

<b>PCN Number:</b>	20240619002.0	<b>PCN Date:</b>	June 20, 2024
<b>Title:</b>	Datasheet for OPA656, TPS62901, TCA9617B		
<b>Customer Contact:</b>	Change Management team	<b>Dept:</b>	Quality Services
<b>Change Type:</b>	Electrical Specification		

### PCN Details

#### Description of Change:

Texas Instruments Incorporated is announcing an information only notification. The product datasheet(s) is being updated as summarized below. The following change history provides further details.



**OPA656**

SBOS196I – DECEMBER 2001 – REVISED FEBRUARY 2024

#### Changes from Revision H (April 2015) to Revision I (February 2024)

**Page**

• Updated the numbering format for tables, figures, and cross-references throughout the document.....	1
• Updated <i>Features, Applications, Description, Device Comparison Table, Feature Description, Device Functional Modes, Application and Implementation, Power Supply Recommendations, Layout, Device and Documentation Support, and Mechanical, Packaging, and Orderable Information</i> sections.....	1
• Added Supply turn-on and turn-off rate, continuous input and output current specifications to <i>Absolute Maximum Ratings Table</i> .....	4
• Updated footnote on <i>Absolute Maximum Ratings</i> table to add additional clarification.....	4
• Deleted Machine Model (MM) specification from <i>ESD Ratings Table</i> .....	4
• Updated thermal specifications for D and DBV package in <i>Thermal Information</i> table.....	4
• Updated the test conditions to add additional clarity, updated the table format and deleted the Test Level column on <i>Electrical Characteristics</i> table.....	5
• Changed the test condition from $T_J = 25^\circ\text{C}$ to $T_A \cong 25^\circ\text{C}$ across <i>Electrical Characteristics</i> section.....	5
• Updated the <i>Electrical Characteristics AC performance</i> section with improved typical small-signal bandwidth, 0.1 dB flatness, large-signal bandwidth, slew rate, voltage noise, and distortion parameters.....	5
• Deleted differential gain and differential phase parameter from <i>Electrical Characteristics</i> section.....	5
• Changed the input current noise at $f = 100\text{ kHz}$ from $1.3\text{ fA}/\sqrt{\text{Hz}}$ to $5\text{ fA}/\sqrt{\text{Hz}}$ .....	5
• Updated the <i>Electrical Characteristics DC Performance, Input, Output, and Power supply</i> sections with improved typical open loop gain, CMRR and PSRR parameters.....	5
• Deleted $0^\circ\text{C}$ to $+70^\circ\text{C}$ conditions across <i>Electrical Characteristics</i> section.....	5
• Changed input offset current maximum from $\pm 10\text{ pA}$ to $\pm 20\text{ pA}$ .....	5
• Changed typical and maximum most negative input voltage for CMRR > 77 dB from $-4.5\text{ V}$ and $-4\text{ V}$ to $-4.3\text{ V}$ and $-3.9\text{ V}$ respectively.....	5
• Changed maximum most negative input voltage at $-40^\circ\text{C}$ to $+85^\circ\text{C}$ for CMRR > 77 dB from $-3.8\text{ V}$ to $-3.7\text{ V}$ .....	5
• Changed the typical common mode input impedance from $10^{12} \parallel 0.7$ to $10^{12} \parallel 0.4$ .....	5
• Changed the typical differential mode input impedance from $10^{12} \parallel 2.8$ to $10^{10} \parallel 2.6$ .....	5
• Changed minimum sourcing output current over $-40^\circ\text{C}$ to $+85^\circ\text{C}$ from $46\text{ mA}$ to $45\text{ mA}$ .....	5
• Changed maximum sinking output current over $-40^\circ\text{C}$ to $+85^\circ\text{C}$ from $-46\text{ mA}$ to $-45\text{ mA}$ .....	5
• Changed typical and maximum quiescent current from $14\text{ mA}$ to $15\text{ mA}$ and $16\text{ mA}$ to $16.7\text{ mA}$ respectively..	5
• Changed maximum quiescent current over $-40^\circ\text{C}$ to $+85^\circ\text{C}$ from $16.3\text{ mA}$ to $16.8\text{ mA}$ .....	5
• Updated the <i>High Grade DC Specifications</i> section with improved typical CMRR and PSRR parameters.....	6
• Changed input bias current and input offset current maximum in <i>High Grade DC Specifications</i> section from $\pm 5\text{ pA}$ to $\pm 20\text{ pA}$ .....	6
• Changed CMRR minimum in <i>High Grade DC Specifications</i> section from $88\text{ dB}$ to $84\text{ dB}$ .....	6
• Changed CMRR minimum in <i>High Grade DC specifications</i> over $-40^\circ\text{C}$ to $+85^\circ\text{C}$ from $84\text{ dB}$ to $83\text{ dB}$ .....	6
• Updated <i>Typical Characteristics: <math>V_S = \pm 5\text{ V}</math></i> section.....	7
• Changed the continuous current rating of the input protection diodes from $30\text{ mA}$ to $10\text{ mA}$ .....	12

<b>Changes from Revision * (March 2021) to Revision A (January 2024)</b>	<b>Page</b>
• Updated trademark information.....	1
• Updated ESD ratings to show CDM testing was per JS-002.....	4
• Updated typical soft-start time with equation 14.....	20
• Updated the definition of VREF.....	20
• Added notice "Generally, TI does not recommend to configure soft-start time lower than 1ms for inrush current consideration".....	20
• Added maximum and minimum soft-start time calculation with equation 15, equation 16.....	20
• Deleted <i>Precise Soft-Start Timing</i> section.....	39

<b>Changes from Revision B (December 2018) to Revision C (January 2024)</b>	<b>Page</b>
• Changed all instances of legacy terminology to controller and target where mentioned.....	1
• Added weak pull-up resistor information on pin EN .....	3
• Changed abs max voltages from 7V to 6.5V.....	4
• Changed the Thermal Information for 8 DGK.....	5
• Changed $V_{IK}$ MAX value of -1.2V to a MIN value.....	5
• Changed $T_{PLH}$ (B to A) by removing typical value.....	7
• Changed $T_{PLH}$ (A to B) for $V_{CCB} \leq 3V$ by changing min value from 59ns to 50ns and removing typical value.....	7
• Changed $T_{PLH}$ (A to B) for $V_{CCB} > 3V$ by removing typical value.....	7
• Changed $T_{PHL}$ (B to A) by changing min value from 69ns to 32ns and removing typical value.....	7
• Changed $T_{PHL}$ (A to B) by changing min value from 68ns to 28ns and removing typical value.....	7
• Changed $T_{THL}$ (B side) by changing max value from 13.8ns to 32ns and removing typical value.....	7
• Changed $T_{THL}$ (B side) by changing max value from 11.3ns to 40ns and removing typical value.....	7
• Changed 0.3V <sub>CCA</sub> to: 30% of V <sub>CCA</sub> in the <i>Overview</i> .....	10
• Changed A side falling below 0.7V <sub>CCA</sub> to: <i>A side falling below 30% of V<sub>CCA</sub></i> .....	10
• Changed goes below 0.7V <sub>CCB</sub> to: <i>goes below 0.4V</i> .....	10
• Changed 0.3V <sub>CCA</sub> to: 30% of V <sub>CCA</sub> in the <i>Low to High Transition Characteristics</i> .....	11
• Deleted <i>Since the A-side does not have a static offset low voltage, no pedestal is seen on the A-side as shown in Figure 6-1</i> .....	11
• Changed 0.7V <sub>CCA</sub> to 30% of V <sub>CCA</sub> in the <i>High-to-Low Transition Characteristics</i> .....	12
• Changed <i>isolate a badly behaved to separate a misbehaving</i> in the <i>Device Functional Modes</i> .....	12
• Changed 0.7V <sub>CCA</sub> to 30% of V <sub>CCA</sub> in the <i>Application Information</i> .....	13
• Changed falls below 0.45V to: falls below 0.4V.....	13
• Changed (0.45V) to: (0.4V) in the <i>Pullup Resistor Sizing</i> .....	14

The datasheet number will be changing.

Device Family	Change From:	Change To:
OPA656	SBOS196H	<b>SBOS196I</b>
TPS62901	SLVSFS7	<b>SLVSFS7A</b>
TCA9617B	SCPS259B	<b>SCPS259C</b>

These changes may be reviewed at the datasheet links provided.

- <http://www.ti.com/product/OPA656>
- <http://www.ti.com/product/TPS62901>
- <http://www.ti.com/product/TCA9617B>

#### **Reason for Change:**

To accurately reflect device characteristics.

<b>Anticipated impact on Fit, Form, Function, Quality or Reliability (positive / negative):</b>			
No anticipated impact. There are no changes to the actual device.			
<b>Changes to product identification resulting from this PCN:</b>			
None.			
<b>Product Affected:</b>			
OPA656NB/250	OPA656UB/2K5	TPS62901RPJR	TCA9617BDGKR

For questions regarding this notice, e-mails can be sent to the Change Management team or your local Field Sales Representative.

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