

钍地半导体
Tudi Semiconductor

Product Specification

TUDI-IX4423/4424/4425

4A Dual High-Speed Power MOSFET Drivers

网址 www.sztdbdt.com

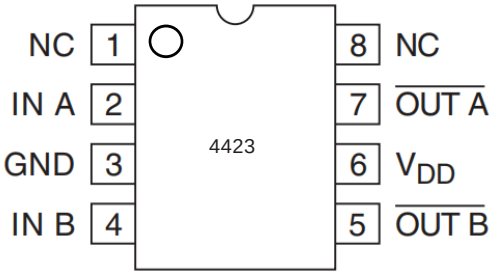
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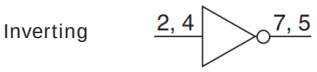
semiconductor device manufacturer

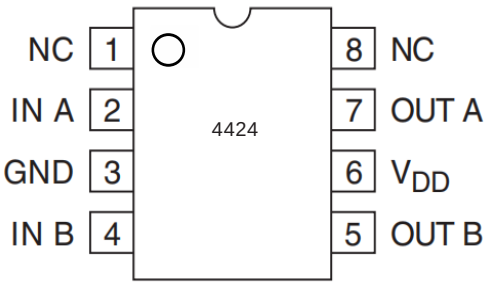
- Design
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- production
- and sales

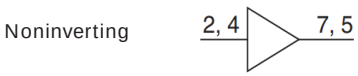
Features

- High Peak Output Current:4A
- Wide Supply Voltage Operating Range:4.5V to 25V
- High Capacitive Load Drive Capability1000pF in 11ns(typical)
- Short Delay Times:35ns (typical)
- Matched Rise/Fall Times
- Low Output Impedance
- Low Supply Current
- Over-temperature Protection
- Under-voltage Lockout
- Non-overlapped Drive Tech
- ESD Protected:2.0kV
- Input withstands negative inputs up to 5V
- Available in Green SOP8 and DIP8



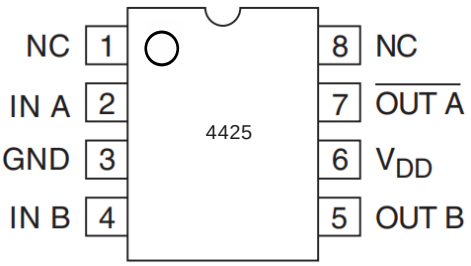


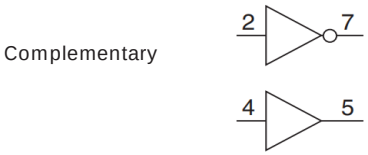




Applications

- Wireless Power Transmitter
- Switch Mode Power Supplies
- Power MOSFET Drivers
- Pulse Transformer Drivers
- Line Drivers
- CCD Driver
- Class D Switching Amplifiers





Description

The IX4423/4424/4425 are matched dual power MOSFET drivers. Unique circuit design enables high speed operation capable of delivering peak currents of 4A into 1000pF capacitive loads.

Improved speed and drive capability are enhanced by matched rise and fall delay times. These matched delays maintain the integrity of input-to-output pulse-widths to reduce timing errors and clockskew problems.Dynamic switching losses are minimized with non-overlapped drive techniques. These devices are highly latch-up resistant within their power and voltage ratings. They are not subject to damage when up to 5V of noise spiking (of either polarity)occurs on the ground pin.All terminals are fully protected against Electrostatic Discharge (ESD)up to 2.0 kV.

Pin Description

Pin	Name	Description
1	NC	No connection
2	IN A	Input A
3	GND	Ground
4	In B	Input B
5	OUT B	Output of Channel B
6	VDD	Power Supply
7	OUTA	Output of Channel A
8	NC	No connection
-	PAD	Exposed Metal Pad

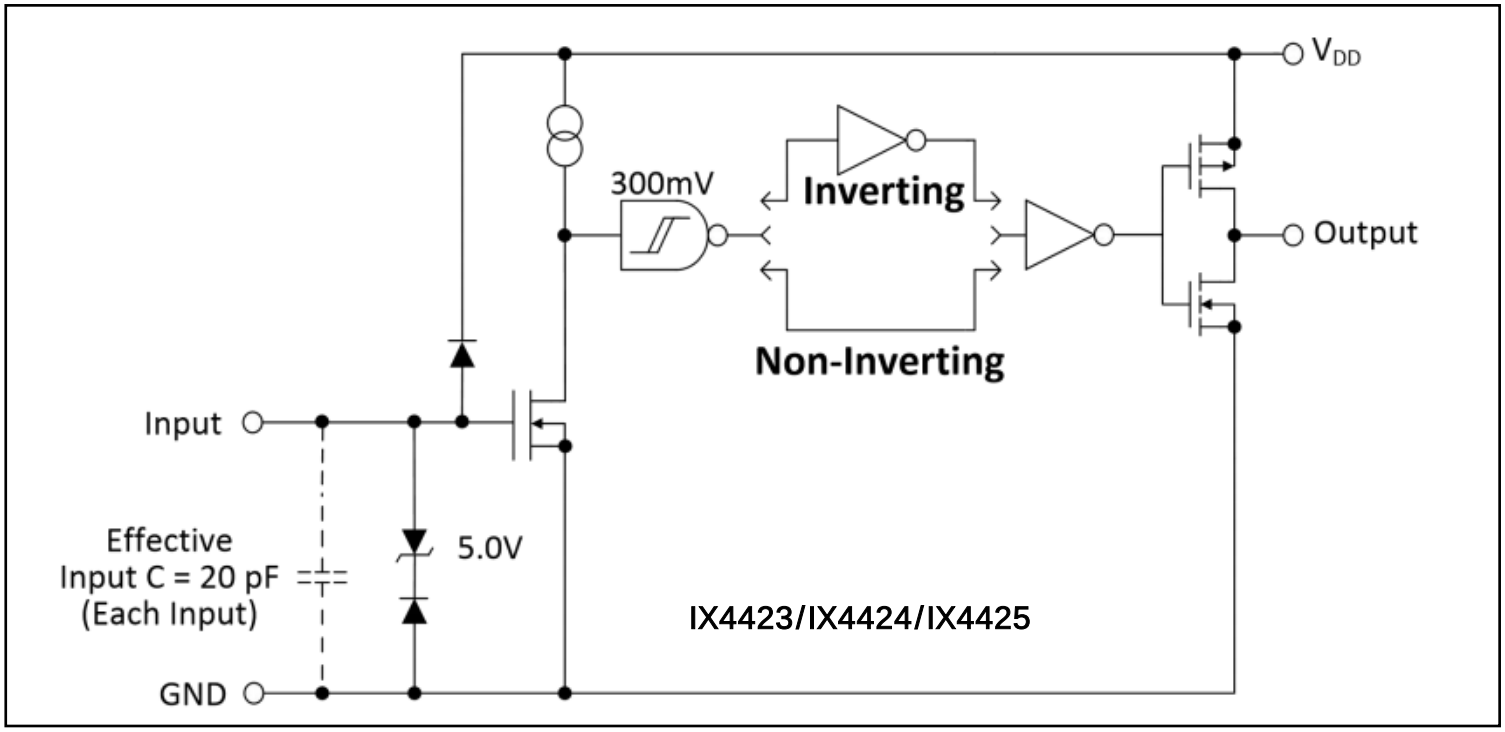
Function Table

		IX4423		IX4424		IX4425	
INA	INB	OUTA	OUT B	OUTA	OUTB	OUTA	OUTB
L	L	H	H	L	L	H	L
L	H	H	L	L	H	H	H
H	L	L	H	H	L	L	L
H	H	L	L	H	H	L	H

Thermal Data

Parameter	Rating	Unit
Package Thermal Resistance	155(SOP8) 90(DIP8)	℃W

Functional Block Diagram



Note
1: IX4423 has two inverting drivers, while the IX4424 has two non-inverting drivers. The IX4425 has one inverting and one non-inverting driver.
2: Ground any unused driver input.

AbsoluteMaximumRatings

Parameter	Min	Max	Unit
DC supply voltage Vs		26	V
Operating junction temperature	-40	125	℃
Storage temperature	-55	150	℃
Maximum input voltage	GND-5	VDD+0.3	V
Combined peak output current		4	A

Note:Stresses exceeding the absolute maximum ratings may damage the device.The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended.In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability.The absolute maximum ratings are stress ratings only.

Recommended Operating Conditions

Parameter	Rating	Unit
DC Supply Voltage	4.5-25	V
Operating ambient temperature	-40~125	℃

Additional description

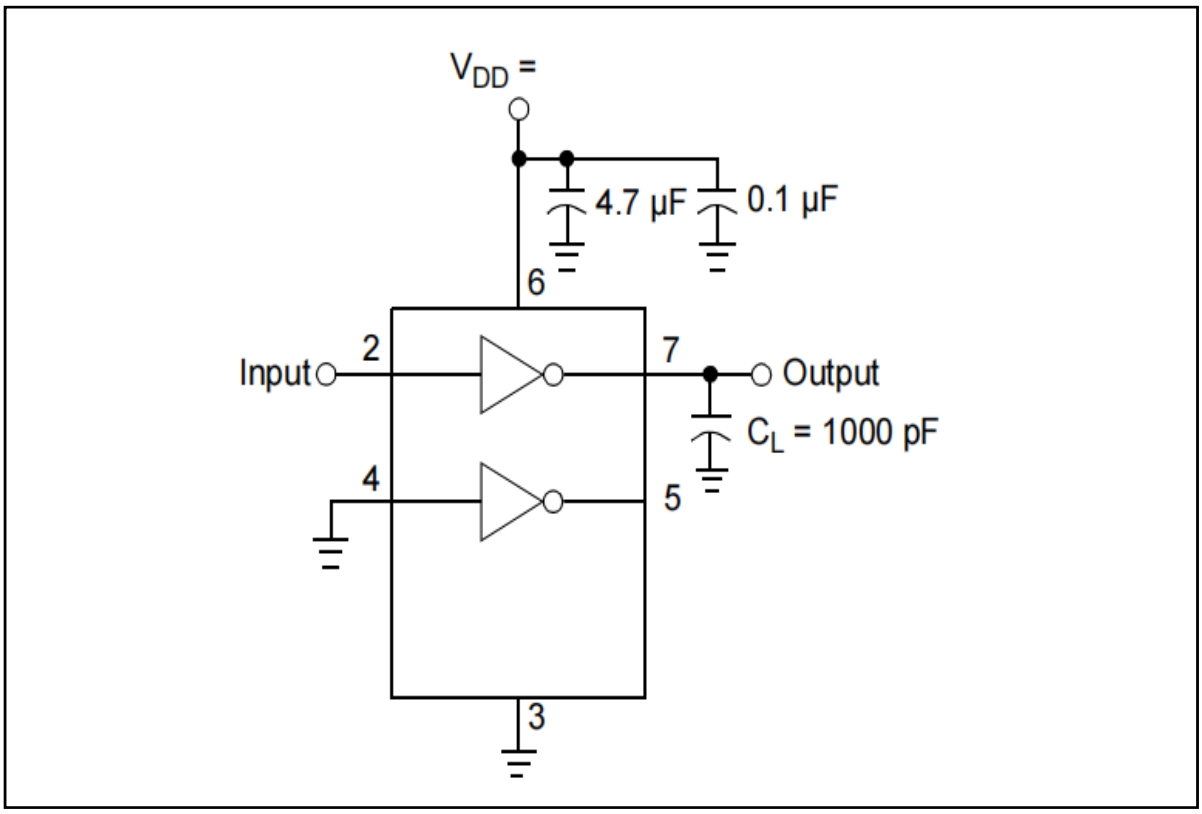
Output A and B
MOSFET driver outputs A and B are low-impedance,CMOS push-pull style outputs.The pull-downand pullup devices are of equal strength,making the rise and fall times equivalent.
Inputs A and B
MOSFET driver inputs A and B are high-impedance,TTL/CMOS compatible inputs.These inputsalso have 300 mV of hysteresis between the high and low thresholds that prevents output glitchingeven when the rise and fall time of the input signal is very slow.
Supply Input (VDD)
The VDD input is the bias supply for the MOSFET driver and is rated for 4.5V to 25V with respect tothe Ground pin.The VDD input should be bypassed with local ceramic capacitors.The value ofthese capacitors should be chosen based on the capacitive load that is being driven.A value of 1.0μF is suggested.
Ground(GND)
Ground is the device return pin.The Ground pin(s)should have a low-impedance connection to thebias supply source return.High peak current flows out the Ground pin(s)when the capacitive load isbeing discharged.
Exposed Metal Pad
The exposed metal pad of the DFN-8 package is not internally connected to any potential. Therefore,this pad can be connected to a ground plane or other copper plane on a Printed Circuit Board(PCB),to aid in heat removal from the package.

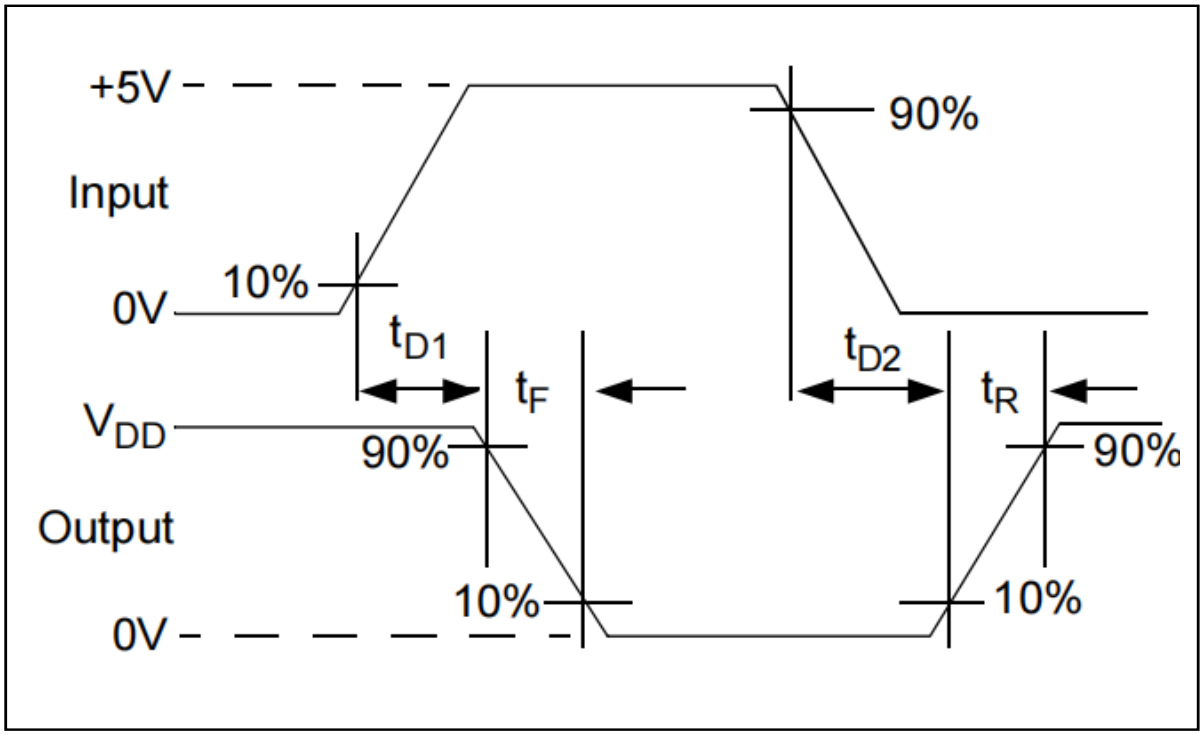
Electrical Characteristics

(Typical values are tested at T_A=25 °C,VDD=18V)

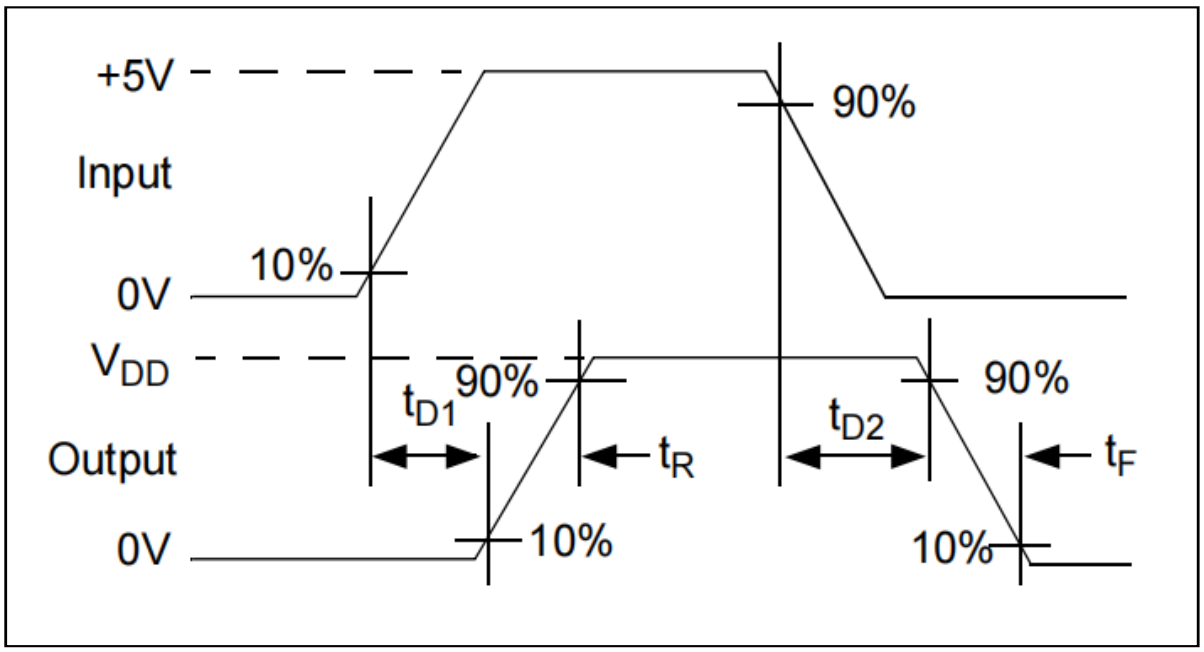
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Input						
Input Signal High Threshold	VIH		1.8			V
Input Signal Low Threshold	VIL				0.7	V
Input Signal Hysteresis	VHYS			0.3		V
Input Current	Iin	OV≤VIn≤VDD			±1	μA
Output						
Pull-Up Resistance	RoH	Source Current =10mA		2.0		Ω
Pull-Down Resistance	RoL	Sink Current =-10mA		2.0		Ω
Peak Output Current	Ipk	Source Current,f=1kHz, CL=1000pF		4		A
		Sink Current,f=1kHz, CL=1000pF		4		
Continuous Output Current	Ioc	Source /Sink Current		±200		mA
Power supply Current						
Power Supply Current	Icc	VINA=VINB=3V		0.9		mA
		VINA=VINB=0V		0.5		
Operating Voltage Range	VDD		4.5		25	V
Under-Voltage Lockout ONThreshold				3.6	4	V
Under-Voltage LockoutHysteresis				0.5		V
Switching characteristics						
Rise Time	tR	CL=1000pF		11		ns
Fall Time	tF	CL=1000pF		11		ns
Turn-On Delay Time	tD1	Non-inverting Input		34		ns
		Inverting Input		44		ns
Turn-Off Delay Time	tD2	Non-inverting Input		34		ns
		Inverting Input		44		ns
Over-temperature protection						
Thermal Shutdown Threshold				150		℃
Thermal Shutdown ThresholdHysteresis				25		℃

Switching Time Test Circuit





Inverting Driver

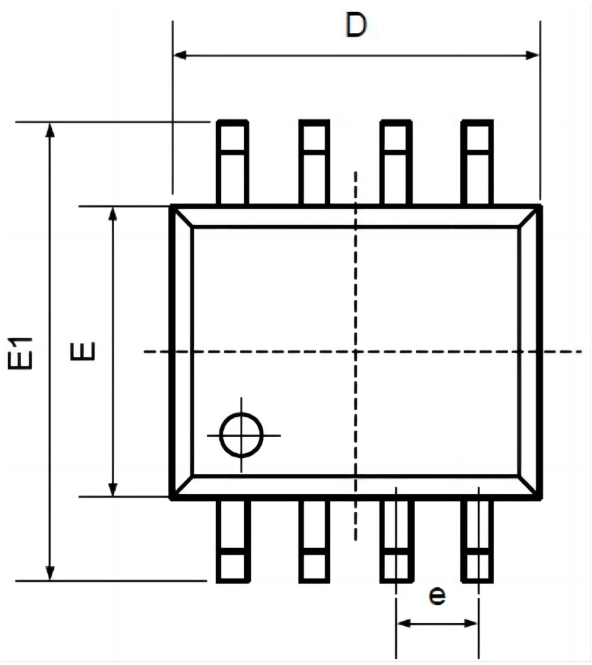


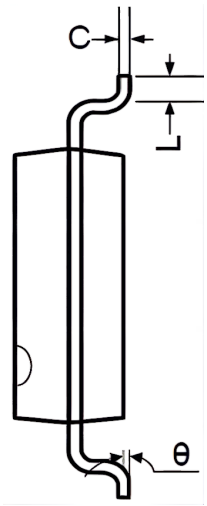
Non-Inverting Driver

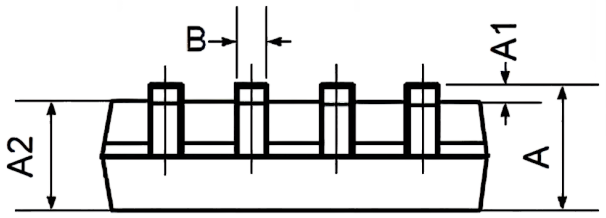
Order information

Order Number	Package	Package Quantity	Marking On The park	Temperature
IX4423NTR-TUDI	SOP8	Tape,Reel,4000	IX4423N	-40℃ to 125℃
IX4423N-TUDI	DIP8	Tube,50,A box of 2000	IX4423N	
IX4424NTR-TUDI	SOP8	Tape,Reel,4000	IX4424N	
IX4424N-TUDI	DIP8	Tube,50,A box of 2000	IX4424N	
IX4425NTR-TUDI	SOP8	Tape,Reel,4000	IX4425N	
IX4425N-TUDI	DIP8	Tube,50,A box of 2000	IX4425N	

Package SOP8

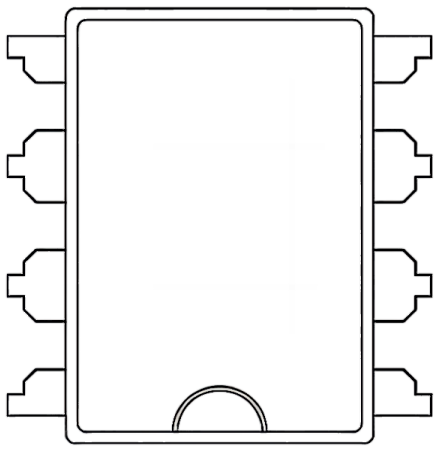


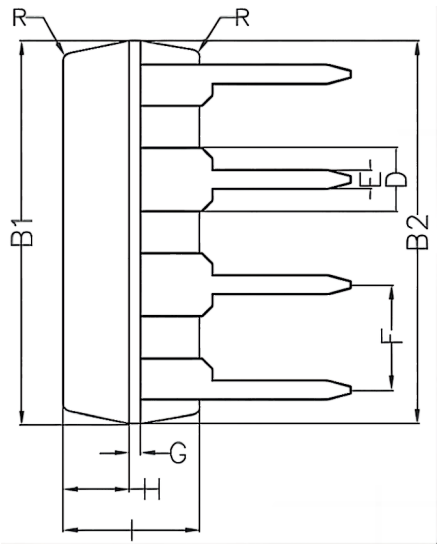


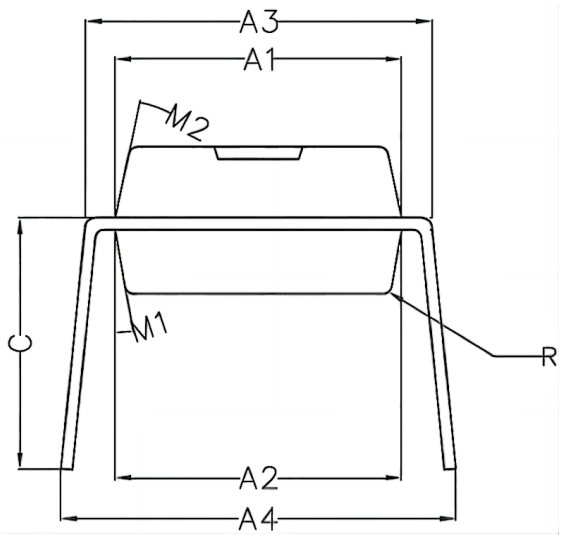


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
B	0.330	0.510	0.013	0.020
C	0.190	0.250	0.007	0.010
D	4.780	5.000	0.188	0.197
E	3.800	4.000	0.150	0.157
E1	5.800	6.300	0.228	0.248
e	1.270TYP		0.050TYP	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

Package DIP8







Symbol	Min	Non	Max
A1	6.28	6.33	6.38
A2	6.33	6.38	6.43
A3	7.52	7.62	7.72
A4	7.80	8.40	9.00
B1	9.15	9.20	9.25
B2	9.20	9.25	9.30
C		5.57	
D		1.52	
E	0.43	0.45	0.47
F		2.54	
G		0.25	
H	1.54	1.59	1.64
工	3.22	3.27	3.32
R		0.20	
M1	9°	10°	11°
M2	11°	12°	13°

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