Features

- Single- Supply Operation from +2.2V ~ +5.5V
- Rail-to-Rail Input 1 Output
- Gain-Bandwidth Product: 10MHz (Typ.)
- Low Input Bias Current: 10pA (Typ.)
- Low Offset Voltage: 5mV (Max.)
- Quiescent Current: 800μA per Amplifier (Typ.)
- Operating Temperature: -40C ~ +125C
- Available in SOT23-5 Package

Applications

- Portable Equipment
- Mobile Communications
- Smoke Detector
- Sensor Interface
- Medical Instrumentation

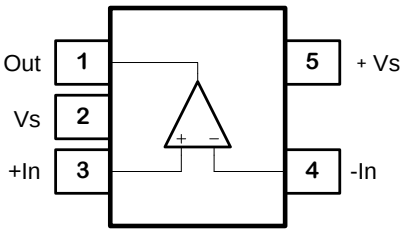
General Description

The KRN6021T-E/OT is wideband, low-noise, low-distortio n dualoperational amplifier, that offer rail-torail inputs 1 outputs andsingle supply operation down to 2.2V.They draw 1.6mAof quiescent supply current while featuring ultra-lowdistortion (0.0002% THD+N), as well as low input voltage-noise density (15nV/Hz) and low input currentnoise density (0.5fA/Hz).These features make the devices an ideal choicef or applications that require low distortion and/or low noise. These amplifiers have inputs and outputs which swing rail-to-rail and their input common mode voltage range includes ground. The maximum input offset of these amplifiers is less than 5mV.

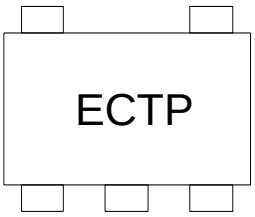
The KRN6021T-E/OT are unity gain stable witha gain-bandwidof 10MHz.The KRN6021T-E/OT is available in SOT23-5packages. The extended temperature range of -40C to+125C over all supply voltages offers additional design flexibility.

Pin Assignments

KRN6021T-E/OT
5-Pin SOT23
(-T Suffix)



Marking



Electrical Characteristics

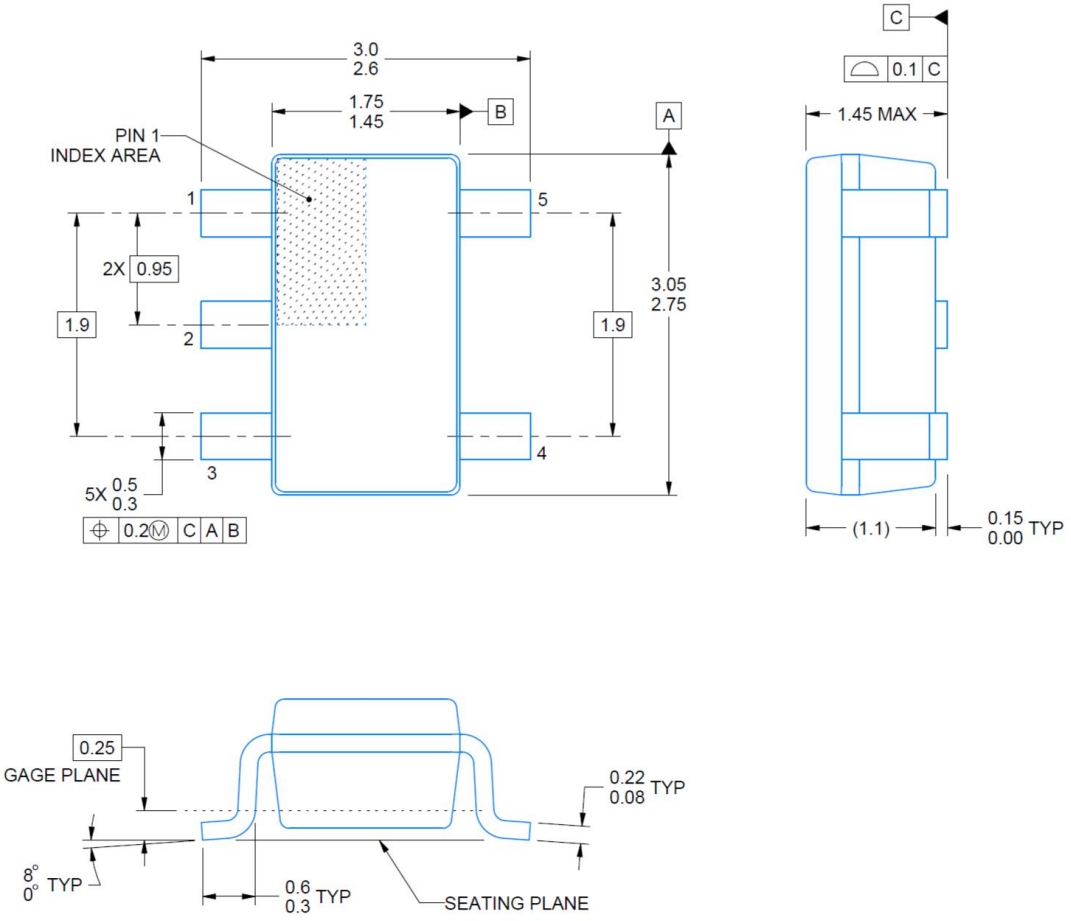
(VDD= +5V, Vss= OV, VCM= 0V, VOUT = VDD/2, RL= 100K tied to VDD/2, SHDNB= VDD,TA= -40C to +125C, unless otherwise noted. Typical values are at TA =+259C.) (Notes 1)

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_{DD}	V_{DD} = 3V	-	0.8	-	mA
		V_{DD} = 5V	-	0.8	1.2	
Input Offset Voltage	V_{OS}	T_A = +25℃	-	-	±5	mV
		T_A = -40℃ to +85℃	-	-	-	
		T_A = -40℃ to +125℃	-	-	±1.5	
Input Offset Voltage Tempco	$\Delta V_{OS}/\Delta T$		-	±0.3	±6	μV/℃
Input Bias Current	I_B	(Note 3)	-	±1	±100	pA
Input Offset Current	I_{OS}	(Note 3)	-	±1	±100	pA
Input Common-Mode Voltage Range	V_{CM}	Guaranteed by the T_A = 25℃	-0.2	-	V_{DD}+0.2	V
		CMRR test T_A = -40°C to +125°C	0	-	V_{DD}0	
Common-Mode Rejection Ratio	CMRR	Vss-0.2V≤V_{CM}≤V_{DD}+0.2V T_A = +25℃	-	75	-	dB
		Vss≤V_{CM}≤5V T_A = +25℃	65	80	-	
		Vss-0.2V≤V_{CM}≤V_{DD}+0.2V T_A = -40℃ to +125℃	-	65	-	
Power-Supply Rejection Ratio	PSRR	V_{DD} = +2.2V to +5.5V	75	90	-	dB
Open-Loop Voltage Gain	A_V	R_L=100kΩ to V_{DD}/2, 100mV≤V_O≤V_{DD} -125mV	90	100	-	dB
		R_L=1kΩ to V_{DD}/2, 200mV≤V_O≤V_{DD} -250mV	75	85	-	
		R_L=500Ω to V_{DD}/2, 350mV≤V_O≤V_{DD} -500mV	55	65	-	
Output Voltage Swing	V_{OUT}	|V_{IN+}-V_{IN-}| ≥ 10mV V_{DD}-V_{OH}	-	10	35	mV
		R_L = 10kΩ to V_{DD}/2 V_{OL}-V_{SS}	-	10	30	
		|V_{IN+}-V_{IN-}| ≥ 10mV V_{DD}-V_{OH}	-	80	200	
		R_L = 1kΩ to V_{DD}/2 V_{OL}-V_{SS}	-	50	150	
		|V_{IN+}-V_{IN-}| ≥ 10mV V_{DD}-V_{OH}		100	350	

Power-Supply Rejection Ratio	PSRR	V_{DD} = +2.2V to +5.5V	75	90	-	dB
Open-Loop Voltage Gain	Av	R_L=100kΩ to V_{DD}/2, 100mV≤V_O≤V_{DD} -125mV	90	100	-	dB
		R_L=1kΩ to V_{DD}/2, 200mV≤V_O≤V_{DD} -250mV	75	85	-	
		R_L=500Ω to V_{DD}/2, 350mV≤V_O≤V_{DD} -500mV	55	65	-	
Output Voltage Swing	V_{OUT}	|V_{IN+}-V_{IN-}| ≥ 10mV V_{DD}-V_{OH}	-	10	35	mV
		R_L = 10kΩ to V_{DD}/2 V_{OL}-V_{SS}	-	10	30	
		|V_{IN+}-V_{IN-}| ≥ 10mV V_{DD}-V_{OH}	-	80	200	
		R_L = 1kΩ to V_{DD}/2 V_{OL}-V_{SS}	-	50	150	
		|V_{IN+}-V_{IN-}| ≥ 10mV V_{DD}-V_{OH}		100	350	
Capacitive-Load Stability	C_{LOAD}	No sustained oscillations. Av = +1V/V	-	200	-	pF
Peak-to-Peak Input Noise Voltage (Note 5)	e_n(p-p)	f = 0.1Hz to 10Hz	-	5	-	μVp-p
Input Voltage Noise Density	e_n	f = 10Hz	-	60	-	nV/√Hz
		f = 1kHz	-	30	-	
		f = 30kHz	-	15	-	
Input Current Noise Density	i_n	f = 1kHz				fA/√Hz
Total Harmonic Distortion plus Noise	THD+N	V_{OUT} = 2Vp-p, Av = +1V/V, f = 1kHz	-	0.0001	-	%
		RL = 10kΩ to GND f = 20kHz	-	0.002	-	
		V_{OUT} = 2Vp-p, Av = +1V/V, f = 1kHz	-	0.0002	-	
		RL = 1kΩ to GND f = 20kHz	-	0.004	-	

Note 1: AII devices are 100% production tested at TA = +25C ; all specifications over the automotive
temperature range is guaranteed by design, not production tested.
Note 2: Parameter is guaranteed by design.
Note 3: Peak-to-peak input noise voltage is defined as six times RMS value of input noise voltage.

PACKAGE MECHANICAL DATA



REEL SPECIFICATION

P/N	PKG	QTY
KRN6021T-E/OT	SOT-23-5	3000