Description

The DIODES™ AP7583Q/AQ series are 300mA LDO for automotive battery-powered applications. The AP7583Q features 2.5µA quiescent current at light loads. Therefore, the AP7583Q/AQ are suitable solution to supply always power-on components, such as microcontroller (MCUs) and controller area network (CAN) transceivers.

The AP7583Q/AQ have features of wide input-voltage range, high accuracy, low-dropout voltage, current limit and ultra-low quiescent current, which make it ideal for automotive applications. The AP7583AQ has power-good indicator.

The IC consists of a voltage reference, an error amplifier, a resistor network for setting output voltage, a current-limit circuit for current protection, and a chip-enable circuit.

The AP7583Q/AQ both have 3.3V and 5V fixed output-voltage version, and adjustable version.

The AP7583Q is available in space-saving W-DFN2020-6 (SWP) (Type A1) package, and AP7583AQ has good power dissipation packages of MSOP-8EP, W-DFN2020-6 (SWP) (Type A1), and TO252-4 (Type C).

Features

- Wide Input-Voltage Range: 3V to 42V
- Maximum Output Current: 300mA
- Low-Dropout Voltage: $V_{\text{DROP}} = 320\text{mV}$ @$I_{\text{OUT}} = 300\text{mA}$ (Typ)
- Low Quiescent Current:
  - AP7583Q is 2.5µA (Typ)
  - AP7583AQ is 3µA (Typ)
- High Output-Voltage Accuracy: ±1.5%
- Compatible with Low ESR Ceramic Capacitor
- Excellent Line/Load Regulation
- Thermal Shutdown Function
- Short Current Protection Function
- Output Current Limit
- AP7583AQ with Power-Good (PG) Output for Supply Monitoring and for Sequencing of Other Supplies
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. “Green” Device (Note 3)
- The AP7583Q/AQ are suitable for automotive applications requiring specific change control; these parts are AEC-Q100 qualified, PPAP capable, and manufactured in IATF16949 certified facilities.

https://www.diodes.com/quality/product-definitions/

Applications

- Powering MCUs and CAN/LIN transceivers
- Automotive head units
- EV and HEV battery management systems
- Body control modules
- Transmission control units (TCU)

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See https://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated’s definitions of Halogen- and Antimony-free, “Green” and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
Typical Applications Circuit

![Typical Applications Circuit Diagrams]

Pin Descriptions

<table>
<thead>
<tr>
<th>Pin Number</th>
<th>MSOP-8EP</th>
<th>W-DFN2020-6 (SWP) (Type A1)</th>
<th>TO252-4 (Type C)</th>
<th>Pin Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>VIN</td>
<td>Input voltage</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>EN</td>
<td>Enable input, active high</td>
</tr>
<tr>
<td>3</td>
<td>5(Q)</td>
<td>—</td>
<td>—</td>
<td>NC</td>
<td>Not connected internally. Recommend connection to GND to maximize PCB copper for thermal dissipation.</td>
</tr>
<tr>
<td>7</td>
<td>5(AQ)</td>
<td>4</td>
<td>4</td>
<td>PG</td>
<td>Power-Good pin with one internal pull high resistor. When the VOUT is below the PG threshold, the PG pin is driven low; when the VOUT exceeds the threshold, the PG pin goes into a high-impedance state.</td>
</tr>
<tr>
<td>4, 5</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>GND</td>
<td>Ground</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>—</td>
<td>—</td>
<td>FB/NC</td>
<td>Adjustable voltage version only – a resistor divider from this pin to the OUT pin and ground sets the output voltage.</td>
</tr>
<tr>
<td>8</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>VOUT</td>
<td>Regulated output voltage</td>
</tr>
<tr>
<td>EP</td>
<td>EP</td>
<td>—</td>
<td>—</td>
<td>Exposed Pad</td>
<td>In PCB layout, prefer to use large copper area to cover this pad for better thermal dissipation, then connect this area to GND or leave it open. However, do not use it as GND electrode function alone.</td>
</tr>
</tbody>
</table>
### Absolute Maximum Ratings (Note 4) (@TA = +25°C, unless otherwise specified.)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Rating</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIN</td>
<td>Supply Input Voltage</td>
<td>-0.3 to 45V</td>
<td>V</td>
</tr>
<tr>
<td>VOUT</td>
<td>Regulated Output Voltage</td>
<td>-0.3 to 7V</td>
<td>V</td>
</tr>
<tr>
<td>IOUT</td>
<td>Output Current</td>
<td>300 mA</td>
<td></td>
</tr>
<tr>
<td>TLEAD</td>
<td>Lead Temperature (Soldering, 10sec)</td>
<td>+260 ºC</td>
<td></td>
</tr>
<tr>
<td>TJ</td>
<td>Operating Junction Temperature</td>
<td>+150 ºC</td>
<td></td>
</tr>
</tbody>
</table>

#### Notes:
4. a). Stresses beyond those listed under Absolute Maximum Ratings can cause permanent damage to the device. These are stress ratings only and functional operation of the device at these conditions is not implied. Exposure to absolute-maximum-rated conditions for extended period can affect device reliability.
b). Ratings apply to ambient temperature at +25°C. The JEDEC STD.51 High-K board design used to derive this data was a 3inch × 3inch multilayer board with 1oz. internal power and ground planes and 2oz. copper traces on the top and bottom of the board.

### Recommended Operating Conditions

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Min</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIN</td>
<td>Supply Input Voltage</td>
<td>3.0</td>
<td>42</td>
<td>V</td>
</tr>
<tr>
<td>VOUT</td>
<td>Supply Output Voltage</td>
<td>1.2</td>
<td>5</td>
<td>V</td>
</tr>
<tr>
<td>TJ</td>
<td>Operating Junction Temperature</td>
<td>-40</td>
<td>+125</td>
<td>ºC</td>
</tr>
</tbody>
</table>

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**Electrical Characteristics**

(-40°C ≤ TJ ≤ +125°C, IOUT = 1mA, CIN = COUT = 10µF ceramic capacitor, VIN = 14V)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Test Conditions</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOUT</td>
<td>Output Voltage</td>
<td>Variation from Specified VOUT</td>
<td>VOUT+</td>
<td>98.5%</td>
<td>VOUT+</td>
<td>V</td>
</tr>
<tr>
<td>VIN</td>
<td>Input Voltage</td>
<td>—</td>
<td>3.0</td>
<td>—</td>
<td>42</td>
<td>V</td>
</tr>
<tr>
<td>VFB</td>
<td>Feedback Reference Voltage</td>
<td>—</td>
<td>1.183</td>
<td>1.207</td>
<td>1.231</td>
<td>V</td>
</tr>
<tr>
<td>ILIMIT</td>
<td>Current Limit</td>
<td>VOUT Short to 90% x VOUT</td>
<td>310</td>
<td>510</td>
<td>690</td>
<td>mA</td>
</tr>
<tr>
<td>∆VOUT/∆VIN</td>
<td>Line Regulation</td>
<td>VOUT = VOUT + 1V to 40V, IOUT = 1mA</td>
<td>-10</td>
<td>—</td>
<td>10</td>
<td>mV</td>
</tr>
<tr>
<td>∆VOUT/VOUT</td>
<td>Load Regulation</td>
<td>1mA ≤ IOUT ≤ 300mA</td>
<td>-20</td>
<td>—</td>
<td>20</td>
<td>mV</td>
</tr>
<tr>
<td>VDROP</td>
<td>Dropout Voltage (Note 5)</td>
<td>IOUT = 300mA @VOUT = 3.3V</td>
<td>—</td>
<td>450</td>
<td>700</td>
<td>mV</td>
</tr>
<tr>
<td>IOUT</td>
<td>Quiescent Current</td>
<td>IOUT = 0A</td>
<td>—</td>
<td>2.5</td>
<td>4.0</td>
<td>µA</td>
</tr>
<tr>
<td>IOUT</td>
<td>Quiescent Current</td>
<td>IOUT = 0A</td>
<td>—</td>
<td>3</td>
<td>6</td>
<td>µA</td>
</tr>
<tr>
<td>IOUT</td>
<td>Quiescent Current</td>
<td>IOUT = 0A</td>
<td>—</td>
<td>2.5</td>
<td>4.0</td>
<td>µA</td>
</tr>
<tr>
<td>IOUT</td>
<td>Quiescent Current</td>
<td>IOUT = 0A</td>
<td>—</td>
<td>3</td>
<td>6</td>
<td>µA</td>
</tr>
<tr>
<td>ISHUTDOWN</td>
<td>Shutdown Current</td>
<td>EN = 0V</td>
<td>—</td>
<td>0.3</td>
<td>0.5</td>
<td>µA</td>
</tr>
<tr>
<td>VIL</td>
<td>EN Input Logic-Low Voltage</td>
<td>—</td>
<td>0</td>
<td>—</td>
<td>0.3</td>
<td>V</td>
</tr>
<tr>
<td>VIH</td>
<td>EN Input Logic-High Voltage</td>
<td>—</td>
<td>1.7</td>
<td>—</td>
<td>VIN</td>
<td>V</td>
</tr>
<tr>
<td>∆VOUT/(VOUTxAT)</td>
<td>Output Voltage Temperature Coefficient</td>
<td>IOUT = 100µA, -40°C ≤ TJ ≤ +125°C</td>
<td>—</td>
<td>±100</td>
<td>—</td>
<td>ppm/°C</td>
</tr>
<tr>
<td>TOTSD</td>
<td>Thermal Shutdown Temperature</td>
<td>—</td>
<td>—</td>
<td>+175</td>
<td>—</td>
<td>°C</td>
</tr>
<tr>
<td>THYOTSD</td>
<td>Thermal Shutdown Hysteresis</td>
<td>—</td>
<td>—</td>
<td>+20</td>
<td>—</td>
<td>°C</td>
</tr>
<tr>
<td>PSRR</td>
<td>Power Supply Rejection Ratio</td>
<td>V(ripple) = 0.5VPp, IOUT = 10mA, frequency = 100Hz, COUT = 2.2µF</td>
<td>—</td>
<td>70</td>
<td>—</td>
<td>dB</td>
</tr>
<tr>
<td>UVLO</td>
<td>VIN Undervoltage Detection</td>
<td>Ramp VIN up until the Output Turns on</td>
<td>2.1</td>
<td>2.4</td>
<td>2.7</td>
<td>V</td>
</tr>
<tr>
<td>IFB</td>
<td>FB Leakage Current</td>
<td>FB = 0V (Adjustable Version)</td>
<td>-10</td>
<td>—</td>
<td>20</td>
<td>nA</td>
</tr>
</tbody>
</table>

**AP7583AQ**

| ID       | Output-Voltage Turn-On Delay Time | VEN High to VOUT Rising 10% | —       | 0.8     | —       | ms |
| ISS      | Output-Voltage Ramp-Up Time      | VOUT Rising 10% to 90%       | —       | 200     | —       | µs |
| IPG      | PG React Time                    | VOUT 90% to PG Active        | —       | 30      | —       | µs |
| IPGF     | PG Off Deglitch Time             | VFB Falling to PG Low        | —       | 3       | —       | µs |
| VPGR     | PG Rising Threshold              | VFB Rising                   | 90      | —       | 94      | %   |
| VPGF     | PG Falling Threshold             | VFB Falling                  | 88      | —       | 92      | %   |
| VPGS     | PG Sinking Voltage              | Sinking Current = 5mA        | —       | —       | 0.4     | V   |

Note: 5. Dropout voltage is the voltage difference between the input and the output at which the output voltage drops 2% below its nominal value.
Typical Characteristics (CIN = COUT = 10μF)

- Quiescent Current vs. Output Current
  - VIN=5.3V, VOUT=3.3V
  - AP7583Q
  - AP7583AQ

- Quiescent Current vs. Input Voltage
  - VOUT=3.3V
  - AP7583Q

- Quiescent Current vs. Output Current
  - VIN=7V, VOUT=5V
  - AP7583Q
  - AP7583AQ
Typical Characteristics \( (C_{IN} = C_{OUT} = 10\mu F) \) (continued)

- **Quiescent Current vs. Input Voltage**
  - \( V_{OUT}=3.3V \)
  - **AP7583AQ**
  - Curves for 1mA, 100mA, and 200mA

- **Quiescent Current vs. Temperature**
  - \( V_{IN}=5.3V, V_{OUT}=3.3V \)
  - **AP7583Q**
  - Curves for 1mA and 100mA

- **Quiescent Current vs. Temperature**
  - \( V_{IN}=7V, V_{OUT}=5V \)
  - **AP7583AQ**
  - Curves for 1mA and 100mA
Typical Characteristics (C\text{IN} = C\text{OUT} = 10\,\mu\text{F}) (continued)
Typical Characteristics (\(C_{\text{IN}} = C_{\text{OUT}} = 10\mu F\)) (continued)
Typical Characteristics (C\text{IN} = C\text{OUT} = 10\,\mu\text{F}) (continued)

Enable Turn-on Response  
V_{\text{OUT}} = 3.3\,\text{V}

Enable Turn-off Response  
V_{\text{OUT}} = 3.3\,\text{V}

Enable Turn-on Response  
V_{\text{OUT}} = 5\,\text{V}

Enable Turn-off Response  
V_{\text{OUT}} = 5\,\text{V}

Line Transient Response  
V_{\text{OUT}} = 3.3\,\text{V}, I_{\text{OUT}} = 30\,\text{mA}

Line Transient Response  
V_{\text{OUT}} = 5\,\text{V}, I_{\text{OUT}} = 30\,\text{mA}

\begin{align*}
V_{\text{IN(DC)}} &= 14\,\text{V}(5\,\text{V/div}) \\
V_{\text{EN(DC)}} &= 0 \text{ to } 2\,\text{V}(2\,\text{V/div}) \\
V_{\text{OUT}} &= 3.3\,\text{V}(1\,\text{V/div}) \\
V_{\text{PG}} &= 3.3\,\text{V}(2\,\text{V/div}) \\
\end{align*}

\begin{align*}
V_{\text{IN(DC)}} &= 14\,\text{V}(5\,\text{V/div}) \\
V_{\text{EN(DC)}} &= 2 \text{ to } 0\,\text{V}(2\,\text{V/div}) \\
V_{\text{OUT}} &= 3.3\,\text{V}(1\,\text{V/div}) \\
V_{\text{PG}} &= 3.3\,\text{V}(2\,\text{V/div}) \\
\end{align*}

\begin{align*}
V_{\text{IN(DC)}} &= 14\,\text{V}(5\,\text{V/div}) \\
V_{\text{EN(DC)}} &= 0 \text{ to } 2\,\text{V}(2\,\text{V/div}) \\
V_{\text{OUT}} &= 5\,\text{V}(2\,\text{V/div}) \\
V_{\text{PG}} &= 5\,\text{V}(5\,\text{V/div}) \\
\end{align*}

\begin{align*}
V_{\text{IN(DC)}} &= 14\,\text{V}(5\,\text{V/div}) \\
V_{\text{EN(DC)}} &= 2 \text{ to } 0\,\text{V}(2\,\text{V/div}) \\
V_{\text{OUT}} &= 5\,\text{V}(2\,\text{V/div}) \\
V_{\text{PG}} &= 5\,\text{V}(5\,\text{V/div}) \\
\end{align*}

\begin{align*}
V_{\text{IN(DC)}} &= 5.3 \text{ to } 6.3\,\text{V}(1\,\text{V/div}) \\
I_{R} &= I_{F} = 5\,\mu\text{s} \\
V_{\text{OUT(AC)}} &= (50\,\text{mV/div}) \\
\text{Time} &= (80\,\mu\text{s/div}) \\
\end{align*}

\begin{align*}
V_{\text{IN(DC)}} &= 7 \text{ to } 8\,\text{V}(1\,\text{V/div}) \\
I_{R} &= I_{F} = 5\,\mu\text{s} \\
V_{\text{OUT(AC)}} &= (50\,\text{mV/div}) \\
\text{Time} &= (80\,\mu\text{s/div}) \\
\end{align*}
Typical Characteristics (C_{IN} = C_{OUT} = 10 \mu F) (continued)

Load Transient Response

\( V_{IN} = 14V, V_{OUT} = 3.3V \)

\( V_{OUT(AC)}: (50mV/div) \)

\( I_{OUT(AC)} = 1 \text{ to } 150mA (50mA/div) \)

\( t_R = t_F = 5\mu s \)

Time (80\mu s/div)

Load Transient Response

\( V_{IN} = 14V, V_{OUT} = 3.3V \)

\( V_{OUT(AC)}: (50mV/div) \)

\( I_{OUT(AC)} = 150 \text{ to } 300mA (50mA/div) \)

\( t_R = t_F = 5\mu s \)

Time (80\mu s/div)

Load Transient Response

\( V_{IN} = 14V, V_{OUT} = 5V \)

\( V_{OUT(AC)}: (50mV/div) \)

\( I_{OUT(AC)} = 1 \text{ to } 150mA (50mA/div) \)

\( t_R = t_F = 5\mu s \)

Time (80\mu s/div)

Load Transient Response

\( V_{IN} = 14V, V_{OUT} = 5V \)

\( V_{OUT(AC)}: (50mV/div) \)

\( I_{OUT(AC)} = 150 \text{ to } 300mA (50mA/div) \)

\( t_R = t_F = 5\mu s \)

Time (80\mu s/div)

Ripple Rejection vs Frequency

\( (V_{IN}=14V, V_{OUT}=5V) \)

Ripple Rejection RR (dB)

Frequency (Hz)

Ripple Rejection vs Frequency

\( (V_{IN}=14V, V_{OUT}=3.3V) \)

Ripple Rejection RR (dB)

Frequency (Hz)
Application Information

Input Capacitor
A 10µF ceramic capacitor is recommended between IN and GND pins to decouple input power-supply glitch and noise. The amount of the capacitance may be increased without limit. This input capacitor must be located as close as possible to the device to assure input stability and reduce noise. For PCB layout, a wide copper trace is required for both IN and GND pins. A lower ESR capacitor type allows the use of less capacitance, while higher ESR type requires more capacitance.

Output Capacitor
Ceramic type output capacitor is recommended for this series; however, the other output capacitors with low ESR also can be used. One 10µF output capacitor is suggested, the AP7583Q/AQ series LDO would have stable output capacitance range from 4.7µF to 100µF. The relations between I_{OUT} (Output Current) and ESR of an output capacitor are shown below. The stable region for the safety operating temperature (-40°C to +125°C) is marked as the gray area in the graph.

Measurement conditions: Frequency Band: 10Hz to 2MHz, Temperature: -40°C to +125°C.

Adjustable Operation
The AP7583Q/AQ provides output voltage from 1.2V to 5.0V through external resistor divider as shown below:
Application Information (continued)

The output voltage is calculated by:

\[ V_{OUT} = \frac{V_{REF}}{1 + \frac{R_1}{R_2}} \]

Where \( V_{REF} = 1.2 \text{V} \) (the internal reference voltage).

Rearranging the equation will give the following that is used for adjusting the output to a particular voltage:

\[ R_1 = R_2 \left( \frac{V_{OUT} - 1}{V_{REF}} \right) \]

To maintain the stability of the internal reference voltage, \( R_2 \) needs to be kept smaller than 80kΩ.

No Load Stability
Other than external resistor divider, no minimum load is required to keep the device stable. The device will remain stable and regulated in no load condition.

ON/OFF Input Operation
The AP7583Q/AQ is turned on by setting the EN pin high, and is turned off by pulling it low. If this feature is not used, the EN pin should be tied to IN pin to keep the regulator output on at all time. To ensure proper operation, the signal source used to drive the EN pin must be able to swing above and below the specified turn-on/off voltage thresholds listed in the Electrical Characteristics section under \( V_{IL} \) and \( V_{IH} \).

Current Limit Protection
When output current at OUT pin is higher than current-limit threshold, the current-limit protection will be triggered and clamp the output current to prevent overcurrent and to protect the regulator from damage due to overheating.

Power Good
The power-good (PG) pin is an open-drain output with one internal resistor. When the \( V_{OUT} \geq V_{PG} \), the PG output is high-impedance; if the \( V_{OUT} \) drops to below \( V_{GF} \), or the device is disabled, the PG pin is pulled to low by an internal MOSFET.

Thermal Shutdown Protection
Thermal protection disables the output when the junction temperature rises to approximately +175°C, allowing the device to cool down. When the junction temperature reduces to approximately +155°C, the output circuitry is enabled again. Depending on power dissipation, thermal resistance, and ambient temperature, the thermal protection circuit may cycle on and off. This cycling limits the heat dissipation of the regulator, protecting it from damage due to overheating.

Power Dissipation
The device power dissipation and proper sizing of the thermal plane that is connected to the thermal pad is critical to avoid thermal shutdown and ensure reliable operation. Power dissipation of the device depends on input voltage and load conditions and can be calculated by:

\[ P_D = (V_{IN} - V_{OUT}) \times I_{OUT} \]

The maximum power dissipation, handled by the device, depends on the maximum junction to ambient thermal resistance, maximum ambient temperature, and maximum device junction temperature, which can be calculated by the equation in the following:

\[ P_{D, \text{max} @ T_A} = \frac{(+150^\circ \text{C} \cdot T_A)}{R_{0JA}} \]
### Ordering Information

#### AP7583Q - XX XXXX - X

**Compliance**
- Q: Automotive Compliant

**Output Voltage**
- Blank: ADJ
  - 33: 3.3V
  - 50: 5.0V

**Package**
- FDZW: W-DFN2020-6 (SWP) (Type A1)

**Packing**
- 7: 7” Tape & Reel

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package Code</th>
<th>Package</th>
<th>Packing</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP7583Q-XXFDZW-7</td>
<td>FDZW</td>
<td>W-DFN2020-6 (SWP) (Type A1)</td>
<td>3,000</td>
</tr>
</tbody>
</table>

#### AP7583AQ - XX XXXX - XX

**Compliance**
- Q: Automotive Compliant

**Output Voltage**
- Blank: ADJ
  - 33: 3.3V
  - 50: 5.0V

**Package**
- MP: MSOP-8EP
- FDZW: W-DFN2020-6 (SWP) (Type A1)
- D4: TO252-4 (Type C)

**Packing**
- 13: 13” Tape & Reel
- 7: 7” Tape & Reel

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package Code</th>
<th>Package</th>
<th>Packing</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP7583AQ-XXMP-13</td>
<td>MP</td>
<td>MSOP-8EP</td>
<td>2,500</td>
</tr>
<tr>
<td>AP7583AQ-XXFDZW-7</td>
<td>FDZW</td>
<td>W-DFN2020-6 (SWP) (Type A1)</td>
<td>3,000</td>
</tr>
<tr>
<td>AP7583AQ-XXD4-13(*)</td>
<td>D4</td>
<td>TO252-4 (Type C)</td>
<td>2,500</td>
</tr>
</tbody>
</table>

*: Future Product
Marking Information (AP7583Q)

(1) W-DFN2020-6 (SWP) (Type A1)

(Top View)

XXXX : Identification Code
Y : Year : 0~9
W : Week : A~Z : 1~26 week;
a~z : 27~52 week; z represents
52 and 53 week
X : Internal Code

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
<th>Identification Code</th>
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<tbody>
<tr>
<td>AP7583Q-FDZW-7</td>
<td>W-DFN2020-6 (SWP) (Type A1)</td>
<td>F7AQ</td>
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<td>AP7583Q-33FDZW-7</td>
<td>W-DFN2020-6 (SWP) (Type A1)</td>
<td>F7DQ</td>
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<td>AP7583Q-50FDZW-7</td>
<td>W-DFN2020-6 (SWP) (Type A1)</td>
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</table>
Marking Information (AP7583AQ)

(1) MSOP-8EP

(Top View)

Logo

Identification Code

7583AQ : ADJ
7583A-33Q : 3.3V
7583A-50Q : 5.0V

Part Number | Package   | Identification Code
-------------|-----------|----------------------
AP7583AQ-MP-13 | MSOP-8EP | 7583AQ
AP7583AQ-33MP-13 | MSOP-8EP | 7583A-33Q
AP7583AQ-50MP-13 | MSOP-8EP | 7583A-50Q

(2) W-DFN2020-6 (SWP) (Type A1)

(Top View)

XXXX : Identification Code
Y : Year : 0~9
W : Week : A~Z : 1~26 week;
a~z : 27~52 week; z represents
52 and 53 week
X : Internal Code

Part Number | Package             | Identification Code
-------------|---------------------|----------------------
AP7583AQ-FDZW-7 | W-DFN2020-6 (SWP) (Type A1) | F8AQ
AP7583AQ-33FDZW-7 | W-DFN2020-6 (SWP) (Type A1) | F8DQ
AP7583AQ-50FDZW-7 | W-DFN2020-6 (SWP) (Type A1) | F8EQ
Marking Information (AP7583AQ) (continued)

(3) TO252-4 (Type C)

(Top View)

Logo
Identification Code
7583A-33Q : 3.3V
7583A-50Q : 5.0V

YY : Year : 01 to 09
WW : Week : 01 to 52, 52 represents 52 and 53 week
XX : Internal Code

<table>
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<td>TO252-4 (Type C)</td>
<td>7583A-33Q</td>
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<td>AP7583AQ-50D4-13</td>
<td>TO252-4 (Type C)</td>
<td>7583A-50Q</td>
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</tbody>
</table>
Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

(1) MSOP-8EP

(2) W-DFN2020-6 (SWP) (Type A1)
Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

(3) TO252-4 (Type C)

<table>
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<td>L3</td>
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</tr>
</tbody>
</table>

All Dimensions in mm

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.

(1) MSOP-8EP
Suggested Pad Layout (continued)

Please see http://www.diodes.com/package-outlines.html for the latest version.

(2) W-DFN2020-6 (SWP) (Type A1)

(3) TO252-4 (Type C)

Mechanical Data

- Moisture Sensitivity:
  - MSOP-8EP: Level 1 Per J-STD-020
  - W-DFN2020-6 (SWP) (Type A1): Level 1 Per J-STD-020
  - TO252-4 (Type C): Level 3 Per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208
- Weight:
  - MSOP-8EP: 0.024 grams (Approximate)
  - W-DFN2020-6 (SWP) (Type A1): 0.01 grams (Approximate)
  - TO252-4 (Type C): 0.343 grams (Approximate)
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