

SCHOTTKY RECTIFIER  
HIGH EFFICIENCY SERIES

45CKQ100

45A\*, 100V

Major Ratings and Characteristics

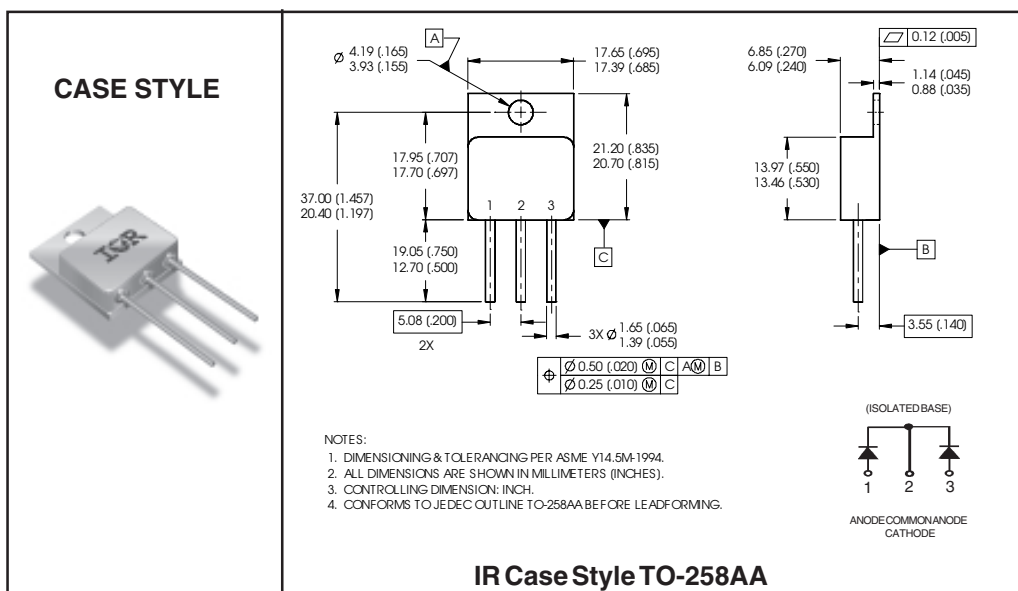
| Characteristics                               | 45CKQ100   | Units      |
|---|------------|------------|
| $I_{F(AV)}$ Rectangular waveform              | 45*        | A          |
| $V_{RRM}$ (Per Leg)                           | 100        | V          |
| $I_{FSM}$ @ $t_p = 8.3ms$ half-sine (Per Leg) | 400        | A          |
| $V_F$ @ 25Apk, $T_J = 125^\circ C$ (Per Leg)  | 0.74       | V          |
| $T_J, T_{stg}$ Operating and storage          | -55 to 150 | $^\circ C$ |

\* $I_{F(AV)}$  current is limited by pin diameter

Description/Features

The 45CKQ100 center tap Schottky rectifier has been expressly designed to meet the rigorous requirements of hi-rel environments. It is packaged in the hermetic isolated TO-258AA package. The device's forward voltage drop and reverse leakage current are optimized for the lowest power loss and the highest circuit efficiency for typical high frequency switching power supplies and resonant power converters. Full MIL-PRF-19500 quality conformance testing is available on source controlled drawings to TX, TXV and S levels.

- Hermetically Sealed
- Center Tap
- Low Forward Voltage Drop
- High Frequency Operation
- Guard Ring for Enhanced Ruggedness and Long Term Reliability
- Electrically Isolated



**Voltage Ratings**

|   |          |
|---|----------|
| Part number   | 45CKQ100 |
| $V_R$ Max. DC Reverse Voltage (V) (Per Leg)               | 100      |
| $V_{RWM}$ Max. Working Peak Reverse Voltage (V) (Per Leg) |          |

**Absolute Maximum Ratings**

| Parameters   | Limits | Units | Conditions  |
|--|--------|-------|---|
| $I_{F(AV)}$ Max. Average Forward Current<br>See Fig. 5                 | 45*    | A     | 50% duty cycle @ $T_C = 100^\circ\text{C}$ , rectangular waveform<br>* $I_{F(AV)}$ current is limited by pin diameter |
| $I_{FSM}$ Max. Peak One Cycle Non - Repetitive Surge Current (Per Leg) | 400    | A     | @ $t_p = 8.3$ ms half-sine  |

**Electrical Specifications**

| Parameters  | Limits | Units | Conditions  |                           |
|---|--------|-------|---|---------------------------|
| $V_{FM}$ Max. Forward Voltage Drop<br>(Per Leg) See Fig. 1 ①    | 0.89   | V     | @ 25A   | $T_J = 25^\circ\text{C}$  |
|   | 1.13   | V     | @ 45A   |                           |
|   | 0.74   | V     | @ 25A   | $T_J = 125^\circ\text{C}$ |
|   | 0.97   | V     | @ 45A   |                           |
| $I_{RM}$ Max. Reverse Leakage Current<br>(Per Leg) See Fig. 2 ① | 0.8    | mA    | $T_J = 25^\circ\text{C}$  | $V_R = \text{rated } V_R$ |
|   | 45     | mA    | $T_J = 125^\circ\text{C}$   |                           |
| $C_T$ Max. Junction Capacitance (Per Leg)                       | 1400   | pF    | $V_R = 5V_{DC}$ ( 1MHz, $25^\circ\text{C}$ )                              |                           |
| $L_S$ Typical Series Inductance (Per Leg)                       | 8.7    | nH    | Measured from anode lead to cathode lead<br>6mm ( 0.025 in.) from package |                           |

**Thermal-Mechanical Specifications**

| Parameters   | Limits     | Units                     | Conditions              |
|--|------------|---------------------------|-------------------------|
| $T_J$ Max. Junction Temperature Range                              | -55 to 150 | $^\circ\text{C}$          |                         |
| $T_{stg}$ Max. Storage Temperature Range                           | -55 to 150 | $^\circ\text{C}$          |                         |
| $R_{thJC}$ Max. Thermal Resistance, Junction to Case (Per Leg)     | 0.83       | $^\circ\text{C}/\text{W}$ | DC operation See Fig. 4 |
| $R_{thJC}$ Max. Thermal Resistance, Junction to Case (Per Package) | 0.42       | $^\circ\text{C}/\text{W}$ | DC operation            |
| wt Weight (Typical)  | 10.9       | g                         |                         |
| Die Size   | 150X150    | mils                      |                         |
| Case Style   | TO-258AA   |                           |                         |

① Pulse Width < 300 $\mu\text{s}$ , Duty Cycle < 2%

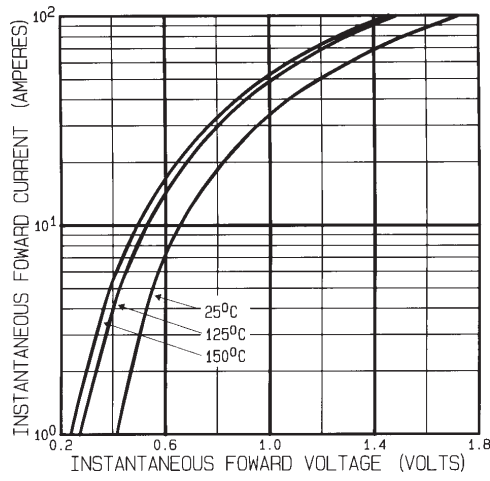


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

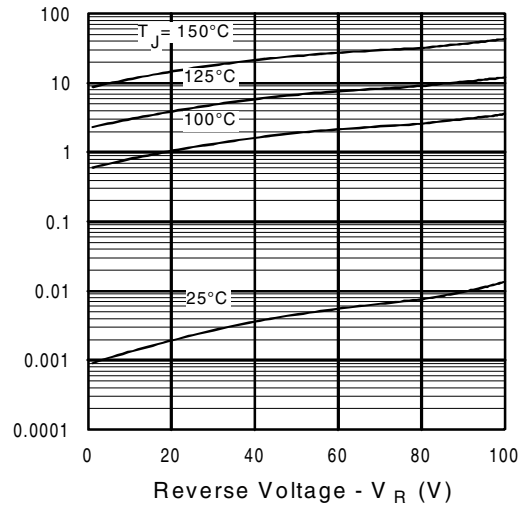


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage (Per Leg)

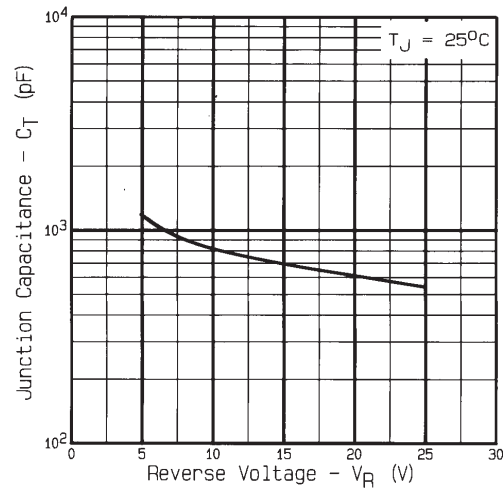


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

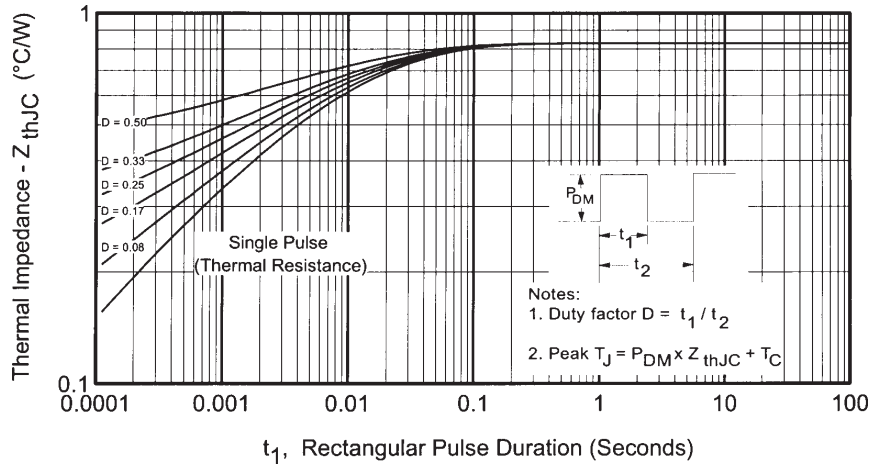


Fig. 4 - Max. Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

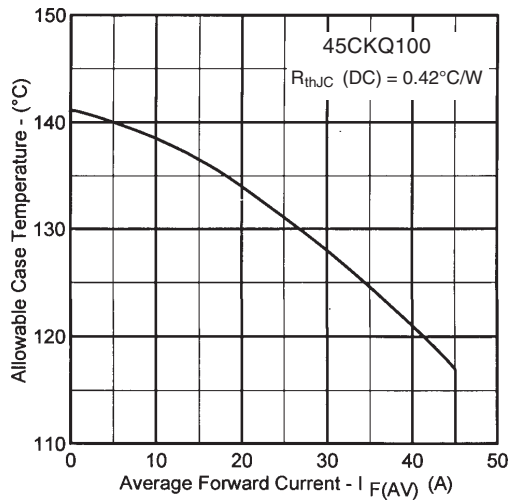


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current