

International IOR Rectifier

40L40CW
40L45CW

SCHOTTKY RECTIFIER

2 x 20 Amps

$I_{F(AV)} = 40\text{Amp}$
 $V_R = 40 - 45\text{V}$

Major Ratings and Characteristics

| Characteristics | Values | Units |
|--|------------|------------------|
| $I_{F(AV)}$ Rectangular waveform | 40 | A |
| V_{RRM} | 40 - 45 | V |
| I_{FSM} @ tp = 5 μ s sine | 1240 | A |
| V_F @ 20 Apk, $T_J = 125^\circ\text{C}$ (per leg, Typical) | 0.42 | V |
| T_J | -55 to 150 | $^\circ\text{C}$ |

Description/ Features

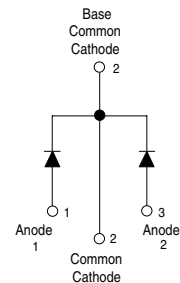
The 40L..CW center tap Schottky rectifier has been optimized for very low forward voltage drop, with moderate leakage. The proprietary barrier technology allows for reliable operation up to 150° C junction temperature. Typical applications are in switching power supplies.

- 150° C T_J operation
- Center tap TO-247 package
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability

Case Styles



TO-247AC



40L40CW, 40L45CW

Bulletin PD-20566 rev. C 10/06



Voltage Ratings

| Part number | 40L40CW | 40L45CW |
|--|---------|---------|
| V _R Max. DC Reverse Voltage (V) | 40 | 45 |
| V _{RWM} Max. Working Peak Reverse Voltage (V) | | |

Absolute Maximum Ratings

| Parameters | 40L..CW | Units | Conditions |
|--|-------------|-------|---|
| I _{F(AV)} Max. Average Forward Current (Per Leg) * See Fig. 5 (Per Device) | 20 40 | A | 50% duty cycle @ T _C = 122 °C, rectangular wave form |
| I _{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7 | 1240 350 | A | 5µs Sine or 3µs Rect. pulse 10ms Sine or 6ms Rect. pulse Following any rated load condition and with rated V _{RRM} applied |
| E _{AS} Non-Repetitive Avalanche Energy (Per Leg) | 20 | mJ | T _J = 25 °C, I _{AS} = 3 Amps, L = 4.4 mH |
| I _{AR} Repetitive Avalanche Current (Per Leg) | 3 | A | Current decaying linearly to zero in 1 µsec Frequency limited by T _J max. V _A = 1.5 x V _R typical |

Electrical Specifications

| Parameters | 40L..CW | | Units | Conditions | |
|--|---------|------|-------|---|---------------------------------------|
| | Typ. | Max. | | | |
| V _{FM} Forward Voltage Drop (Per Leg) * See Fig. 1 (1) | 0.48 | 0.53 | V | @ 20A | T _J = 25 °C |
| | 0.61 | 0.69 | V | @ 40A | |
| | 0.42 | 0.49 | V | @ 20A | T _J = 125 °C |
| | 0.60 | 0.70 | V | @ 40A | |
| I _{RM} Reverse Leakage Current (Per Leg) * See Fig. 2 (1) | - | 1.5 | mA | T _J = 25 °C | V _R = rated V _R |
| | 20 | 80 | mA | T _J = 100 °C | |
| V _{F(TO)} Threshold Voltage | 0.27 | | V | T _J = T _J max. | |
| r _t Forward Slope Resistance | 8.72 | | mΩ | | |
| C _T Max. Junction Capacitance (Per Leg) | - | 1500 | pF | V _R = 5V _{DC} (test signal range 100Khz to 1Mhz) 25°C | |
| L _S Typical Series Inductance (Per Leg) | 7.5 | - | nH | Measured lead to lead 5mm from package body | |
| dv/dt Max. Voltage Rate of Change | 10000 | | V/µs | (Rated V _R) | |

Thermal-Mechanical Specifications

(1) Pulse Width < 300µs, Duty Cycle <2%

| Parameters | 40L..CW | Units | Conditions |
|--|-----------------|---------|--------------------------------------|
| T _J Max. Junction Temperature Range | -55 to 150 | °C | |
| T _{stg} Max. Storage Temperature Range | -55 to 150 | °C | |
| R _{thJC} Max. Thermal Resistance Junction to Case (Per Leg) | 1.6 | °C/W | DC operation * See Fig. 4 |
| R _{thJC} Max. Thermal Resistance Junction to Case (Per Package) | 0.8 | °C/W | DC operation |
| R _{thCS} Typical Thermal Resistance, Case to Heatsink | 0.24 | °C/W | Mounting surface, smooth and greased |
| wt Approximate Weight | 6 (0.21) | g (oz.) | |
| T Mounting Torque | Min. | 6 (5) | Non-lubricated threads |
| | Max. | 12 (10) | |
| Case Style | TO-247AC(TO-3P) | JEDEC | |
| Marking Device | 40L40CW | | |
| | 40L45CW | | |

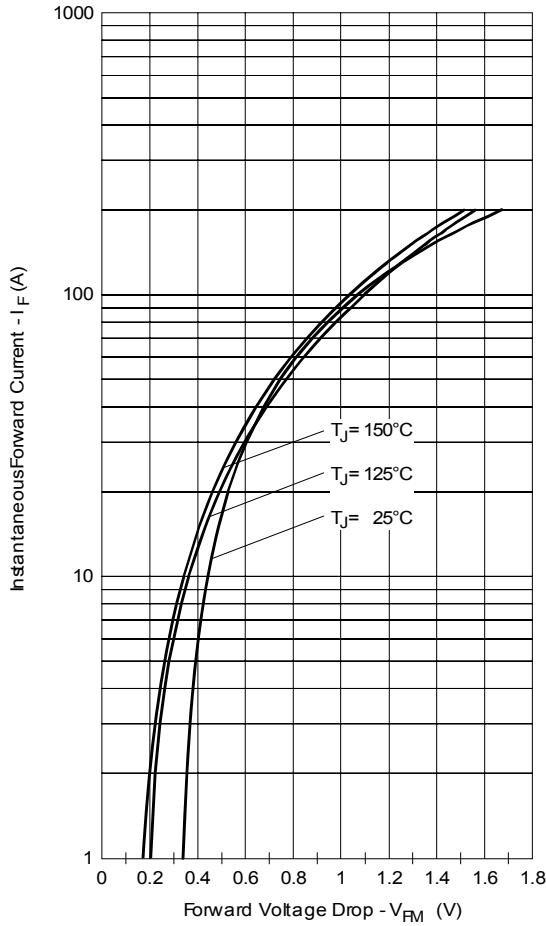


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

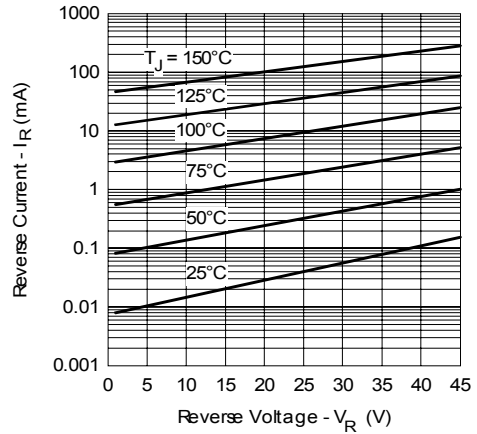


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

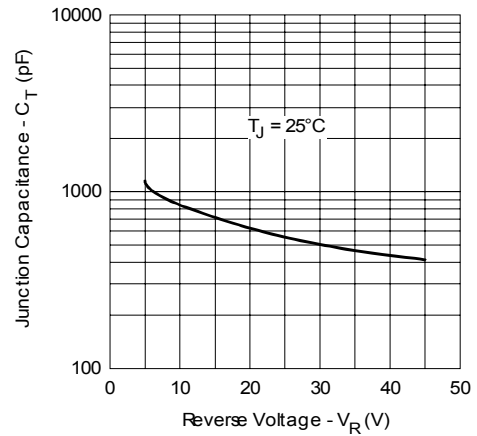


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

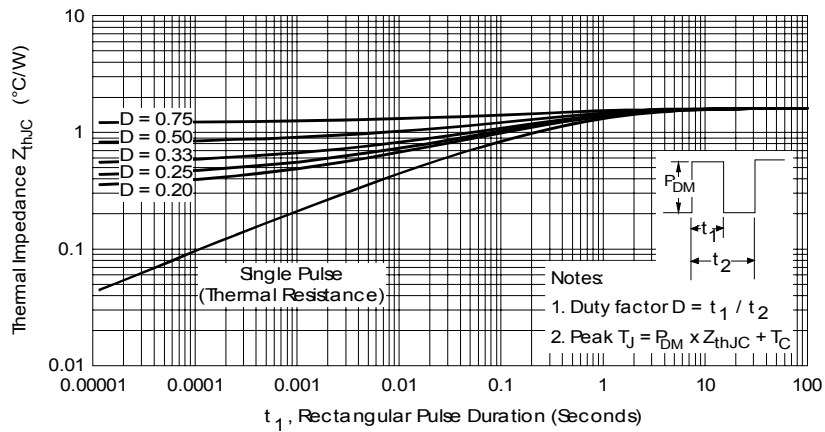


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

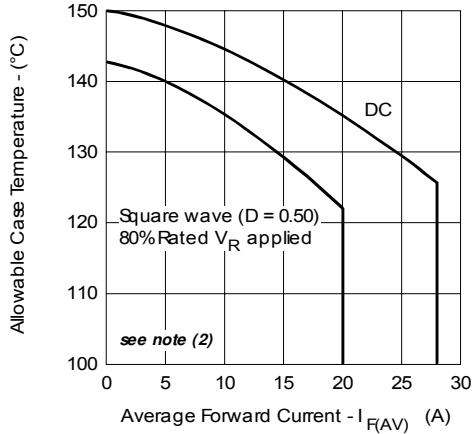


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

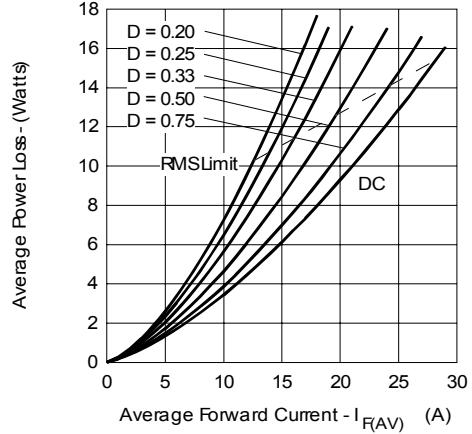


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

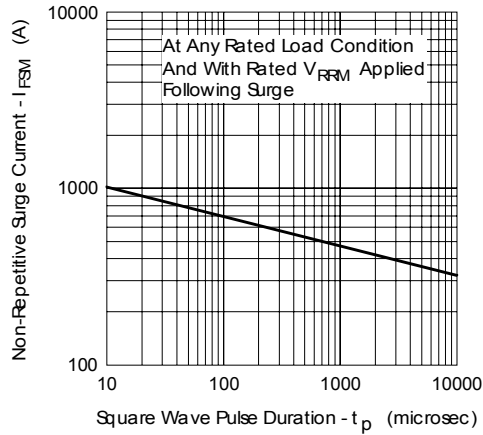


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

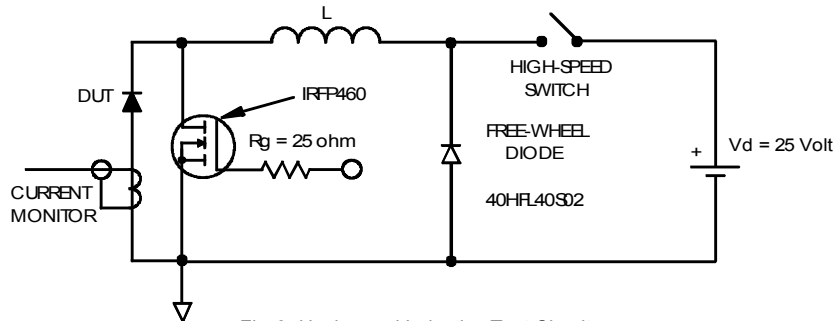


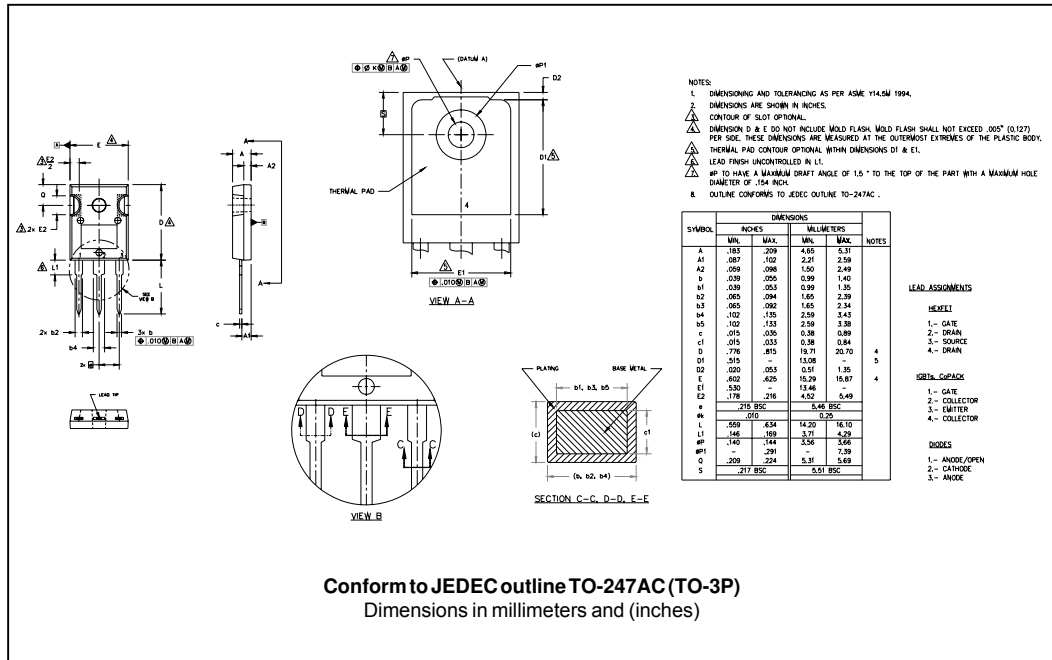
Fig. 8 - Unclamped Inductive Test Circuit

(2) Formula used: $T_c = T_j - (Pd + Pd_{REV}) \times R_{thJC}$;

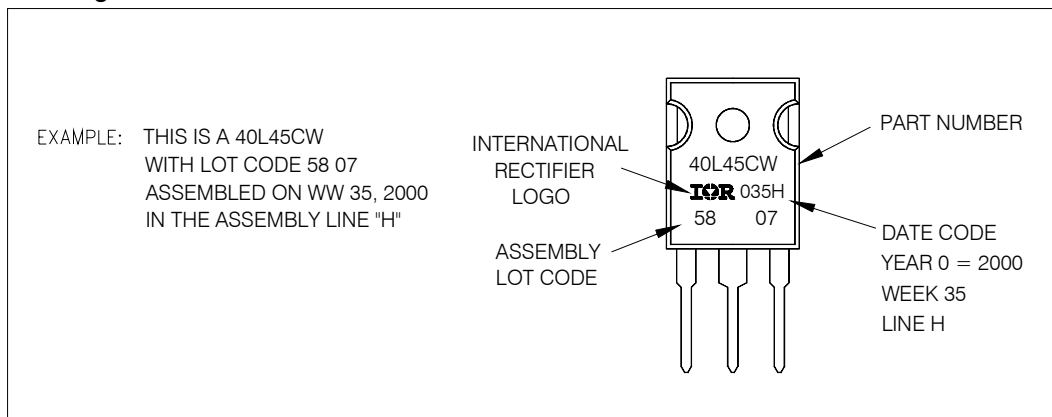
Pd = Forward Power Loss = $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);

Pd_{REV} = Inverse Power Loss = $V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1} = 80\%$ rated V_R

Outline Table



Marking Information



Ordering Information Table

| Device Code | | | | | |
|---|---|---|---|----------------------|---|
| 40 | L | 45 | C | W | - |
| ① | ② | ③ | ④ | ⑤ | ⑥ |
| 1 | - | Current Rating (40 = 40A) | | | |
| 2 | - | Schottky "L" Series | | | |
| 3 | - | Voltage Code | | 40 = 40V 45 = 45V | |
| 4 | - | Circuit Configuration | | | |
| | | C = Common Cathode | | | |
| 5 | - | Package | | | |
| | | W = TO-247 | | | |
| 6 | - | • none = Standard Production • PbF = Lead-Free | | | |
| Tube Standard Pack Quantity : 25 pieces | | | | | |

Data and specifications subject to change without notice.
This product has been designed and qualified for Industrial Level.
Qualification Standards can be found on IR's Web site.



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