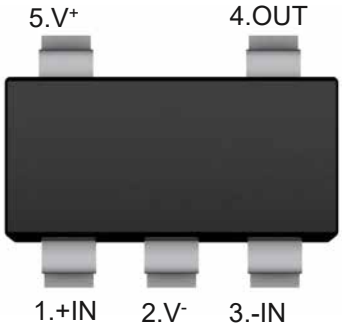
Low Power Single Operational Amplifier

Description

LM321 is a low power, wide power range performance operational amplifier； The static current is only 430 μA per amplifier (5V) with high unit gain frequency and A voltage swing rate of 0.4V/μs.Input common model circuit includes ground, so the device can operate in single - and dual-power applications.It can also comfortably drive large capacity loads.

SOT-23-5



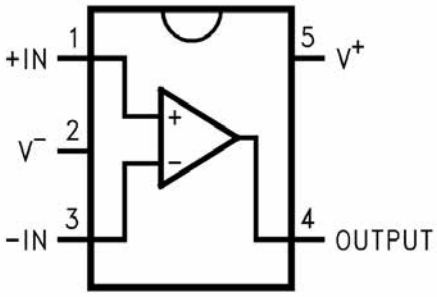
Features

- Low quiescent current
- Low input bias current
- Wide range of supply voltage
- High capacity load stability

Applications

- Battery-Powered Equipment
- Smoke Detector and Sensor
- Micro Controller Applications

Pin arrangement diagram



Absolute Maximum Ratings (T_A=25℃)

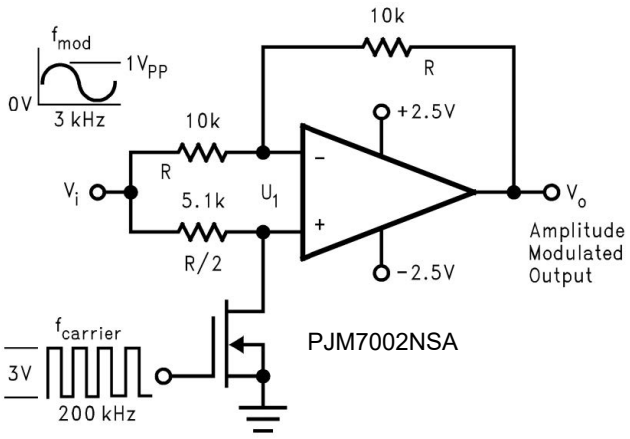
Parameter	Symbol	Value	Units
Supply Voltage	V_{CC}	24 or ±12	V
Differential Input Voltage	V_{ID}	24	V
Input Voltage	V_{IN}	-0.3~VCC	V
Power Dissipation	P_D	530	mW
Output Short Circuit to GND V≤15V,Ta=25℃	I_O	Continuous	
Input Current VIN<-0.3V	I_{IN}	50	mA
Junction Temperature	T_J	150	°C
Operating Temperature Range	T_{OPR}	0 to 70	°C
Storage Temperature Range	T_{STG}	-65 to 150	°C

Electrical Characteristics

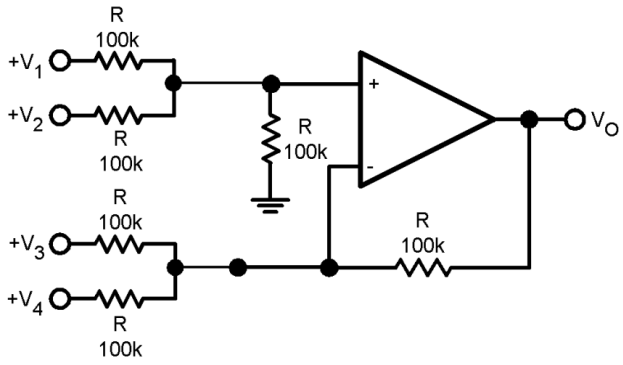
At V_{CC}=5V, unless otherwise noted.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Input Offset Voltage	V_{OS}	Ta=25℃	--	±2	±5	mV
Input offset current	I_{OS}	Ta=25℃,IIN(+) - IIN(-) , VCM=0V	--	±3	±50	nA
Input bias current	I_B	Ta=25℃,IIN(+) or IIN(-) , VCM=0V	--	±45	±250	nA
Common-mode input voltage range	V_{CM}	Ta=25℃,V^+=24V	0	--	VCC-1.5	V
Supply current	I_S	V_{CC}=24V, R_L =∞	--	0.7	2	mA
		V_{CC}=5V , R_L =∞	--	0.5	1.2	
Common Mode Rejection	CMRR	V_{CM} = 0~VCC-1.5V, Ta=25℃, DC	65	90	--	dB
Power Supply Rejection	PSRR	V_{CC} = 5V~24V, Ta=25℃, DC	65	100	--	dB
Large signal voltage gain	A_V	V_{CC} = 15V,T_a=25℃,R_L≥ 2kΩ(for V_O=1~11V)	25	100	--	V/mV
Output voltage swing	V_O	V_{OH} V_{CC} = 24V,R_L= 2 kΩ	22	--	--	V
		V_{OH} V_{CC} = 24V,R_L=10 kΩ	22	--	--	V
		V_{OL} V_{CC} = 5V,R_L=10 kΩ	--	5	20	mV
Output Current Sourcing	I_{Source}	$V_{IN(+)}$ =1V,$V_{IN(-)}$ =0V,V_{CC}=15V, V_O=2V,Ta=25℃	20	40	--	mA
Output Current Sinking	I_{SINK}	$V_{IN(+)}$ =0V,$V_{IN(-)}$ =1V,V_{CC}=15V, V_O=2V,Ta=25℃	10	15	--	mA
		$V_{IN(+)}$ =0V,$V_{IN(-)}$ =1V,V_{CC}=15V, V_O=200mV,Ta=25℃	12	50	--	μA
Output Short Circuit to Ground	I_O	V_{CC}=15V,Ta=25℃	--	40	60	mA

Typical Applications



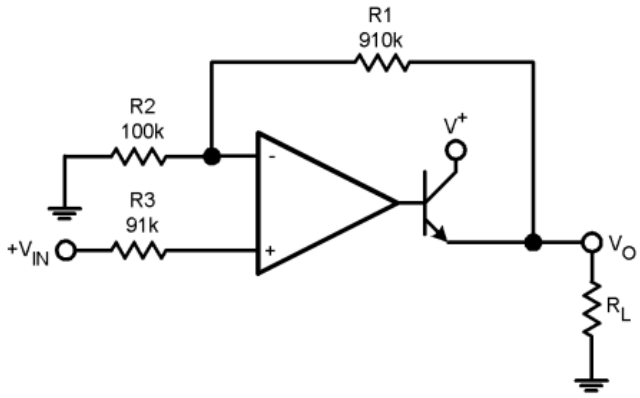
Amplitude modulator circuit



Note：$V_O=V_1+V_2-V_3-V_4,(V_1+V_2) \geq (V_3+V_4)$ for $V_O \geq 0V_{DC}$

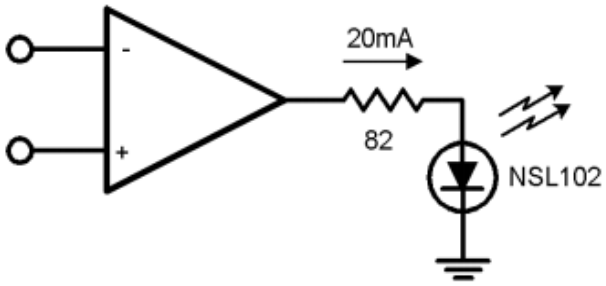
DC adder amplifier

($V_{IN'S} \geq 0V_{DC}, V_O \geq V_{DC}$)

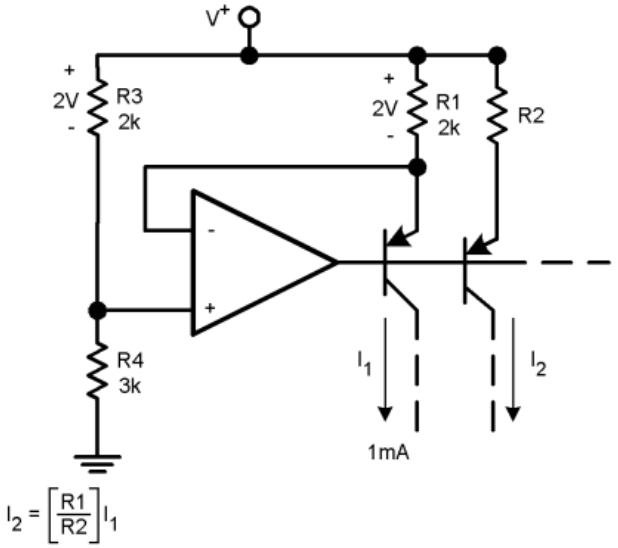


$V_O=0V_{DC}$ for $V_{IN}=0V_{DC}$， $A_V=10$

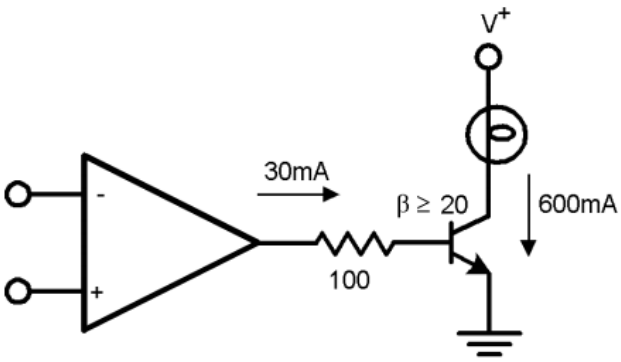
Power Amplifier



LED Driver

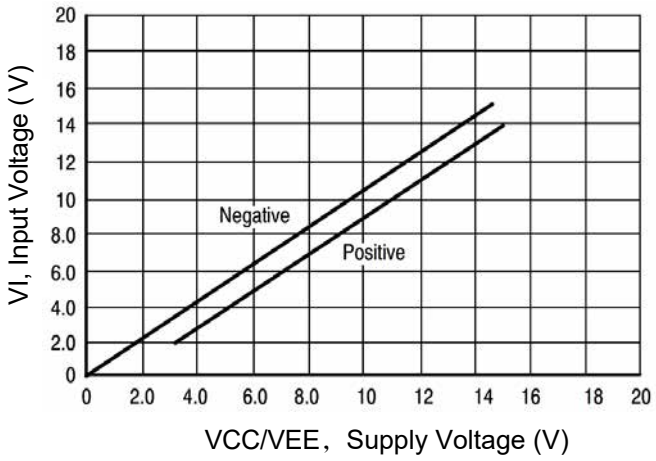


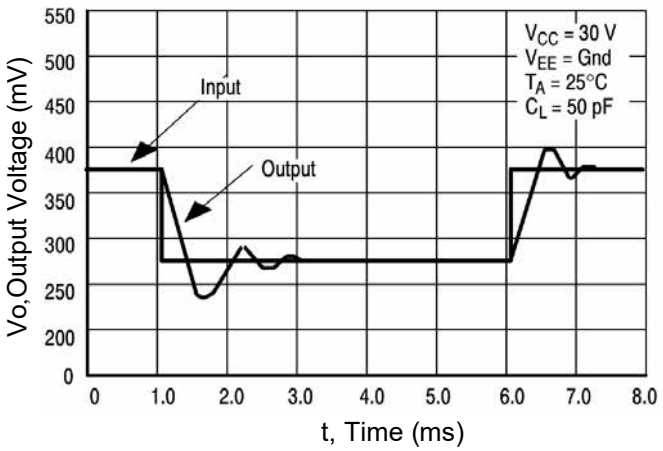
Fixed current source



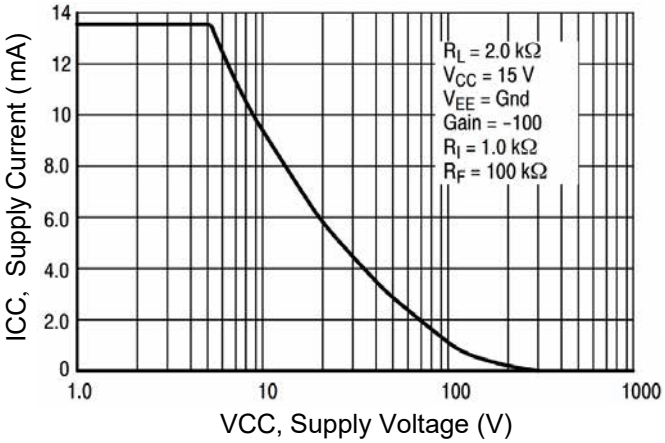
Lamp Driver

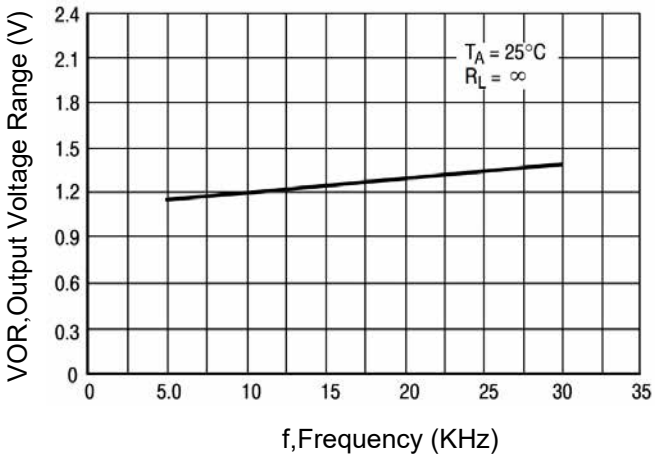
Typical characteristic curve





Small signal voltage follower impulse response (same direction)

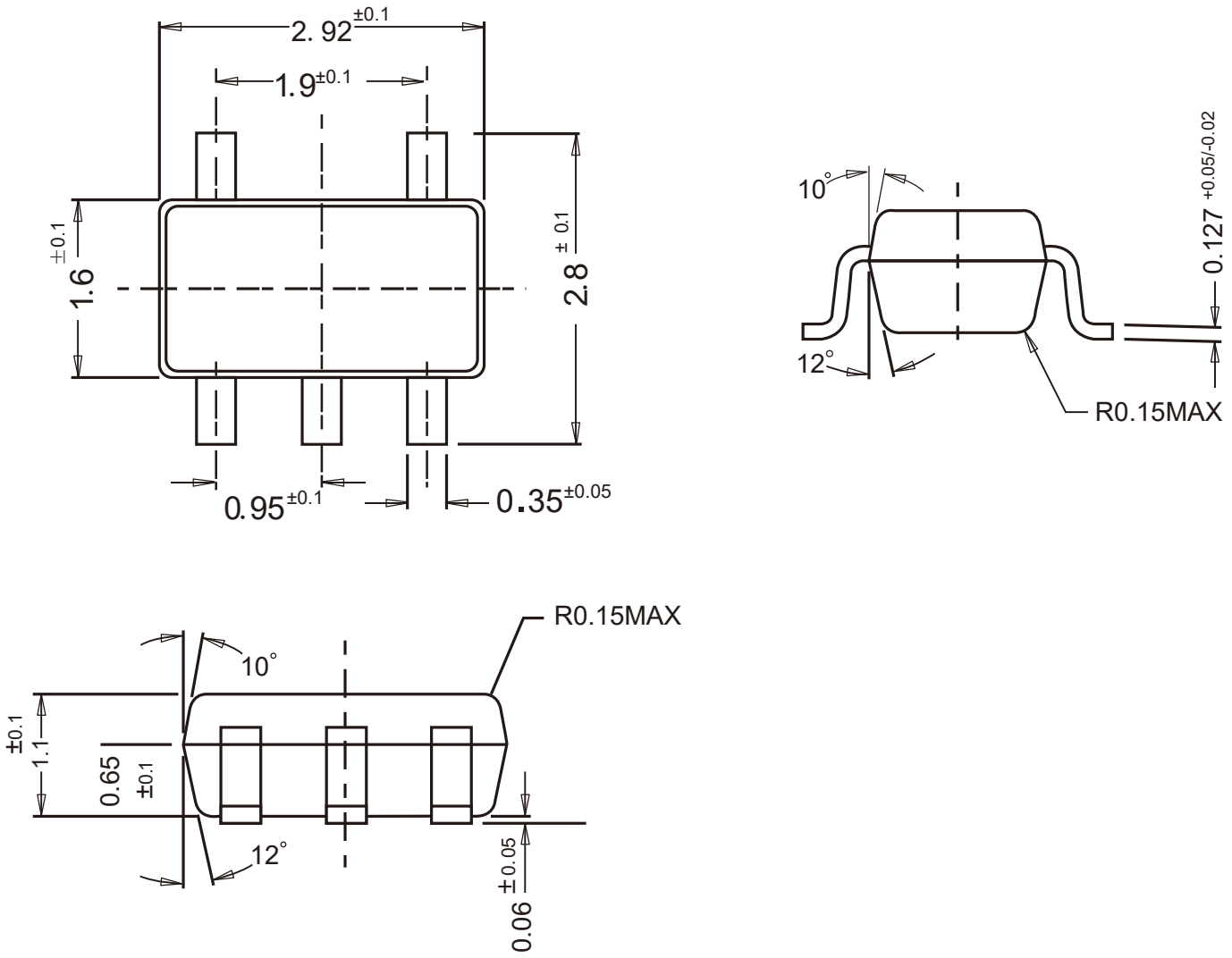




Package Outline

SOT-23-5

Dimensions in mm



Ordering Information

Device	Package	Shipping
LM321	SOT-23-5	3,000PCS/Reel&7inches

Contact Information

TANI website: **http://www.tanisemi.com** Email:tani@tanisemi.com

For additional information, please contact your local Sales Representative.

