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TPLMV321RILT

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

www.sot23.com.tw

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: 40μA (Typ.)
- Operating Temperature: -40°C ~ +125°C
- Available in SOT23-5 and SOP8 Packages

Applications

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

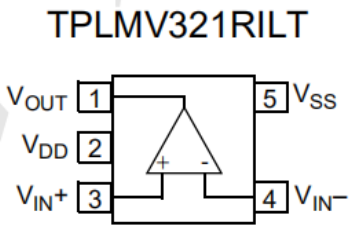
General Description

TPLMV321RILT are rail-to-rail COMS are rail-to-rail CMOS operational amplifiers with ultra low offset. Features include wide input common-mode voltage range and broad output voltage swing with operating supply voltage from 2.2V to 5.5V. Products are fully specified over the extended –40 to +125°C temperature range.

TPLMV321R provide 1MHz bandwidth consuming Ultra low current of 40uA per chhannel . Very low input bias currents of 10pA enable them ideal for integrators,photodiode amplifiers, and piezoelectric sensors

Pin Assignments

TPLMV321RILT



SOT23-5

Absolute Maximum Ratigs

Condition	Min	Max
Power Supply Voltage (V_{DD} to Vss)	-0.5V	+7V
Analog Input Voltage (IN+ or IN-)	Vss-0.5V	V_{DD}+0.5V
PDB Input Voltage	Vss-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°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.

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

(V_{DD} = +5V, Vss = 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)

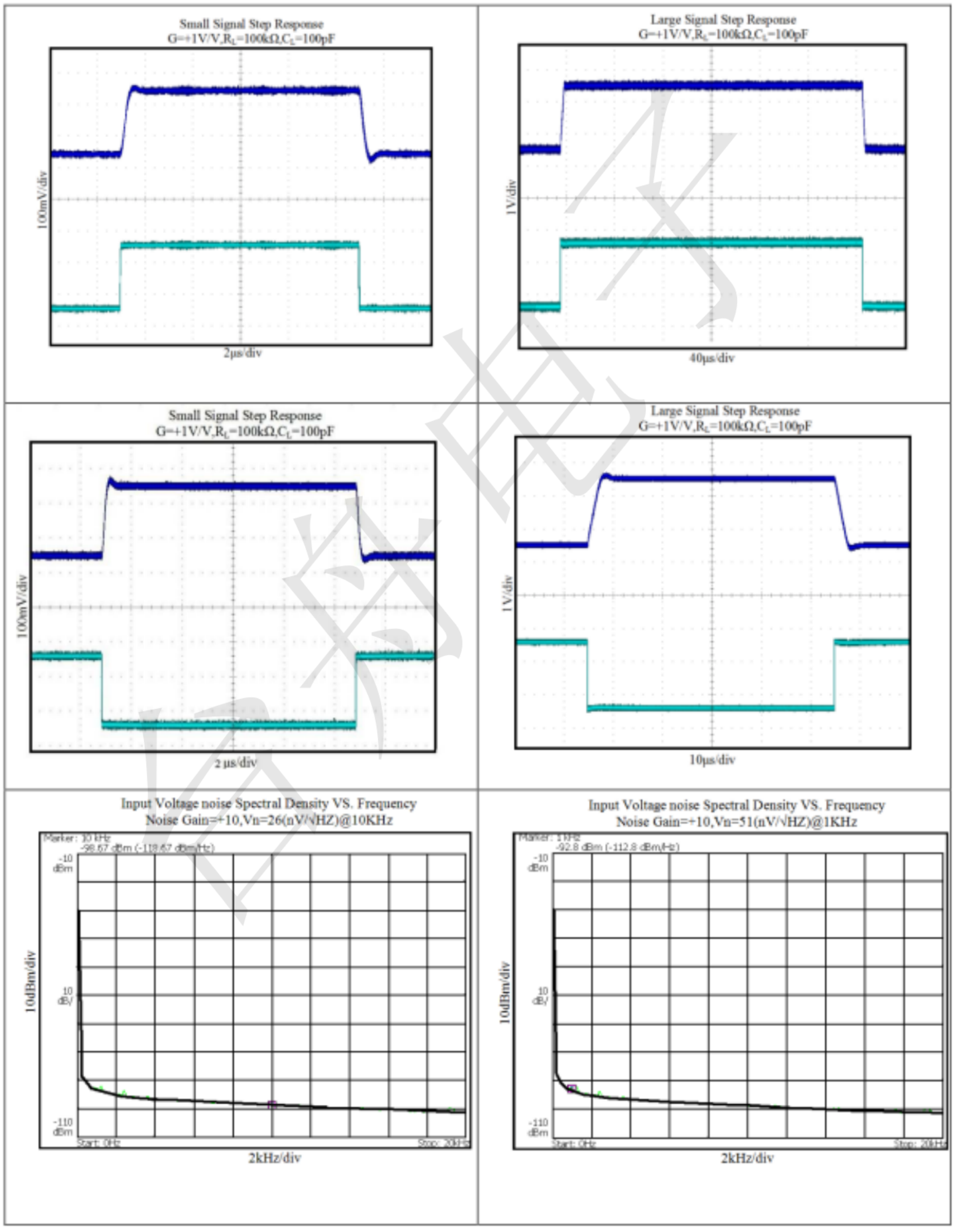
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Supply-Voltage Range	V_{DD}	Guaranteed by the PSRR test	2.2	-	5.5	V
Quiescent Supply Current (per Amplifier)	I_Q	V_{DD} = 5V	30	40	60	μA
Input Offset Voltage	V_{OS}		-	0.5	±5	mV
Input Offset Voltage Tempco	$\Delta V_{OS}/\Delta T$		-	2	-	μV/°C
Input Bias 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 Vss-0.1V≤V_{CM}≤V_{DD}+0.1V	55	65	-	dB
		Vss≤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}-Vss	-	6	-	mV
		|V_{IN+}-V_{IN-}| ≥ 10mV V_{DD}-V_{OH}	-	60	-	mV
		R_L = 5kΩ to V_{DD}/2 V_{OL}-Vss	-	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.

TYPICAL PERFORMANCE CHARACTERISTICS

At T_A=+25°C, R_L=100 kΩ connected to V_S/2 and V_{OUT}= V_S/2, unless otherwise noted.



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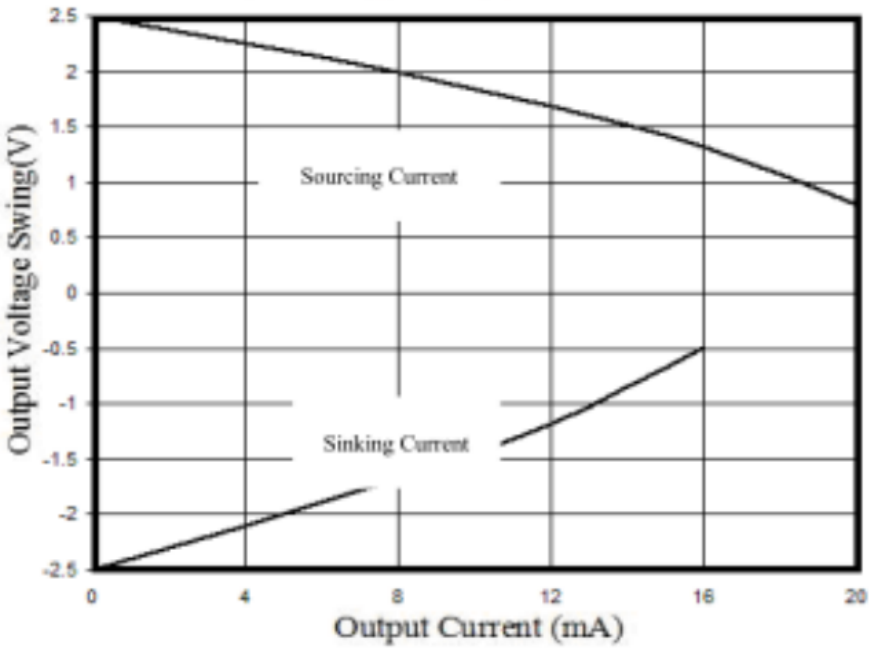
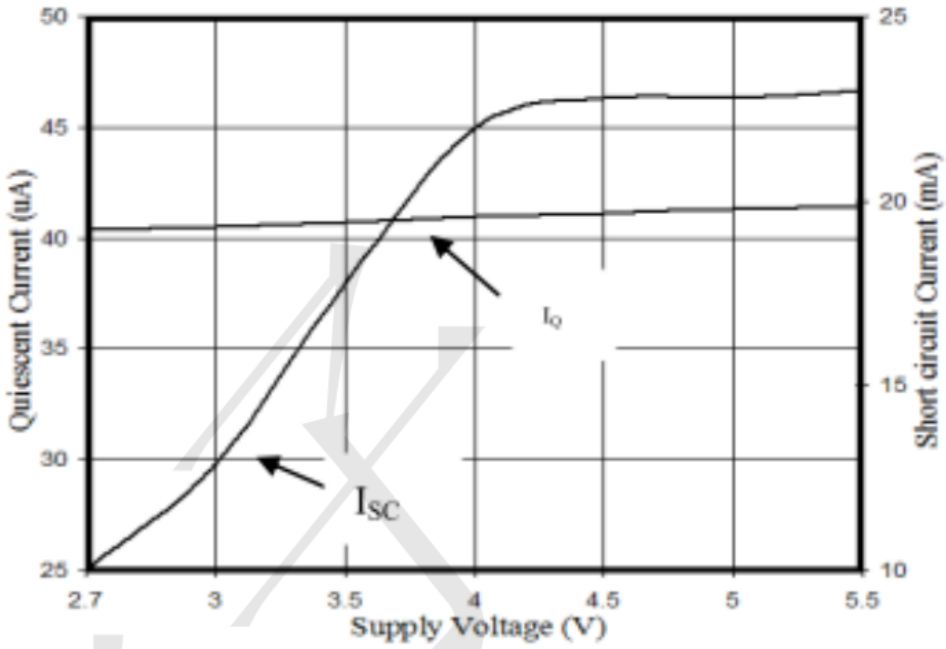
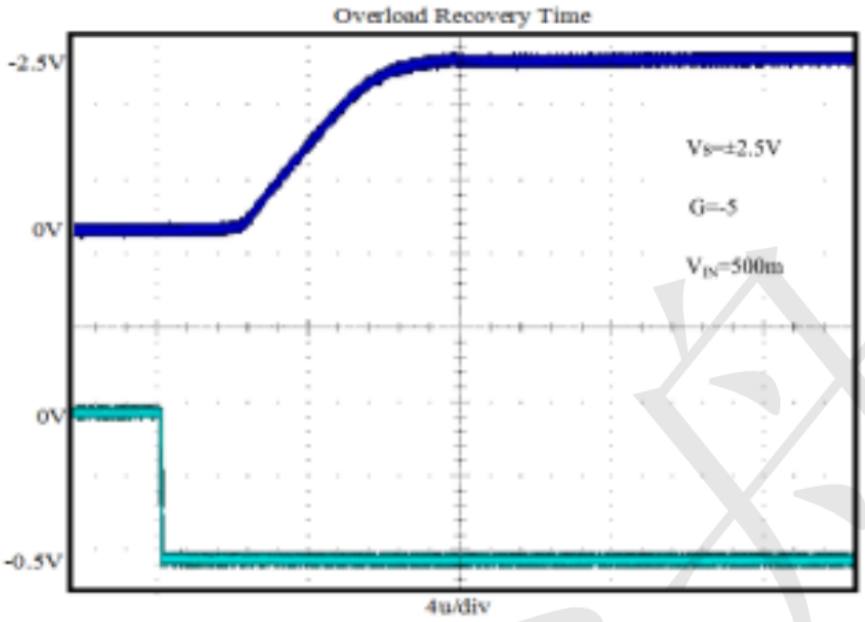
Output Voltage swing VS. Output Current



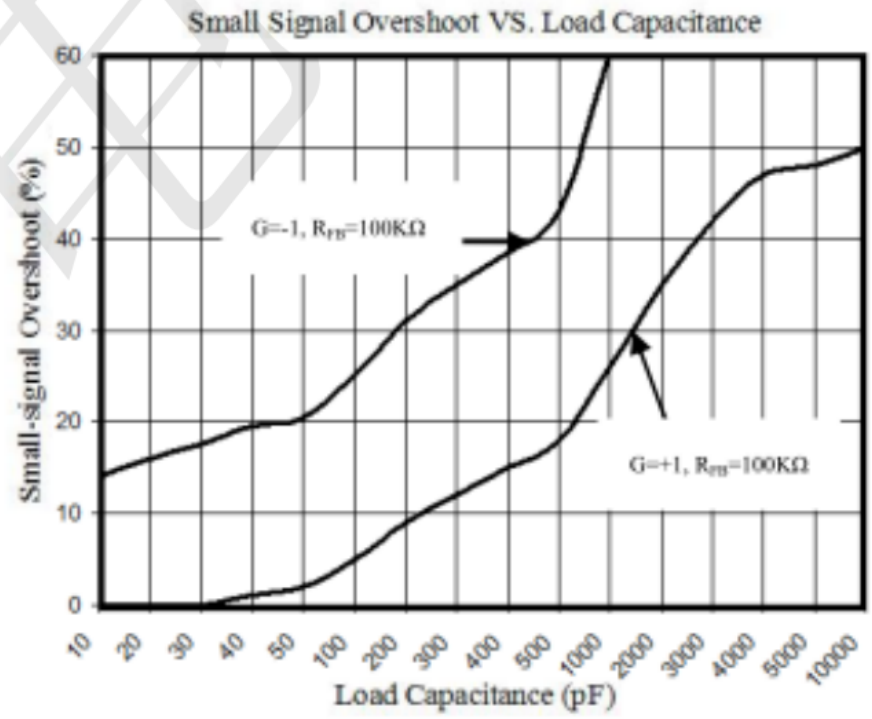
Quiescent and Short-Circuit Current VS. Supply Voltage



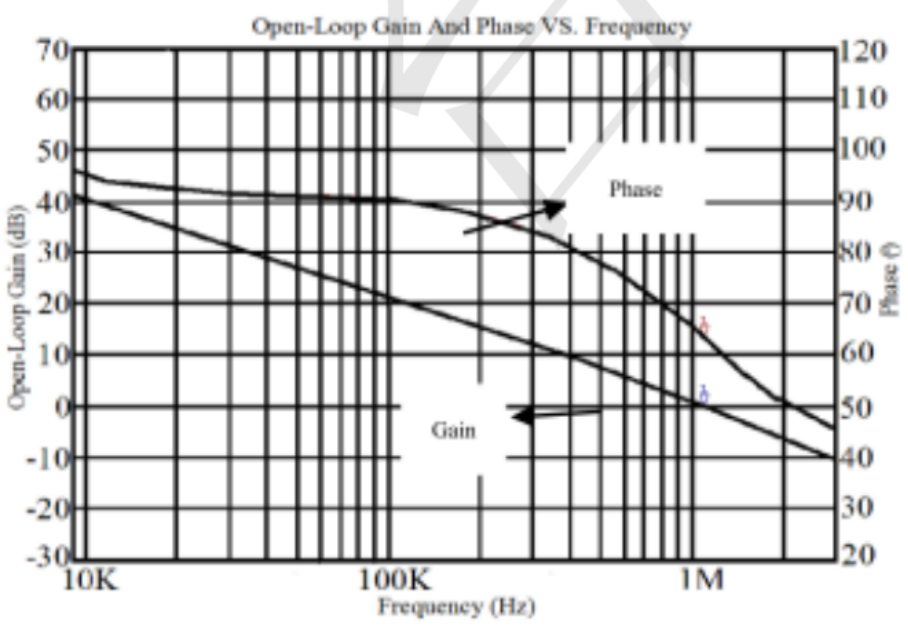
Overload Recovery Time



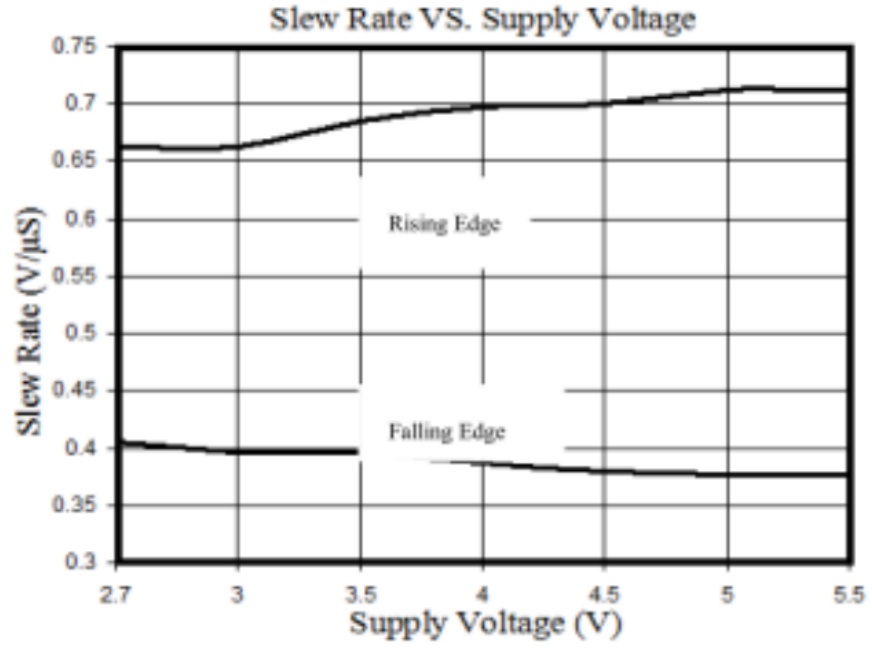
Small Signal Overshoot VS. Load Capacitance



Open-Loop Gain And Phase VS. Frequency

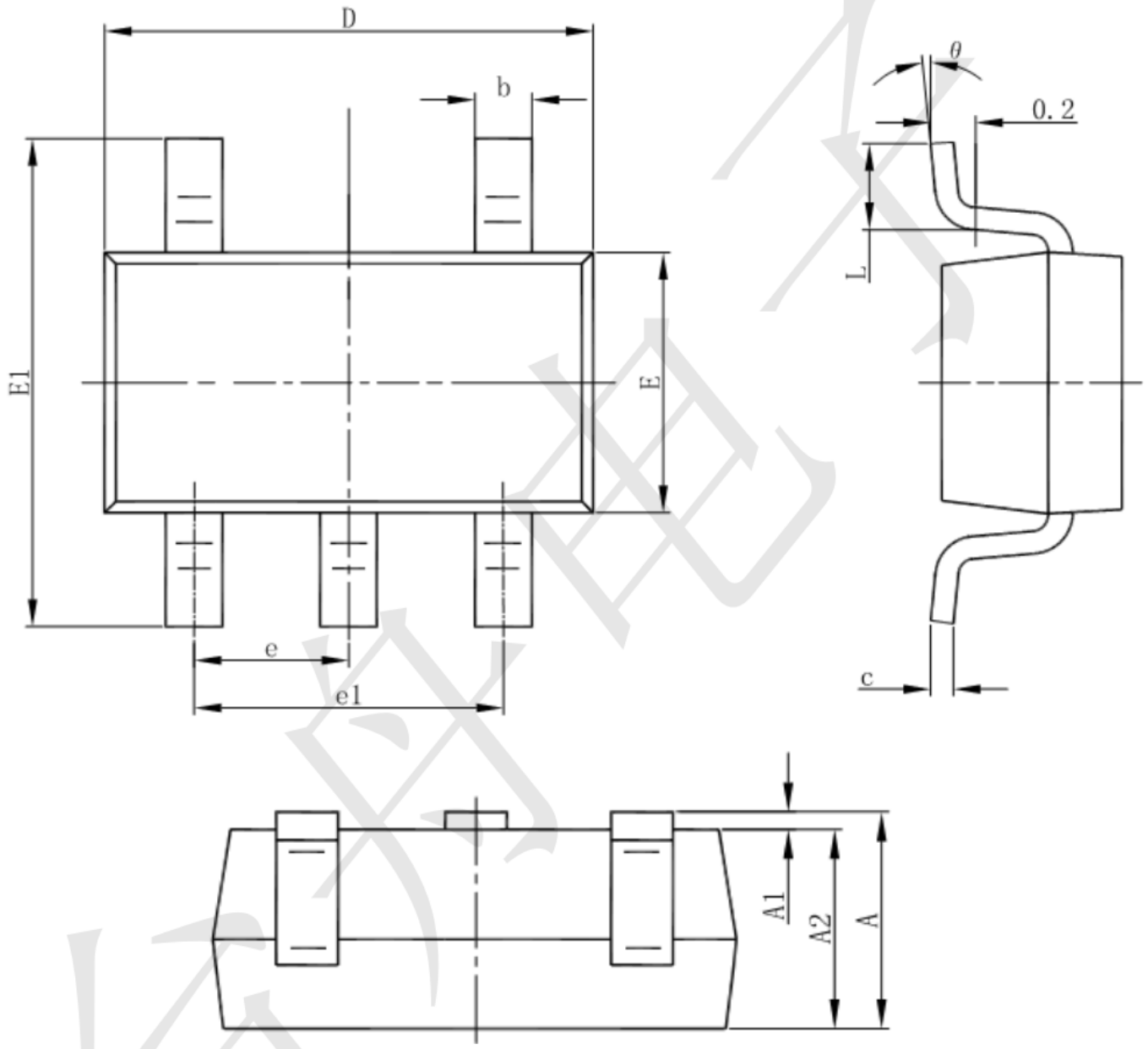


Slew Rate VS. Supply Voltage



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°