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 100μA, 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: -40ºC to 85ºC
- Low Supply Current: 100μA 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

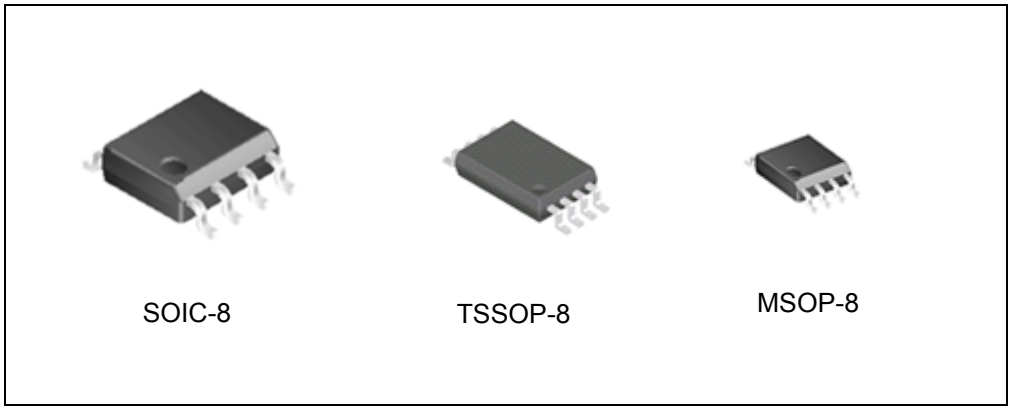


Figure 1. Package Types of AZV393

Pin Configuration

M/G/MM Package
(SOIC-8/TSSOP-8/MSOP-8)

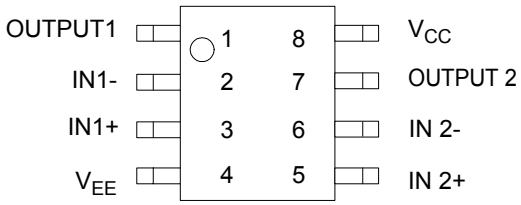


Figure 2. Pin Configuration of AZV393 (Top View)

Functional Block Diagram

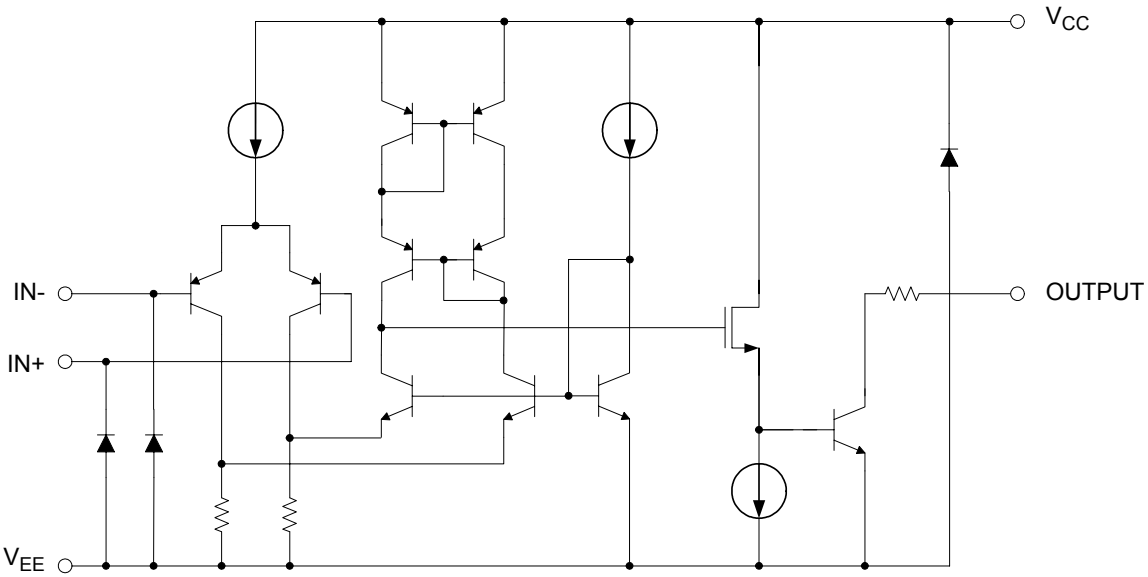
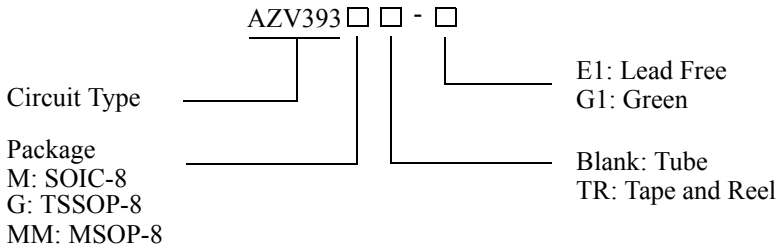


Figure 3. Functional Block Diagram of AZV393 (Each comparator)

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.

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°C, V_{CC}=2.7V, V_{EE}=0V, R_L=5.1kΩ 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		μV/°C
Input Bias Current	I_B	I_{IN}+ or I_{IN}- with output in linear range, V_{CM}=0V		10	250	nA
					400	
Input Offset Current	I_{IO}	I_{IN}+ - I_{IN}-, V_{CM}=0V		5	50	nA
					150	
Saturation Voltage	V_{SAT}	I_{SINK}≤1mA		200		mV
					500	
Output Sink Current	I_{SINK}	V_O≤1.5V	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°C, V_{CC}=2.7V, V_{EE}=0V, R_L=5.1kΩ 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		

5V DC Electrical Characteristics

Limits in standard typeface are guaranteed for T_A=25°C, V_{CC}=5V, V_{EE}=0V, R_L=5.1kΩ 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		μV/°C
Input Bias Current	I_B	I_{IN}+ or I_{IN}- with output in linear range, V_{CM}=0V		25	250	nA
					400	
Input Offset Current	I_{IO}	I_{IN}+ - I_{IN}-, V_{CM}=0V		2	50	nA
					150	
Saturation Voltage	V_{SAT}	I_{SINK}≤4mA		200	400	mV
					500	
Output Sink Current	I_{SINK}	V_O≤1.5V	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°C, V_{CC}=5V, V_{EE}=0V, R_L=5.1kΩ 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		

Typical Performance Characteristics

T_A=25°C, unless otherwise specified.

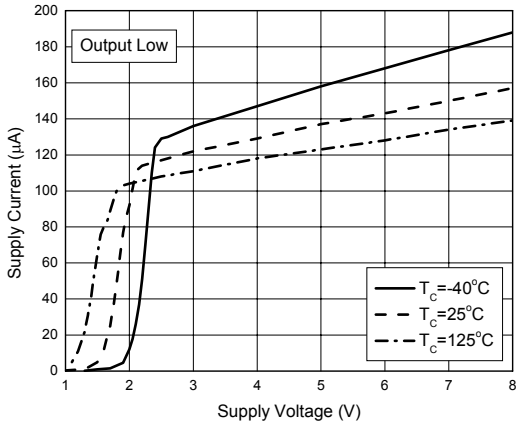


Figure 4. Supply Current vs. Supply Voltage

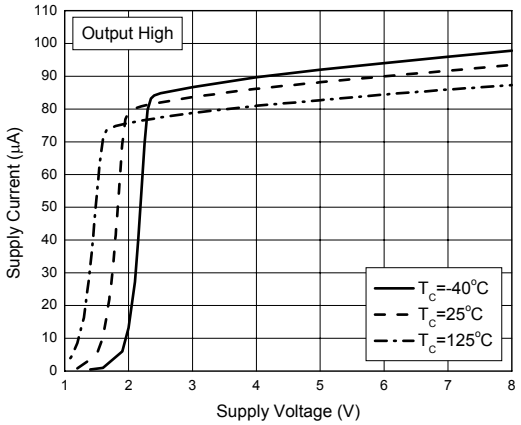


Figure 5. Supply Current vs. Supply Voltage

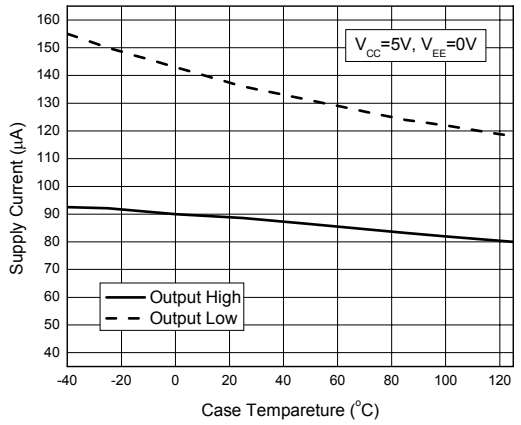


Figure 6. Supply Current vs. Case Temperature

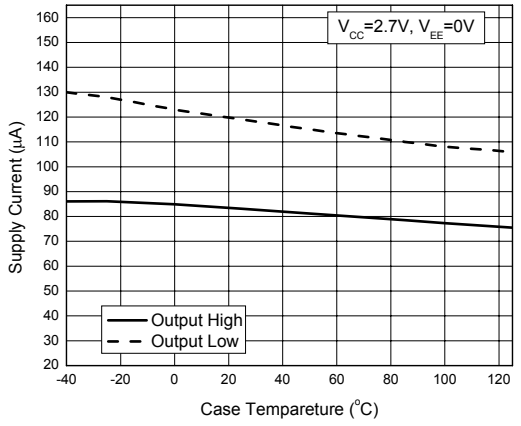


Figure 7. Supply Current vs. Case Temperature

Typical Performance Characteristics (Continued)

T_A=25°C, unless otherwise specified.

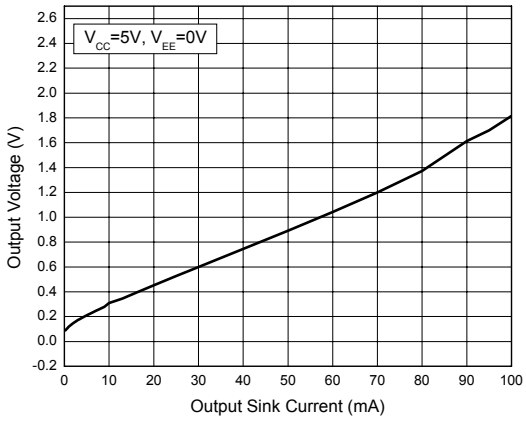


Figure 8. Output Voltage vs. Output Sink Current

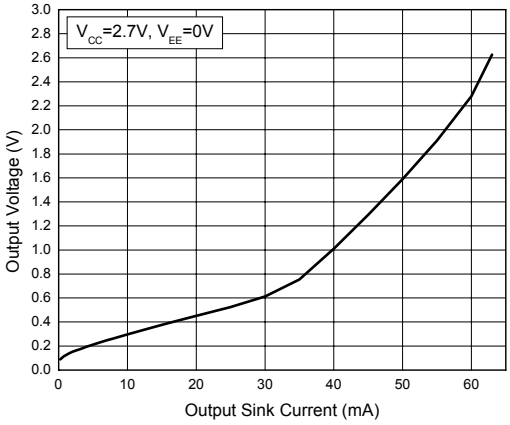


Figure 9. Output Voltage vs. Output Sink Current

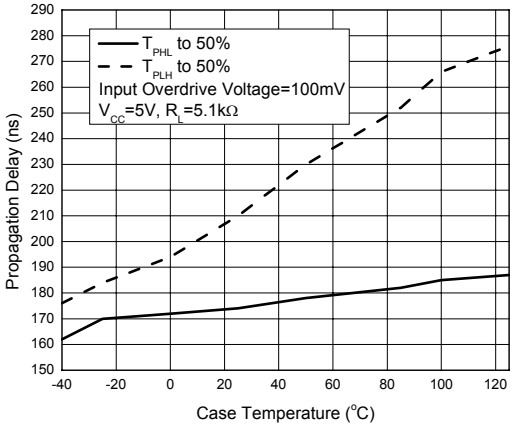


Figure 10. Propagation Delay vs. Temperature

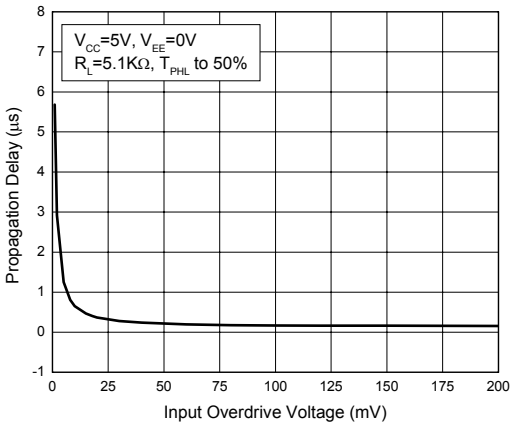


Figure 11. Propagation Delay vs. Input Overdrive Voltage

Typical Performance Characteristics (Continued)

T_A=25°C, unless otherwise specified.

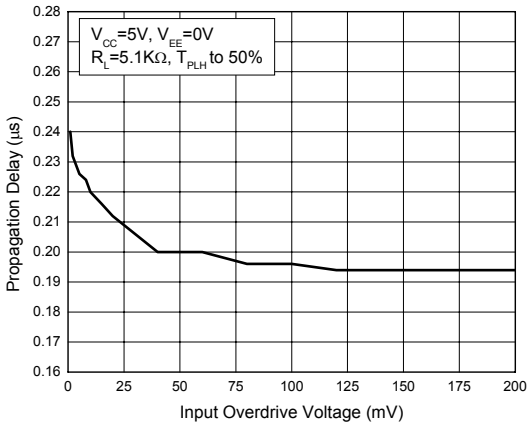


Figure 12. Propagation Delay vs. Input Overdrive Voltage

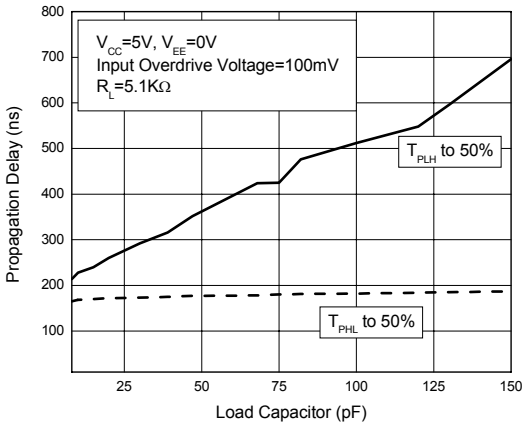


Figure 13. Propagation Delay vs. Load Capacitor

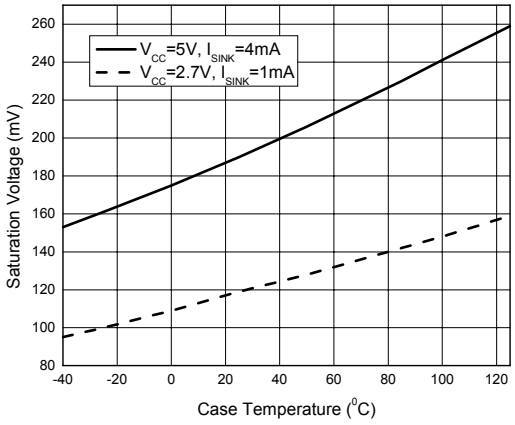


Figure 14. Saturation Voltage vs. Case Temperature

Typical Performance Characteristics (Continued)

T_A=25°C, unless otherwise specified.

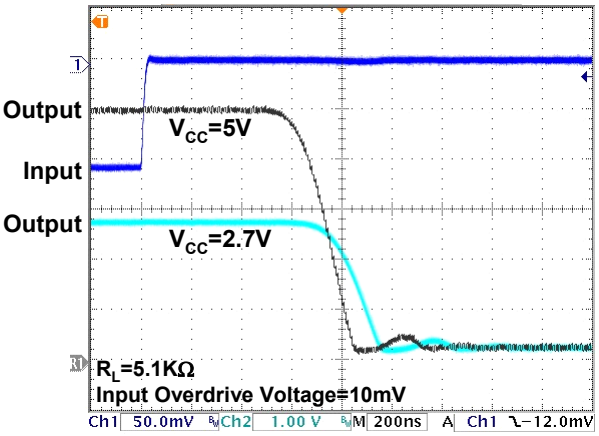


Figure 15. Response Time for Positive Transition

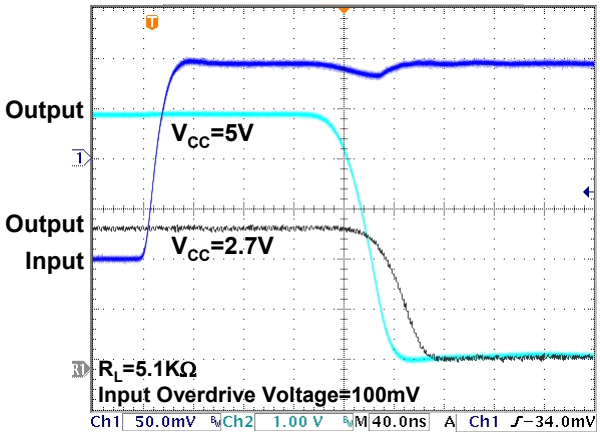


Figure 16. Response Time for Positive Transition

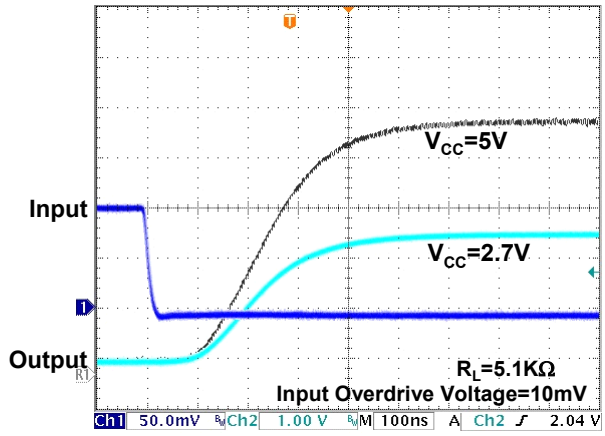


Figure 17. Response Time for Negative Transition

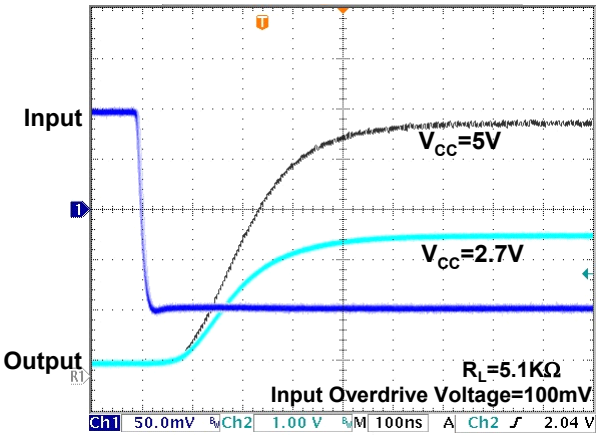


Figure 18. Response Time for Negative Transition

Typical Performance Characteristics (Continued)

T_A=25°C, unless otherwise specified.

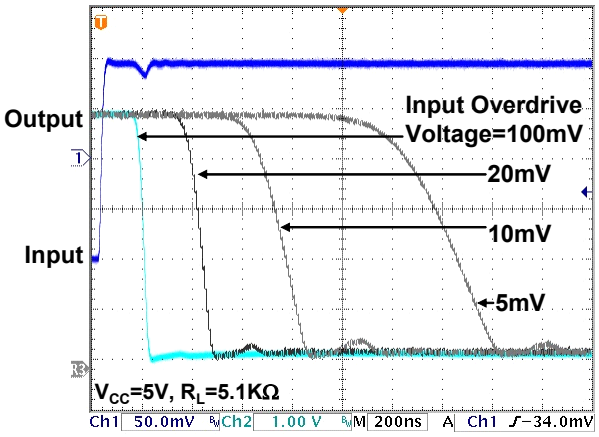


Figure 19. Response Time for Positive Transition

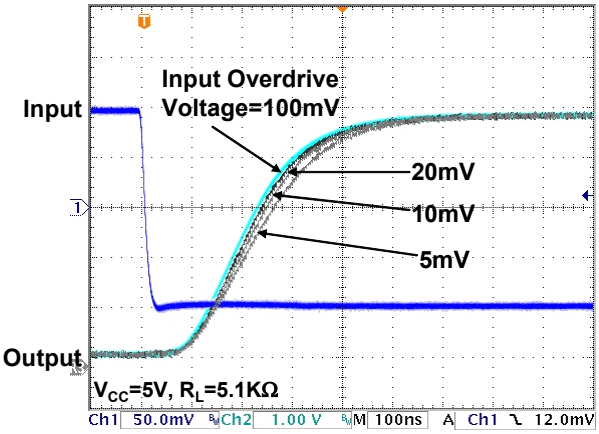


Figure 20. Response Time for Negative Transition

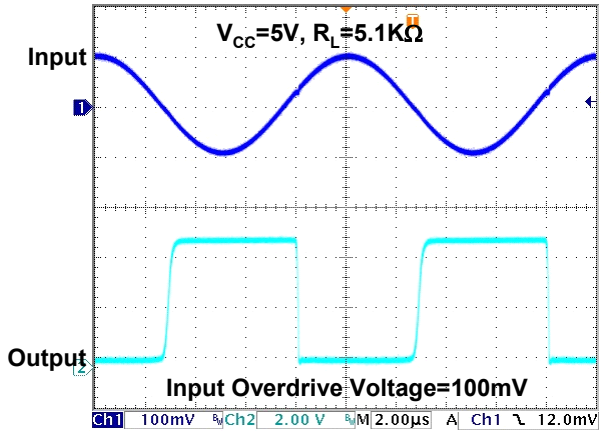


Figure 21. 100kHz Response

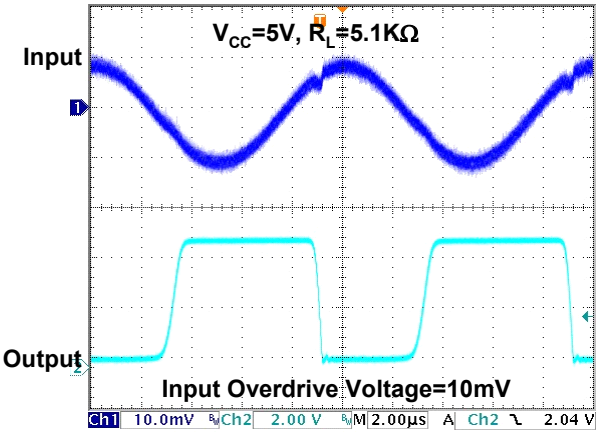


Figure 22. 100kHz Response

Typical Performance Characteristics (Continued)

T_A=25°C, unless otherwise specified.

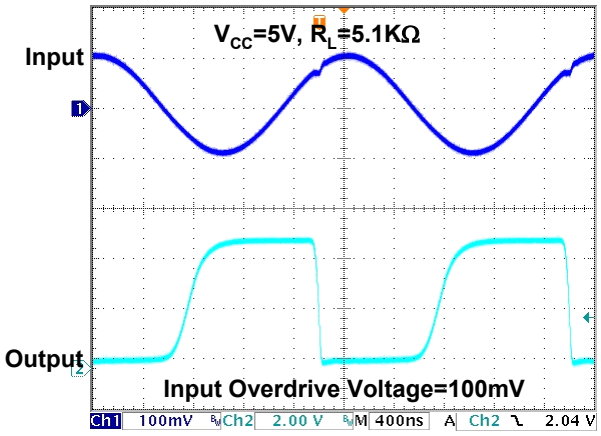


Figure 23. 500kHz Response

Typical Applications

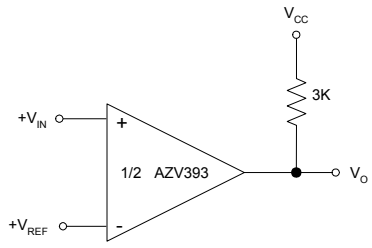


Figure 24. Basic Comparator

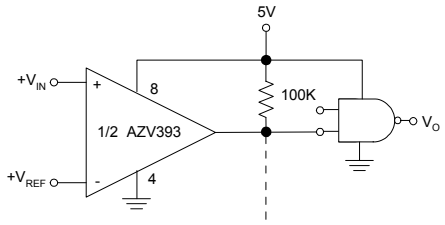


Figure 25. Driving CMOS

Typical Applications (Continued)

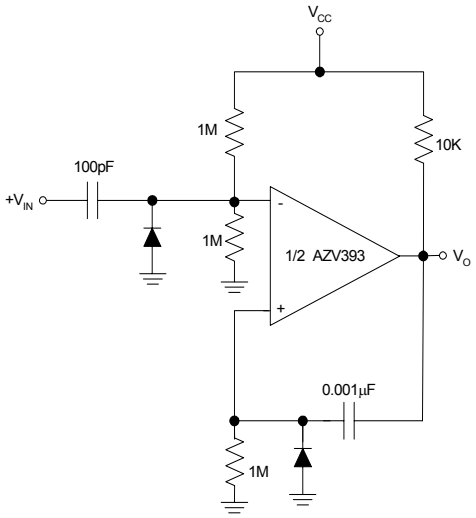


Figure 26. One Shot Multivibrator

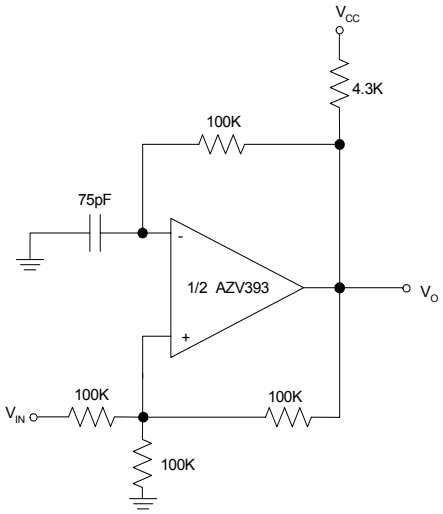
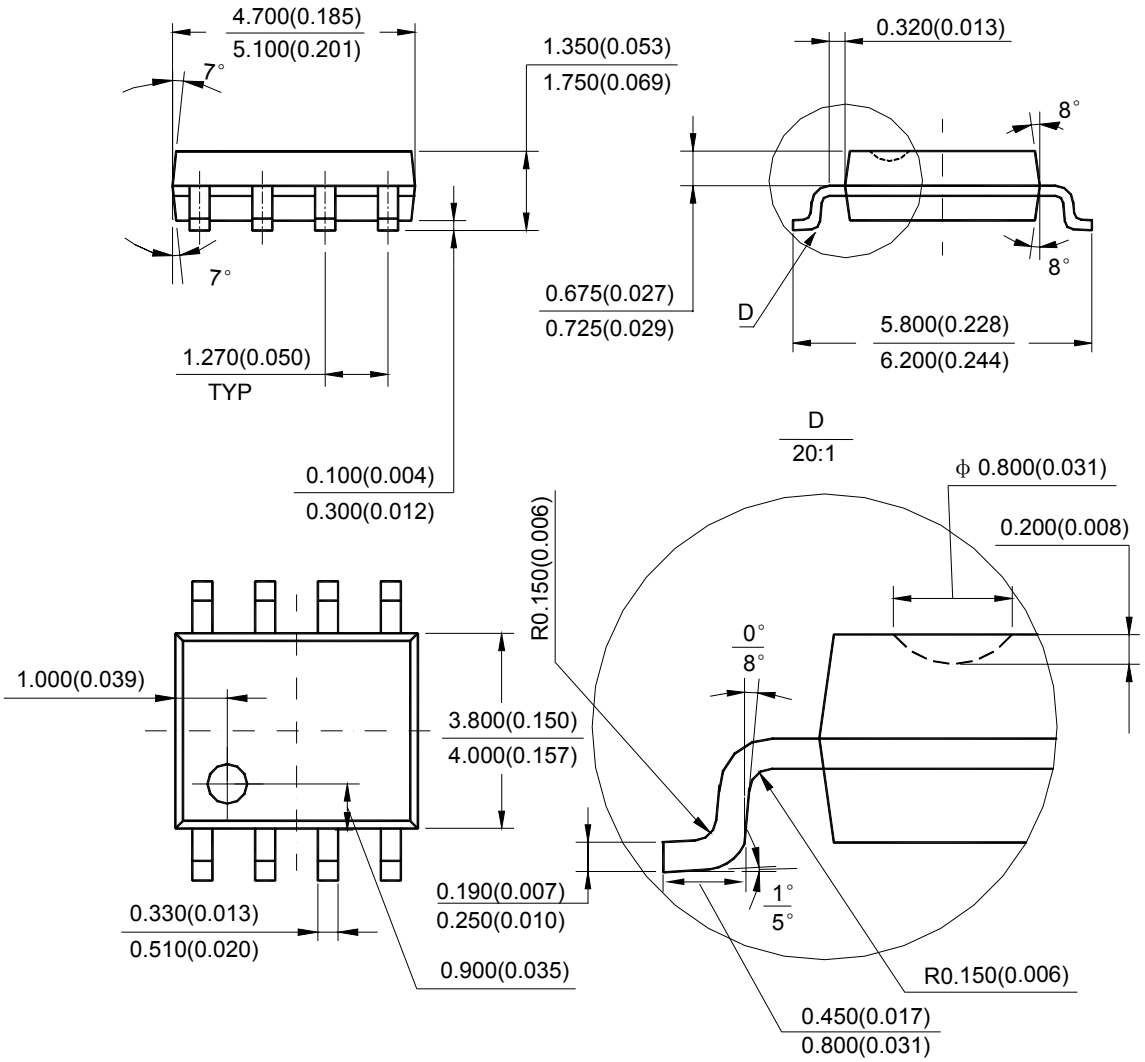


Figure 27. Squarewave Oscillator

Mechanical Dimensions

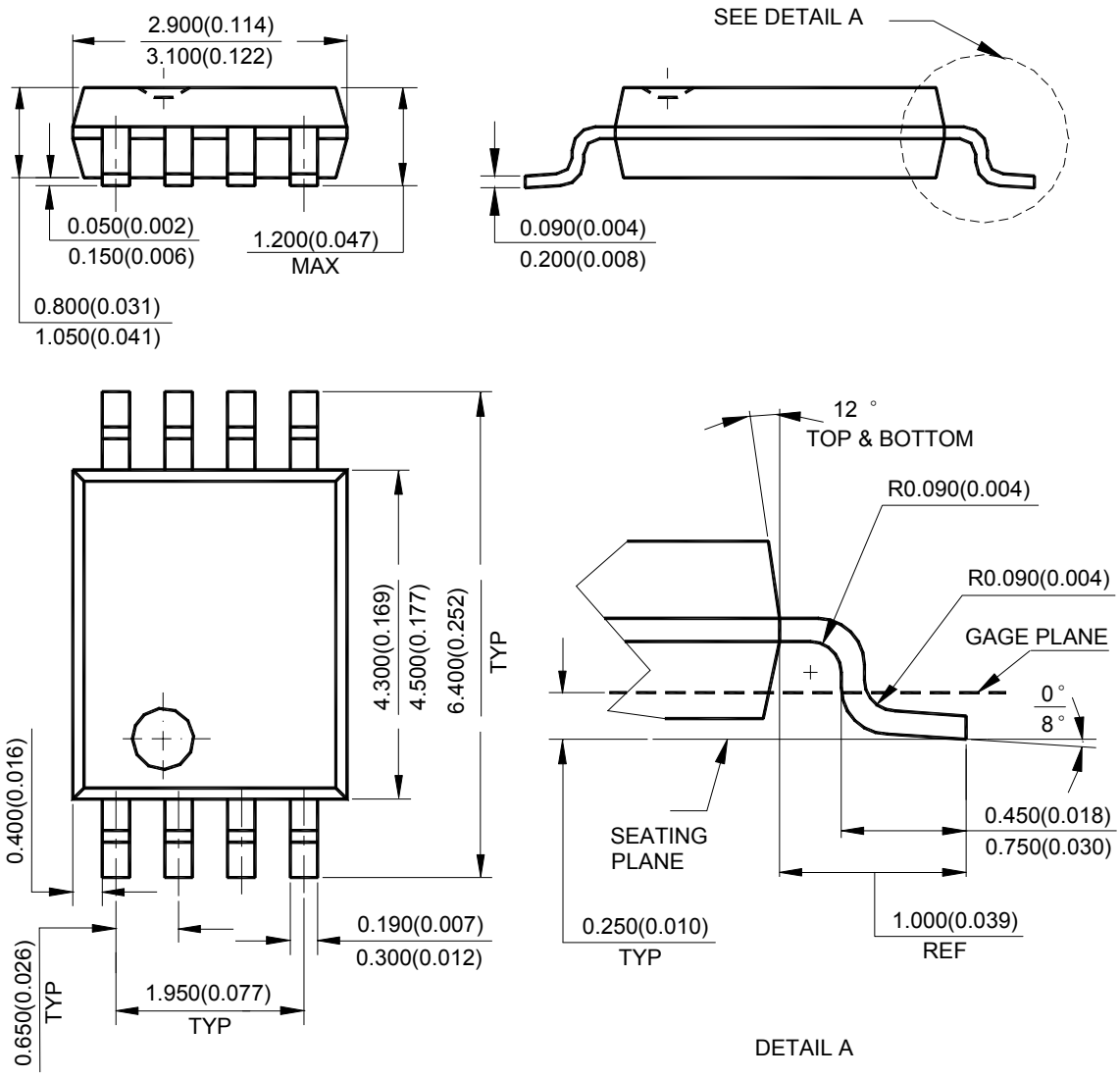
SOIC-8 **Unit: mm(inch)**



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

Mechanical Dimensions (Continued)

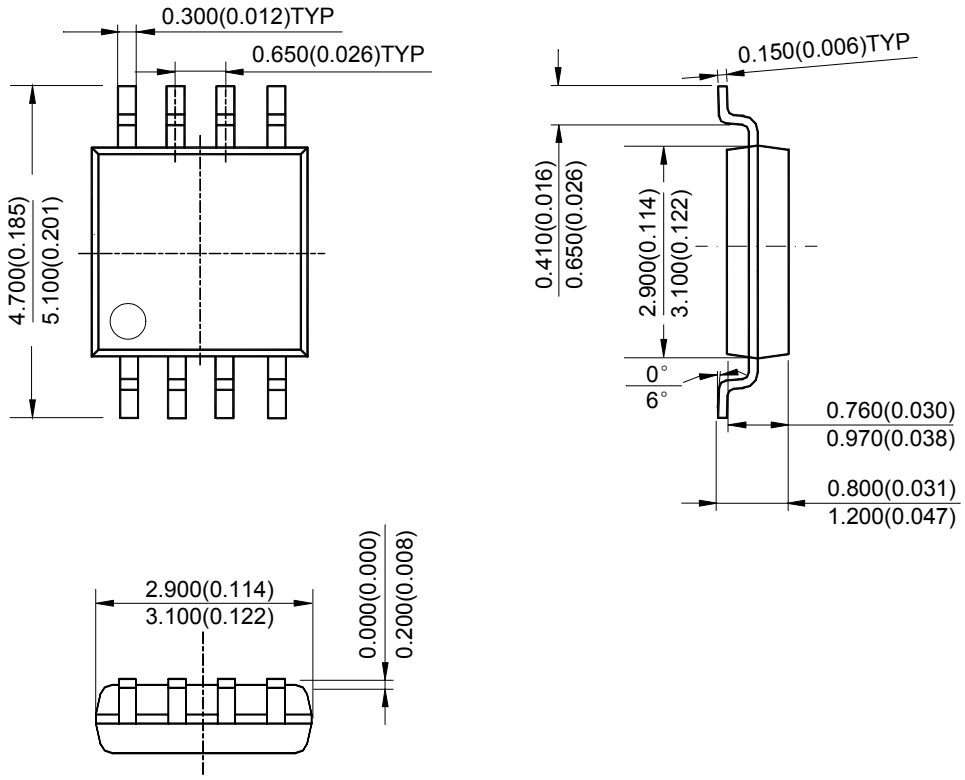
TSSOP-8 **Unit: mm(inch)**



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

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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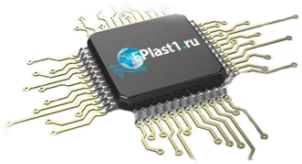
Наши преимущества:

- 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.



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