

DUAL GENERAL PURPOSE LOW VOLTAGE COMPARATOR**AZV393****General Description**

The AZV393 is a low voltage 2.5V to 5.5V, dual comparator, which has a very low supply current of 100 μ A, making the part an excellent choice for portable electronic systems. The device is pin-for-pin compatible replacement of the LMV393.

The AZV393 is built with BiCMOS process with bipolar input and output stages for improved noise performance. It is a cost-effective solution for portable consumer products where space, low voltage, low power and price are the primary specification in circuit design.

The AZV393 is available in standard SOIC-8 and space saving TSSOP-8 and MSOP-8 packages.

Features

- Guaranteed 2.5V to 5.5V Performance
- Industrial Temperature Range: -40°C to 85°C
- Low Supply Current: 100 μ A Typical
- Input Common Mode Voltage Range Includes Ground
- Low Output Saturation Voltage: 200mV Typical
- Open Collector Output for Maximal Flexibility

Applications

- Notebook and PDA
- Low Power, Low Voltage Applications
- General Purpose Portable Devices
- Mobile Communications
- Battery Powered Electronics

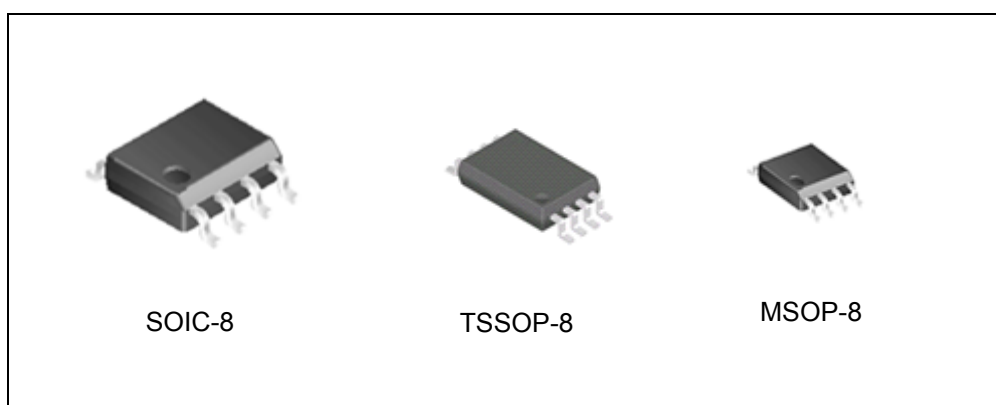


Figure 1. Package Types of AZV393

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AZV393

Pin Configuration

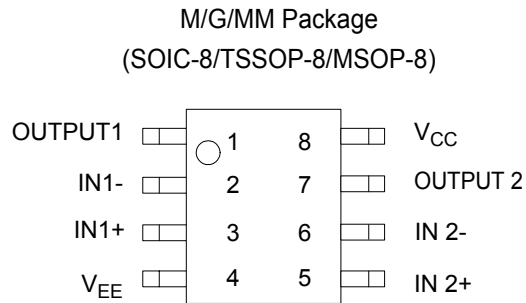


Figure 2. Pin Configuration of AZV393 (Top View)

Functional Block Diagram

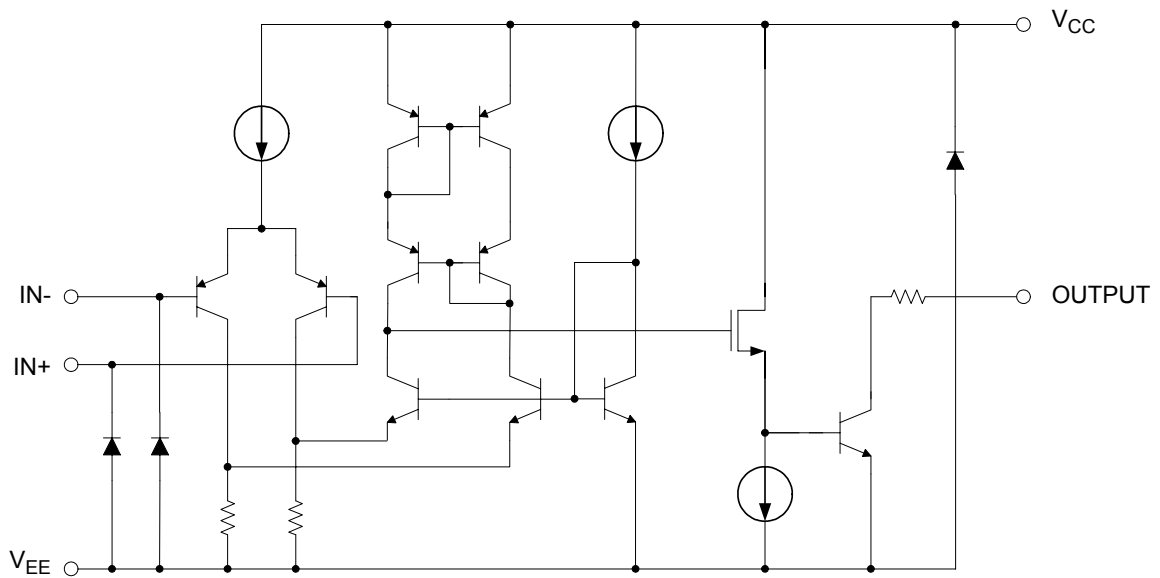


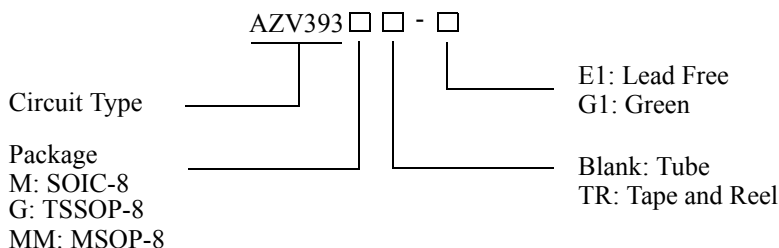
Figure 3. Functional Block Diagram of AZV393 (Each comparator)



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Ordering Information



Package	Temperature Range	Part Number		Marking ID		Packing Type
		Lead Free	Green	Lead Free	Green	
SOIC-8	-40 to 85°C	AZV393M-E1	AZV393M-G1	AZV393M-E1	AZV393M-G1	Tube
		AZV393MTR-E1	AZV393MTR-G1	AZV393M-E1	AZV393M-G1	Tape & Reel
TSSOP-8	-40 to 85°C	AZV393G-E1	AZV393G-G1	EG3D	GG3D	Tube
		AZV393GTR-E1	AZV393GTR-G1	EG3D	GG3D	Tape & Reel
MSOP-8	-40 to 85°C	AZV393MM-E1	AZV393MM-G1	AZV393MM-E1	AZV393MM-G1	Tube
		AZV393MMTR-E1	AZV393MMTR-G1	AZV393MM-E1	AZV393MM-G1	Tape & Reel

BCD Semiconductor's Pb-free products, as designated with "E1" suffix in the part number, are RoHS compliant. Products with "G1" suffix are available in green packages.

Absolute Maximum Ratings (Note 1)

Parameter	Symbol	Value	Unit
Power Supply Voltage	V _{CC}	6	V
Operation Junction Temperature	T _J	150	°C
Storage Temperature Range	T _{STG}	-65 to 150	°C
Lead Temperature (Soldering, 10 Seconds)	T _{LEAD}	260	°C
ESD (Machine Model)		300	V
ESD (Human Body Model)		4000	V

Note 1: Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

**DUAL GENERAL PURPOSE LOW VOLTAGE COMPARATOR****AZV393****Recommended Operating Conditions**

Parameter	Symbol	Min	Max	Unit
Supply Voltage	V_{CC}	2.5	5.5	V
Ambient Operating Temperature Range	T_A	-40	85	°C

2.7V DC Electrical Characteristics

Limits in standard typeface are guaranteed for $T_A=25^{\circ}\text{C}$, $V_{CC}=2.7\text{V}$, $V_{EE}=0\text{V}$, $R_L=5.1\text{k}\Omega$ connected to V_{CC} and $V_{CM}=0$, **bold** typeface applies over full temperature ranges, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input Offset Voltage	V_{OS}			1.7	7	mV
					9	
Input Offset Voltage Average Drift	TCV_{OS}			5		$\mu\text{V}/^{\circ}\text{C}$
Input Bias Current	I_B	I_{IN^+} or I_{IN^-} with output in linear range, $V_{CM}=0\text{V}$		10	250	nA
					400	
Input Offset Current	I_{IO}	$I_{IN^+} - I_{IN^-}$, $V_{CM}=0\text{V}$		5	50	nA
					150	
Saturation Voltage	V_{SAT}	$I_{SINK} \leq 1\text{mA}$		200		mV
					500	
Output Sink Current	I_{SINK}	$V_O \leq 1.5\text{V}$	5	23		mA
Input Common-Mode Voltage Range	V_{CM}		-0.1		2	V
Supply Current	I_{CC}			70	150	μA
					200	
Output Leakage Current	$I_{LEAKAGE}$			0.003		μA

2.7V AC Electrical Characteristics

All limits are guaranteed for $T_A=25^{\circ}\text{C}$, $V_{CC}=2.7\text{V}$, $V_{EE}=0\text{V}$, $R_L=5.1\text{k}\Omega$ connected to V_{CC} and $V_{CM}=0$, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Propagation Delay (High to Low)	T_{PHL}	Input Overdrive=10mV		1000		ns
		Input Overdrive=100mV		350		
Propagation Delay (Low to High)	T_{PLH}	Input Overdrive=10mV		500		ns
		Input Overdrive=100mV		400		



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5V DC Electrical Characteristics

Limits in standard typeface are guaranteed for $T_A=25^{\circ}\text{C}$, $V_{CC}=5\text{V}$, $V_{EE}=0\text{V}$, $R_L=5.1\text{k}\Omega$ connected to V_{CC} and $V_{CM}=0$, **bold** typeface applies over full temperature ranges, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input Offset Voltage	V_{OS}			1.7	7	mV
					9	
Input Offset Voltage Average Drift	TCV_{OS}			5		$\mu\text{V}/^{\circ}\text{C}$
Input Bias Current	I_B	I_{IN+} or I_{IN-} with output in linear range, $V_{CM}=0\text{V}$		25	250	nA
					400	
Input Offset Current	I_{IO}	$I_{IN+} - I_{IN-}$, $V_{CM}=0\text{V}$		2	50	nA
					150	
Saturation Voltage	V_{SAT}	$I_{SINK} \leq 4\text{mA}$		200	400	mV
					500	
Output Sink Current	I_{SINK}	$V_O \leq 1.5\text{V}$	10	84		mA
Input Common-Mode Voltage Range	V_{CM}		-0.1		4.2	V
Voltage Gain	A_V		20	50		V/mV
Supply Current	I_{CC}			100	200	μA
					250	
Output Leakage Current	$I_{LEAKAGE}$			0.003		μA

5V AC Electrical Characteristics

All limits are guaranteed for $T_A=25^{\circ}\text{C}$, $V_{CC}=5\text{V}$, $V_{EE}=0\text{V}$, $R_L=5.1\text{k}\Omega$ connected to V_{CC} and $V_{CM}=0$, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Propagation Delay (High to Low)	T_{PHL}	Input Overdrive=10mV		600		ns
		Input Overdrive=100mV		200		
Propagation Delay (Low to High)	T_{PLH}	Input Overdrive=10mV		450		ns
		Input Overdrive=100mV		300		



DUAL GENERAL PURPOSE LOW VOLTAGE COMPARATOR

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Typical Performance Characteristics

$T_A=25^{\circ}\text{C}$, unless otherwise specified.

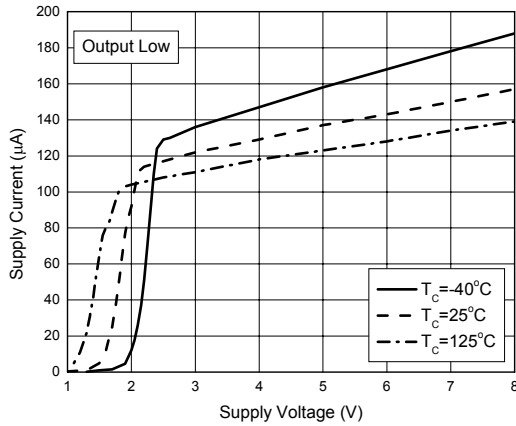


Figure 4. Supply Current vs. Supply Voltage

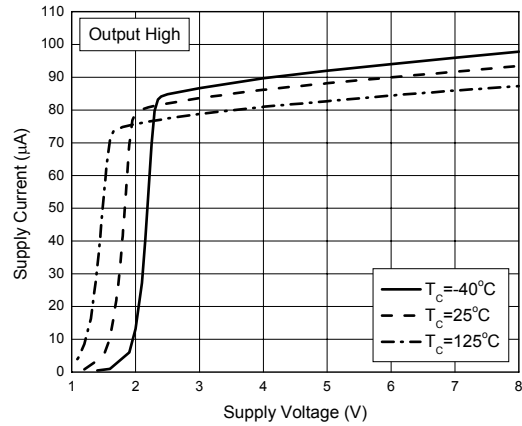


Figure 5. Supply Current vs. Supply Voltage

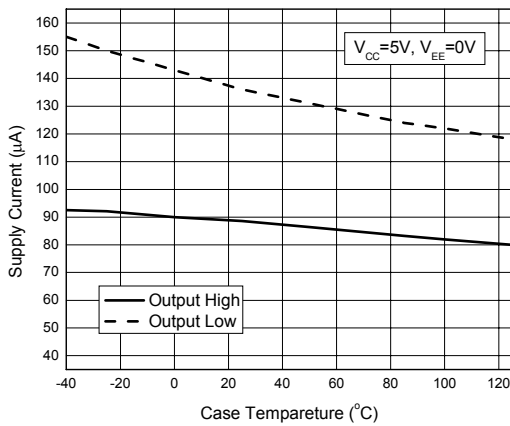


Figure 6. Supply Current vs. Case Temperature

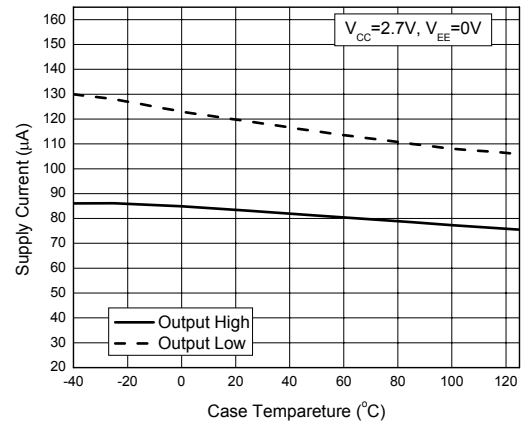


Figure 7. Supply Current vs. Case Temperature



DUAL GENERAL PURPOSE LOW VOLTAGE COMPARATOR

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Typical Performance Characteristics (Continued)

$T_A=25^\circ\text{C}$, unless otherwise specified.

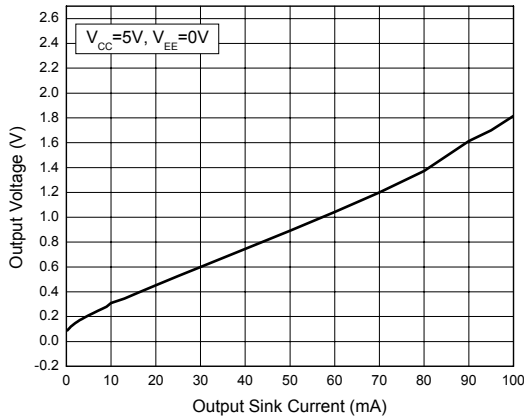


Figure 8. Output Voltage vs. Output Sink Current

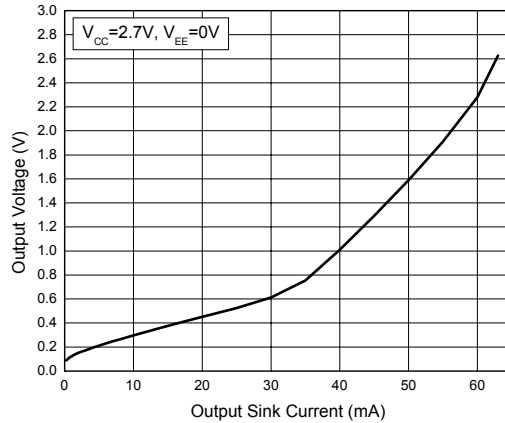


Figure 9. Output Voltage vs. Output Sink Current

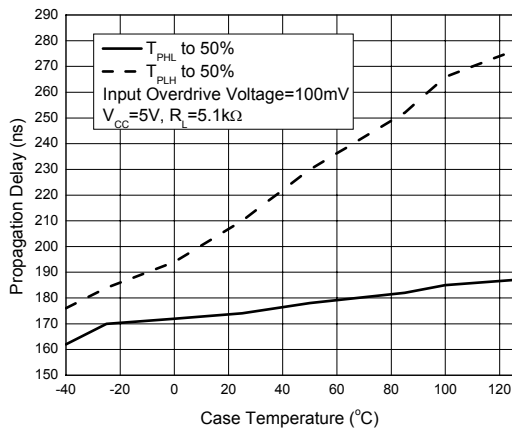


Figure 10. Propagation Delay vs. Temperature

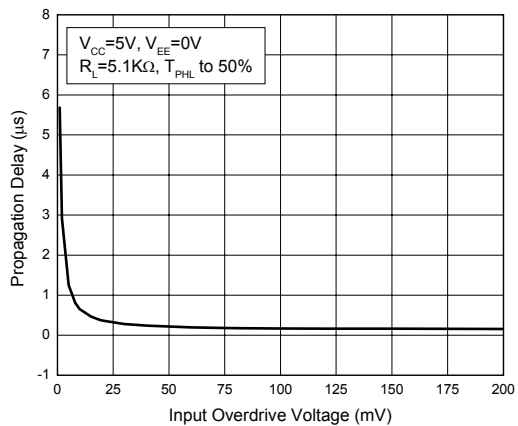


Figure 11. Propagation Delay vs. Input Overdrive Voltage



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Typical Performance Characteristics (Continued)

$T_A=25^{\circ}\text{C}$, unless otherwise specified.

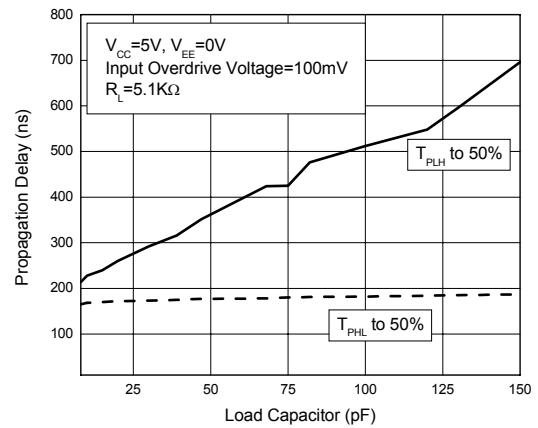
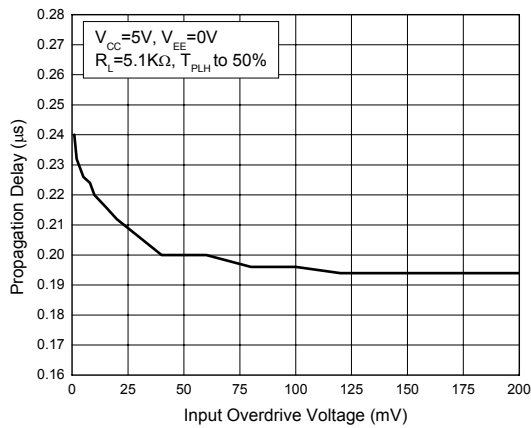


Figure 12. Propagation Delay vs. Input Overdrive Voltage Figure 13. Propagation Delay vs. Load Capacitor

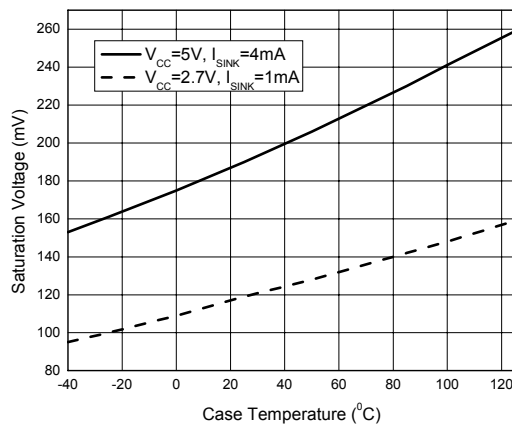


Figure 14. Saturation Voltage vs. Case Temperature

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Typical Performance Characteristics (Continued)

$T_A=25^{\circ}\text{C}$, unless otherwise specified.

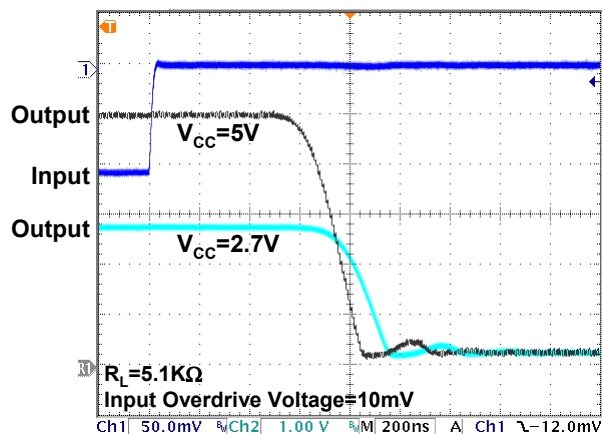


Figure 15. Response Time for Positive Transition

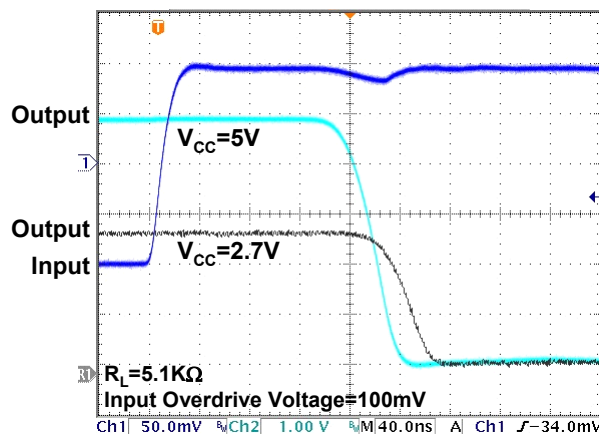


Figure 16. Response Time for Positive Transition

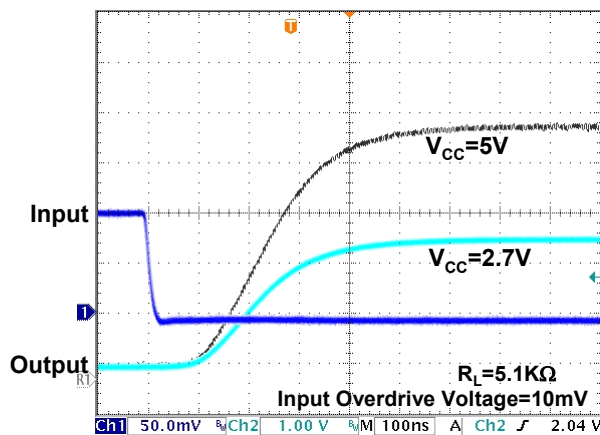


Figure 17. Response Time for Negative Transition

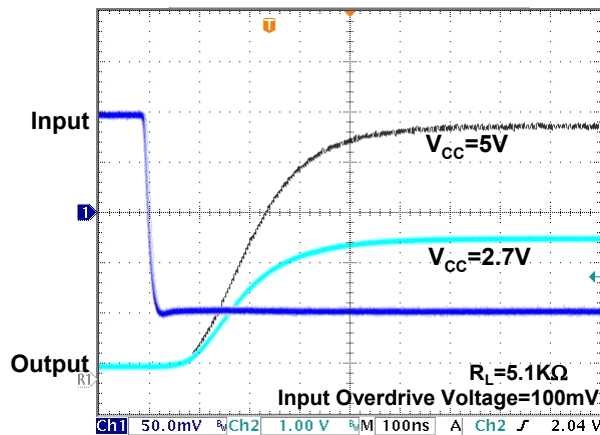


Figure 18. Response Time for Negative Transition

DUAL GENERAL PURPOSE LOW VOLTAGE COMPARATOR

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Typical Performance Characteristics (Continued)

$T_A=25^{\circ}\text{C}$, unless otherwise specified.

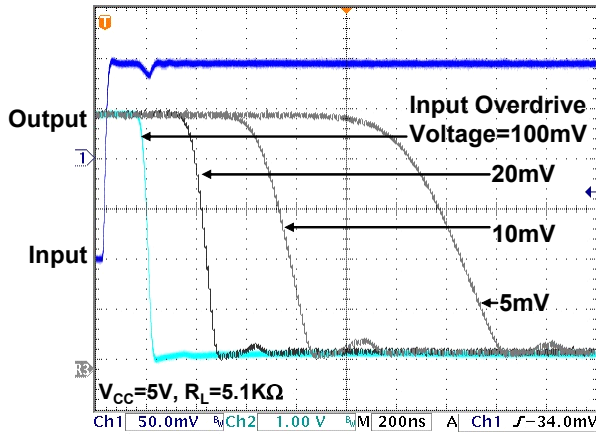


Figure 19. Response Time for Positive Transition

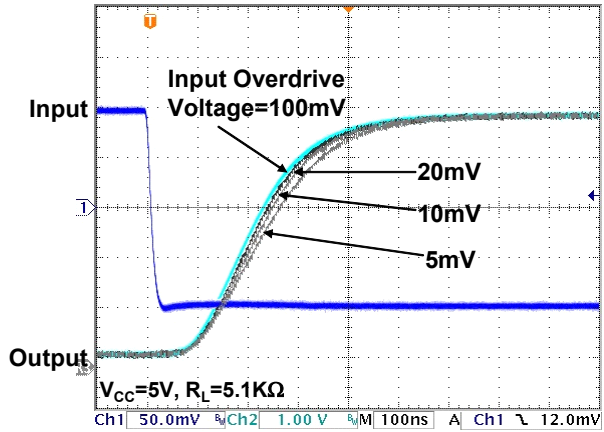


Figure 20. Response Time for Negative Transition

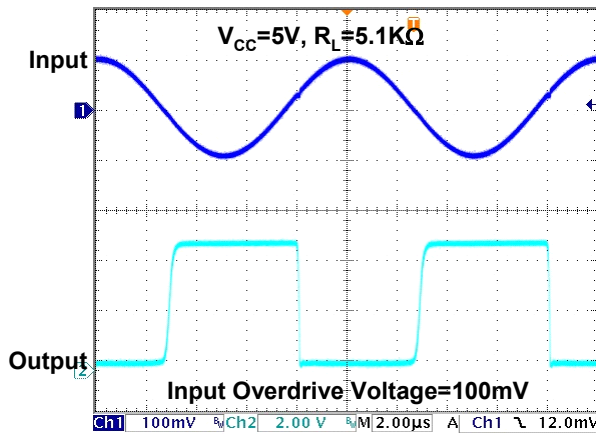


Figure 21. 100kHz Response

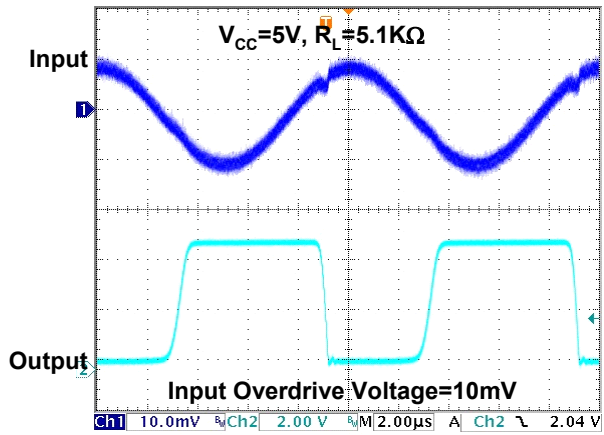


Figure 22. 100kHz Response

Typical Performance Characteristics (Continued)

$T_A=25^\circ\text{C}$, unless otherwise specified.

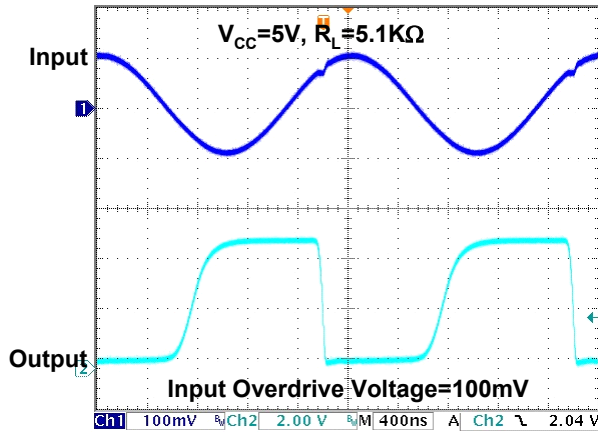


Figure 23. 500kHz Response

Typical Applications

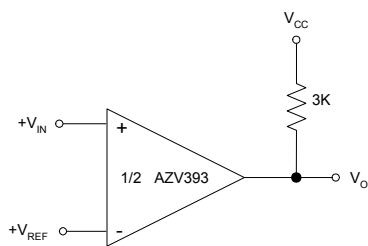


Figure 24. Basic Comparator

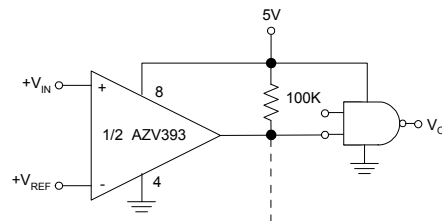


Figure 25. Driving CMOS

Typical Applications (Continued)

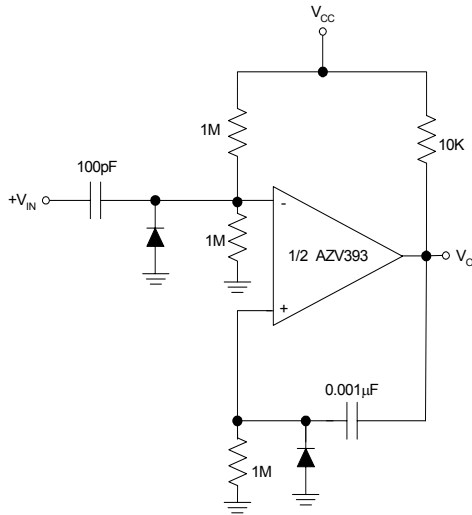


Figure 26. One Shot Multivibrator

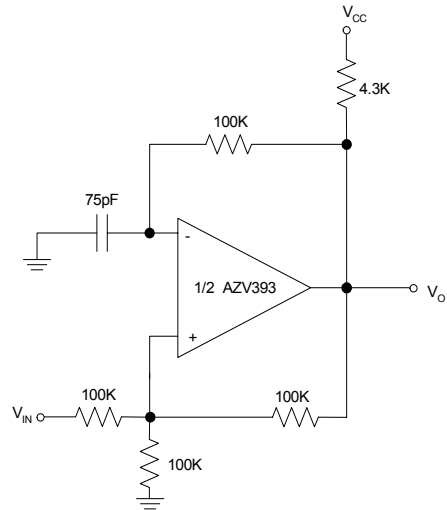


Figure 27. Squarewave Oscillator



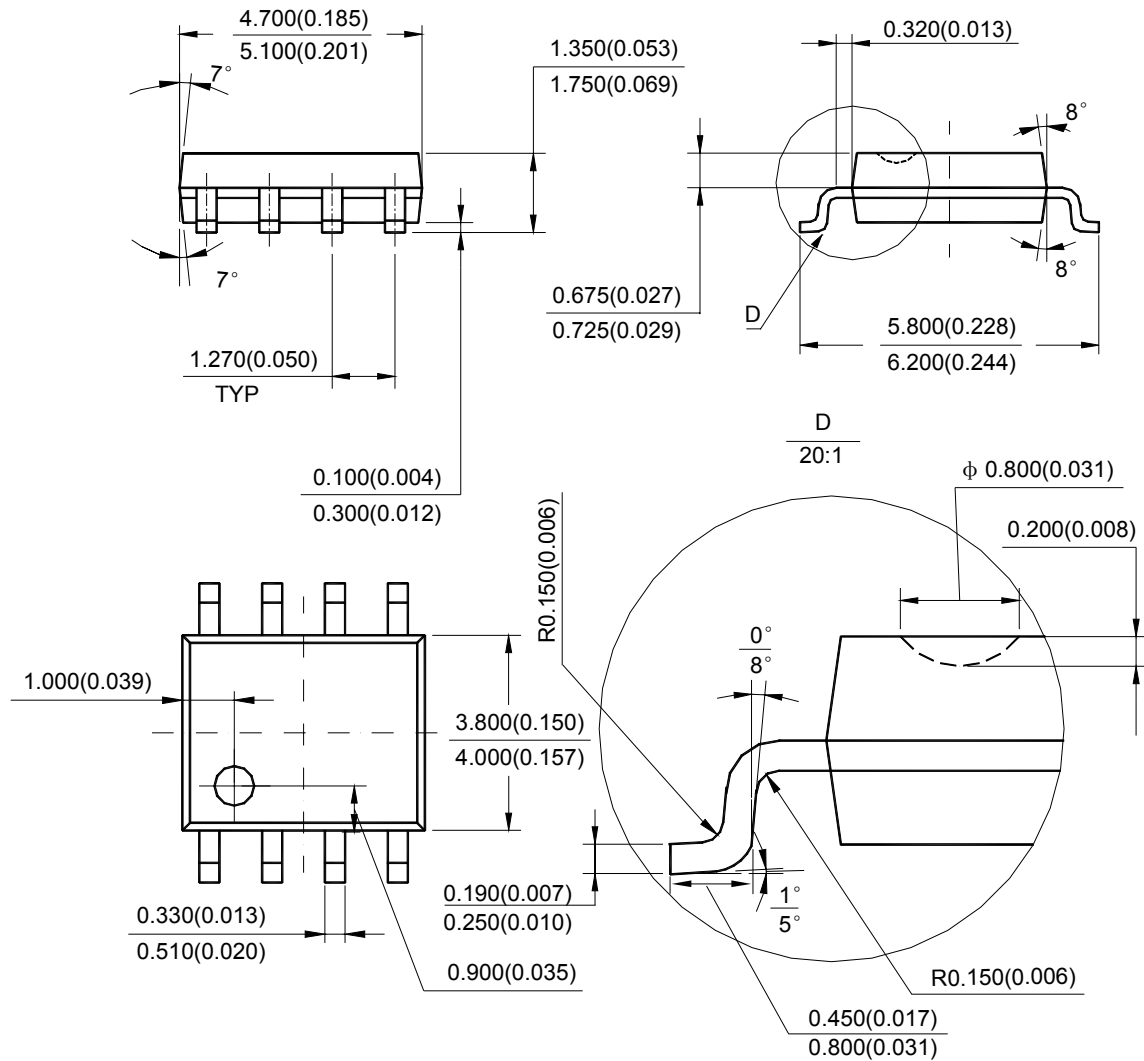
DUAL GENERAL PURPOSE LOW VOLTAGE COMPARATOR

AZV393

Mechanical Dimensions

SOIC-8

Unit: mm(inch)



Note: Eject hole, oriented hole and mold mark is optional.



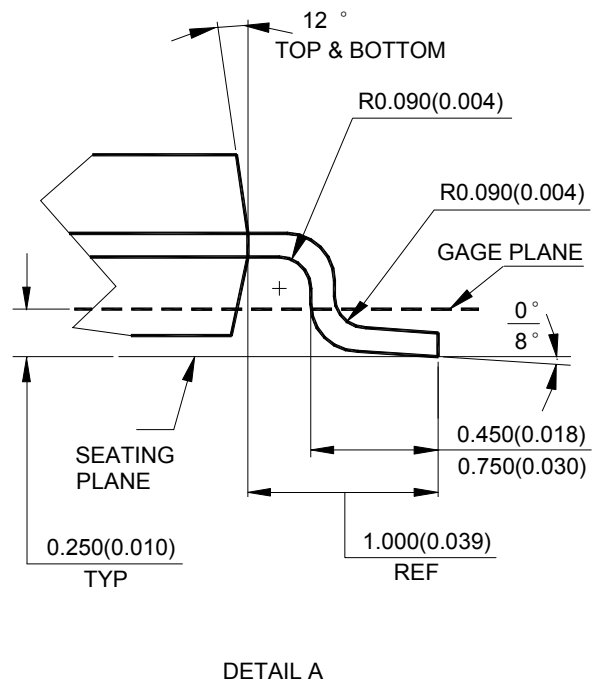
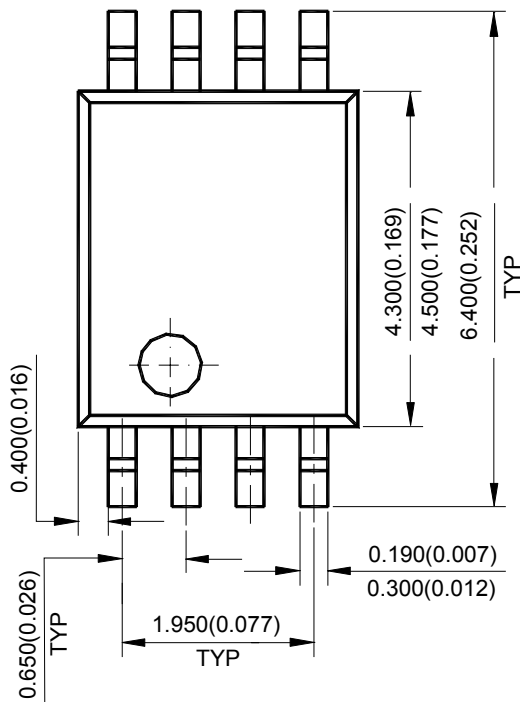
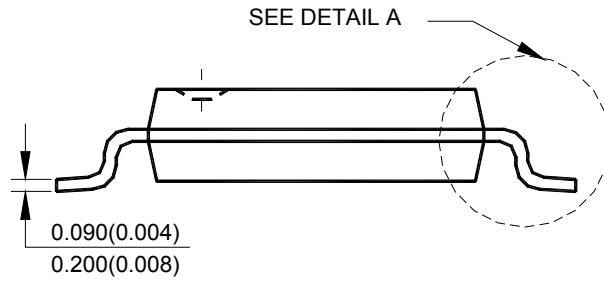
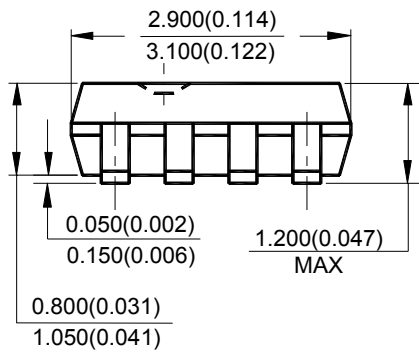
DUAL GENERAL PURPOSE LOW VOLTAGE COMPARATOR

AZV393

Mechanical Dimensions (Continued)

TSSOP-8

Unit: mm(inch)



Note: Eject hole, oriented hole and mold mark is optional.



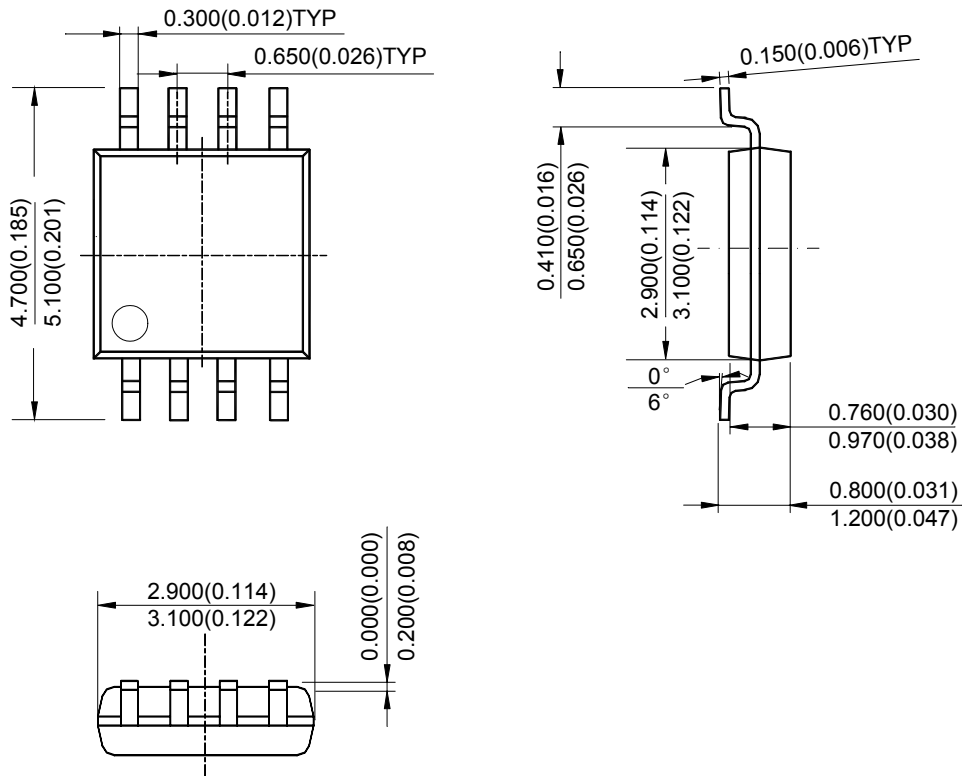
DUAL GENERAL PURPOSE LOW VOLTAGE COMPARATOR

AZV393

Mechanical Dimensions (Continued)

MSOP-8

Unit: mm(inch)



Note: Eject hole, oriented hole and mold mark is optional.



BCD Semiconductor Manufacturing Limited

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Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



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