

TPLMV321IDBVR

1MHZ CMOS Rail-to-Rail IO Opamp With RF Filter

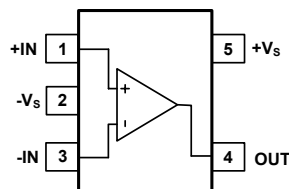
Features

- Single-Supply Operation from +2.2V ~ +5.5V
- Rail-to-Rail Input / Output
- Gain-Bandwidth Product: 1MHz (Typ.)
- Low Input Bias Current: 10pA (Typ.)
- Low Offset Voltage: 5mV (Max.)
- Quiescent Current: 40 μ A (Typ.)
- Operating Temperature: -40°C ~ +125°C
- Available in SOT23-5

Applications

- Portable Equipment
- Mobile Communications
- Smoke Detector
- Sensor Interface
- Medical Instrumentation
- Battery-Powered Instruments
- Handheld Test Equipment

Pin Assignments



SOT23-5

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Absolute Maximum Ratings

Condition	Min	Max
Power Supply Voltage (V_{DD} to V_{SS})	-0.5V	+7V
Analog Input Voltage (IN+ or IN-)	$V_{SS}-0.5V$	$V_{DD}+0.5V$
PDB Input Voltage	$V_{SS}-0.5V$	+7V
Operating Temperature Range	-40°C	+125°C
Junction Temperature	+150°C	
Storage Temperature Range	-65°C	+150°C
Lead Temperature (soldering, 10sec)	+300°C	
Package Thermal Resistance ($T_A=+25^\circ\text{C}$)		
SOT23-5, θ_{JA}	190°C	
SOP-8, θ_{JA}	130°C	

Note: Stress greater than those listed under Absolute Maximum Ratings may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions outside those indicated in the operational sections of this specification are not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

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Electrical Characteristics (T_A=25°C unless otherwise noted)

(V_{DD} = +5V, V_{SS} = 0V, V_{CM} = 0V, V_{OUT} = V_{DD}/2, R_L=100K tied to V_{DD}/2, SHDNB = V_{DD}, T_A = -40°C to +125°C, unless otherwise noted. Typical values are at T_A = +25°C.) (Notes 1)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Supply-Voltage Range	V _{DD}	Guaranteed by the PSRR test	2.2	-	5.5	V
Quiescent Supply Current (per Amplifier)	I _Q	V _{DD} = 5V	30	40	60	μA
Input Offset Voltage	V _{OS}		-	0.5	±5	mV
Input Offset Voltage Tempco	ΔV _{OS} /ΔT		-	2	-	μV/°C
Input Bias Current	I _B	(Note 2)	-	10	-	pA
Input Offset Current	I _{OS}	(Note 2)	-	10	-	pA
Input Common-Mode Voltage Range	V _{CM}		-0.1	-	V _{DD} +0.1	V
Common-Mode Rejection Ratio	CMRR	V _{DD} =5.5 V _{SS} -0.1V ≤ V _{CM} ≤ V _{DD} +0.1V	55	65	-	dB
		V _{SS} ≤ V _{CM} ≤ 5V	60	80	-	dB
Power-Supply Rejection Ratio	PSRR	V _{DD} = +2.5V to +5.5V	75	94	-	dB
Open-Loop Voltage Gain	A _V	V _{DD} =5V, R _L =100kΩ, 0.05V ≤ V _O ≤ 4.95V	100	110	-	dB
		V _{DD} =5V, R _L =5kΩ, 0.05V ≤ V _O ≤ 4.95V	70	80	-	dB
Output Voltage Swing	V _{OUT}	V _{IN+} -V _{IN-} ≥ 10mV V _{DD} -V _{OH}	-	6	-	mV
		R _L = 100kΩ to V _{DD} /2 V _{OL} -V _{SS}	-	6	-	mV
		V _{IN+} -V _{IN-} ≥ 10mV V _{DD} -V _{OH}	-	60	-	mV
		R _L = 5kΩ to V _{DD} /2 V _{OL} -V _{SS}	-	60	-	mV
Output Short-Circuit Current	I _{SC}	Sinking or Sourcing	-	±20	-	mA
Gain Bandwidth Product	GBW	A _V = +1V/V	-	1	-	MHz
Slew Rate	SR	A _V = +1V/V	-	0.6	-	V/μs
Settling Time	t _s	To 0.1%, V _{OUT} = 2V step A _V = +1V/V	-	5	-	μs
Over Load Recovery Time		V _{IN} × Gain=V _s	-	2	-	μs
Input Voltage Noise Density	e _n	f = 10kHz	-	20	-	nV/√Hz

Note 1: All devices are 100% production tested at T_A = +25°C; all specifications over the automotive temperature range is guaranteed by design, not production tested.

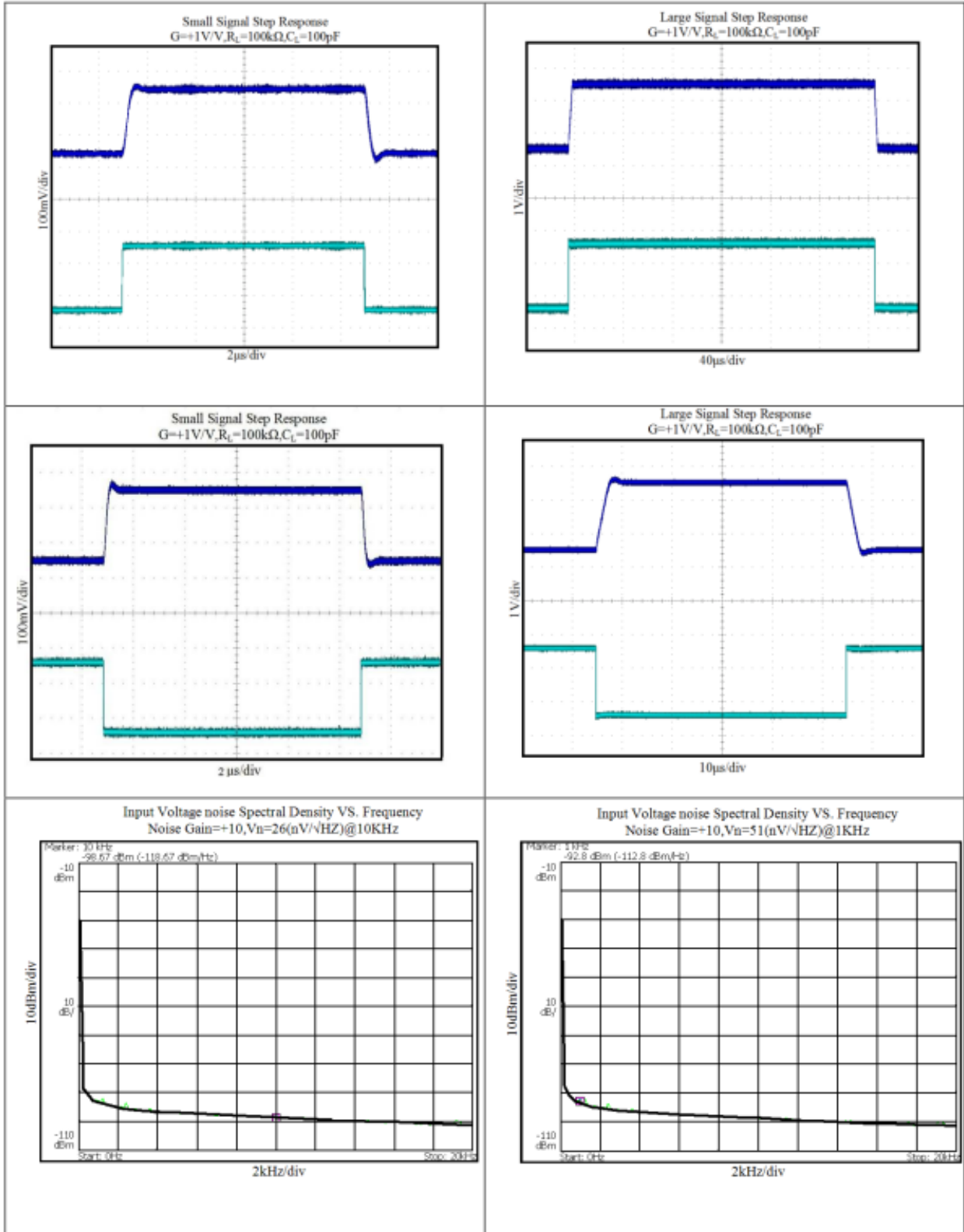
Note 2: Parameter is guaranteed by design.

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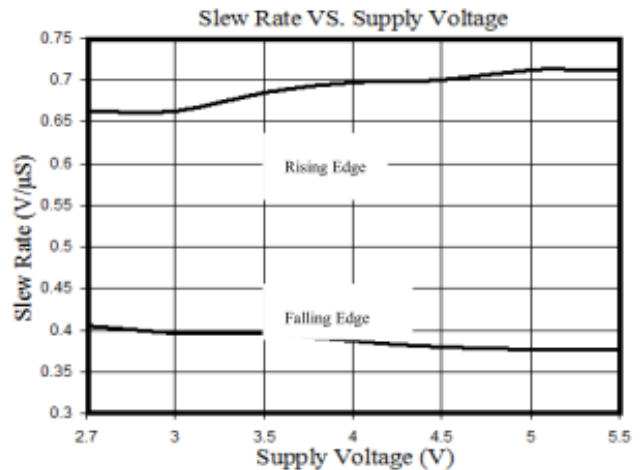
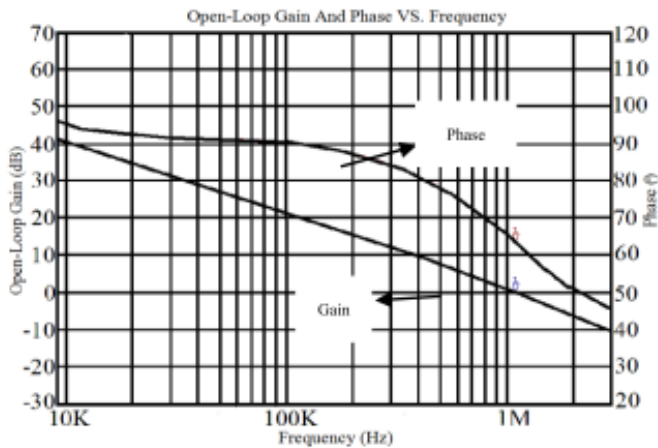
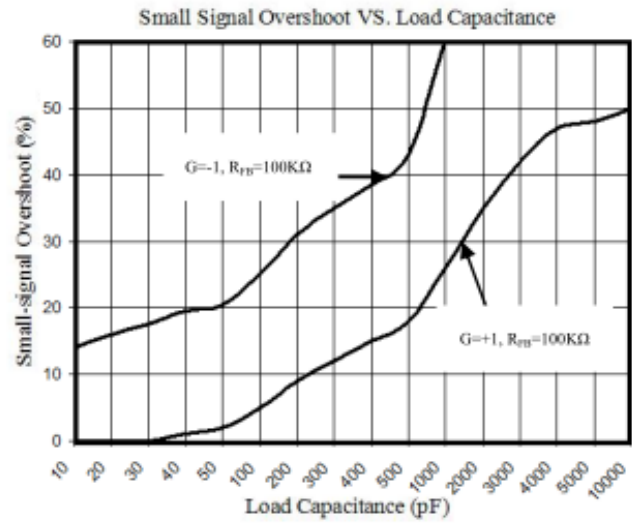
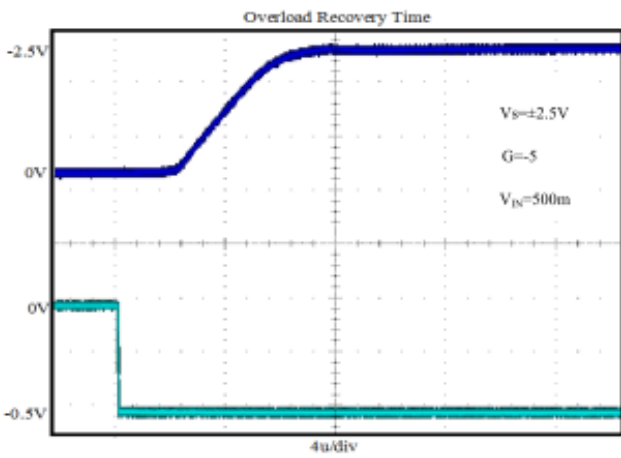
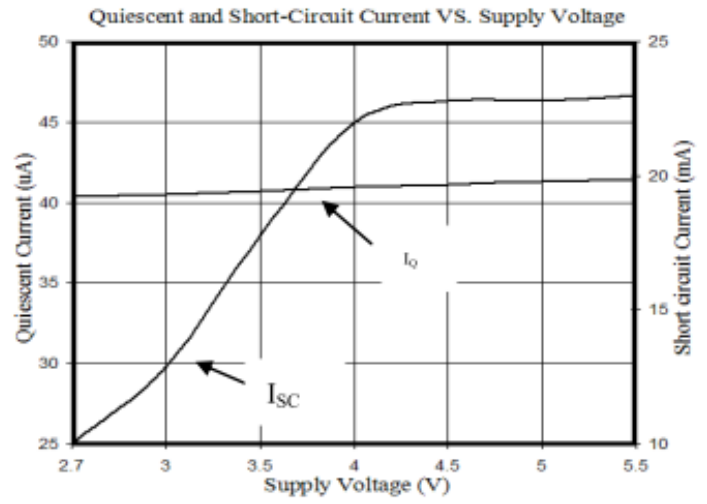
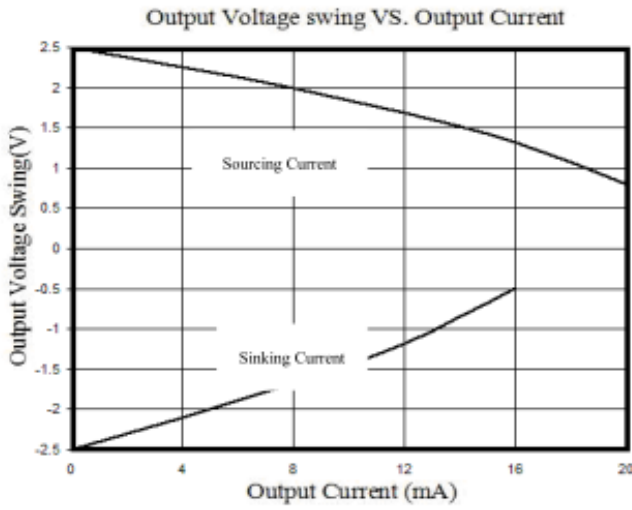
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TYPICAL PERFORMANCE CHARACTERISTICS

At $T_A=+25^\circ\text{C}$, $R_L=100\text{ k}\Omega$ connected to $V_S/2$ and $V_{OUT}=V_S/2$, unless otherwise noted.



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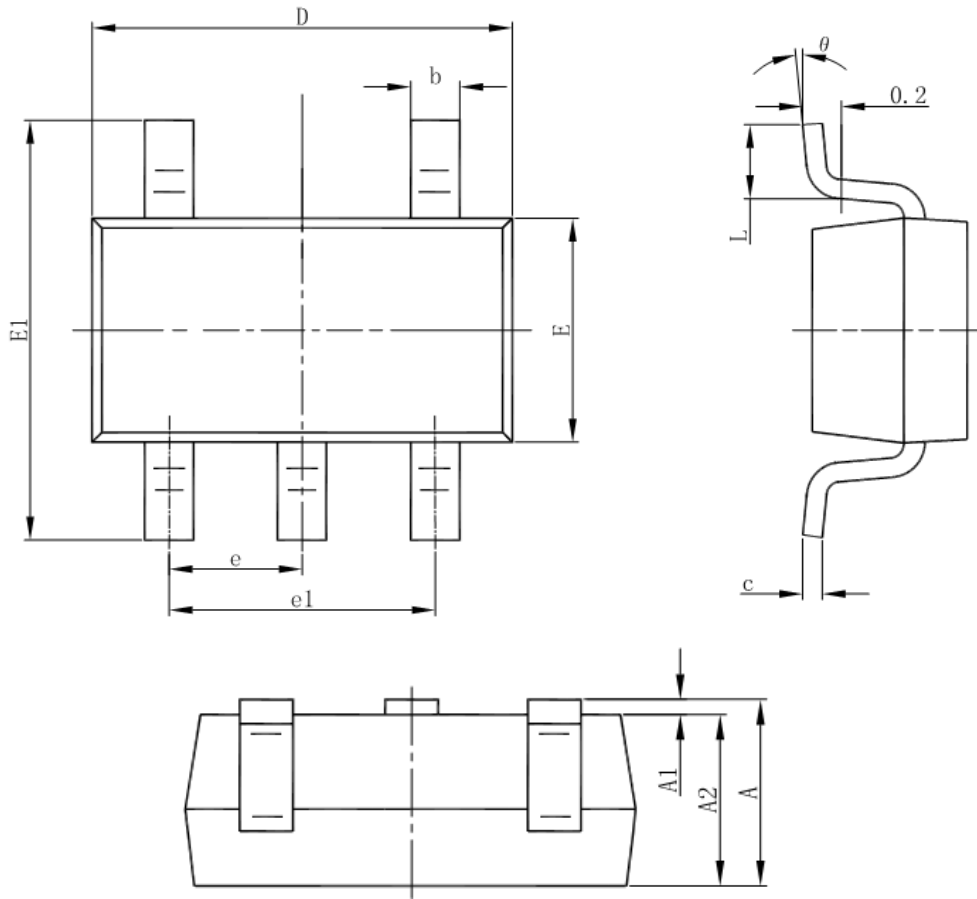


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Package Information

SOT23-5



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°