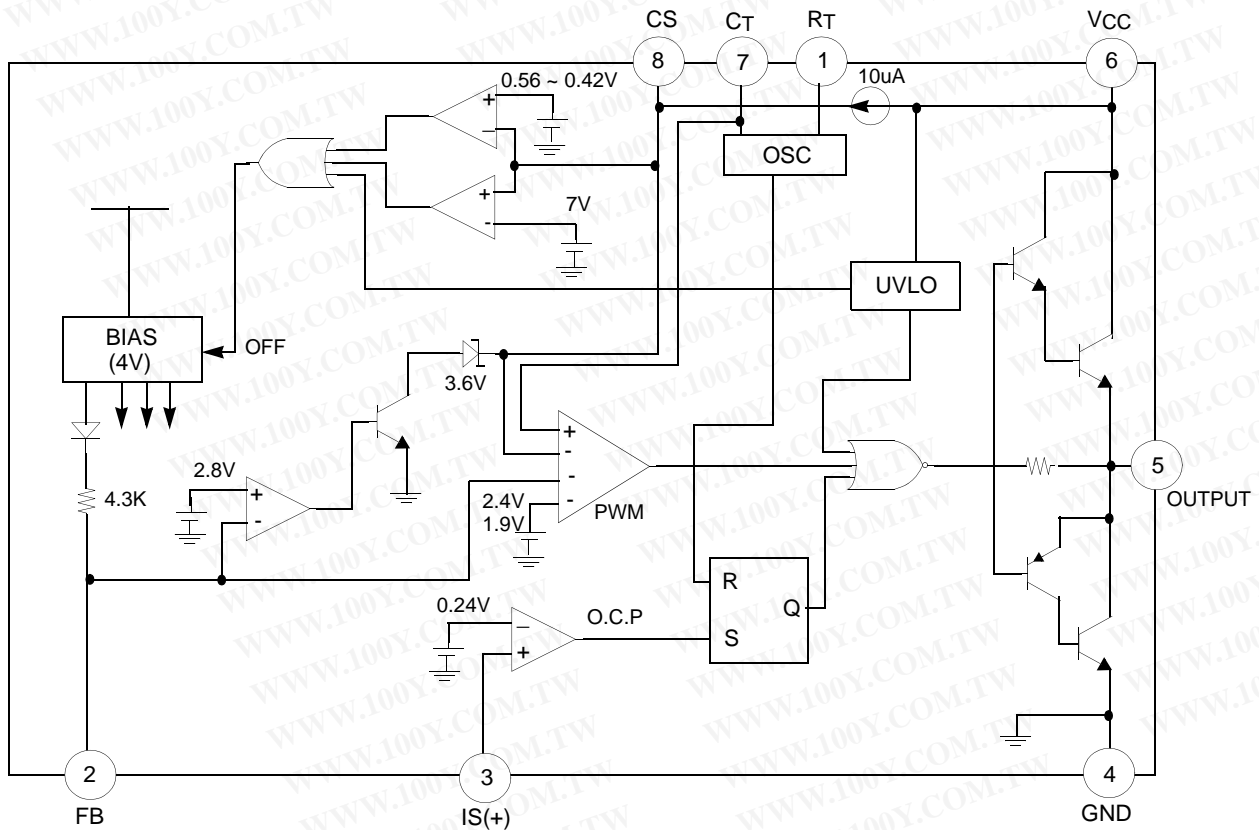
- Built-in drive circuits for direct connection power MOSFET ($I_O = \pm 1.5A$)
- Wide operating frequency range (5kHz ~ 600kHz)
- Pulse by pulse over current limiting
- Over load protection
- On/off control by external trigger
- Internal UVLO
- Low standby current (typ. 90uA)
- Soft start circuit

Description

The KA7552A/KA7553A 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	VCC	30	V
Output current	IO	±1.5	A
Input voltage at overcurrent detection pin	VIN(IS)	-0.3 to 4	V
Input voltage at FB pin	VIN(FB)	4	V
Input current at CS pin	IIN(CS)	2	mA
Total power dissipation (Ta = 25°C)	PD	800	mW
Operating temperature	TOPR	-25 to 85	°C
Storage temperature range	TSTG	-65 to 150	°C
Junction temperature	Tj	+125	°C

Electrical Characteristics

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
OSCILLATOR SECTION						
Initial accuracy	FOSC	CT = 360pF, TJ = 25°C	125	135	145	kHz
Frequency variation 1	$\Delta F/\Delta V$	VCC = 10V to 30V	-	±1	±3	%
Frequency variation 2 ^(Note1)	$\Delta F/\Delta V$	TA = 25°C to 85°C	-	±1.5	-	%
Ramp high voltage	VRH	CT = 360pF, TJ = 25°C	2.80	3.08	3.30	V
Ramp low voltage	VRL	CT = 360pF, TJ = 25°C	0.6	0.9	1.2	V
Amplitude	VOSC	VPIN7, peak to peak	1.80	2.18	2.50	V
PULSE WIDTH MODULATION SECTION						
Input threshold voltage(pin2)	VTH(FBD)	Duty cycle = 0%	0.6	0.75	0.95	V
Input threshold voltage(pin2) ^(Note1)	VTH(FB1) (KA7552)	Duty cycle = Dmax 1	2.1	2.3	2.6	V
	VTH(FB2) (KA7553)	Duty cycle = Dmax 2	1.6	1.8	2.1	V
Max. duty cycle	D(Max1) (KA7552)	-	66	70	74	%
	D(Max2) (KA7553)	-	43	46	49	%
Source current(pin2)	ISOURCE(FB)	VPIN2 = 0V	-660	-800	-960	uA
OVERCURRENT LIMIT SECTION						
Input threshold voltage	VTH(IS)	-	0.21	0.24	0.27	V
Source current(pin3)	ISOURCE(IS)	VPIN3 = 0V	-300	-200	-100	uA
Deley time ^(Note1)	TD	-	-	150	-	ns
SOFT START SECTION						
Charging current	ICHG	VPIN8 = 0V	-15	-10	-5	uA
Input threshold voltage(pin8)	VTH(CSO)	-	0.7	0.9	1.1	V
Input threshold voltage(pin8) ^(Note1)	VTH(CS1) (KA7552)	Duty cycle = Dmax 1	2.2	2.4	2.6	V
	VTH(CS2) (KA7553)	Duty cycle = Dmax 2	1.7	1.9	2.1	V
LATCH MODE SHUTDOWN CIRCUIT SECTION						
Sink current(pin8)	ISINK(CS)	VPIN8 = 6V, VPIN2 = 1V	25	45	65	uA
Shutdown threshold voltage	VTH(SD,CS)	-	6.7	7.2	7.7	V
OVERLOAD SHUTDOWN SECTION						
Shutdown threshold voltage	VTH(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.	Unit
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 ^(Note1)	T _R	No load	-	50	-	ns
Fall time ^(Note1)	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

Note :

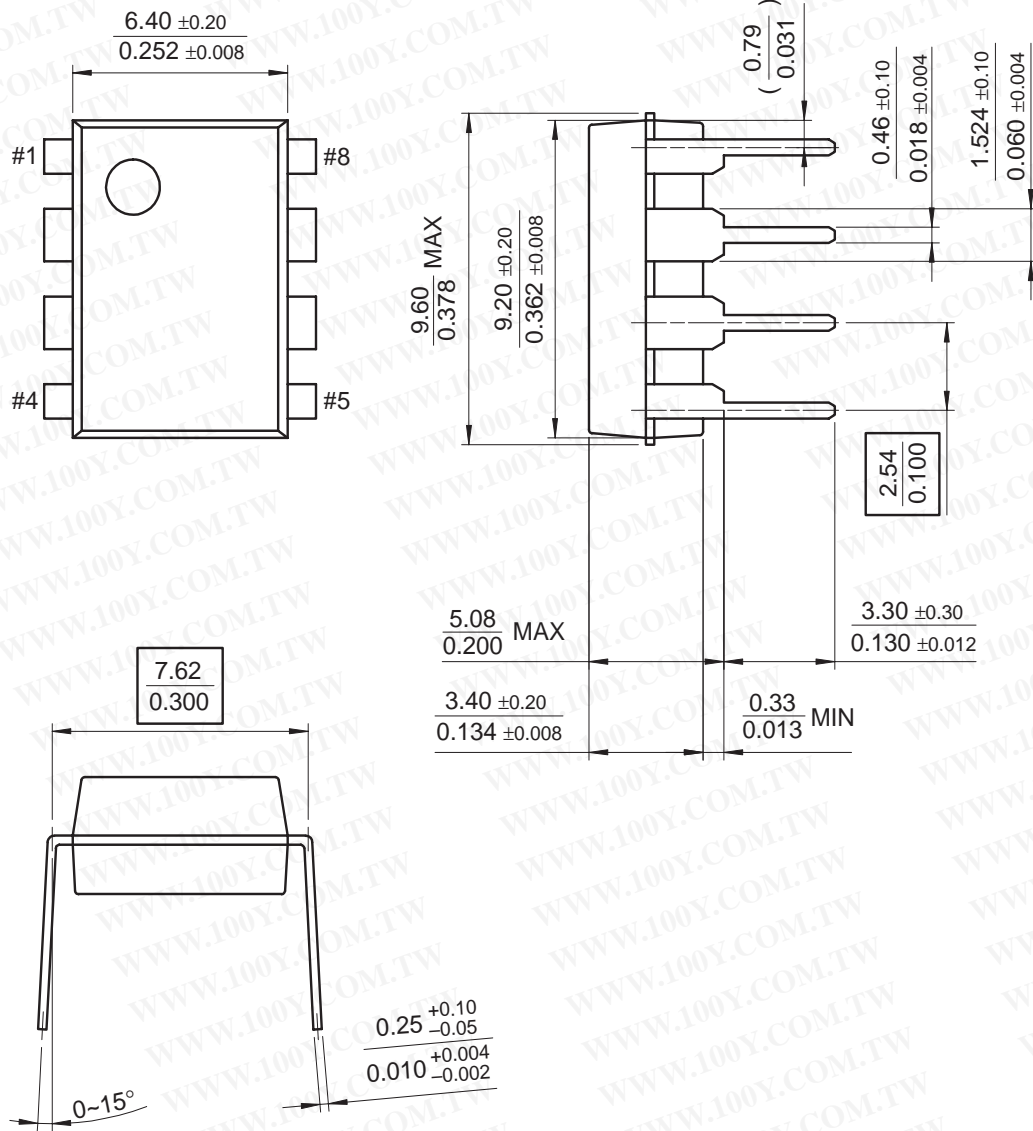
- These parameters, although guaranteed, are not 100% tested in production.
- Recommend operating condition :
 - V_{cc(min)} = 12V
 - R_T = 3.3kΩ ~ 10kΩ
 - Oscillation frequency = 5kHz ~ 600kHz
 - Soft start capacitor(C_S) = 0.1uF ~ 1uF

Mechanical Dimensions

Package

Dimensions in millimeters

8-DIP



Ordering Information

Product Number	Package	Operating Temperature
KA7552A	8-DIP	-25 ~ +85°C
KA7553A		

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