



Is Now Part of



**ON Semiconductor®**

To learn more about ON Semiconductor, please visit our website at  
[www.onsemi.com](http://www.onsemi.com)

Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (\_), the underscore (\_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (\_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at [www.onsemi.com](http://www.onsemi.com). Please email any questions regarding the system integration to [Fairchild\\_questions@onsemi.com](mailto:Fairchild_questions@onsemi.com).

ON Semiconductor and the ON Semiconductor logo are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that ON Semiconductor was negligent regarding the design or manufacture of the part. ON Semiconductor is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

# KA7552A/KA7553A

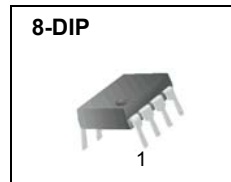
## SMPS Controller

### Features

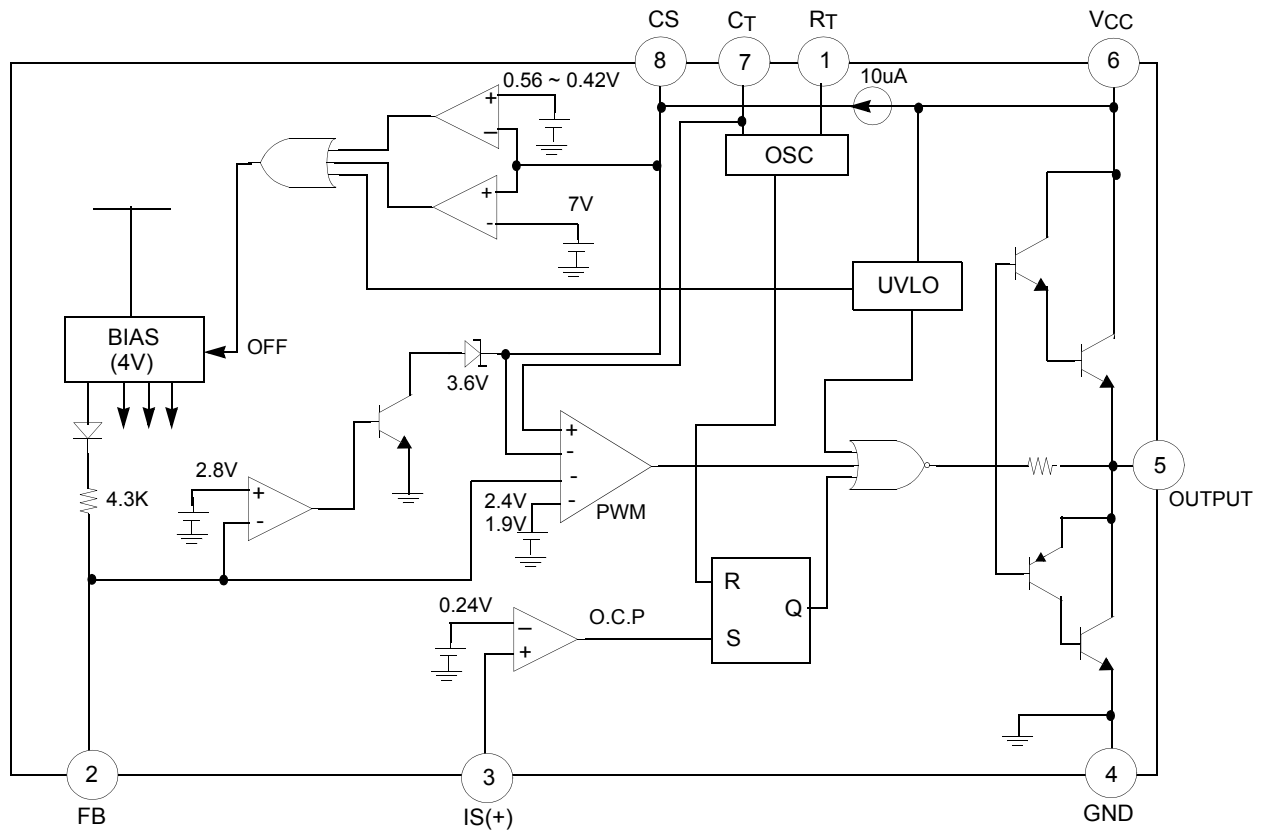
- Built-in drive circuits for direct connection power MOSFET ( $I_O = \pm 1.5A$ )
- Wide operating frequency range (5kHz ~ 600kHz)
- Pulse by pulse over current limiting
- Over load protection
- On/off control by external trigger
- Internal UVLO
- Low standby current (typ. 90uA)
- Soft start circuit

### Description

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	V <sub>CC</sub>	30	V
Output current	I <sub>O</sub>	±1.5	A
Input voltage at overcurrent detection pin	V <sub>IN(IS)</sub>	-0.3 to 4	V
Input voltage at FB pin	V <sub>IN(FB)</sub>	4	V
Input current at CS pin	I <sub>IN(CS)</sub>	2	mA
Total power dissipation (T <sub>a</sub> = 25°C)	P <sub>D</sub>	800	mW
Operating temperature	T <sub>OPR</sub>	-25 to 85	°C
Storage temperature range	T <sub>STG</sub>	-65 to 150	°C
Junction temperature	T <sub>J</sub>	+125	°C

## Electrical Characteristics

(V<sub>CC</sub> = 18V, F<sub>OSC</sub> = 135kHz, T<sub>A</sub> = 25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>OSCILLATOR SECTION</b>						
Initial accuracy	F <sub>OSC</sub>	C <sub>T</sub> = 360pF, T <sub>J</sub> = 25°C	125	135	145	kHz
Frequency variation 1	ΔF/ΔV	V <sub>CC</sub> = 10V to 30V	-	±1	±3	%
Frequency variation 2 <sup>(Note1)</sup>	ΔF/ΔV	T <sub>A</sub> = 25°C to 85°C	-	±1.5	-	%
Ramp high voltage	V <sub>RH</sub>	C <sub>T</sub> = 360pF, T <sub>J</sub> = 25°C	2.80	3.08	3.30	V
Ramp low voltage	V <sub>RL</sub>	C <sub>T</sub> = 360pF, T <sub>J</sub> = 25°C	0.6	0.9	1.2	V
Amplitude	V <sub>OSC</sub>	V <sub>PIN7</sub> , peak to peak	1.80	2.18	2.50	V
<b>PULSE WIDTH MODULATION SECTION</b>						
Input threshold voltage(pin2)	V <sub>TH(FBD)</sub>	Duty cycle = 0%	0.6	0.75	0.95	V
Input threshold voltage(pin2) <sup>(Note1)</sup>	V <sub>TH(FB1)</sub> (KA7552)	Duty cycle = D <sub>max</sub> 1	2.1	2.3	2.6	V
	V <sub>TH(FB2)</sub> (KA7553)	Duty cycle = D <sub>max</sub> 2	1.6	1.8	2.1	V
Max. duty cycle	D <sub>(Max1)</sub> (KA7552)	-	66	70	74	%
	D <sub>(Max2)</sub> (KA7553)	-	43	46	49	%
Source current(pin2)	I <sub>SOURCE(FB)</sub>	V <sub>PIN2</sub> = 0V	-660	-800	-960	uA
<b>OVERCURRENT LIMIT SECTION</b>						
Input threshold voltage	V <sub>TH(IS)</sub>	-	0.21	0.24	0.27	V
Source current(pin3)	I <sub>SOURCE(IS)</sub>	V <sub>PIN3</sub> = 0V	-300	-200	-100	uA
Deley time <sup>(Note1)</sup>	T <sub>D</sub>	-	-	150	-	ns
<b>SOFT START SECTION</b>						
Charging current	I <sub>CHG</sub>	V <sub>PIN8</sub> = 0V	-15	-10	-5	uA
Input threshold voltage(pin8)	V <sub>TH(CSO)</sub>	-	0.7	0.9	1.1	V
Input threshold voltage(pin8) <sup>(Note1)</sup>	V <sub>TH(CS1)</sub> (KA7552)	Duty cycle = D <sub>max</sub> 1	2.2	2.4	2.6	V
	V <sub>TH(CS2)</sub> (KA7553)	Duty cycle = D <sub>max</sub> 2	1.7	1.9	2.1	V
<b>LATCH MODE SHUTDOWN CIRCUIT SECTION</b>						
Sink current(pin8)	I <sub>SINK(CS)</sub>	V <sub>PIN8</sub> = 6V, V <sub>PIN2</sub> = 1V	25	45	65	uA
Shutdown threshold voltage	V <sub>TH(SD,CS)</sub>	-	6.7	7.2	7.7	V
<b>OVERLOAD SHUTDOWN SECTION</b>						
Shutdown threshold voltage	V <sub>TH(SD,FB)</sub>	-	2.6	2.8	3.1	V

**Electrical Characteristics** (Continued)(V<sub>CC</sub> = 18V, FOSC = 135kHz, T<sub>A</sub> = 25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>UNDER VOLTAGE LOCKOUT SECTION</b>						
Start-up threshold voltage	V <sub>TH(ST)</sub>	-	15.5	16.0	16.5	V
Minimum operating voltage	V <sub>OPR(Min)</sub>	-	8.20	8.70	9.20	V
Hysteresis	V <sub>HYS</sub>	-	6.40	7.30	8.20	V
<b>ON/OFF CONTROL SECTION</b>						
Source current(pin8)	I <sub>SOURCE(CS)</sub>	V <sub>PIN8</sub> = 0V	-15	-10	-5	uA
On threshold voltage	V <sub>TH(ON)</sub>	V <sub>PIN8</sub> : OFF->ON	0.45	0.56	0.70	V
Off threshold voltage	V <sub>TH(OFF)</sub>	V <sub>PIN8</sub> : ON -> OFF	0.30	0.42	0.55	V
<b>OUTPUT SECTION</b>						
Low output voltage	V <sub>OL</sub>	I <sub>O</sub> = 100mA, V <sub>CC</sub> = 18V	-	1.3	1.8	V
High output voltage	V <sub>OH</sub>	I <sub>O</sub> = -100mA, V <sub>CC</sub> = 18V	16.0	16.5	18.0	V
Rise time <sup>(Note1)</sup>	T <sub>R</sub>	No load	-	50	-	ns
Fall time <sup>(Note1)</sup>	T <sub>F</sub>	No load	-	50	-	ns
<b>OVERALL</b>						
Stand-by current	I <sub>SB</sub>	V <sub>CC</sub> = 14V	-	90	150	uA
Operating current	I <sub>CC(OPR)</sub>	V <sub>PIN2</sub> = 0V	-	9	15	mA
Power supply current off	I <sub>CC(OFF)</sub>	V <sub>PIN8</sub> = 0V	-	1.1	1.8	mA
Power supply current shutdown	I <sub>CC(SD)</sub>	V <sub>PIN8</sub> = 7.6V	-	1.1	1.8	mA

**Note :**

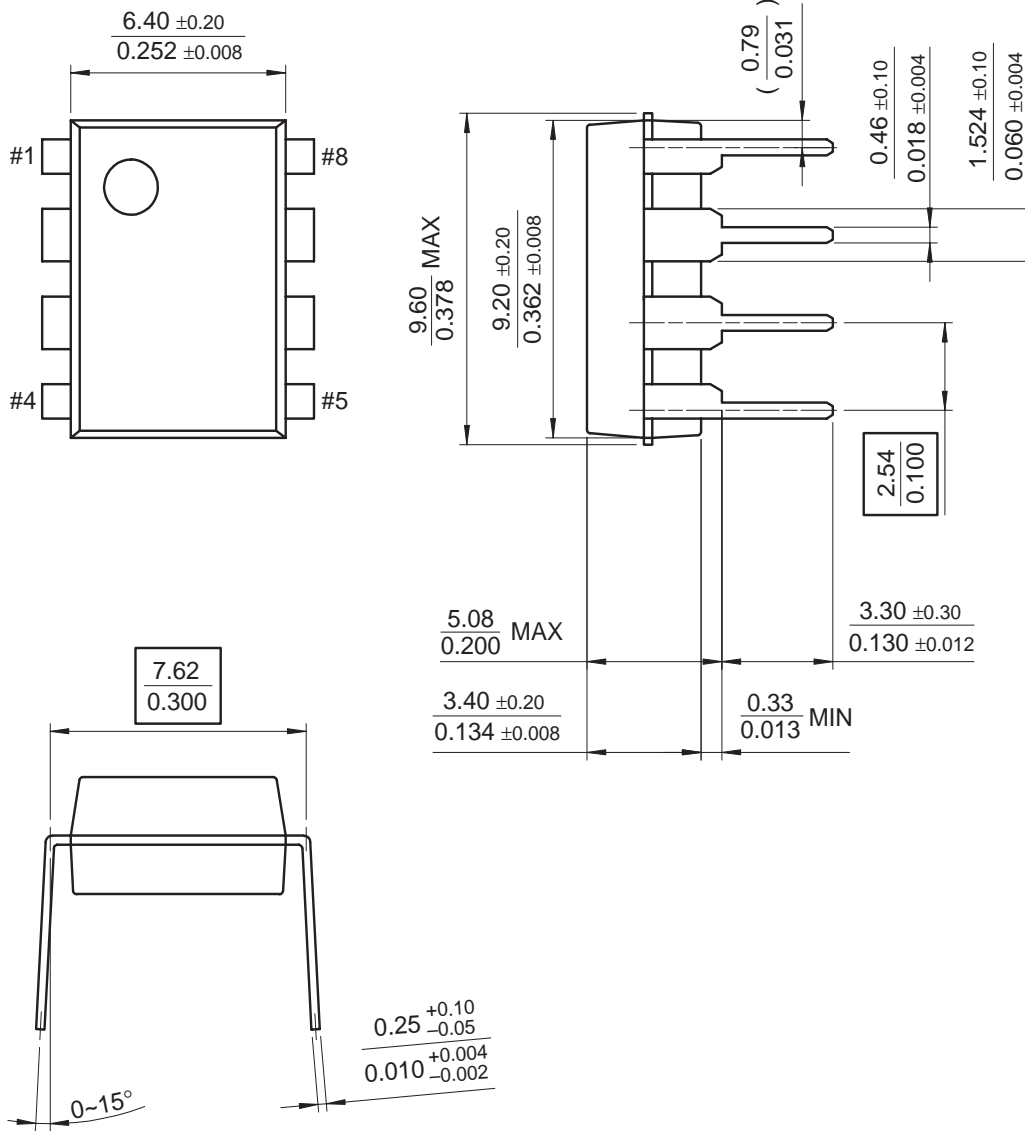
1. These parameters, although guaranteed, are not 100% tested in production.
2. Recommend operating condition :
  - V<sub>CC(min)</sub> = 12V
  - R<sub>T</sub> = 3.3kΩ ~ 10kΩ
  - Oscillation frequency = 5kHz ~ 600kHz
  - Soft start capacitor(C<sub>S</sub>) = 0.1uF ~ 1uF

# Mechanical Dimensions

## Package

Dimensions in millimeters

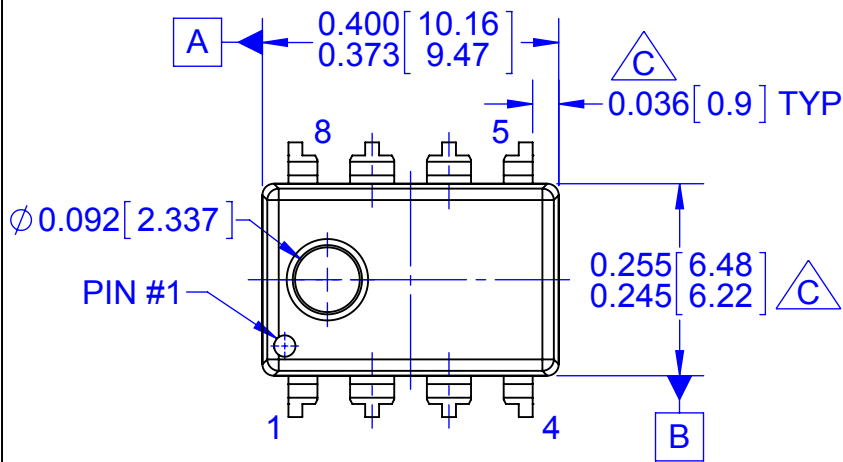
### 8-DIP



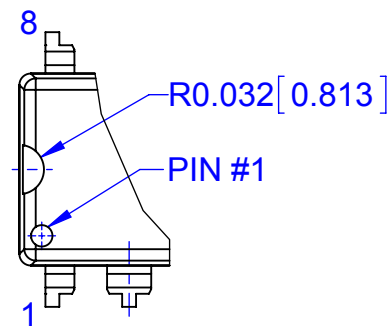
---

## Ordering Information

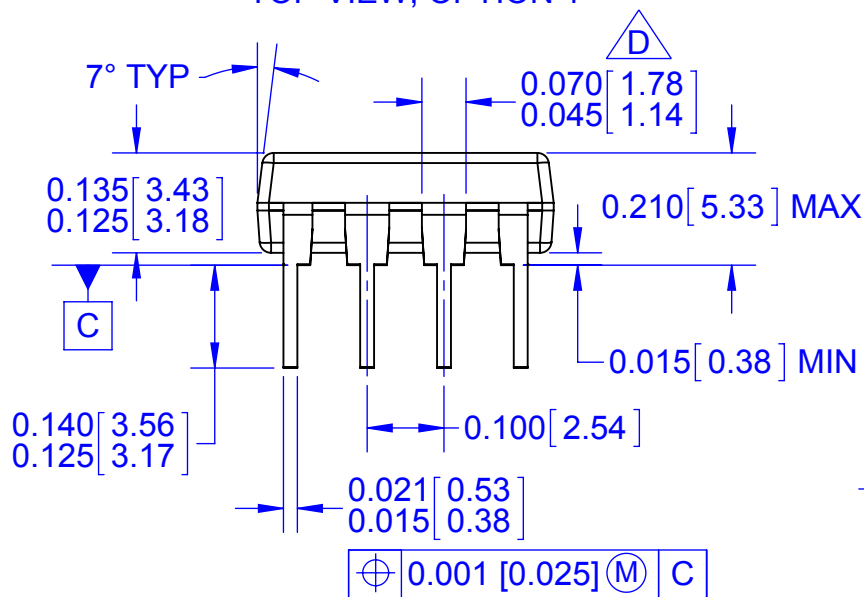
Product Number	Package	Operating Temperature
KA7552A	8-DIP	-25 ~ +85°C
KA7553A		



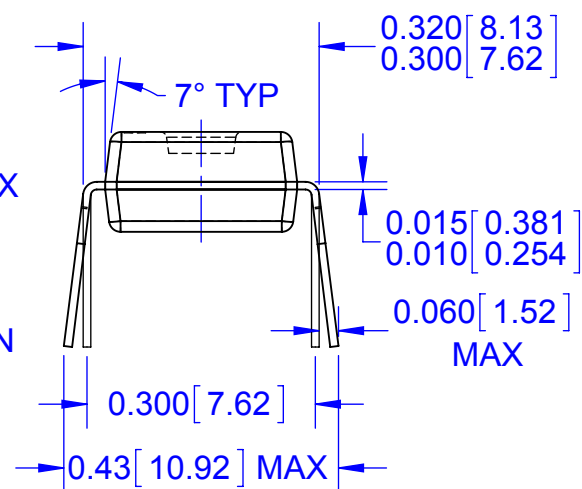
TOP VIEW, OPTION 1



TOP VIEW, OPTION 2



FRONT VIEW



SIDE VIEW

NOTES:

- A. CONFORMS TO JEDEC MS-001, VARIATION BA
- B. CONTROLLING DIMENSIONS ARE IN INCHES.  
REFERENCE DIMENSIONS ARE IN MILLIMETERS.

**C** DOES NOT INCLUDE MOLD FLASH OR PROTRUSIONS.  
MOLD FLASH OR PROTRUSIONS SHALL NOT EXCEED  
0.010 INCHES OR 0.25MM.

**D** DOES NOT INCLUDE DAMBAR PROTRUSIONS.  
DAMBAR PROTRUSIONS SHALL NOT EXCEED 0.010  
INCHES OR 0.25MM.

E. DIMENSIONING AND TOLERANCING PER ASME  
Y14.5M-2009

F. DRAWING FILENAME: MKT-N08Erev8



ON Semiconductor and  are trademarks of Semiconductor Components Industries, LLC dba ON Semiconductor or its subsidiaries in the United States and/or other countries. ON Semiconductor owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of ON Semiconductor's product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). ON Semiconductor reserves the right to make changes without further notice to any products herein. ON Semiconductor makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ON Semiconductor assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using ON Semiconductor products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by ON Semiconductor. "Typical" parameters which may be provided in ON Semiconductor data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. ON Semiconductor does not convey any license under its patent rights nor the rights of others. ON Semiconductor products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use ON Semiconductor products for any such unintended or unauthorized application, Buyer shall indemnify and hold ON Semiconductor and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that ON Semiconductor was negligent regarding the design or manufacture of the part. ON Semiconductor is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

## PUBLICATION ORDERING INFORMATION

### LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor  
19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA  
**Phone:** 303-675-2175 or 800-344-3860 Toll Free USA/Canada  
**Fax:** 303-675-2176 or 800-344-3867 Toll Free USA/Canada  
**Email:** [orderlit@onsemi.com](mailto:orderlit@onsemi.com)

**N. American Technical Support:** 800-282-9855 Toll Free  
USA/Canada  
**Europe, Middle East and Africa Technical Support:**  
Phone: 421 33 790 2910  
**Japan Customer Focus Center**  
Phone: 81-3-5817-1050

**ON Semiconductor Website:** [www.onsemi.com](http://www.onsemi.com)  
**Order Literature:** <http://www.onsemi.com/orderlit>  
For additional information, please contact your local  
Sales Representative



# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[ON Semiconductor:](#)

[KA7552A](#)



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.