



10A 45V Trench Schottky Diode

Applications

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

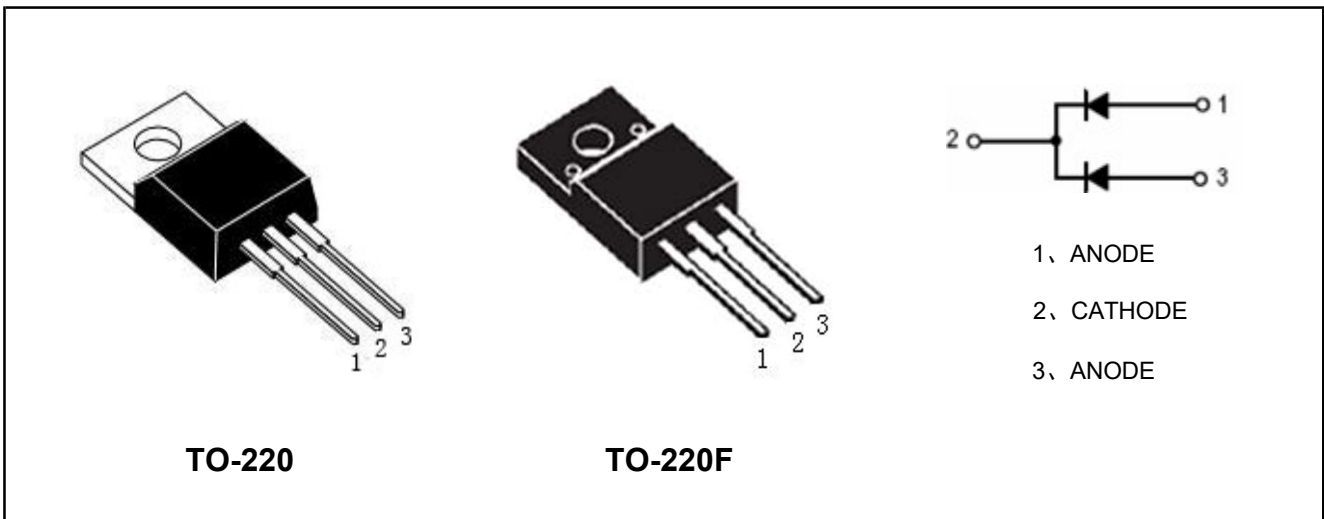
- AC-DC Adaptors
- DC-DC Converters

Features

- Schottky Barrier Chip
- Guard Ring Die Construction for Transient Protection
- Low Power Loss,High Efficiency
- High Surge Capability
- High Current Capability and Low Forward Voltage Drop
- Halogen Free and RoHS Compliant

Product Summary

|                                 |       |    |
|---------------------------------|-------|----|
| $V_{RRM}$                       | 45    | V  |
| $I_F@T_c=25^{\circ}C$           | 5 x 2 | A  |
| $V_{F,TYP}@5A,T_c=25^{\circ}C$  | 0.45  | V  |
| $V_{F,TYP}@5A,T_c=125^{\circ}C$ | 0.38  | V  |
| $I_{R,MAX}@T_c=25^{\circ}C$     | 0.3   | mA |



| Marking   | Package | Packaging | Min. package quantity |
|-----------|---------|-----------|-----------------------|
| MC10T45CT | TO-220  | Tube      | 1000                  |
| MF10T45CT | TO-220F | Tube      | 1000                  |





### ■ Absolute Maximum Ratings (Tc=25°C unless otherwise noted)

| Parameter   | Symbol            | Ratings | Unit |
|---|-------------------|---------|------|
| Peak Repetitive Reverse Voltage   | $V_{RRM}$         | 45      | V    |
| Surge Peak Reverse Voltage  | $V_{RSM}$         |         | V    |
| DC Peak Blocking Voltage  | $V_R$             |         | V    |
| Continuous Forward Current  | $I_{F(per\ leg)}$ | 5       | A    |
|   | $I_{F(total)}$    | 10      | A    |
| Non-Repetitive Peak Surge Current((Surge applied at rated load conditions halfwave,single phase,60HZ) | $I_{FSM}$         | 200     | A    |
| Junction Temperature  | $T_j$             | 150     | °C   |
| Storage Temperature   | $T_{stg}$         | -55-150 | °C   |

### ■ Thermal Characteristics

| Parameter                   | Symbol          | Package | Max | Unit |
|-----------------------------|-----------------|---------|-----|------|
| Maximum Junction-to-Case    | $R_{\theta JC}$ | TO-220  | 2   | °C/W |
|                             | $R_{\theta JC}$ | TO-220F | 4   | °C/W |
| Maximum Junction-to-Ambient | $R_{\theta JA}$ | TO-220  | 60  | °C/W |
|                             | $R_{\theta JA}$ | TO-220F | 60  | °C/W |

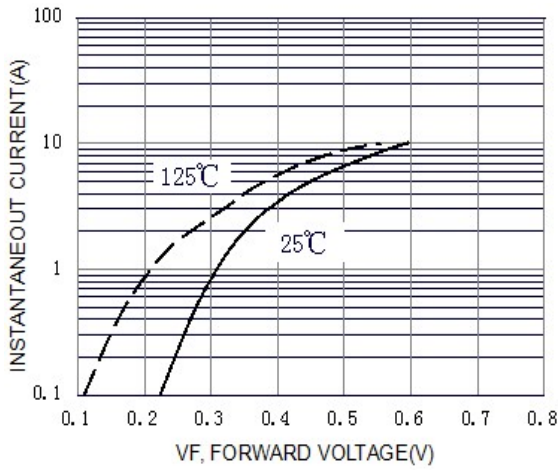
### ■ Electrical Characteristics (Per Leg) (Tc=25°C unless otherwise noted)

| Parameter       | Symbol | Test Condition             | Min | Typ  | Max | Unit |
|-----------------|--------|----------------------------|-----|------|-----|------|
| Forward Voltage | $V_F$  | $I_F=3A, T_J=25^\circ C$   | -   | 0.39 |     | V    |
|                 |        | $I_F=3A, T_J=125^\circ C$  | -   | 0.32 |     | V    |
|                 |        | $I_F=5A, T_J=25^\circ C$   | -   | 0.45 |     | V    |
|                 |        | $I_F=5A, T_J=125^\circ C$  | -   | 0.38 |     | V    |
| Reverse Current | $I_R$  | $V_R=45V, T_J=25^\circ C$  | -   | 0.06 | 0.3 | mA   |
|                 |        | $V_R=45V, T_J=125^\circ C$ | -   | -    | 100 | mA   |

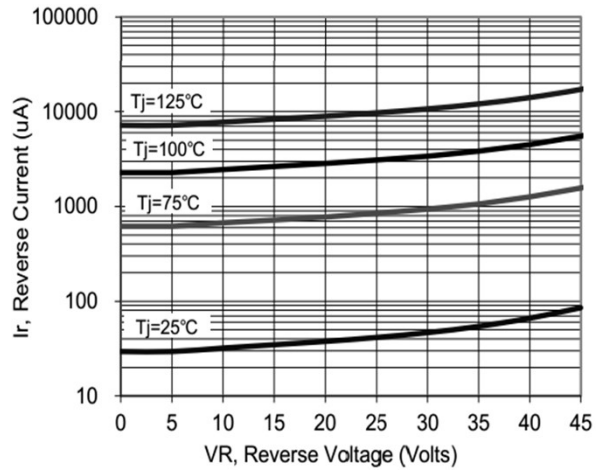




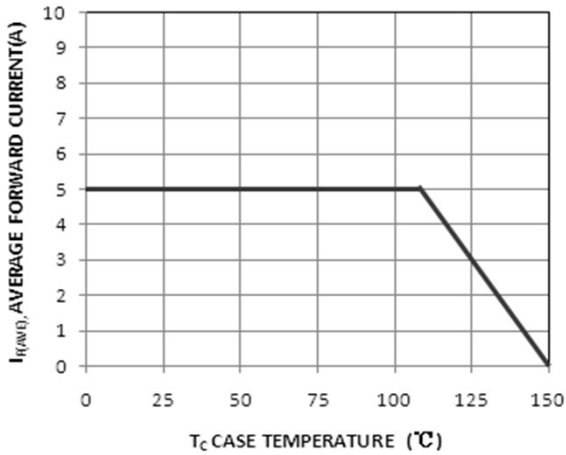
■ Characteristics Curves



Forward Characteristics Per Diode



Reverse Characteristics Per Diode

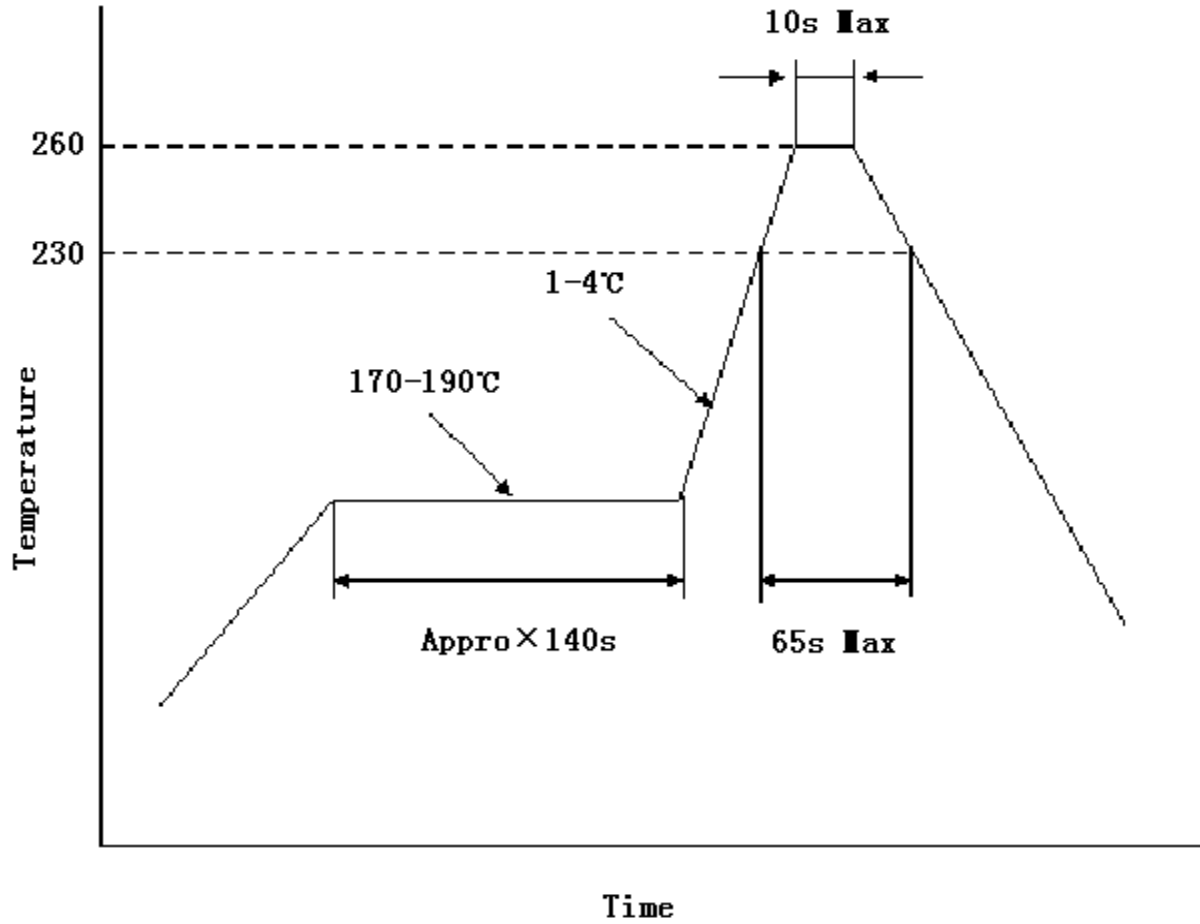


Current Derating Per Diode





■ Reflow Soldering Temperature Profile

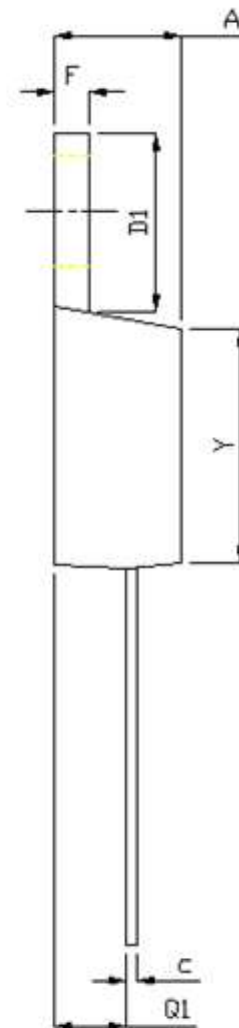
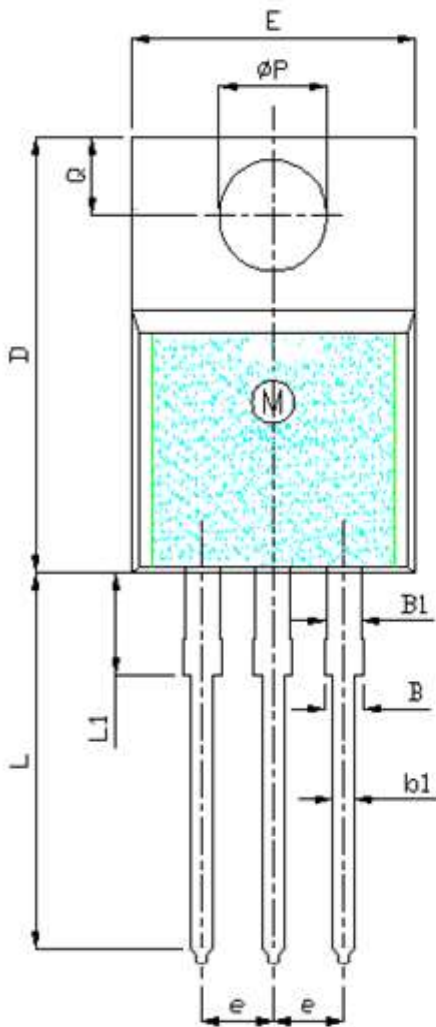




TO-220 Package Dimensions

Unit: mm

| Symbol | Min   | Nom | Max   | Symbol | Min   | Nom  | Max   |
|--------|-------|-----|-------|--------|-------|------|-------|
| A      | 4.00  |     | 4.80  | e      | 2.44  | 2.54 | 2.64  |
| B      | 1.20  |     | 1.40  | F      | 1.10  |      | 1.40  |
| B1     | 1.00  |     | 1.40  | L      | 12.50 |      | 14.50 |
| b1     | 0.75  |     | 0.95  | L1     | 3.00  | 3.50 | 4.00  |
| c      | 0.40  |     | 0.55  | ΦP     | 3.70  | 3.80 | 3.90  |
| D      | 15.00 |     | 16.50 | Q      | 2.50  |      | 3.00  |
| D1     | 5.90  |     | 6.90  | Q1     | 2.00  |      | 2.90  |
| E      | 9.90  |     | 10.70 | Y      | 8.02  | 8.12 | 8.22  |





TO-220F Package Dimensions

Unit: mm

| Symbol | Min  | Nom | Max  | Symbol | Min  | Nom  | Max   |
|--------|------|-----|------|--------|------|------|-------|
| A      | 4.5  |     | 4.9  | E1     | 6.5  | 7    | 7.5   |
| A1     | 2.3  |     | 2.9  | e      | 2.44 | 2.54 | 2.64  |
| b      | 0.65 |     | 0.9  | L      | 12.5 |      | 14.3  |
| b1     | 1.1  |     | 1.7  | L1     | 9.45 |      | 10.05 |
| b2     | 1.2  |     | 1.4  | L2     | 15   |      | 16    |
| c      | 0.35 |     | 0.65 | L3     | 3.2  |      | 4.4   |
| D      | 14.5 |     | 16.5 | ΦP     | 3    |      | 3.3   |
| D1     | 6.1  |     | 6.9  | Q      | 2.5  |      | 2.9   |
| E      | 9.6  |     | 10.3 |        |      |      |       |

