PFC Device Corporation

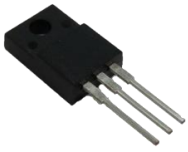
**PFR40V300CT**
**PFR40V300CTF**
**PFR40V300CTI**
**PFR40V300CTB**

# 40A 300V MOS Schottky Rectifier

## Major ratings and characteristics

| Characteristics | Values | Units |
|---|---|---|
| $I_{F(AV)}$ Rectangular Waveform | 20 × 2 | A |
| $V_{RRM}$ | 300 | V |
| $V_F$@ 20A , Tj=125 °C | 0.73 | V, typ. |
| $T_J$ Operating Junction Temperature | -65 to +175 | °C |

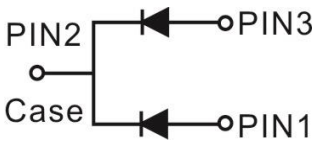
**PFR40V300CT** **PFR40V300CTF**



**TO-220AB** **ITO-220AB**

**PFR40V300CTI** **PFR40V300CTB**

**TO-262** **TO-263**




## Features

- Ultra Low Forward Voltage Drop
- Reliable High Temperature Operation
- Softest, fast switching capability
- 175°C Operating Junction Temperature
- Lead Free Finish, RoHS Compliant

## Typical Applications

Device optimized for ultra-low forward voltage drop to maximize efficiency in Power Supply applications

## 1. Characteristics

**Maximum Ratings Characteristics** ( $T_A$ = 25℃ unless otherwise specified )

| Parameter | Symbol | Values | Units |
|---|---|---|---|
| DC Blocking Voltage | $V_{RM}$ | 300 | Volts |
| Working Peak Reverse Voltage | $V_{RWM}$ | | |
| Peak Repetitive Reverse Voltage | $V_{RRM}$ | | |
| Average Rectified Forward Current<br>Per device<br>(Rated VR-20Khz Square Wave) - 50% duty cycle | $I_o$ | 40 | Amps |
| Peak Forward Surge Current - 1/2 60hz | $I_{FSM}$ | 350 | Amps |
| Peak Repetitive Reverse Surge Current (2uS-1Khz) | $I_{RRM}$ | 0.5 | Amps |
| Typical Thermal Resistance (per leg)<br>Package = TO-220AB<br>Package =ITO-220AB<br>Package =TO-262<br>Package =TO-263 | $R\theta_{Jc}$ | <br>2<br>4<br>2.5<br>3 | °C / W |
| Isolation voltage (ITO-220 only) | $V_{AC}$ | 1500 | V |
| Maximum Rate of Voltage Change ( at Rated $V_R$ ) | dv/dt | 10000 | V/uS |
| Operating Junction Temperature | $T_J$ | - 65 to +175 | °C |
| Storage Junction Temperature | $T_{STG}$ | - 65 to +175 | |

**Electrical Characteristics - (per leg)** ( $T_A$ = 25℃ unless otherwise specified )

| Parameter | Test Conditions | | Symbol | Typ. | Max. | Units |
|---|---|---|---|---|---|---|
| Instantaneous Forward Voltage | IF = 20 A | $T_J$ = 25 °C | VF* | ---- | 0.89 | Volts |
| | | $T_J$ = 125 °C | | 0.73 | 0.78 | |
| Instantaneous Reverse Current | At $V_{RM}$ | $T_J$ = 25 °C | IR* | ---- | 100 | uA |
| | | $T_J$ = 125 °C | | ---- | 20 | mA |
| * Pulse width < 300 uS, Duty cycle < 2% | | | | | | |

## 2. Characteristics Curves

**Ratings and Characteristics Curves** ( TA = 25℃ unless otherwise specified )

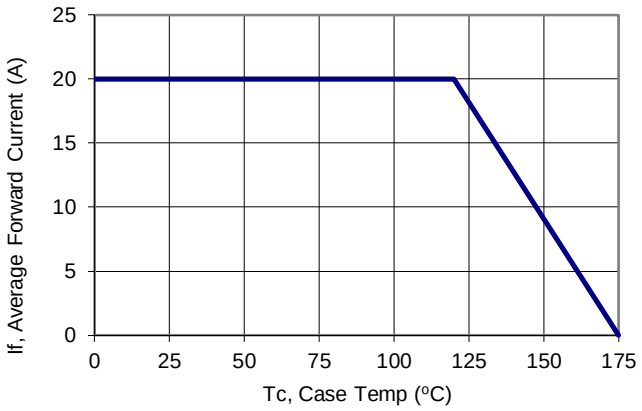



**Figure 1: Current Derating, Case**

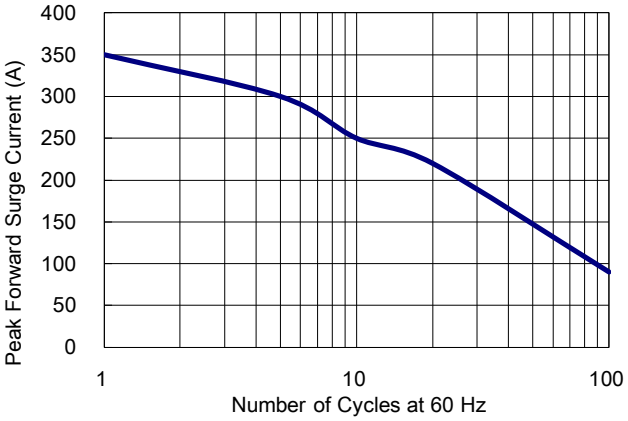



**Figure 2: Maximum Repetitive Surge Current**

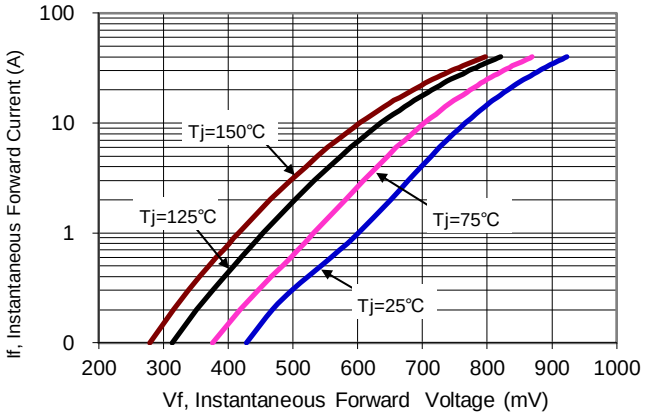



**Figure 3: Typical Forward Voltage**

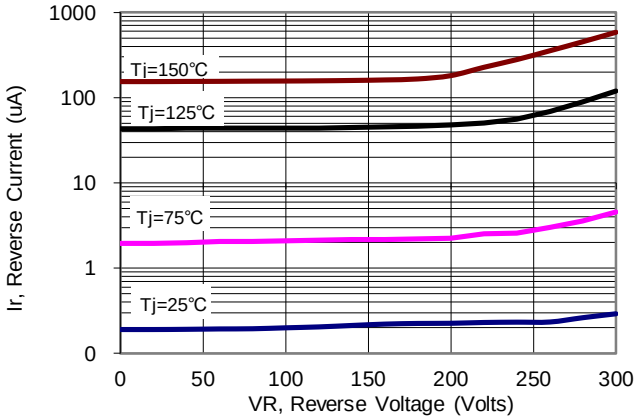



**Figure 4: Typical Reverse Current**

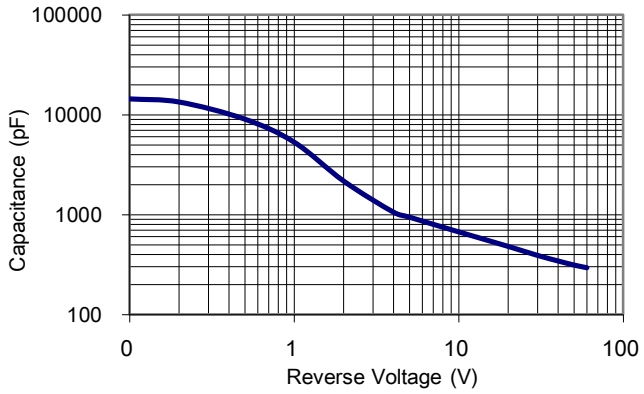
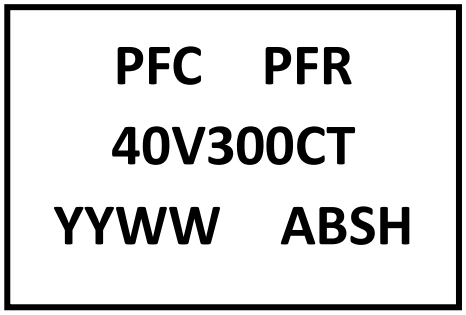


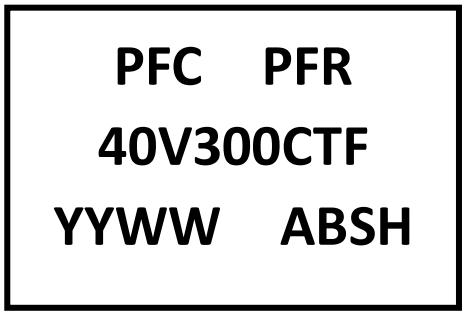

**Figure 5: Typical Junction Capacitance**

## 3. Marking information

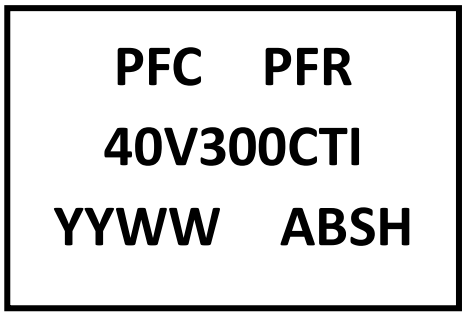
**Top Marking Rule**



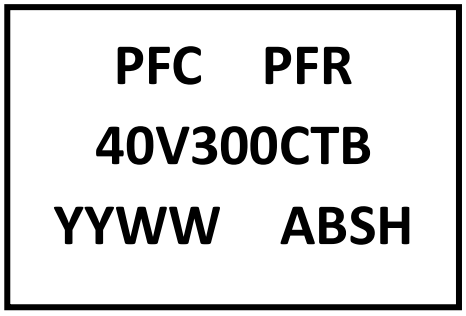

PFR40V300CT = Product Type Marking Code
YYWW = Date Code
YY = Last two digits of year
WW = Week code
AB = Assembly code
S = Series Number
H = Halogen Free (N/A = common molding compound)




PFR40V300CTF = Product Type Marking Code
YYWW = Date Code
YY = Last two digits of year
WW = Week code
AB = Assembly code
S = Series Number
H = Halogen Free (N/A = common molding compound)




PFR40V300CTI = Product Type Marking Code
YYWW = Date Code
YY = Last two digits of year
WW = Week code
AB = Assembly code
S = Series Number
H = Halogen Free (N/A = common molding compound)

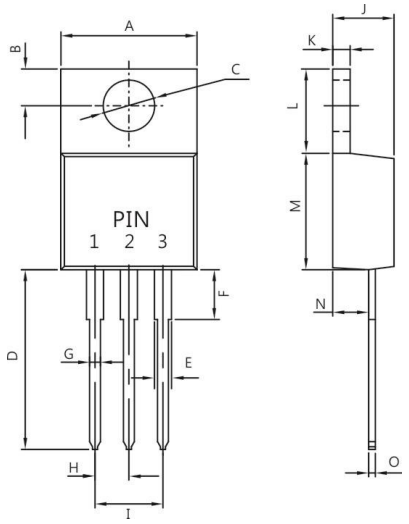



PFR40V300CTB = Product Type Marking Code
YYWW = Date Code
YY = Last two digits of year
WW = Week code
AB = Assembly code
S = Series Number
H = Halogen Free (N/A = common molding compound)

## 4. Package information

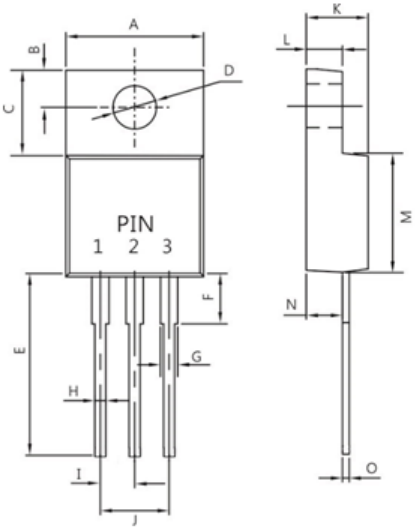
**Package Outline Dimensions millimeters**

**TO-220AB**




| Dim. | Min. | Max. |
|---|---|---|
| A | ----- | 10.50 |
| B | 2.50 | 3.50 |
| C | 3.50 | 4.10 |
| D | 13.10 | 13.90 |
| E | 1.15 | 1.49 |
| F | ----- | 4.50 |
| G | 0.65 | 0.95 |
| H | 2.29 | 2.79 |
| I | 4.80 | 5.30 |
| J | 4.40 | 4.80 |
| K | 1.14 | 1.40 |
| L | 5.84 | 6.86 |
| M | 8.50 | 9.60 |
| N | 2.03 | 2.92 |
| O | 0.30 | 0.64 |
| All Dimensions in millimeter | | |

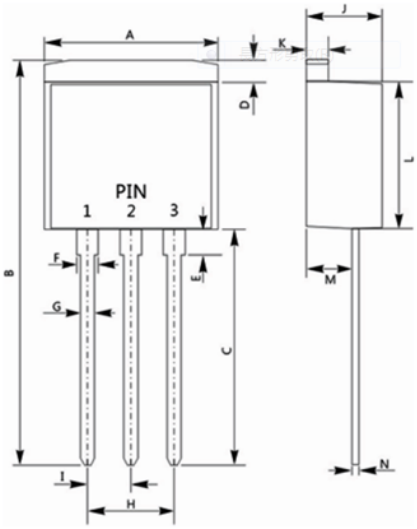
**ITO-220AB**




| Dim. | Min. | Max. |
|---|---|---|
| A | ----- | 10.50 |
| B | 2.60 | 3.00 |
| C | 6.70 | 7.10 |
| D | 2.90 | 3.50 |
| E | 13.10 | 13.90 |
| F | ----- | 4.00 |
| G | 1.11 | 1.45 |
| H | 0.40 | 0.80 |
| I | 2.40 | 2.80 |
| J | 5.00 | 5.40 |
| K | 4.30 | 4.70 |
| L | 2.90 | 3.30 |
| M | 8.20 | 9.00 |
| N | 2.50 | 2.90 |
| O | 0.40 | 0.80 |
| All Dimensions in millimeter | | |

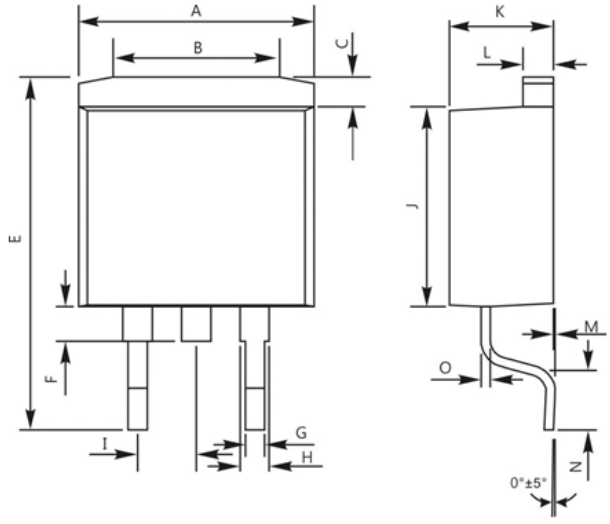
**Package Outline Dimensions millimeters**

## TO-262 ( $I^2PAK$ )




| Dim. | Min. | Max. |
|---|---|---|
| A | ----- | 10.40 |
| B | 23.44 | 24.20 |
| C | 13.25 | 14.25 |
| D | 1.27 Ref. | |
| E | ----- | 4.10 |
| F | 1.14 | 1.40 |
| G | 0.76 | 1.00 |
| H | 4.95 | 5.20 |
| I | 2.54 Ref. | |
| J | 4.40 | 4.80 |
| K | 1.25 | 1.45 |
| L | 8.60 | 9.00 |
| M | 2.50 | 2.80 |
| N | 0.35 | 0.56 |
| All Dimensions in millimeter | | |

## TO-263 ( $D^2PAK$ )




| Dim. | Min. | Max. |
|---|---|---|
| A | 9.65 | 10.69 |
| B | 7.30 Ref. | |
| C | 1.30 Ref. | |
| E | 14.70 | 15.90 |
| F | 1.5 Ref. | |
| G | 0.76 | 1.00 |
| H | 1.14 | 1.70 |
| I | 2.54 Ref. | |
| J | 8.55 | 9.50 |
| K | 4.40 | 4.85 |
| L | 1.25 | 1.50 |
| M | ---- | 0.25 |
| N | 2.30 | 2.80 |
| O | 0.36 | 0.60 |
| All Dimensions in millimeter | | |

## 5. Ordering information

| Part Number | Package | Delivery mode |
|---|---|---|
| PFR40V300CT | TO-220AB | 50 pieces / tube |
| PFR40V300CTF | ITO-220AB | 50 pieces / tube |
| PFR40V300CTI | TO-262 | 50 pieces / tube |
| PFR40V300CTB | TO-263 | 800 pieces / 13'' diameter reel |

Note: For Halogen Free molding compound, add "H" suffix to part number above.

Mechanical

- Molder Plastic: UL Flammability Classification Rating 94V-0
- Device Weight : 0.07 ounces (1.96grams) - TO-220AB
  0.06 ounces (1.74grams) - ITO-220AB
  0.05 ounces (1.45 grams) - TO-262
  0.04 ounces (1.16 grams) - TO-263

- Mounting Torque : Recommended 4~5 kg-cm.