

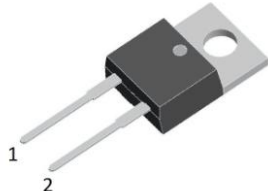
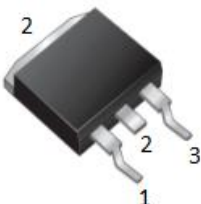
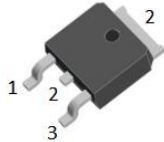
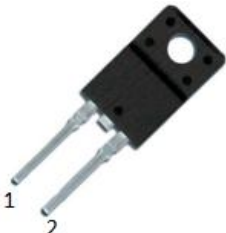
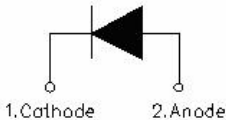
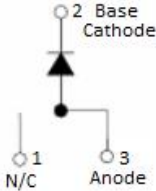
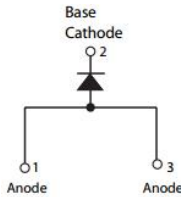
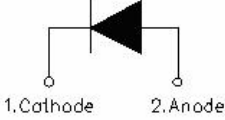
## ST1560/STB1560/STF1560/STD1560 SCHOTTKY RECTIFIER

### Applications

- Switching power supply
- Converters
- Free-Wheeling diodes
- Reverse battery protection

### Features

- 150 °C T<sub>J</sub> operation
- Center tap configuration
- Ultralow forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- This is a Pb – Free Device
- All SMC parts are traceable to the wafer lot
- Additional testing can be offered upon request

| ST1560  | STB1560   | STD1560  | STF1560   |
|---|---|--|---|
|   |  |  |   |
|  |  |  |  |
| TO-220AC  | D <sup>2</sup> PAK  | DPAK   | ITO-220AC   |

### Maximum Ratings:

| Characteristics                             | Symbol             | Condition   | Max. | Units |
|---|--------------------|---|------|-------|
| Peak Repetitive Reverse Voltage             | V <sub>RRM</sub>   | -   | 60   | V     |
| Working Peak Reverse Voltage                | V <sub>RWM</sub>   |   |      |       |
| DC Blocking Voltage                         | V <sub>R</sub>     |   |      |       |
| Average Rectified Forward Current           | I <sub>F(AV)</sub> | 50% duty cycle @T <sub>c</sub> =100°C,<br>rectangular wave form | 15   | A     |
| Peak One Cycle Non-Repetitive Surge Current | I <sub>FSM</sub>   | 8.3ms, Half Sine pulse, T <sub>c</sub> = 25 °C                  | 170  | A     |

### Electrical Characteristics:

| Characteristics       | Symbol   | Condition   | Typ.  | Max. | Units |
|-----------------------|----------|---|-------|------|-------|
| Forward Voltage Drop* | $V_{F1}$ | @ 7.5A, Pulse, $T_J = 25\text{ }^\circ\text{C}$                                   | 0.48  | -    | V     |
|                       |          | @ 15A, Pulse, $T_J = 25\text{ }^\circ\text{C}$                                    | 0.59  | 0.70 | V     |
| Reverse Current*      | $I_{R1}$ | @ $V_R = \text{rated } V_R$<br>$T_J = 25\text{ }^\circ\text{C}$                   | 0.024 | 1.2  | mA    |
|                       |          | @ $V_R = \text{rated } V_R$<br>$T_J = 125\text{ }^\circ\text{C}$                  | 14    | 45   | mA    |
| Junction Capacitance  | $C_T$    | @ $V_R = 5\text{V}$ , $T_C = 25\text{ }^\circ\text{C}$<br>$f_{SIG} = 1\text{MHz}$ | 712   | -    | pF    |

\* Pulse width < 300  $\mu\text{s}$ , duty cycle < 2%

### Thermal-Mechanical Specifications:

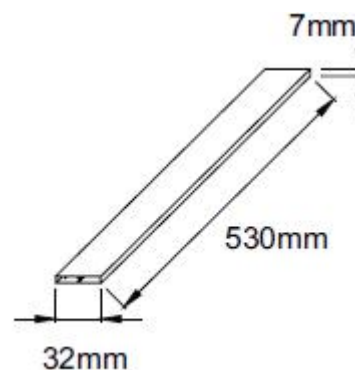
| Characteristics                             | Symbol          | ST1560  | STB1560 | STD1560 | STF1560 | Units              |
|---|-----------------|---|---------|---------|---------|--------------------|
| Junction Temperature                        | $T_J$           | -55 to +150                                   |         |         |         | $^\circ\text{C}$   |
| Storage Temperature                         | $T_{stg}$       | -55 to +150                                   |         |         |         | $^\circ\text{C}$   |
| Typical Thermal Resistance Junction to Case | $R_{\theta JC}$ | 2.5   | 2.5     | 2       | 6       | $^\circ\text{C/W}$ |
| Case Style                                  |                 | TO-220AC/ D <sup>2</sup> PAK/ DPAK/ ITO-220AC |         |         |         |                    |

### Tube Specification

| Device  | Package            | Weight | Shipping       |
|---------|--------------------|--------|----------------|
| ST1560  | TO-220AC           | 1.6g   | 50pcs / tube   |
| STB1560 | D <sup>2</sup> PAK | 1.85g  | 800pcs / reel  |
| STD1560 | DPAK               | 0.39g  | 2500pcs / reel |
| STF1560 | ITO-220AC          | 1.6g   | 50pcs / tube   |

For information on tape and reel specifications, including part orientation and tape sizes, please refer to our tape and reel packaging specification.

### Tube Specification(TO-220AC/ITO-220AC)



**Ratings and Characteristics Curves**

Figure 1  
Typical Forward Characteristics

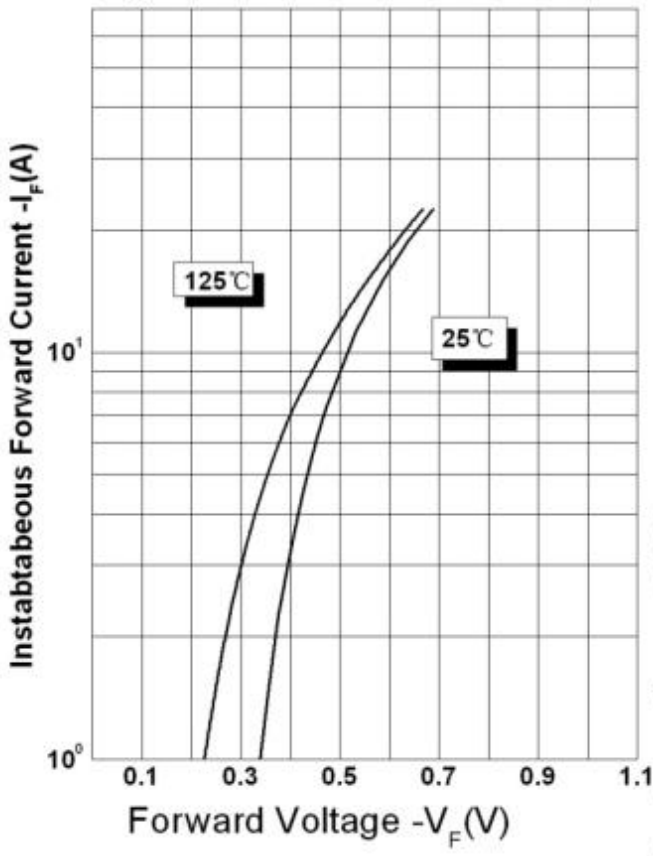


Figure 2  
Typical Reverse Characteristics

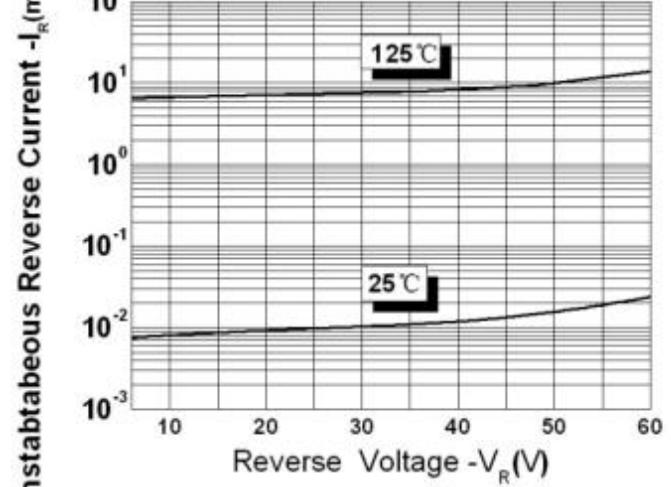
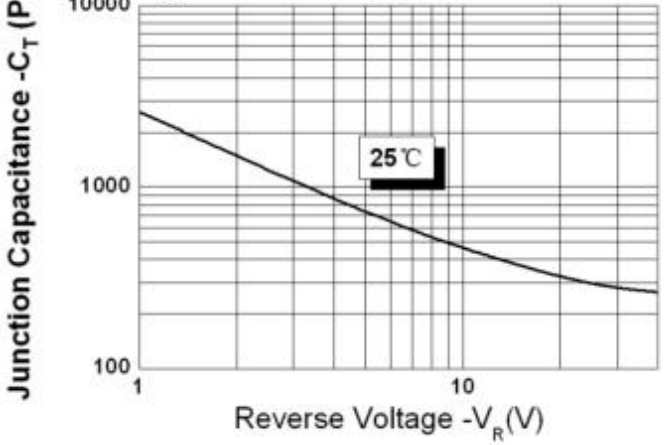
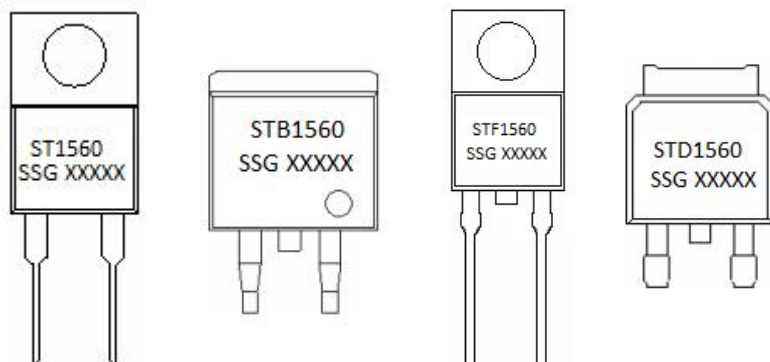


Figure 3  
Typical Junction Capacitance



### Marking Diagram

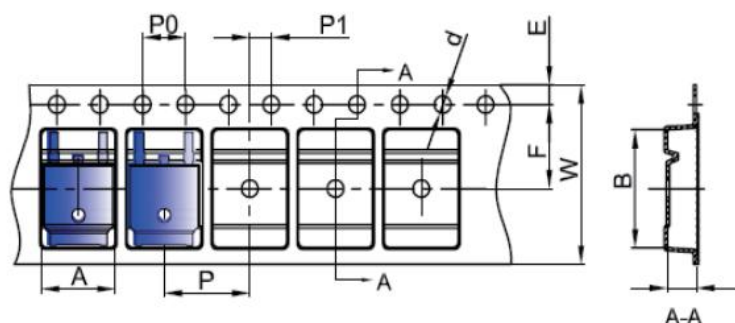


Where XXXXX is YYWWL

ST = Device Type  
 B/D/F = Package type  
 15 = Forward Current (15A)  
 60 = Reverse Voltage (60V)  
 SSG = SSG  
 YY = Year  
 WW = Week  
 L = Lot Number

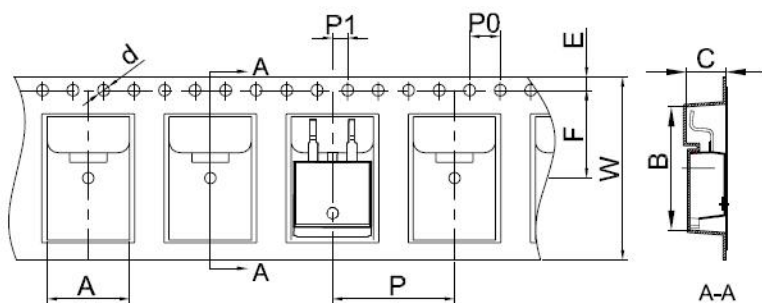
**Cautions:** Molding resin  
 Epoxy resin UL:94V-0

### Carrier Tape Specification DPAK



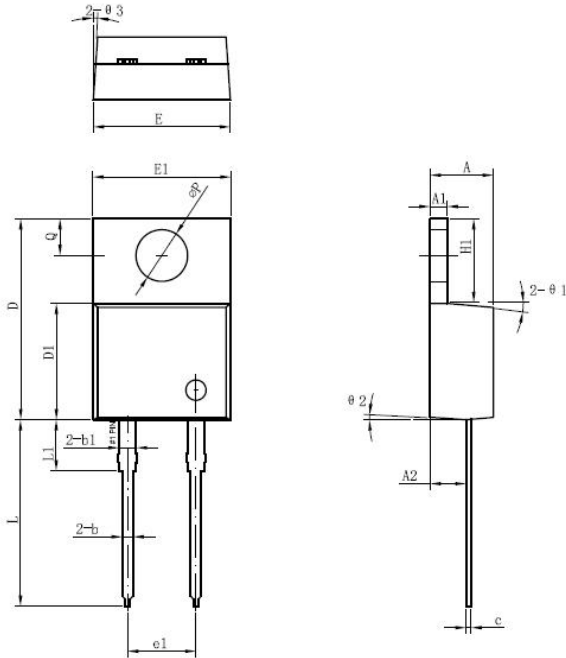
| SYMBOL | Millimeters |       |
|--------|-------------|-------|
|        | Min.        | Max.  |
| A      | 6.80        | 7.00  |
| B      | 10.40       | 10.60 |
| C      | 2.60        | 2.80  |
| d      | Φ1.45       | Φ1.65 |
| E      | 1.65        | 1.85  |
| F      | 7.40        | 7.60  |
| P0     | 3.90        | 4.10  |
| P      | 7.90        | 8.10  |
| P1     | 1.90        | 2.10  |
| W      | 15.90       | 16.30 |

### Carrier Tape Specification D<sup>2</sup>PAK



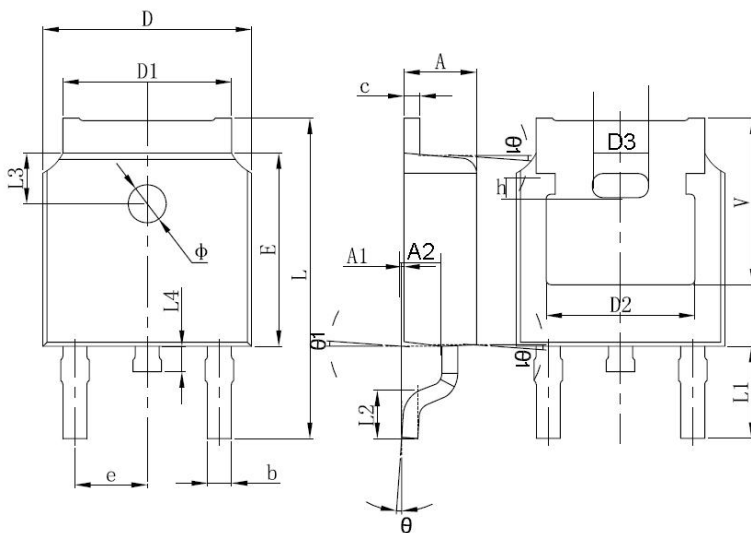
| SYMBOL | Millimeters |       |
|--------|-------------|-------|
|        | Min.        | Max.  |
| A      | 10.70       | 10.90 |
| B      | 16.03       | 16.23 |
| C      | 5.11        | 5.31  |
| d      | 1.45        | 1.65  |
| E      | 1.65        | 1.85  |
| F      | 11.40       | 11.60 |
| P0     | 3.90        | 4.10  |
| P      | 15.90       | 16.10 |
| P1     | 1.90        | 2.10  |
| W      | 23.90       | 24.30 |

**Mechanical Dimensions TO-220AC**



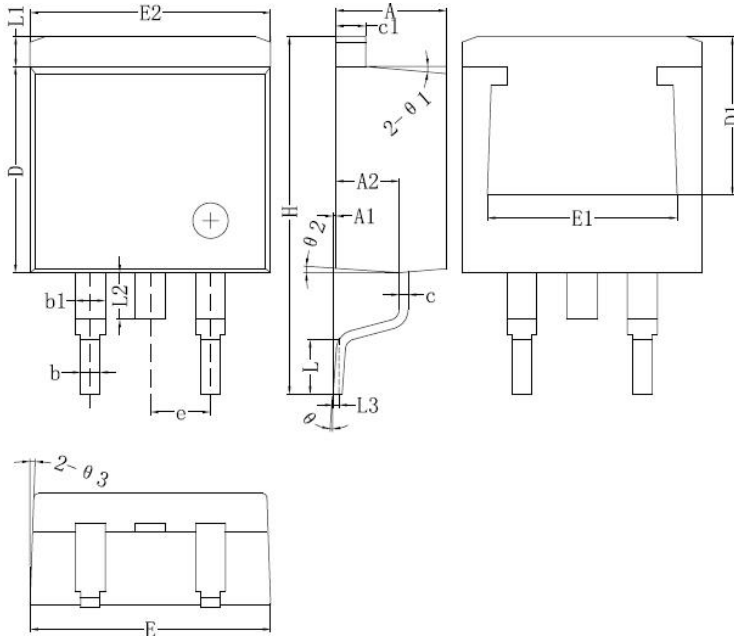
| Symbol | Dimensions in millimeters |         |       |
|--------|---------------------------|---------|-------|
|        | Min.                      | Typical | Max.  |
| A      | 4.47                      | 4.70    | 4.85  |
| A1     | 1.17                      | 1.27    | 1.37  |
| A2     | 2.52                      | 2.69    | 2.89  |
| b      | 0.71                      | 0.81    | 0.96  |
| b1     | 1.17                      | 1.27    | 1.37  |
| c      | 0.31                      | 0.38    | 0.61  |
| D      | 14.64                     | 14.94   | 15.24 |
| D1     | 8.50                      | 8.07    | 8.90  |
| E      | 10.01                     | 10.16   | 10.31 |
| E1     | 9.98                      | 10.18   | 10.38 |
| e1     | 4.98                      | 5.08    | 5.18  |
| H1     | 6.04                      | 6.24    | 6.44  |
| L      | 13.00                     | 13.86   | 14.08 |
| L1     | 3.56                      | 3.80    | 3.96  |
| ΦP     | 3.74                      | 3.84    | 4.04  |
| Q      | 2.54                      | 2.74    | 2.94  |
| Θ1     |                           | 5°      |       |
| Θ2     |                           | 4°      |       |
| Θ3     |                           | 4°      |       |

**Mechanical Dimensions DPAK**



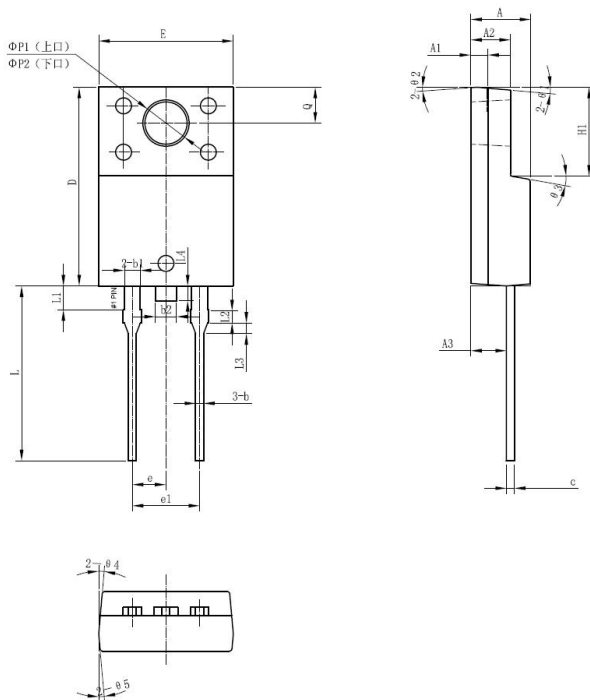
| SYMBOL | Millimeters |       | Inches     |       |
|--------|-------------|-------|------------|-------|
|        | Min.        | Max.  | Min.       | Max.  |
| A      | 2.20        | 2.40  | 0.087      | 0.094 |
| A1     | 0.00        | 0.127 | 0.000      | 0.005 |
| b      | 0.66        | 0.86  | 0.026      | 0.034 |
| c      | 0.46        | 0.60  | 0.018      | 0.024 |
| D      | 6.50        | 6.70  | 0.256      | 0.264 |
| D1     | 5.13        | 5.46  | 0.202      | 0.215 |
| D2     | 4.83 REF.   |       | 0.190 REF. |       |
| E      | 6.00        | 6.20  | 0.236      | 0.244 |
| e      | 2.186       | 2.386 | 0.086      | 0.094 |
| L      | 9.70        | 10.40 | 0.381      | 0.409 |
| L1     | 2.90 REF.   |       | 0.144 REF. |       |
| L2     | 1.40        | 1.70  | 0.055      | 0.067 |
| L3     | 1.60 REF.   |       | 0.063 REF. |       |
| L4     | 0.60        | 1.00  | 0.024      | 0.039 |
| Φ      | 1.10        | 1.30  | 0.043      | 0.051 |
| Θ      | 0°          | 8°    | 0°         | 8°    |
| h      | 0.00        | 0.30  | 0.000      | 0.012 |
| V      | 5.35 REF.   |       | 0.211 REF. |       |

**Mechanical Dimensions D<sup>2</sup>PAK**



| Symbol | Dimensions in millimeters |         |       |
|--------|---------------------------|---------|-------|
|        | Min.                      | Typical | Max.  |
| A      | 4.47                      | 4.70    | 4.85  |
| A1     | 0                         | 0.10    | 0.25  |
| A2     | 2.59                      | 2.69    | 2.89  |
| b      | 0.71                      | 0.81    | 0.96  |
| b1     | 1.17                      | 1.27    | 1.37  |
| c      | 0.31                      | 0.38    | 0.61  |
| c1     | 1.17                      | 1.27    | 1.37  |
| D      | 8.50                      | 8.70    | 8.90  |
| D1     | 6.40                      |         |       |
| E      | 10.01                     | 10.16   | 10.31 |
| E1     | 7.6                       |         |       |
| E2     | 9.98                      | 10.08   | 10.31 |
| e      |                           | 2.54    |       |
| H      | 14.6                      | 15.1    | 15.6  |
| L      | 2.00                      | 2.30    | 2.74  |
| L1     | 1.12                      | 1.27    | 1.42  |
| L2     | 1.30                      |         | 2.20  |
| L3     |                           | 0.25BSC |       |
| e      | 0                         | -       | 8°    |
| e1     |                           | 5°      |       |
| e2     |                           | 4°      |       |
| e3     |                           | 4°      |       |

**Mechanical Dimensions ITO-220AC**



| SYMBOL  | Dimensions in millimeters |         |       |
|---------|---------------------------|---------|-------|
|         | Min.                      | Typical | Max.  |
| A       | 4.30                      | 4.50    | 4.70  |
| A1      | 1.10                      | 1.30    | 1.50  |
| A2      | 2.80                      | 3.00    | 3.20  |
| A3      | 2.50                      | 2.70    | 2.90  |
| b       | 0.50                      | 0.60    | 0.75  |
| b1      | 1.10                      | 1.20    | 1.35  |
| b2      | 1.50                      | 1.60    | 1.75  |
| c       | 0.50                      | 0.60    | 0.75  |
| D       | 14.80                     | 15.00   | 15.20 |
| E       | 9.96                      | 10.16   | 10.36 |
| e       | -                         | 2.55    | -     |
| e1      | 5.00                      | 5.10    | 5.16  |
| H1      | 6.50                      | 6.70    | 6.90  |
| L       | 12.70                     | 13.20   | 13.70 |
| L1      | 1.60                      | 1.80    | 2.00  |
| L2      | 0.80                      | 1.00    | 1.20  |
| L3      | 0.60                      | 0.80    | 1.00  |
| L4      | -                         | 1.10    | 1.50  |
| ΦP1(上口) | 3.30                      | 3.50    | 3.70  |
| ΦP2(下口) | 2.99                      | 3.19    | 3.39  |
| Q       | 2.50                      | 2.70    | 2.90  |
| θ1      |                           | 5°      |       |
| θ2      |                           | 4°      |       |
| θ3      |                           | 10°     |       |
| θ4      |                           | 5°      |       |
| θ5      |                           | 5°      |       |



**ST1560**  
**STB1560**  
**STD1560**  
**STF1560**

**Technical Data**  
**Data Sheet N1417, Rev. A**



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