

**Product Summary** (Per Leg)

| V <sub>RRM</sub> (V) | I <sub>o</sub> (A) | V <sub>F</sub> Max (V)<br>@ +25°C | I <sub>R</sub> Max (μA)<br>@ +25°C |
|----------------------|--------------------|-----------------------------------|------------------------------------|
| 120                  | 20                 | 0.95                              | 100                                |

**Features**

- Low Forward Voltage Drop
- Low Power Loss
- Excellent High Temperature Stability
- Soft, Fast Switching Capability
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](#) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

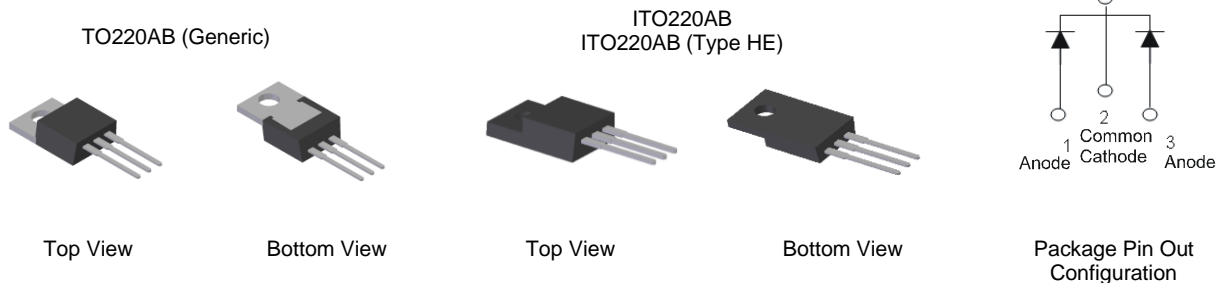
**Description and Applications**

The DIODES™ SDT40120CT and DIODES™ SDT40120CTFP provide very low V<sub>F</sub> and extremely excellent reverse leakage stability at high temperatures. It is ideal for use as a rectifier, freewheel diode or blocking diode in:

- DC-DC converters
- AC-DC adaptors

**Mechanical Data**

- Package: TO220AB, ITO220AB
- Package Material: Molded Plastic, UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin Finish Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208
- Weight: TO220AB (Generic) – 1.85 grams (Approximate)  
ITO220AB – 1.90 grams (Approximate)  
ITO220AB (Type HE) – 1.90 grams (Approximate)

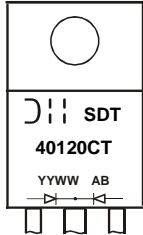

**Ordering Information** (Note 4)

| Part Number  | Package            | Packing   |         |
|--------------|--------------------|-----------|---------|
|              |                    | Qty.      | Carrier |
| SDT40120CT   | TO220AB (Generic)  | 50 Pieces | Tube    |
| SDT40120CTFP | ITO220AB           | 50 Pieces | Tube    |
| SDT40120CTFP | ITO220AB (Type HE) | 50 Pieces | Tube    |

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
  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.
  4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

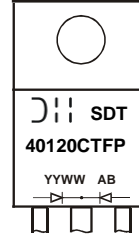
## Marking Information

TO220AB (Generic)



= Manufacturer's Marking  
 SDT40120CT = Product Type Marking Code  
 AB = Foundry and Assembly Code  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 22 = 2022)  
 WW = Week (01 to 53)

ITO220AB  
ITO220AB (Type HE)



= Manufacturer's Marking  
 SDT40120CTFP = Product Type Marking Code  
 AB = Foundry and Assembly Code  
 YYWW = Date Code Marking  
 YY = Last Two Digits of Year (ex: 22 = 2022)  
 WW = Week (01 to 53)

## Maximum Ratings (Per Leg) (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load.  
For capacitive load, derate current by 20%.

| Characteristic   | Symbol           | Value    | Unit |
|--|------------------|----------|------|
| Peak Repetitive Reverse Voltage  | V <sub>RRM</sub> | 120      | V    |
| Working Peak Reverse Voltage   | V <sub>RWM</sub> |          |      |
| DC Blocking Voltage  | V <sub>RM</sub>  |          |      |
| Average Rectified Output Current per Device (Per Leg) (Total)                                    | I <sub>O</sub>   | 20<br>40 | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub> | 180      | A    |

## Thermal Characteristics (Per Leg)

| Characteristic   | Symbol                            | Value       | Unit |
|--|-----------------------------------|-------------|------|
| Typical Thermal Resistance (Note 5)<br>Package = TO220AB (Generic) | R <sub>θJC</sub>                  | 2           | °C/W |
| Package = ITO220AB   |                                   | 4           |      |
| Package = ITO220AB (Type HE)                                       |                                   | 4           |      |
| Operating and Storage Temperature Range                            | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150 | °C   |

## Electrical Characteristics (Per Leg) (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic           | Symbol         | Min | Typ. | Max  | Unit     | Test Condition                                 |
|--------------------------|----------------|-----|------|------|----------|--|
| Forward Voltage Drop     | V <sub>F</sub> | —   | 0.69 | —    | V        | I <sub>F</sub> = 10A, T <sub>J</sub> = +25°C   |
|                          |                | —   | 0.90 | 0.95 |          | I <sub>F</sub> = 20A, T <sub>J</sub> = +25°C   |
|                          |                | —   | 0.70 | 0.76 |          | I <sub>F</sub> = 20A, T <sub>J</sub> = +125°C  |
| Leakage Current (Note 6) | I <sub>R</sub> | —   | 5    | 100  | μA<br>mA | V <sub>R</sub> = 120V, T <sub>J</sub> = +25°C  |
|                          |                | —   | 4    | 20   |          | V <sub>R</sub> = 120V, T <sub>J</sub> = +125°C |

Notes: 5. With 50mm x 50mm x 23mm Al heatsink.  
6. Short duration pulse test used to minimize self-heating effect.

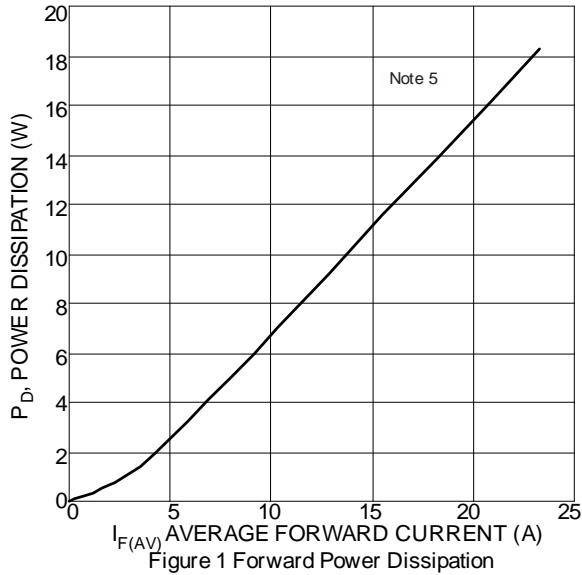


Figure 1 Forward Power Dissipation

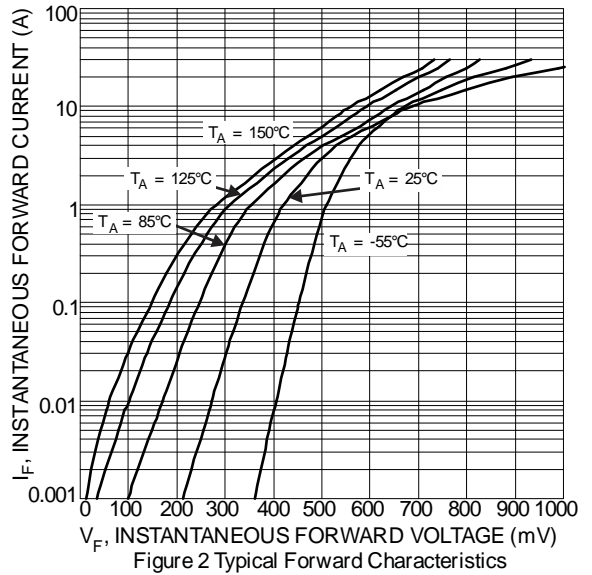


Figure 2 Typical Forward Characteristics

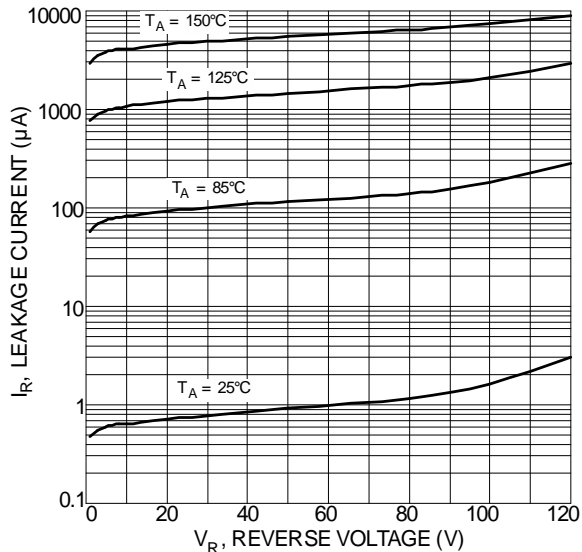


Figure 3 Typical Reverse Characteristics

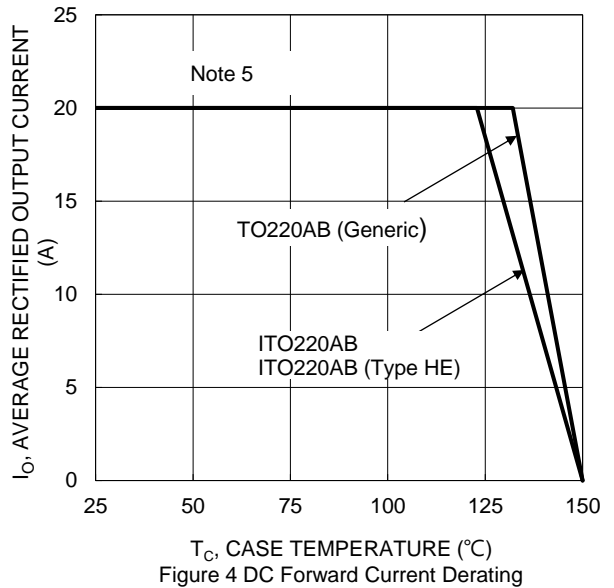


Figure 4 DC Forward Current Derating

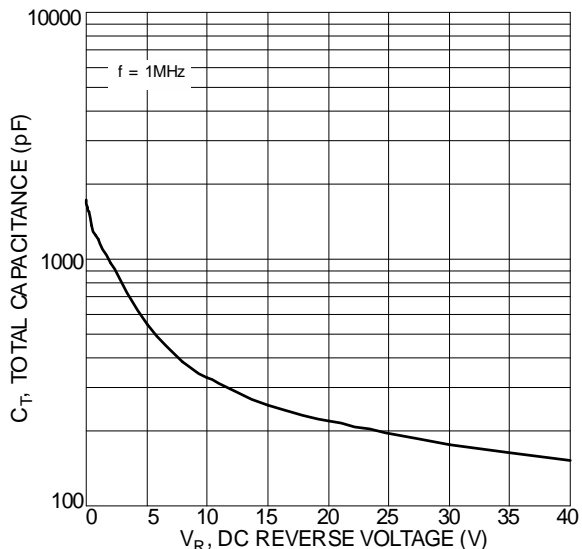
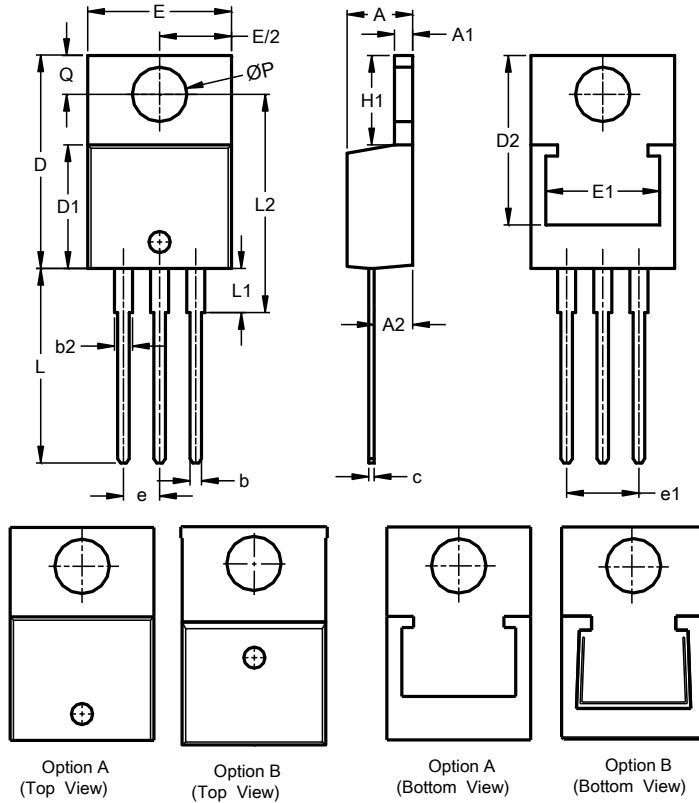


Figure 5 Total Capacitance vs. Reverse Voltage

**Package Outline Dimensions**

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

**TO220AB (Generic)**

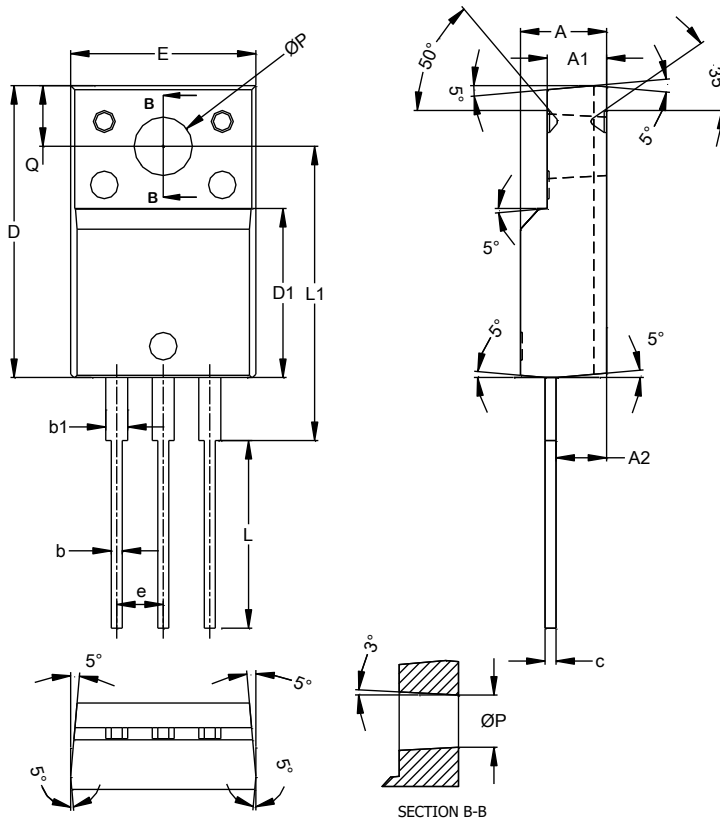


| TO220AB (Generic)    |       |       |       |
|----------------------|-------|-------|-------|
| Dim                  | Min   | Max   | Typ   |
| A                    | 3.56  | 4.82  | -     |
| A1                   | 0.51  | 1.39  | -     |
| A2                   | 2.04  | 2.92  | -     |
| b                    | 0.39  | 1.01  | 0.81  |
| b2                   | 1.15  | 1.77  | 1.24  |
| c                    | 0.356 | 0.61  | -     |
| D                    | 14.22 | 16.51 | -     |
| D1                   | 8.39  | 9.01  | -     |
| D2                   | 11.45 | 12.87 | -     |
| e                    | -     | -     | 2.54  |
| e1                   | -     | -     | 5.08  |
| E                    | 9.66  | 10.66 | -     |
| E1                   | 6.86  | 8.89  | -     |
| H1                   | 5.85  | 6.85  | -     |
| L                    | 12.70 | 14.73 | -     |
| L1                   | -     | 4.42  | -     |
| L2                   | 15.80 | 17.51 | 16.00 |
| P                    | 3.54  | 4.08  | -     |
| Q                    | 2.54  | 3.42  | -     |
| All Dimensions in mm |       |       |       |

**Package Outline Dimensions** (continued)

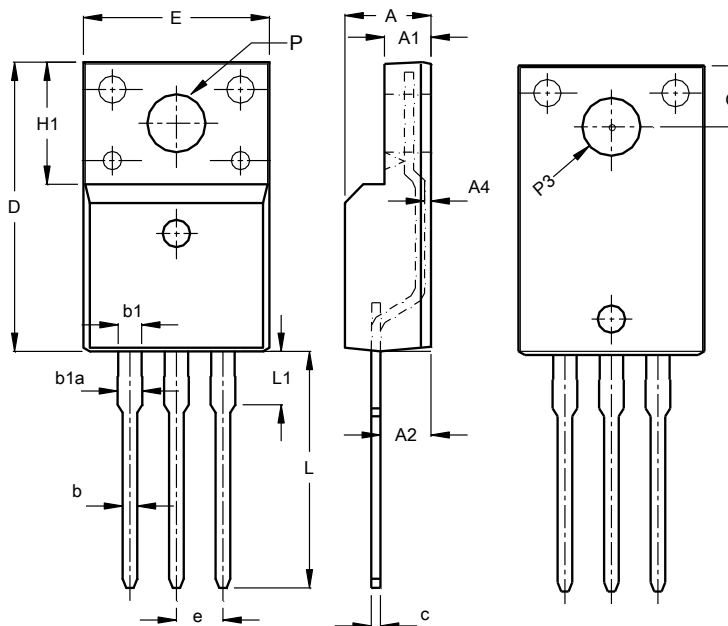
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**ITO220AB**



| ITO220AB             |       |       |       |
|----------------------|-------|-------|-------|
| Dim                  | Min   | Max   | Typ   |
| A                    | 4.50  | 4.90  | 4.70  |
| A1                   | 3.04  | 3.44  | 3.24  |
| A2                   | 2.56  | 2.96  | 2.76  |
| b                    | 0.50  | 0.75  | 0.60  |
| b1                   | 1.10  | 1.35  | 1.20  |
| c                    | 0.50  | 0.70  | 0.60  |
| D                    | 15.67 | 16.07 | 15.87 |
| D1                   | 8.99  | 9.39  | 9.19  |
| E                    | 9.91  | 10.31 | 10.11 |
| e                    | --    | --    | 2.54  |
| L                    | 9.45  | 10.05 | 9.75  |
| L1                   | 15.80 | 16.20 | 16.00 |
| P                    | 2.98  | 3.38  | 3.18  |
| Q                    | 3.10  | 3.50  | 3.30  |
| All Dimensions in mm |       |       |       |

**ITO220AB (Type HE)**



| ITO220AB (Type HE)   |          |       |       |
|----------------------|----------|-------|-------|
| Dim                  | Min      | Max   | Typ   |
| A                    | 4.50     | 4.90  | 4.70  |
| A1                   | 2.34     | 2.74  | 2.54  |
| A2                   | 2.56     | 2.96  | 2.76  |
| A4                   | 0.30     | 0.60  | 0.45  |
| b                    | 0.70     | 0.95  | 0.80  |
| b1                   | 1.18     | 1.43  | 1.28  |
| b1a                  | 1.25     | 1.55  | 1.35  |
| c                    | 0.45     | 0.60  | 0.50  |
| D                    | 15.57    | 16.17 | 15.87 |
| e                    | 2.54 BSC |       |       |
| E                    | 9.96     | 10.36 | 10.16 |
| H1                   | 6.70 REF |       |       |
| L                    | 12.68    | 13.28 | 12.98 |
| L1                   | 3.03     | 3.43  | 3.23  |
| Q                    | 3.15     | 3.45  | 3.30  |
| ØP                   | 3.03     | 3.38  | 3.18  |
| ØP3                  | 3.15     | 3.65  | 3.45  |
| All Dimensions in mm |          |       |       |

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