

μ A9636A

RS-423 Dual Programmable Slew Rate Line Driver

Linear Division Interface Products

Description

The μ A9636A is a TTL/CMOS compatible, dual, single ended line driver which has been specifically designed to satisfy the requirements of EIA Standard RS-423.

The μ A9636A is suitable for use in digital data transmission systems where signal wave shaping is desired. The output slew rates are jointly controlled by a single external resistor connected between the wave shaping control lead (WS) and ground. This eliminates any need for external filtering of the output signals. Output voltage levels and slew rates are independent of power supply variations. Current-limiting is provided in both output states. The μ A9636A is designed for nominal power supplies of ± 12 V.

Inputs are TTL compatible with input current loading low enough (1/10 UL) to be also compatible with CMOS logic. Clamp diodes are provided on the inputs to limit transients below ground.

- Programmable Slew Rate Limiting
- Meets EIA Standard RS-423
- Commercial Or Extended Temperature Range
- Output Short Circuit Protection
- TTL And CMOS Compatible Inputs

Absolute Maximum Ratings

Storage Temperature Range

Ceramic DIP	-65°C to +175°C
Molded DIP	-65°C to +150°C

Operating Temperature Range

Extended (μ A9636AM)	-55°C to +125°C
Commercial (μ A9636AC)	0°C to +70°C

Lead Temperature

Ceramic DIP (soldering, 60 s)	300°C
Molded DIP (soldering, 10 s)	265°C

Internal Power Dissipation^{1,2}

8L-Ceramic DIP	1.30 W
8L-Molded DIP	0.93 W

V+ Lead Potential to Ground Lead V- to +15 V

V- Lead Potential to Ground Lead +0.5 V to -15 V

V+ Lead Potential to V- Lead 0 V to +30 V

Output Potential to Ground Lead ± 15 V

Output Source Current -150 mA

Output Sink Current 150 mA

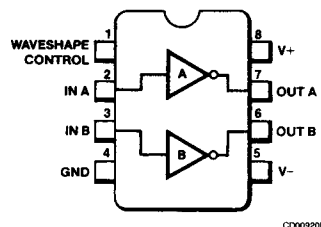
Notes

1. $T_{J \text{ Max}}$ = 175°C for the Ceramic DIP, and 150°C for the Molded DIP.
2. Ratings apply to ambient temperature at 25°C. Above this temperature, derate the 8L-Ceramic DIP at 8.7 mW/°C, and the 8L-Molded DIP at 7.5 mW/°C.

Connection Diagram

8-Lead DIP

(Top View)

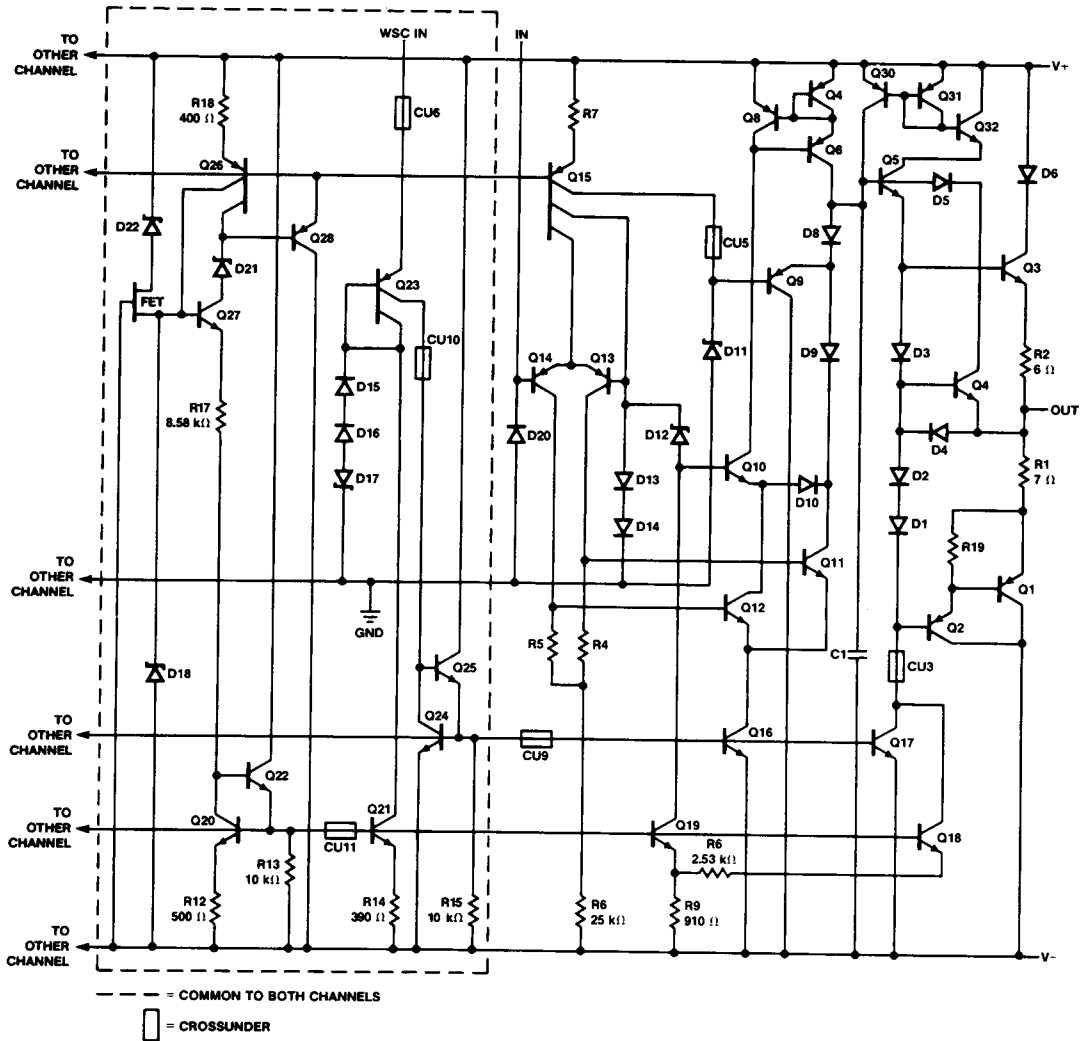


CD00020F

Order Information

Device Code	Package Code	Package Description
μ A9636ARM	6T	Ceramic DIP
μ A9636ARC	6T	Ceramic DIP
μ A9636ATC	9T	Molded DIP

Equivalent Circuit



EQ00300F

Recommended Operating Conditions

Symbol	Characteristic	μA9636A			μA9636AC			Unit
		Min	Typ	Max	Min	Typ	Max	
V+	Positive Supply Voltage	10.8	12	13.2	10.8	12	13.2	V
V−	Negative Supply Voltage	−13.2	−12	−10.8	−13.2	−12	−10.8	V
T _A	Operating Temperature	−55	25	125	0	25	70	°C
R _{WS}	Wave Shaping Resistance	10		500	10		1000	kΩ

μA9636A

Electrical Characteristics Over recommended operating temperature, supply voltage and wave shaping resistance ranges unless otherwise specified.

DC Characteristics

Symbol	Characteristic	Condition	Min	Typ	Max	Unit
V _{OH1}	Output Voltage HIGH	R _L to GND (R _L = ∞)	5.0	5.6	6.0	V
V _{OH2}		R _L to GND (R _L = 3.0 kΩ)	5.0	5.6	6.0	V
V _{OH3}		R _L to GND (R _L = 450 Ω)	4.0	5.5	6.0	V
V _{OL1}	Output Voltage LOW	R _L to GND (R _L = ∞)	−6.0	−5.7	−5.0	V
V _{OL2}		R _L to GND (R _L = 3.0 kΩ)	−6.0	−5.6	−5.0	V
V _{OL3}		R _L to GND (R _L = 450 Ω)	−6.0	−5.4	−4.0	V
R _O	Output Resistance	450 Ω ≤ R _L		25	50	Ω
I _{OS+}	Output Short Circuit Current ¹	V _O = 0 V, V _I = 0 V	−150	−60	−15	mA
I _{OS−}		V _O = 0 V, V _I = 2.0 V	15	60	150	mA
I _{CEX}	Output Leakage Current	V _O = ±6.0 V, Power-Off	−100		+100	μA
V _{IH}	Input Voltage HIGH		2.0			V
V _{IL}	Input Voltage LOW				0.8	V
V _{IC}	Input Clamp Diode Voltage	I _I = 15 mA	−1.5	−1.1		V
I _{IL}	Input Current LOW	V _I = 0.4 V	−80	−16		μA
I _{IH}	Input Current HIGH	V _I = 2.4 V		1.0	10	μA
		V _I = 5.5 V		10	100	
I+	Positive Supply Current	V _{CC} = ±12 V, R _L = ∞, R _{WS} = 100 kΩ, V _I = 0 V		13	18	mA
I−	Negative Supply Current	V _{CC} = ±12 V, R _L = ∞, R _{WS} = 100 kΩ, V _I = 0 V	−18	−13		mA

Notes

1. Only one output should be shorted at a time.

μA9636A (Cont.)

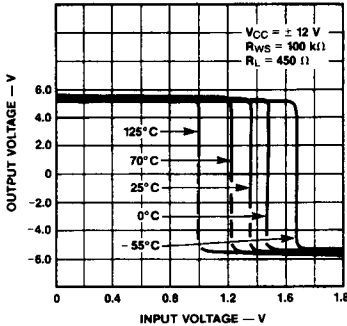
Electrical Characteristics Over recommended operating temperature, supply voltage and wave shaping resistance ranges unless otherwise specified.

AC Characteristics $V_{CC} = \pm 12\text{ V} \pm 10\%$, $T_A = 25^\circ\text{C}$, see AC Test Circuit

Symbol	Characteristic	Condition	Min	Typ	Max	Unit
t_r	Rise Time	$R_{WS} = 10\text{ k}\Omega$	0.8	1.1	1.4	μs
		$R_{WS} = 100\text{ k}\Omega$	8.0	11	14	
		$R_{WS} = 500\text{ k}\Omega$	40	55	70	
		$R_{WS} = 1000\text{ k}\Omega$	80	110	140	
t_f	Fall Time	$R_{WS} = 10\text{ k}\Omega$	0.8	1.1	1.4	μs
		$R_{WS} = 100\text{ k}\Omega$	8.0	11	14	
		$R_{WS} = 500\text{ k}\Omega$	40	55	70	
		$R_{WS} = 1000\text{ k}\Omega$	80	110	140	

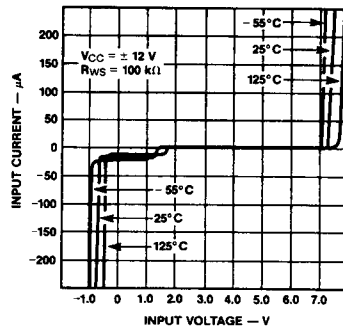
Typical Performance Curves

Input/Output Transfer Characteristic vs Temperature



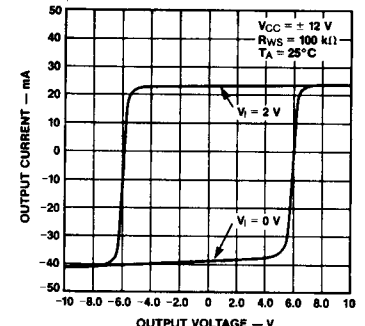
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Input Current vs Input Voltage



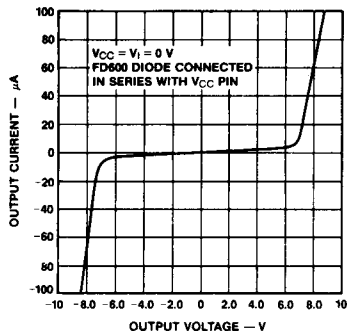
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Output Current vs Output Voltage (Power On)



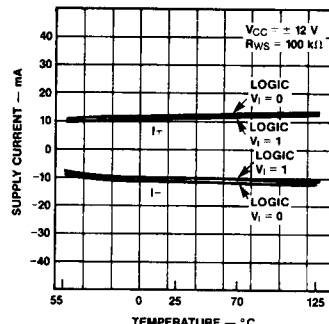
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Output Current vs Output Voltage (Power Off)



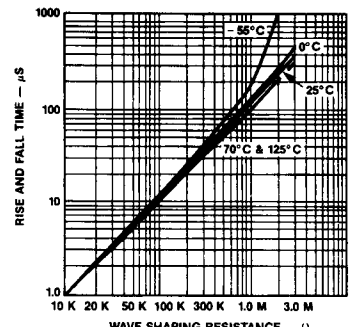
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Supply Current vs Temperature



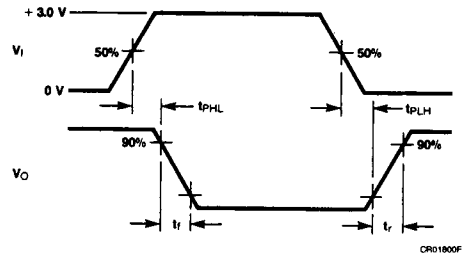
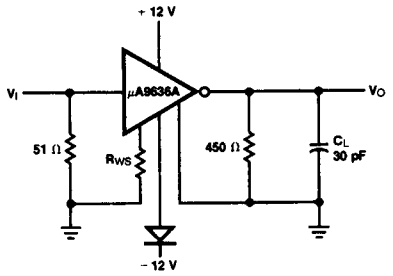
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Transition Time vs Rws



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AC Test Circuit and Waveforms

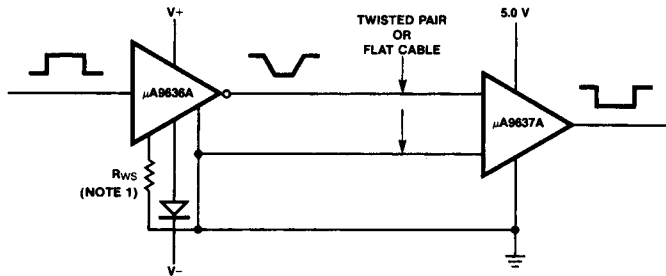


Note

C_L includes jig and probe capacitance

V_I
Amplitude: 3.0 V
Offset: 0 V
Pulse Width: 500 μ s
PRR: 1.0 kHz
 $t_r = t_f \leq 10$ ns

RS-423 System Application



Note

1. Use Fairchild's 1N4448.