

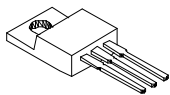
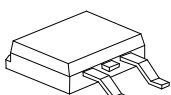
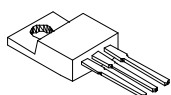
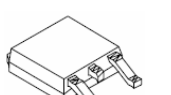
## ST2045C/STB2045C/STF2045C/STD2045C SCHOTTKY RECTIFIER

### Applications:

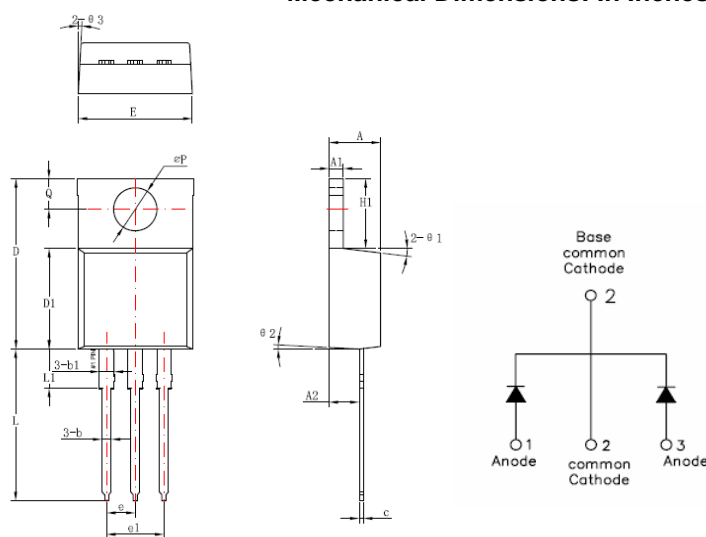
- Switching power supply
- Converters
- Free-Wheeling diodes
- Reverse battery protection

### 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

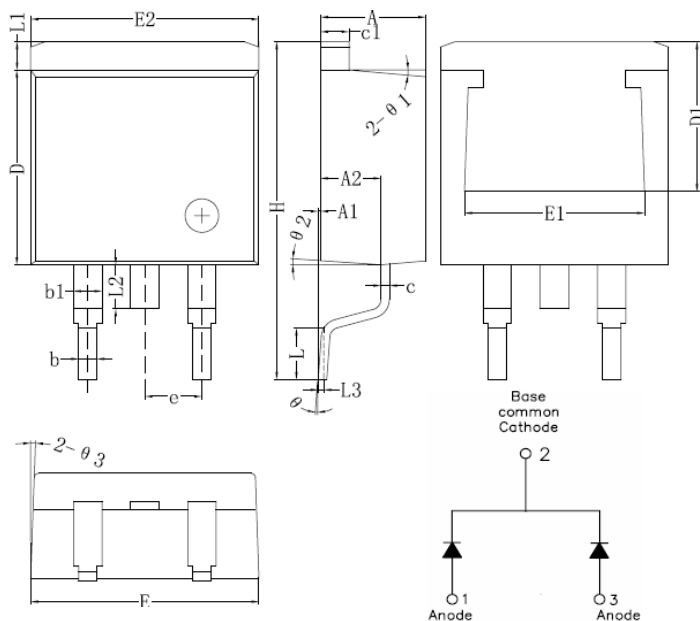
| Case styles  |   |   |   |
|--|---|---|---|
| <p><b>ST2045C</b></p>  <p><b>TO-220AB</b></p> | <p><b>STB2045C</b></p>  <p><b>D<sup>2</sup>PAK</b></p> | <p><b>STF2045C</b></p>  <p><b>ITO-220AB</b></p> | <p><b>STD2045C</b></p>  <p><b>DPAK</b></p> |

Mechanical Dimensions: In Inches / mm



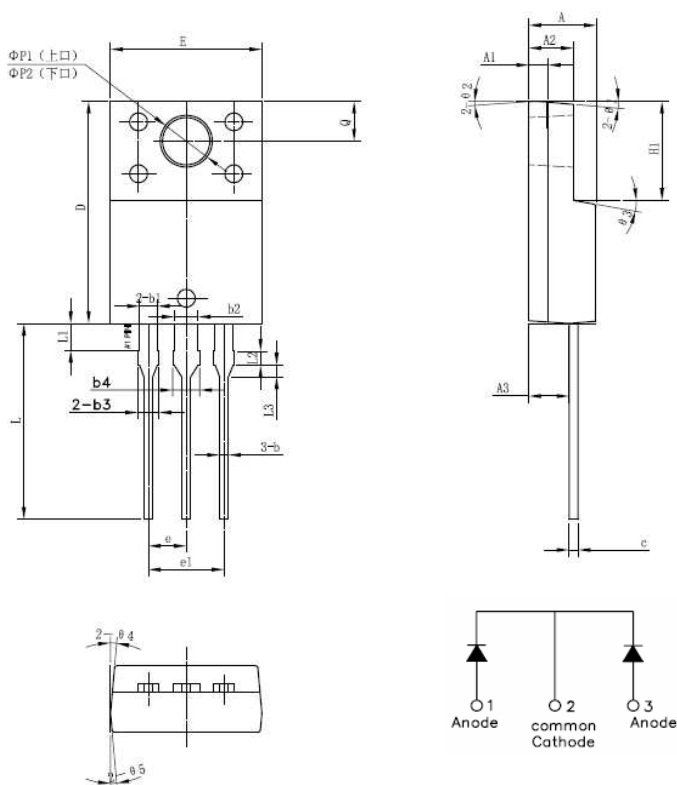
| Symbol | Dimensions in millimeters |         |       |
|--------|---------------------------|---------|-------|
|        | Min                       | Typical | Max   |
| A      | 4.42                      | 4.57    | 4.72  |
| A1     | 1.17                      | 1.27    | 1.37  |
| A2     | 2.59                      | 2.69    | 2.89  |
| b      | 0.71                      | 0.81    | 0.96  |
| b1     |                           | 1.27    |       |
| c      | 0.36                      | 0.38    | 0.61  |
| D      | 14.94                     | 15.24   | 15.54 |
| D1     | 8.85                      | 9.00    | 9.15  |
| E      | 10.01                     | 10.16   | 10.31 |
| e      |                           | 2.54    |       |
| e1     |                           | 5.06    |       |
| H1     | 6.04                      | 6.24    | 6.44  |
| L      | 12.7                      | 13.56   | 13.78 |
| L1     |                           | 3.5     |       |
| ΦP     | 3.74                      | 3.84    | 4.04  |
| Q      | 2.54                      | 2.74    | 2.94  |
| θ1     |                           | 7°      |       |
| θ2     |                           | 3°      |       |
| θ3     |                           | 4°      |       |

**TO-220AB**



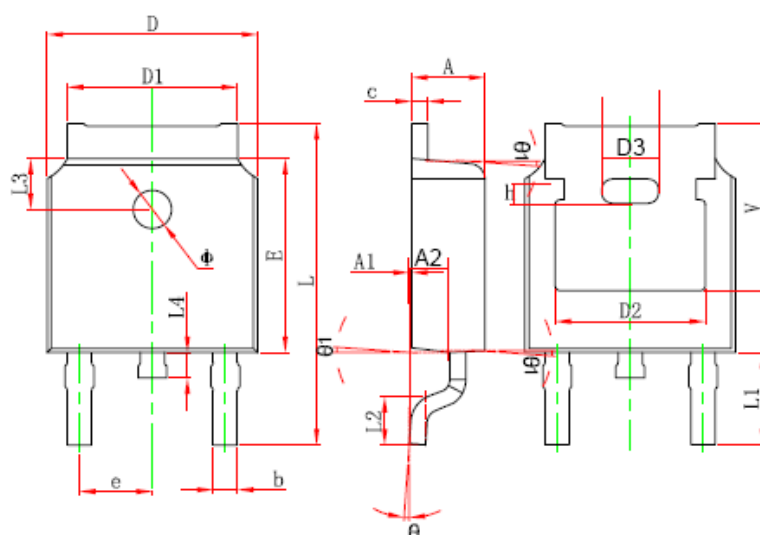
| Symbol | Dimensions in millimeters |         |       |
|--------|---------------------------|---------|-------|
|        | Min.                      | Typical | Max.  |
| A      | 4.55                      | 4.70    | 4.85  |
| A1     | 0                         | 0.10    | 0.25  |
| A2     | 2.59                      | 2.69    | 2.89  |
| b      | 0.71                      | 0.81    | 0.96  |
| b1     |                           | 1.27    |       |
| c      | 0.36                      | 0.38    | 0.61  |
| c1     | 1.17                      | 1.27    | 1.37  |
| D      | 8.55                      | 8.70    | 8.85  |
| D1     | 6.40                      |         |       |
| E      | 10.01                     | 10.16   | 10.31 |
| E1     | 7.6                       |         |       |
| E2     | 9.98                      | 10.08   | 10.18 |
| e      |                           | 2.54    |       |
| H      | 14.6                      | 15.1    | 15.6  |
| L      | 2.00                      | 2.30    | 2.70  |
| L1     | 1.17                      | 1.27    | 1.40  |
| L2     |                           |         | 2.20  |
| L3     |                           | 0.25BSC |       |
| e      | 0                         | -       | 8°    |
| e1     |                           | 5°      |       |
| e2     |                           | 4°      |       |
| e3     |                           | 4°      |       |

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

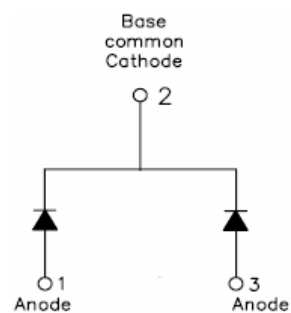


| SYMBOL         | MIN.  | TYP.  | MAX.  |
|----------------|-------|-------|-------|
| A              | 4.30  | 4.50  | 4.70  |
| A1             | 1.10  | 1.30  | 1.50  |
| A2             | 2.80  | 3.00  | 3.20  |
| A3             | 2.50  | 2.70  | 2.90  |
| b              | 0.50  | 0.60  | 0.75  |
| b1             | 1.10  | 1.20  | 1.35  |
| b2             | 1.50  | 1.60  | 1.75  |
| b3             | 1.20  | 1.30  | 1.45  |
| b4             | 1.60  | 1.70  | 1.85  |
| c              | 0.55  | 0.60  | 0.75  |
| D              | 14.80 | 15.00 | 15.20 |
| E              | 9.96  | 10.16 | 10.36 |
| e              |       | 2.55  |       |
| e1             |       | 5.10  |       |
| 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  |
| $\Phi P1$ (上孔) | 3.30  | 3.50  | 3.70  |
| $\Phi P2$ (下孔) | 2.99  | 3.19  | 3.39  |
| Q              | 2.50  | 2.70  | 2.90  |
| $\Theta 1$     |       | 5°    |       |
| $\Theta 2$     |       | 4°    |       |
| $\Theta 3$     |       | 10°   |       |
| $\Theta 4$     |       | 5°    |       |
| $\Theta 5$     |       | 5°    |       |

ITO-220AB



| Symbol | Dimensions In Millimeters |        | Dimensions In Inches |       |
|--------|---------------------------|--------|----------------------|-------|
|        | Min.                      | Max.   | Min.                 | Max.  |
| A      | 2.200                     | 2.380  | 0.087                | 0.094 |
| A1     | 0.000                     | 0.100  | 0.000                | 0.004 |
| b      | 0.710                     | 0.810  | 0.028                | 0.032 |
| c      | 0.460                     | 0.560  | 0.018                | 0.022 |
| D      | 6.500                     | 6.700  | 0.256                | 0.264 |
| D1     | 5.130                     | 5.460  | 0.202                | 0.215 |
| D2     | 4.830 REF.                |        | 0.190 REF.           |       |
| E      | 6.000                     | 6.200  | 0.236                | 0.244 |
| e      | 2.186                     | 2.386  | 0.086                | 0.094 |
| L      | 9.800                     | 10.400 | 0.386                | 0.409 |
| L1     | 2.900 REF.                |        | 0.114 REF.           |       |
| L2     | 1.400                     | 1.700  | 0.055                | 0.067 |
| L3     | 1.600 REF.                |        | 0.063 REF.           |       |
| L4     | 0.600                     | 1.000  | 0.024                | 0.039 |
| Φ      | 1.100                     | 1.300  | 0.043                | 0.051 |
| θ      | 0°                        | 8°     | 0°                   | 8°    |
| A2     | 0.910                     | 1.110  | 0.036                | 0.044 |
| V      | 5.350 REF.                |        | 0.211 REF.           |       |
| D3     | 1.778 REF.                |        | 0.070 REF.           |       |
| h      | 0.762 REF.                |        | 0.030 REF.           |       |
| θ1     | 7°                        |        | 7°                   |       |

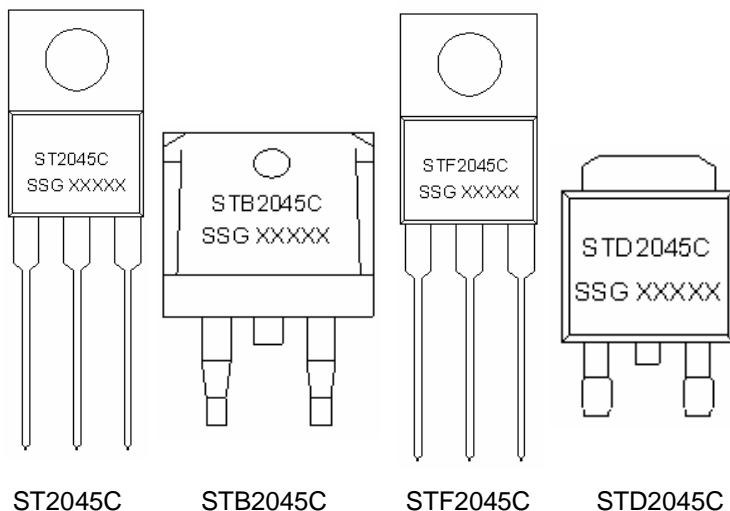


**DPAK**

Technical Data  
 Data Sheet N1035, Rev. A

*Green Products*

**Marking Diagram:**



Where XXXXX is YYWWL

ST = Device Type  
 B/F/D = Package type  
 20 = Forward Current (20A)  
 45 = Reverse Voltage (45V)  
 C = Configuration  
 SSG = SSG  
 YY = Year  
 WW = Week  
 L = Lot Number

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

**Ordering Information:**

| Device   | Package                     | Shipping       |
|----------|-----------------------------|----------------|
| ST2045C  | TO-220AB(Pb-Free)           | 50pcs / tube   |
| STB2045C | D <sup>2</sup> PAK(Pb-Free) | 800pcs / reel  |
| STF2045C | ITO-220AB(Pb-Free)          | 50pcs / tube   |
| STD2045C | DPAK(Pb-Free)               | 2500pcs / reel |

For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification.

**Maximum Ratings:**

| Characteristics  | Symbol      | Condition  | Max. | Units |
|--|-------------|--|------|-------|
| Peak Inverse Voltage   | $V_{RWM}$   | -  | 45   | V     |
| Max. Average Forward   | $I_{F(AV)}$ | 50% duty cycle @ $T_C = 80^\circ\text{C}$ ,<br>rectangular wave form | 20   | A     |
| Max. Peak One Cycle<br>Non-Repetitive Surge Current<br>(per leg) | $I_{FSM}$   | 8.3 ms, half Sine pulse  | 150  | A     |

### Electrical Characteristics:

| Characteristics                      | Symbol          | Condition  | Max.   | Units |
|--------------------------------------|-----------------|--|--------|-------|
| Max. Forward Voltage Drop (per leg)* | V <sub>F1</sub> | @ 10A, Pulse, T <sub>J</sub> = 25 °C                                     | 0.58   | V     |
|                                      | V <sub>F2</sub> | @ 10A, Pulse, T <sub>J</sub> = 125 °C                                    | 0.52   | V     |
| Max. Reverse Current (per leg)*      | I <sub>R1</sub> | @ V <sub>R</sub> = rated V <sub>R</sub><br>T <sub>J</sub> = 25 °C        | 2      | mA    |
|                                      | I <sub>R2</sub> | @ V <sub>R</sub> = rated V <sub>R</sub><br>T <sub>J</sub> = 125 °C       | 30     | mA    |
| Max. Junction Capacitance (per leg)  | C <sub>T</sub>  | @ V <sub>R</sub> = 5V, T <sub>C</sub> = 25 °C<br>f <sub>SIG</sub> = 1MHz | 700    | pF    |
| Max. Voltage Rate of Change          | dv/dt           | -  | 10,000 | V/μs  |

\* Pulse Width < 300μs, Duty Cycle <2%

### Thermal-Mechanical Specifications:

| Characteristics                                       | Symbol                                     | Condition    | Specification | Units |
|---|--|--------------|---------------|-------|
| Max. Junction Temperature                             | T <sub>J</sub>                             | -            | -55 to +150   | °C    |
| Max. Storage Temperature                              | T <sub>stg</sub>                           | -            | -55 to +150   | °C    |
| Maximum Thermal Resistance Junction to Case(per leg)* | R <sub>θJC</sub>                           | DC operation | 6.5           | °C/W  |
| Approximate Weight                                    | wt   | -            | 2/1.85/2/0.39 | g     |
| Case Style  | TO-220AB/D <sup>2</sup> PAK/ITO-220AB/DPAK |              |               |       |

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