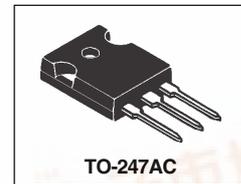


PD-20566 rev. A 11/99

International
IOR Rectifier

SCHOTTKY RECTIFIER

40L45CW
2 x 20 Amps



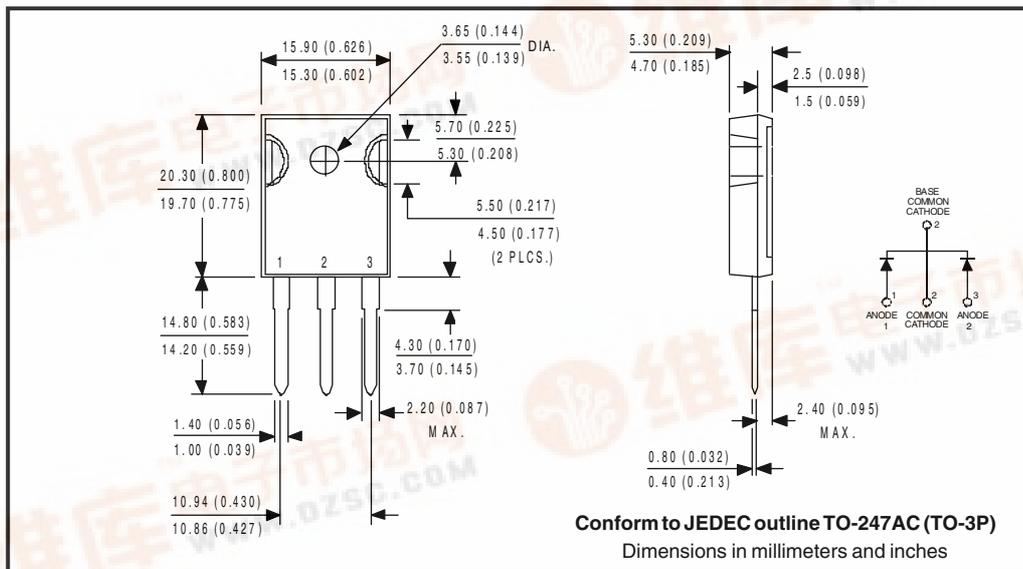
Major Ratings and Characteristics

Characteristics	40L45CW	Units
$I_{F(AV)}$ Rectangular waveform	40	A
V_{RRM}	45	V
I_{FSM} @ tp=5 μ s sine	1240	A
V_F @ 20Apk, $T_J=125^\circ\text{C}$ (per leg, Typical)	0.42	V
T_J	-55 to 150	$^\circ\text{C}$

Description/Features

The 40L45CW 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 $^\circ\text{C}$ junction temperature. Typical applications are in switching power supplies.

- 150 $^\circ\text{C}$ 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



40L45CW

PD-20566 rev. A 11/99

Voltage Ratings

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

Absolute Maximum Ratings

Parameters	40L45CW	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 waveform
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	40L45CW		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 (Rated V _R)	10,000		V/ µs		

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

Thermal-Mechanical Specifications

Parameters	40L45CW	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	

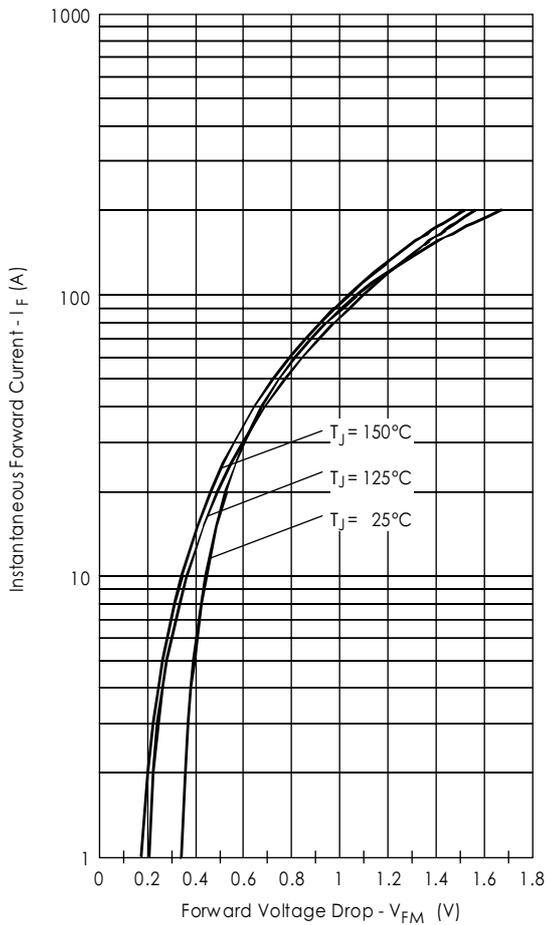


Fig. 1 - Max. Forward Voltage Drop Characteristics (PerLeg)

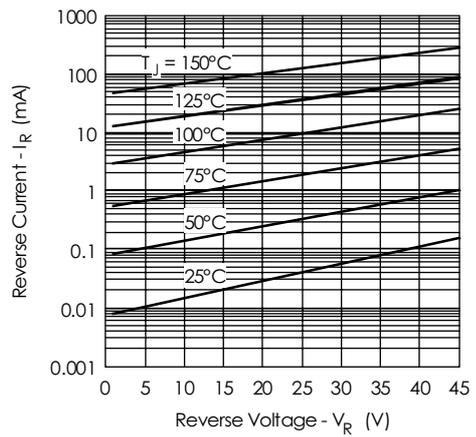


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (PerLeg)

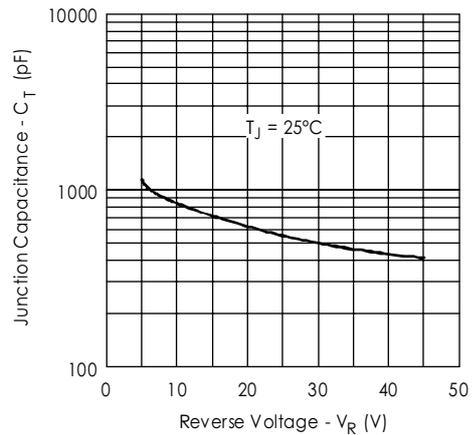


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (PerLeg)

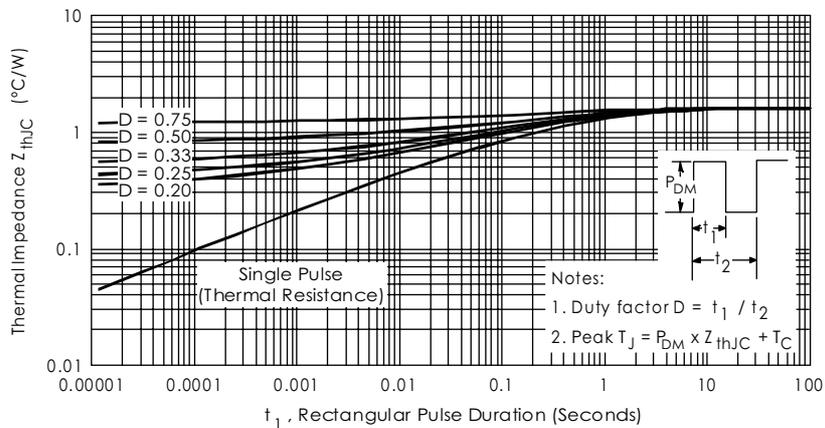


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (PerLeg)

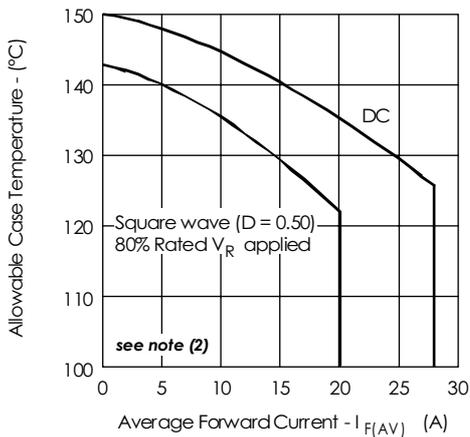


Fig. 5- Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

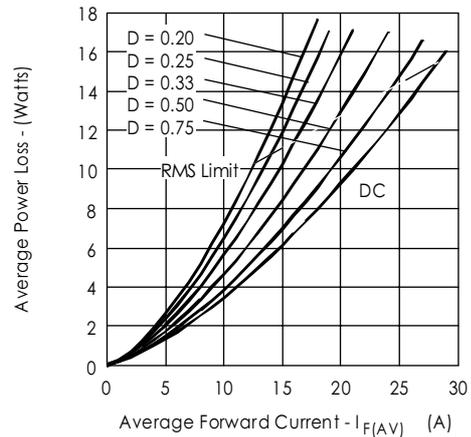


Fig. 6- Forward Power Loss Characteristics (Per Leg)

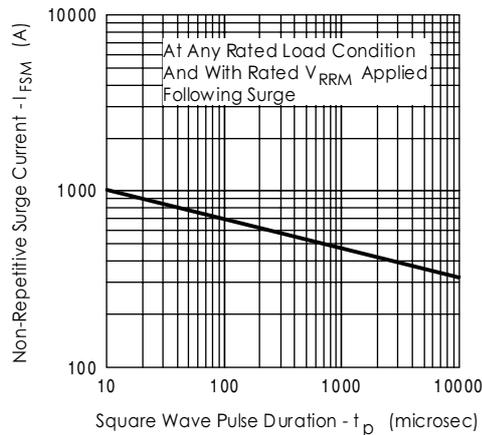


Fig. 7- Max. Non-Repetitive Surge Current (Per Leg)

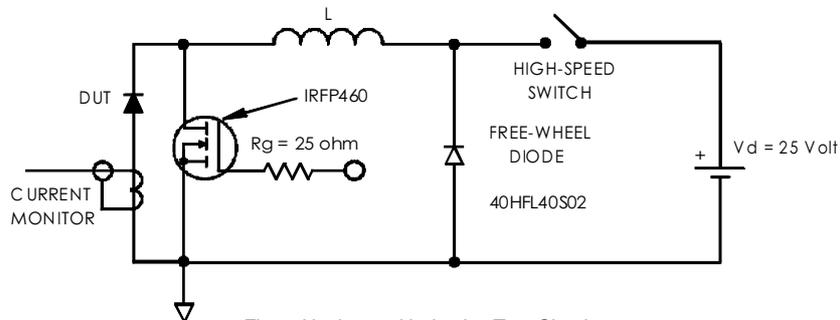


Fig. 8- Unclamped Inductive Test Circuit

(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

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