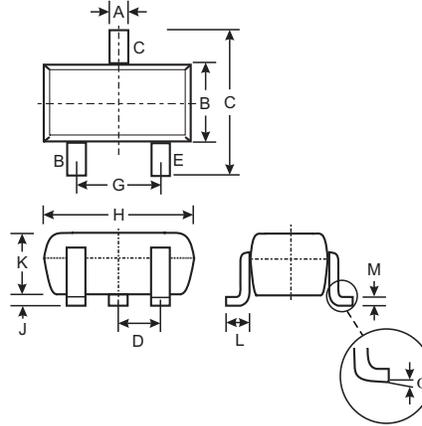


### Features

- Ultra Miniature Surface Mount Package
- Complementary NPN Type Available (2DC4617Q,R,S)
- Lead Free/RoHS Compliant (Note 3)

### Mechanical Data

- Case: SOT-523
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture sensitivity: Level 1 per J-STD-020C
- Terminal Connections: See Diagram
- Lead Free Plating (Matte Tin annealed over Alloy 42 leadframe).
- Marking & Type Code Information (See Last Page):  
2DA1774Q: 8A  
2DA1774R: 8B  
2DA1774S: 8C
- Ordering Information: See Last Page
- Weight: 0.002 grams (approx.)



| SOT-523              |      |      |      |
|----------------------|------|------|------|
| Dim                  | Min  | Max  | Typ  |
| A                    | 0.15 | 0.30 | 0.22 |
| B                    | 0.75 | 0.85 | 0.80 |
| C                    | 1.45 | 1.75 | 1.60 |
| D                    | —    | —    | 0.50 |
| G                    | 0.90 | 1.10 | 1.00 |
| H                    | 1.50 | 1.70 | 1.60 |
| J                    | 0.00 | 0.10 | 0.05 |
| K                    | 0.60 | 0.80 | 0.75 |
| L                    | 0.10 | 0.30 | 0.22 |
| M                    | 0.10 | 0.20 | 0.12 |
| N                    | 0.45 | 0.65 | 0.50 |
| $\alpha$             | 0°   | 8°   | —    |
| All Dimensions in mm |      |      |      |

### Maximum Ratings @ T<sub>A</sub> = 25°C unless otherwise specified

| Characteristic                          | Symbol           | 2DA1774Q/R/S | Unit |
|---|------------------|--------------|------|
| Collector-Base Voltage                  | V <sub>CB0</sub> | -60          | V    |
| Collector-Emitter Voltage               | V <sub>CEO</sub> | -50          | V    |
| Emitter-Base Voltage                    | V <sub>EBO</sub> | -6.0         | V    |
| Collector Current - Continuous (Note 1) | I <sub>C</sub>   | 150          | mA   |
| Power Dissipation (Note 1)              | P <sub>d</sub>   | 150          | mW   |

### Thermal Characteristics @ T<sub>A</sub> = 25°C unless otherwise specified

| Characteristic                                   | Symbol                            | 2DA1774Q/R/S | Unit |
|--|-----------------------------------|--------------|------|
| Thermal Resistance, Junction to Ambient (Note 1) | R <sub>θJA</sub>                  | 833          | °C/W |
| Operating and Storage and Temperature Range      | T <sub>j</sub> , T <sub>STG</sub> | -55 to +150  | °C   |

### Electrical Characteristics @ T<sub>A</sub> = 25°C unless otherwise specified

| Characteristic                       | Symbol  | Min               | Max               | Unit | Test Condition   |
|--------------------------------------|---|-------------------|-------------------|------|--|
| <b>OFF CHARACTERISTICS (Note 2)</b>  |   |                   |                   |      |  |
| Collector-Base Breakdown Voltage     | V <sub>(BR)CBO</sub>                                | -60               | —                 | V    | I <sub>C</sub> = -50μA, I <sub>E</sub> = 0                 |
| Collector-Emitter Breakdown Voltage  | V <sub>(BR)CEO</sub>                                | -50               | —                 | V    | I <sub>C</sub> = 1.0μA, I <sub>B</sub> = 0                 |
| Emitter-Base Breakdown Voltage       | V <sub>(BR)EBO</sub>                                | -6.0              | —                 | V    | I <sub>E</sub> = -50μA, I <sub>C</sub> = 0                 |
| Collector Cutoff Current             | I <sub>CBO</sub>                                    | —                 | -100              | nA   | V <sub>CB</sub> = -60V                                     |
| Emitter Cutoff Current               | I <sub>EBO</sub>                                    | —                 | -100              | nA   | V <sub>EB</sub> = -6.0V                                    |
| <b>ON CHARACTERISTICS (Note 2)</b>   |   |                   |                   |      |  |
| DC Current Gain                      | 2DA1774Q<br>2DA1774R<br>2DA1774S<br>h <sub>FE</sub> | 120<br>180<br>270 | 270<br>390<br>560 | —    | V <sub>CE</sub> = -6.0V, I <sub>C</sub> = -1.0mA           |
| Collector-Emitter Saturation Voltage | V <sub>CE(SAT)</sub>                                | —                 | -0.5              | V    | I <sub>C</sub> = -50mA, I <sub>B</sub> = -5.0mA            |
| <b>SMALL SIGNAL CHARACTERISTICS</b>  |   |                   |                   |      |  |
| Output Capacitance                   | C <sub>obo</sub>                                    | 4.0 Typ.          | 5.0               | pF   | V <sub>CB</sub> = -12V, f = 1.0MHz, I <sub>E</sub> = 0     |
| Current Gain-Bandwidth Product       | f <sub>T</sub>                                      | 140 Typ.          | —                 | MHz  | V <sub>CE</sub> = -12V, I <sub>C</sub> = -2.0mA, f = 30MHz |

- Notes:
1. Part mounted on FR-4 board with recommended pad layout, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
  2. Short duration pulse test used to minimize self-heating effect.
  3. No purposefully added lead.

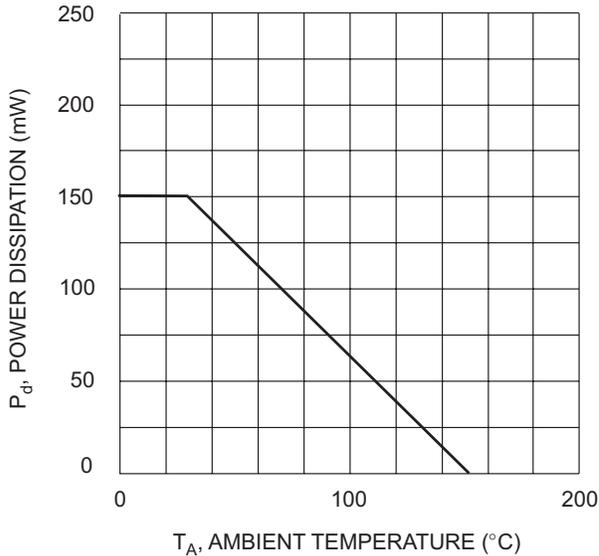


Fig. 1 Power Derating Curve, Total Package

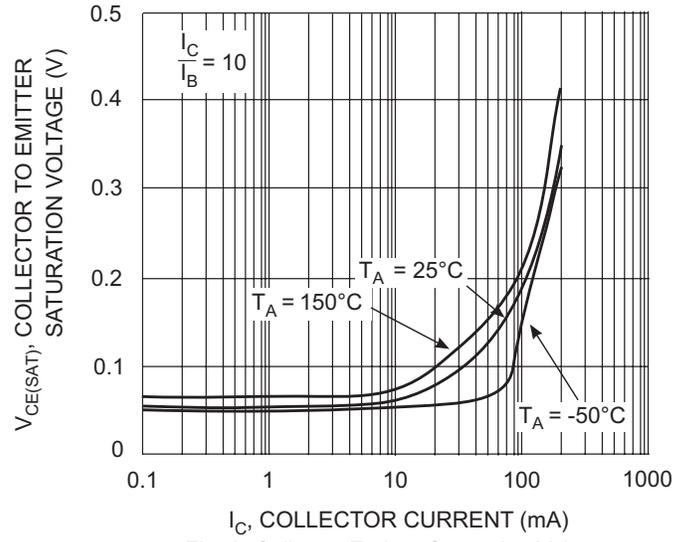


Fig. 2 Collector Emitter Saturation Voltage vs. Collector Current

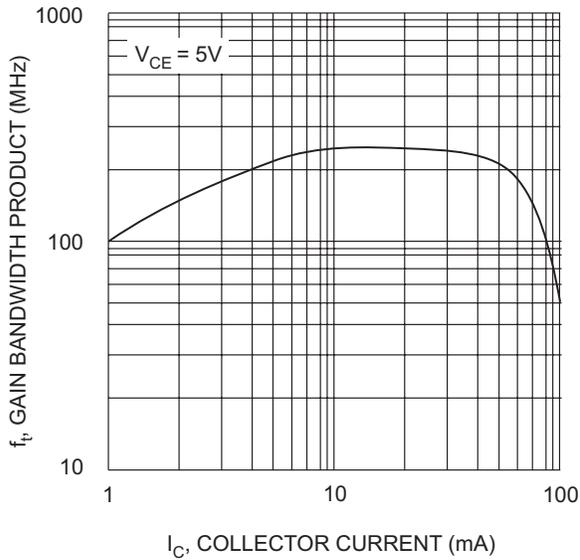
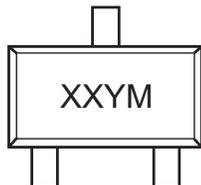


Fig. 3, Gain Bandwidth Product vs Collector Current

**Ordering Information** (Note 4)

| Device       | Packaging | Shipping         |
|--------------|-----------|------------------|
| 2DA1774Q-7-F | SOT-523   | 3000/Tape & Reel |
| 2DA1774R-7-F | SOT-523   | 3000/Tape & Reel |
| 2DA1774S-7-F | SOT-523   | 3000/Tape & Reel |

Notes: 4. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**


XX = Product Type Marking Code (See Page 1, e.g. 8A = 2DA1774Q)  
 YM = Date Code Marking  
 Y = Year (ex: N = 2002)  
 M = Month (ex: 9 = September)

Date Code Key

| Year | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|------|------|------|------|------|------|------|------|------|
| Code | N    | P    | R    | S    | T    | U    | V    | W    |

| Month | Jan | Feb | March | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code  | 1   | 2   | 3     | 4   | 5   | 6   | 7   | 8   | 9   | O   | N   | D   |

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