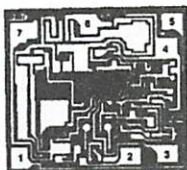


# OP-02

## DICE CHARACTERISTICS (125°C TESTED DICE AVAILABLE)



DIE SIZE 0.047 × 0.043 inch, 2021 sq. mils  
(1.19 × 1.09 mm, 1.30 sq. mm)

1. NULL
2. INVERTING INPUT
3. NONINVERTING INPUT
4. V-
5. NULL
6. OUTPUT
7. V+

**WAFER TEST LIMITS** at  $V_S = \pm 15V$ ,  $T_A = 25^\circ C$  for OP-02N, OP-02G and OP-02GR devices;  $T_A = 125^\circ C$  for OP-02NT and OP-02GT devices, unless otherwise noted.

PARAMETER	SYMBOL	CONDITIONS	OP-02NT LIMIT	OP-02N LIMIT	OP-02GT LIMIT	OP-02G LIMIT	OP-02GR LIMIT	UNITS
Input Offset Voltage	$V_{OS}$	$R_S \leq 20k\Omega$	1	0.5	3	2	5	mV MAX
Input Offset Current	$I_{OS}$		5	3	6	5	25	nA MAX
Input Bias Current	$I_B$		50	30	60	50	200	nA MAX
Input Voltage Range	IVR		$\pm 13$	$\pm 13$	$\pm 13$	$\pm 13$	$\pm 13$	V MIN
Common-Mode Rejection Ratio	CMRR	$V_{CM} = \pm 10V$ $R_S \leq 20k\Omega$	80	85	80	80	70	dB MIN
Power Supply Rejection Ratio	PSRR	$V_S = \pm 5V$ to $\pm 20V$ $R_S \leq 20k\Omega$	60	60	100	100	150	$\mu V/V$ MAX
Output Voltage Swing	$V_O$	$R_L \geq 2k\Omega$	$\pm 12$	$\pm 12$	$\pm 12$	$\pm 12$	$\pm 12$	V MIN
Large-Signal Voltage Gain	$A_{VO}$	$R_L \geq 2k\Omega$ $V_O = \pm 10V$	50	100	25	50	25	V/mV MIN
Power Consumption	$P_d$	$V_O = 0V$	—	90	—	90	90	mW MAX

**NOTE:**

For 25°C characteristics of NT and GT devices, see N and G characteristics, respectively.

Electrical tests are performed at wafer probe to the limits shown. Due to variations in assembly methods and normal yield loss, yield after packaging is not guaranteed for standard product dice. Consult factory to negotiate specifications based on dice lot qualification through sample lot assembly and testing.

## TYPICAL ELECTRICAL CHARACTERISTICS at $V_S = \pm 15V$ , $T_A = 25^\circ C$ , unless otherwise noted.

PARAMETER	SYMBOL	CONDITIONS	OP-02NT OP-02N TYPICAL	OP-02GT OP-02G TYPICAL	OP-02GR TYPICAL	UNITS
Input Resistance Differential-Mode	$R_{IN}$		5.7	5.2	3.5	M $\Omega$
Input Noise Voltage	$e_{np-p}$	0.1Hz to 10Hz	0.65	0.65	0.65	$\mu V_{p-p}$
Input Noise Voltage Density	$e_n$	$f_O = 10Hz$	25	25	25	nV/ $\sqrt{Hz}$
		$f_O = 100Hz$	22	22	22	
		$f_O = 1000Hz$	21	21	21	
Input Noise Current	$i_{np-p}$	0.1Hz to 10Hz	12.8	12.8	12.8	pA $_{p-p}$
Input Noise Current Density	$i_n$	$f_O = 10Hz$	1.4	1.4	1.4	pA/ $\sqrt{Hz}$
		$f_O = 100Hz$	0.7	0.7	0.7	
		$f_O = 1000Hz$	0.4	0.4	0.4	
Slew Rate	SR		0.5	0.5	0.5	V/ $\mu s$
Large-Signal Bandwidth		$V_O = 20V_{p-p}$	8	8	8	kHz
Closed-Loop Bandwidth	BW	$A_{VCL} = +1$	1.3	1.3	1.3	MHz
Risetime	$t_r$	$A_V = +1$ $V_{IN} = 50mV$	200	200	200	ns
Overshoot	OS		15	15	15	%
Average Input Offset Voltage Drift	$TCV_{OS}$	$R_S = 500\Omega$ (Note 1)	2	4	8	$\mu V/^\circ C$
Average Input Offset Current Drift	$TCI_{OS}$		7.5	15	30	pA/ $^\circ C$

**NOTE:**

1. Sample tested.