

# 2PA1774

## PNP general-purpose transistor

Rev. 05 — 17 November 2009

Product data sheet

## 1. Product profile

### 1.1 General description

PNP transistor in a SOT416 (SC-75) plastic package. The NPN complement is 2PC4617.

### 1.2 Features

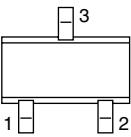
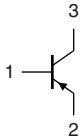
- Low current (max. 150 mA)
- Low voltage (max. 50 V)

### 1.3 Applications

- General-purpose switching and amplification in communication, Electronic Data Processing (EDP) and consumer applications.

## 2. Pinning information

Table 1. Pinning

| Pin | Description | Simplified outline  | Symbol   |
|-----|-------------|---|--|
| 1   | base        |  | <br><i>sym013</i> |
| 2   | emitter     |   |  |
| 3   | collector   |   |  |

## 3. Ordering information

Table 2. Ordering information

| Type number | Package |  |         |
|-------------|---------|--|---------|
|             | Name    | Description                              | Version |
| 2PA1774Q    | SC-75   | plastic surface mounted package; 3 leads | SOT416  |
| 2PA1774R    |         |  |         |
| 2PA1774S    |         |  |         |

## 4. Marking

**Table 3. Marking codes**

| Type number | Marking code |
|-------------|--------------|
| 2PA1774Q    | YQ           |
| 2PA1774R    | YR           |
| 2PA1774S    | YS           |

## 5. Limiting values

**Table 4. Limiting values**

*In accordance with the Absolute Maximum Rating System (IEC 60134).*

| Symbol    | Parameter                 | Conditions                  | Min | Max  | Unit |
|-----------|---------------------------|-----------------------------|-----|------|------|
| $V_{CBO}$ | collector-base voltage    | open emitter                | -   | -60  | V    |
| $V_{CEO}$ | collector-emitter voltage | open base                   | -   | -50  | V    |
| $V_{EBO}$ | emitter-base voltage      | open collector              | -   | -6   | V    |
| $I_C$     | collector current (DC)    |                             | -   | -150 | mA   |
| $I_{CM}$  | peak collector current    |                             | -   | -200 | mA   |
| $I_{BM}$  | peak base current         |                             | -   | -100 | mA   |
| $P_{tot}$ | total power dissipation   | $T_{amb} \leq 25\text{ °C}$ | [1] | 150  | mW   |
| $T_{stg}$ | storage temperature       |                             | -65 | +150 | °C   |
| $T_j$     | junction temperature      |                             | -   | 150  | °C   |
| $T_{amb}$ | ambient temperature       |                             | -65 | +150 | °C   |

[1] Transistor mounted on an FR4 printed-circuit board, single-sided copper, tin-plated and standard footprint.

## 6. Thermal characteristics

**Table 5. Thermal characteristics**

| Symbol        | Parameter                                   | Conditions | Min | Typ | Max | Unit |
|---------------|---|------------|-----|-----|-----|------|
| $R_{th(j-a)}$ | thermal resistance from junction to ambient |            | [1] | -   | 833 | K/W  |

[1] Transistor mounted on an FR4 printed-circuit board, single-sided copper, tin-plated and standard footprint.

## 7. Characteristics

**Table 6. Characteristics**

$T_{amb} = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

| Symbol      | Parameter                            | Conditions   | Min | Typ | Max  | Unit          |
|-------------|--------------------------------------|--|-----|-----|------|---------------|
| $I_{CBO}$   | collector-base cut-off current       | $I_E = 0\text{ A}; V_{CB} = -30\text{ V}$                                    | -   | -   | -100 | nA            |
|             |                                      | $I_E = 0\text{ A}; V_{CB} = -30\text{ V}; T_j = 150\text{ }^{\circ}\text{C}$ | -   | -   | -5   | $\mu\text{A}$ |
| $I_{EBO}$   | emitter-base cut-off current         | $I_C = 0\text{ A}; V_{EB} = -4\text{ V}$                                     | -   | -   | -100 | nA            |
| $h_{FE}$    | DC current gain                      | $I_C = -1\text{ mA}; V_{CE} = -6\text{ V}$                                   | [1] |     |      |               |
|             |                                      | 2PA1774Q   | 120 | -   | 270  |               |
|             |                                      | 2PA1774R   | 180 | -   | 390  |               |
|             |                                      | 2PA1774S   | 270 | -   | 560  |               |
| $V_{CEsat}$ | collector-emitter saturation voltage | $I_C = -50\text{ mA}; I_B = -5\text{ mA}$                                    | [1] | -   | -200 | mV            |
| $C_c$       | collector capacitance                | $I_E = i_e = 0\text{ A}; V_{CB} = -12\text{ V}; f = 1\text{ MHz}$            | -   | -   | 2.2  | pF            |
| $f_T$       | transition frequency                 | $I_E = -2\text{ mA}; V_{CE} = -12\text{ V}; f = 100\text{ MHz}$              | [1] | 100 | -    | MHz           |

[1] Pulse test:  $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02$ .

## 8. Package outline

Plastic surface-mounted package; 3 leads

SOT416

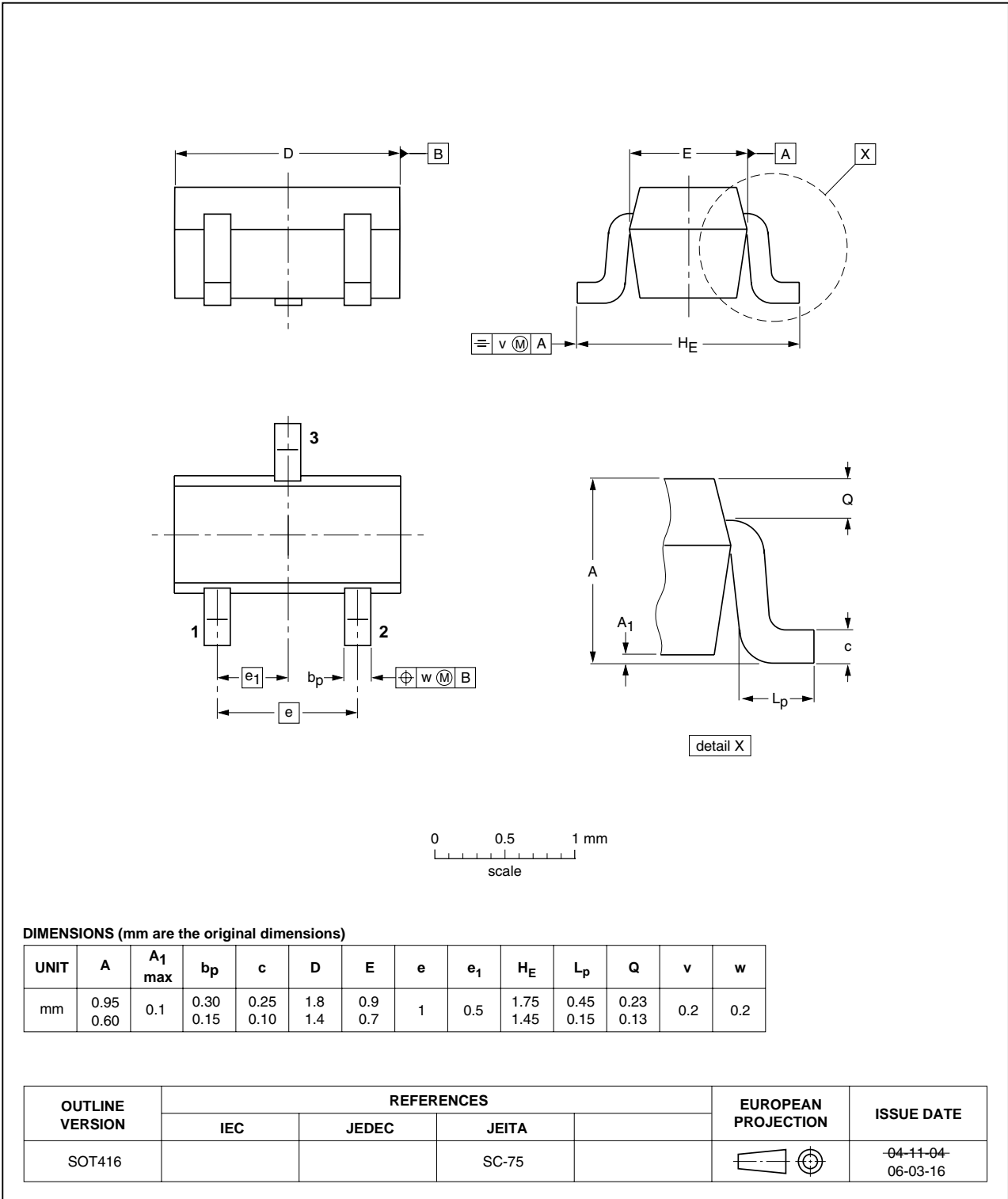


Fig 1. Package outline SOT416 (SC-75)

## 9. Revision history

Table 7. Revision history

| Document ID    | Release date | Data sheet status  | Change notice | Supersedes |
|----------------|--------------|--|---------------|------------|
| 2PA1774_5      | 20091117     | Product data sheet   | -             | 2PA1774_4  |
| Modifications: |              | <ul style="list-style-type: none"><li>This data sheet was changed to reflect the new company name NXP Semiconductors, including new legal definitions and disclaimers. No changes were made to the technical content.</li><li><a href="#">Figure 1 "Package outline SOT416 (SC-75)"; updated</a></li></ul> |               |            |
| 2PA1774_4      | 20041124     | Product data sheet   | -             | 2PA1774_3  |
| 2PA1774_3      | 20001212     | Product specification  | -             | 2PA1774_2  |
| 2PA1774_2      | 19990601     | Preliminary specification  | -             | 2PA1774_1  |
| 2PA1774_1      | 19970709     | Preliminary specification  | -             | -          |

## 10. Legal information

### 10.1 Data sheet status

| Document status <sup>[1][2]</sup> | Product status <sup>[3]</sup> | Definition  |
|-----------------------------------|-------------------------------|---|
| Objective [short] data sheet      | Development                   | This document contains data from the objective specification for product development. |
| Preliminary [short] data sheet    | Qualification                 | This document contains data from the preliminary specification.                       |
| Product [short] data sheet        | Production                    | This document contains the product specification.                                     |

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <http://www.nxp.com>.

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**Datasheet**

 (Product Specification)  
v.5.0, 2009-12-07  
Pages, 84kB

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**General description**

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PNP transistor in a SOT416 (SC-75) plastic package. The NPN complement is 2PC4617.

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**Features and benefits**

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Low current (max. 150 mA)  
Low voltage (max. 50 V)

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**Applications**

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General-purpose switching and amplification in communication, Electronic Data Processing (EDP) and consumer applications.

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**Parameters/similar products**

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| Type number | Package         | Complement | I <sub>C</sub> [max](mA) | Polarity | P <sub>tot</sub> [max](mW) | V <sub>CEO</sub> [max](V) | f <sub>T</sub> [min](MHz) | h <sub>FE</sub> [max] | h <sub>FE</sub> [min] |
|-------------|-----------------|------------|--------------------------|----------|----------------------------|---------------------------|---------------------------|-----------------------|-----------------------|
| 2PA1774Q    | SOT416 (SOT416) | 2PC4617Q   | 100                      | PNP      | 150                        | 40                        | 100                       | 270                   | 120                   |
| 2PA1774R    | SOT416 (SOT416) | 2PC4617R   | 100                      | PNP      | 150                        | 40                        | 100                       | 390                   | 180                   |
| 2PA1774S    | SOT416 (SOT416) | 2PC4617S   | 100                      | PNP      | 150                        | 40                        | 100                       | 560                   | 270                   |

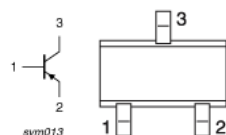
**Similar products**

2PA1774 links to the similar products page containing an overview of products that are similar in function or related to the type number(s) as listed on this page. The similar products page includes products from the same catalog tree(s), relevant selection guides and products from the same functional category.

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**Block diagrams**

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**Pricing/ordering/availability**

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| Type number | Ordering code(12NC) | Orderable part number | Region | Distributor          | In stock  | Order quantity             | Inventory date | Buy online                 | Samples                    |               |
|-------------|---------------------|-----------------------|--------|----------------------|-----------|----------------------------|----------------|----------------------------|----------------------------|---------------|
| 2PA1774Q    | 9340 509 50115      | 2PA1774Q,115          | ASIA   | WPI                  | 15,000    | 3000                       | 05/15/2011     | <a href="#">Buy online</a> | Order samples              |               |
|             |                     |                       | NA     | MOUSER ELECTRONICS   | 12,400    |                            | 5/14/2011      | <a href="#">Buy online</a> |                            |               |
|             |                     |                       | NA     | MOUSER ELECTRONICS   | 12,400    |                            | 5/14/2011      | <a href="#">Buy online</a> |                            |               |
| 2PA1774R/DG | 9340 614 23115      | 2PA1774R/DG,115       | JAPAN  | CHIP ONE STOP        | no        |                            | 5/12/2011      | <a href="#">Buy online</a> | not available              |               |
| 2PA1774R/DG | 9340 614 23135      | 2PA1774R/DG,135       | JAPAN  | CHIP ONE STOP        | no        |                            | 5/12/2011      | <a href="#">Buy online</a> | not available              |               |
| 2PA1774R    | 9340 509 60115      | 2PA1774R,115          | NA     | DIGI-KEY CORPORATION | 56,900    |                            |                | 5/14/2011                  | <a href="#">Buy online</a> | Order samples |
|             |                     |                       | NA     | DIGI-KEY CORPORATION | 54,000    |                            |                | 5/14/2011                  | <a href="#">Buy online</a> |               |
|             |                     |                       | ASIA   | WPI                  | 15,000    | 3000                       |                | 05/15/2011                 | <a href="#">Buy online</a> |               |
|             |                     |                       | EU     | FARNELL              | 115       |                            |                | 5/14/2011                  | <a href="#">Buy online</a> |               |
|             |                     |                       | AS     | element14 APAC       | 115       |                            |                | 5/14/2011                  | <a href="#">Buy online</a> |               |
|             |                     |                       | NA     | MOUSER ELECTRONICS   | 4         |                            |                | 5/14/2011                  | <a href="#">Buy online</a> |               |
|             |                     |                       | NA     | MOUSER ELECTRONICS   | 4         |                            |                | 5/14/2011                  | <a href="#">Buy online</a> |               |
|             |                     |                       | JAPAN  | CHIP ONE STOP        | yes       |                            |                | 5/12/2011                  | <a href="#">Buy online</a> |               |
|             |                     |                       | EU     | FARNELL              | 115       |                            |                | 5/14/2011                  | <a href="#">Buy online</a> |               |
| AS          | element14 APAC      | 115                   |        |                      | 5/14/2011 | <a href="#">Buy online</a> |                |                            |                            |               |
| 2PA1774R    | 9340 509 60135      | 2PA1774R,135          | EU     | FARNELL              | 115       |                            |                | 5/14/2011                  | <a href="#">Buy online</a> | not available |
|             |                     |                       | AS     | element14 APAC       | 115       |                            |                | 5/14/2011                  | <a href="#">Buy online</a> |               |
|             |                     |                       |        |                      |           |                            |                |                            |                            |               |



|          |                |              |       |                    |       |  |           |            |               |
|----------|----------------|--------------|-------|--------------------|-------|--|-----------|------------|---------------|
|          |                |              | JAPAN | CHIP ONE STOP      | no    |  | 5/12/2011 | Buy online |               |
| 2PA1774S | 9340 509 70115 | 2PA1774S,115 | NA    | MOUSER ELECTRONICS | 6,250 |  | 5/14/2011 | Buy online | Order samples |
|          |                |              | NA    | MOUSER ELECTRONICS | 6,250 |  | 5/14/2011 | Buy online |               |

The variants in the table below are discontinued. See the table [Discontinued information](#) for more information.

| Type number | Ordering code(12NC) | Orderable part number | Region | Distributor | In stock | Order quantity | Inventory date | Buy online | Samples       |
|-------------|---------------------|-----------------------|--------|-------------|----------|----------------|----------------|------------|---------------|
| 2PA1774R/A2 | 9340 631 69115      | 2PA1774R/A2,115       |        |             |          |                |                |            | not available |

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#### Products/packages

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| Type number | Orderable part number | Ordering code (12NC) | Product status    | Package         | Packing       | Marking          | ECCN |
|-------------|-----------------------|----------------------|-------------------|-----------------|---------------|------------------|------|
| 2PA1774Q    | 2PA1774Q,115          | 9340 509 50115       | Volume production | SOT416 (SOT416) | Tape reel smd | Standard Marking |      |
| 2PA1774R/DG | 2PA1774R/DG,115       | 9340 614 23115       | Volume production | SOT416 (SOT416) | Tape reel smd | Standard Marking |      |
| 2PA1774R/DG | 2PA1774R/DG,135       | 9340 614 23135       | Volume production | SOT416 (SOT416) | Tape reel smd | Standard Marking |      |
| 2PA1774R    | 2PA1774R,115          | 9340 509 60115       | Volume production | SOT416 (SOT416) | Tape reel smd | Standard Marking |      |
| 2PA1774R    | 2PA1774R,135          | 9340 509 60135       | Volume production | SOT416 (SOT416) | Tape reel smd | Standard Marking |      |
| 2PA1774S    | 2PA1774S,115          | 9340 509 70115       | Volume production | SOT416 (SOT416) | Tape reel smd | Standard Marking |      |

The variants in the table below are discontinued. See the table [Discontinued information](#) for more information.

| Type number | Orderable part number | Ordering code (12NC) | Product status                   | Package         | Packing       | Marking          | ECCN |
|-------------|-----------------------|----------------------|----------------------------------|-----------------|---------------|------------------|------|
| 2PA1774R/A2 | 2PA1774R/A2,115       | 9340 631 69115       | Withdrawn<br>Replacement product | SOT416 (SOT416) | Tape reel smd | Standard Marking |      |

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#### Quality/reliability/chemical content

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| Type number | Orderable part number | Chemical content | RoHS | Leadfree conversion date | RHF | IFR (FIT) | MTBF (hours) | MSL | MSL LF |
|-------------|-----------------------|------------------|------|--------------------------|-----|-----------|--------------|-----|--------|
| 2PA1774Q    | 2PA1774Q,115          | 2PA1774Q         |      | week 17, 2003            |     |           |              | 1   | NA     |
| 2PA1774R/DG | 2PA1774R/DG,115       | 2PA1774R/DG      |      | Always Pb-free           |     |           |              | 1   |        |
| 2PA1774R/DG | 2PA1774R/DG,135       | 2PA1774R/DG      |      | Always Pb-free           |     |           |              | 1   |        |
| 2PA1774R    | 2PA1774R,115          | 2PA1774R         |      | week 17, 2003            |     |           |              | 1   | NA     |
| 2PA1774R    | 2PA1774R,135          | 2PA1774R         |      | week 17, 2003            |     |           |              | 1   | NA     |
| 2PA1774S    | 2PA1774S,115          | 2PA1774S         |      | week 17, 2003            |     |           |              | 1   | NA     |

The variants in the table below are discontinued. See the table [Discontinued information](#) for more information.

| Type number | Orderable part number | Chemical content | RoHS | Leadfree conversion date | RHF | IFR (FIT) | MTBF (hours) | MSL | MSL LF |
|-------------|-----------------------|------------------|------|--------------------------|-----|-----------|--------------|-----|--------|
| 2PA1774R/A2 | 2PA1774R/A2,115       |                  |      | Always Pb-free           |     |           |              |     |        |

Quality and reliability disclaimer

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#### Discontinued information

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| Type number | Ordering code (12NC) | Last-time buy date | Last-time delivery date | Replacement product | DN Notice | Status  | Comments              |
|-------------|----------------------|--------------------|-------------------------|---------------------|-----------|---|-----------------------|
| 2PA1774R/A2 | 934063169115         | 31-dec-09          | 30-jun-10               | 2PA1774R            | DN 64     | Multi source product<br>Standard availability | Standard End of Life. |

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#### Design support

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##### Leaflet

Downsize the footprint, boost the performance; NXP ultra-small diodes and transistors for portable applications (v.1.0, 2009-05-01)

##### Other type

Letter Symbols - Transistors; General (v.1.0, 1999-05-07)

##### Support Models

Spice model of 2PA1774Q  
Spice model of 2PA1774R  
Spice model of 2PA1774S

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