

HIGH-PRECISION, LOW-NOISE, RAIL-TO-RAIL OUTPUT, 11-MHZ JFET OPERATIONAL AMPLIFIER

Check for Samples: [OPA140A-DIE](#)

FEATURES

- Very Low Offset Drift
- Very Low Offset
- Low Input Bias Current
- Very Low 1/f Noise
- Low Noise
- Slew Rate
- Low Supply Current
- Input Voltage Range Includes V– Supply
- Single-Supply Operation: 4.5 V to 36 V
- Dual-Supply Operation: ± 2.25 V to ± 18 V
- No Phase Reversal

APPLICATIONS

- Battery-Powered Instruments
- Industrial Controls
- Medical Instrumentation
- Photodiode Amplifiers
- Active Filters
- Data Acquisition Systems
- Automatic Test Systems

DESCRIPTION

The OPA140A operational amplifier is a low-power JFET input amplifier that features good drift and low input bias current. The rail-to-rail output swing and input range that includes V– allow designers to take advantage of the low-noise characteristics of JFET amplifiers while also interfacing to modern, single-supply, precision analog-to-digital converters (ADCs) and digital-to-analog converters (DACs). The OPA140A runs on a single 4.5-V to 36-V supply or dual ± 2.25 -V to ± 18 -V supplies.

ORDERING INFORMATION⁽¹⁾

PRODUCT	PACKAGE DESIGNATOR	PACKAGE ⁽²⁾	ORDERABLE PART NUMBER	PACKAGE QUANTITY
OPA140A	TD	Bare Die In Waffle Pack	OPA140ATDD1	252
			OPA140ATDD2	10

- (1) For the most current package and ordering information, see the Package Option Addendum at the end of this document, or see the TI web site at www.ti.com.
- (2) Processing is per the Texas Instruments commercial production baseline and is in compliance with the Texas Instruments Quality Control System in effect at the time of manufacture. Electrical screening consists of DC parametric and functional testing at room temperature only. Unless otherwise specified by Texas Instruments AC performance and performance over temperature is not warranted. Visual Inspection is performed in accordance with MIL-STD-883 Test Method 2010 Condition B at 75X minimum.



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.



This integrated circuit can be damaged by ESD. Texas Instruments recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

BARE DIE INFORMATION

DIE THICKNESS	BACKSIDE FINISH	BACKSIDE POTENTIAL	BOND PAD METALLIZATION COMPOSITION	BOND PAD THICKNESS
15 mils.	Silicon with backgrind	Floating	TiW/AlCu (0.5%)	1100 nm

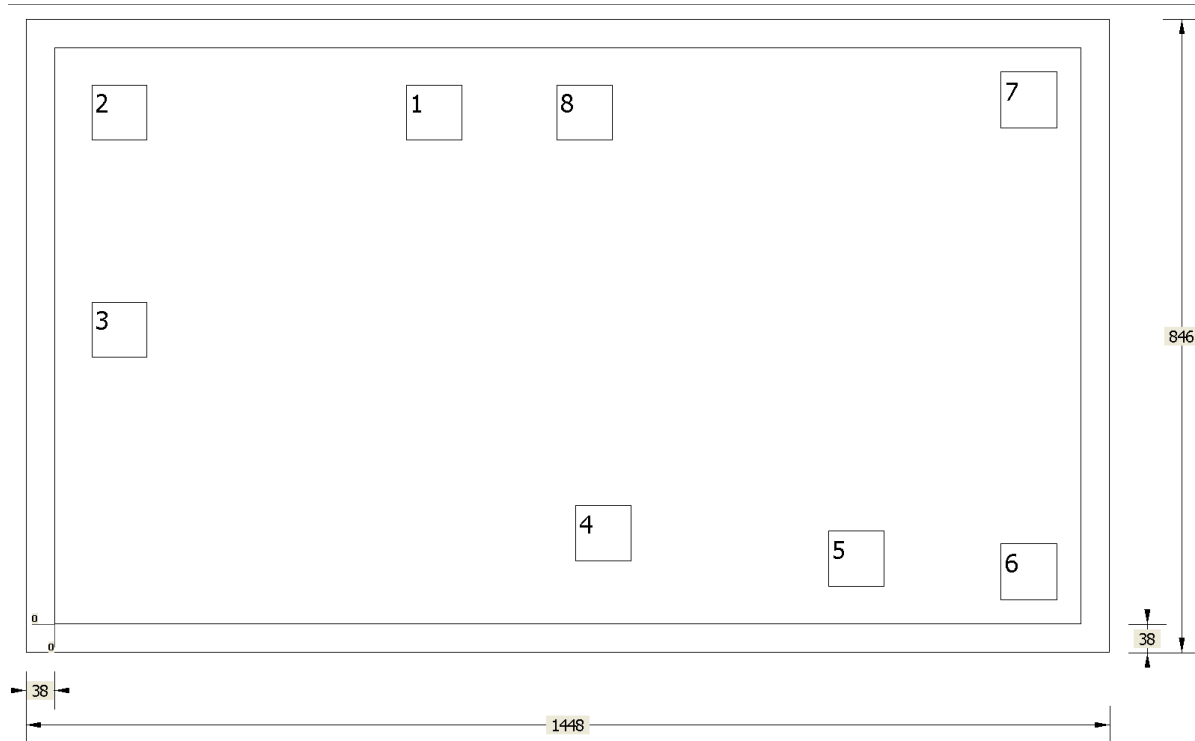


Table 1. Bond Pad Coordinates in Microns

DESCRIPTION	PAD NUMBER	X MIN	Y MIN	X MAX	Y MAX
VIN	1	469.600	-720.500	544.600	-645.500
N/C	2				
VIP	3	49.500	-430.500	124.500	-355.500
N/C	4				
V-	5	1034.050	-124.550	1109.050	-49.550
OUT	6	1264.500	-107.500	1339.500	-32.500
V+	7	1264.500	-737.500	1339.500	-662.500

PACKAGING INFORMATION

Orderable part number	Status (1)	Material type (2)	Package Pins	Package qty Carrier	RoHS (3)	Lead finish/ Ball material (4)	MSL rating/ Peak reflow (5)	Op temp (°C)	Part marking (6)
OPA140ATDD1	Active	Production	null (null) 0	252 null	-	Call TI	Call TI	0 to 0	
OPA140ATDD1.B	Active	Production	null (null) 0	252 null	-	Call TI	Call TI	0 to 0	
OPA140ATDD2	Active	Production	null (null) 0	10 null	-	Call TI	Call TI	0 to 0	
OPA140ATDD2.B	Active	Production	null (null) 0	10 null	-	Call TI	Call TI	0 to 0	

⁽¹⁾ **Status:** For more details on status, see our [product life cycle](#).

⁽²⁾ **Material type:** When designated, preproduction parts are prototypes/experimental devices, and are not yet approved or released for full production. Testing and final process, including without limitation quality assurance, reliability performance testing, and/or process qualification, may not yet be complete, and this item is subject to further changes or possible discontinuation. If available for ordering, purchases will be subject to an additional waiver at checkout, and are intended for early internal evaluation purposes only. These items are sold without warranties of any kind.

⁽³⁾ **RoHS values:** Yes, No, RoHS Exempt. See the [TI RoHS Statement](#) for additional information and value definition.

⁽⁴⁾ **Lead finish/Ball material:** Parts may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead finish/Ball material values may wrap to two lines if the finish value exceeds the maximum column width.

⁽⁵⁾ **MSL rating/Peak reflow:** The moisture sensitivity level ratings and peak solder (reflow) temperatures. In the event that a part has multiple moisture sensitivity ratings, only the lowest level per JEDEC standards is shown. Refer to the shipping label for the actual reflow temperature that will be used to mount the part to the printed circuit board.

⁽⁶⁾ **Part marking:** There may be an additional marking, which relates to the logo, the lot trace code information, or the environmental category of the part.

Multiple part markings will be inside parentheses. Only one part marking contained in parentheses and separated by a "~" will appear on a part. If a line is indented then it is a continuation of the previous line and the two combined represent the entire part marking for that device.

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