

# HERMETIC SCHOTTKY RECTIFIERS

## 6 Amp, 45 Volts

USD245C  
 USD245CHR2  
 USD245CR  
 USD245CRHR2

### FEATURES

- MIL-S-19500 Type Screening Available
- Extremely Low  $V_F$  and  $I_R$
- High Surge Capability
- Low Recovered Charge
- Rugged Hermetic Package, No Pressure Contacts
- Dual Rectifier in One Package
- Available in Reverse Polarity (CR)

### DESCRIPTION

The USD245C series hermetic Schottky rectifier is ideally suited for output rectifiers and PWM protection in high efficiency, low voltage, high reliability switching power supplies. The series combines Schottky rectifiers in one convenient package; thus simplifying installation and reducing component parts count.

### ABSOLUTE MAXIMUM RATINGS (Either leg, unless noted.)

Peak Repetitive Reverse Voltage, $V_{RRM}$ .....	45V
Working Peak Reverse Voltage, $V_{RWM}$ .....	45V
DC Blocking Voltage, $V_R$ .....	45V
Non-Repetitive Peak Reverse Voltage, $V_{RSM}$ .....	54V
Average Forward Current (50% Duty Cycle), $I_{F(AV)}$ , Full Wave Configuration .....	6A
Either Leg Alone .....	4A
$T_{CASE} = 100^\circ C$	
$V_{RWM} = 45V$	
Average Forward Current (50% Duty Cycle), $I_{F(AV)}$ (Note 1), Either Leg Alone .....	2A
$R_{\theta C-A} = 68^\circ C/W$ , $I_A = 25^\circ C$	
$V_{RWM} = 45V$	
Non-Repetitive Peak Surge Current, $I_{FSM}$ .....	80A
8.3rms, Half Sine Wave	
Operating and Storage Junction Temperature Range, $T_{OP}$ , $T_{STG}$ .....	$-65^\circ C$ to $+175^\circ C$
Thermal Resistance, Junction to Ambient, $R_{\theta J-A}$ .....	$175^\circ C/W$
Thermal Resistance, Junction to Case, $R_{\theta J-C}$ .....	$15^\circ C/W$

**Note:** 1. Using Wakefield Type 205 heatsink with convection cooling.  
 For more definitive data refer to the Output vs Temperature curves on this data sheet.

### MECHANICAL SPECIFICATIONS

**USD245C SERIES**

	MILLIMETERS	INCHES
A	0.72-0.86	0.028-0.034
B	0.88	0.035
C	5.08	0.20
D	9.14 DIA.	0.36 DIA.
E	8.25 DIA.	0.325 DIA.
F	4.30-4.57	0.169-0.180
G	18.03 REF.	0.71 REF.
H	0.41-0.53 DIA.	0.016-0.021 DIA.
J	12.70-14.22	0.50-0.56
K	0.36-0.45	0.014-0.018

All Dimensions in Inches and Millimeters

**TO-205AF (TO-39)**





**ELECTRICAL CHARACTERISTICS PER LEG** ( $T_j = 25^\circ\text{C}$ )

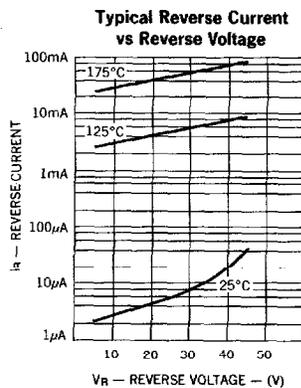
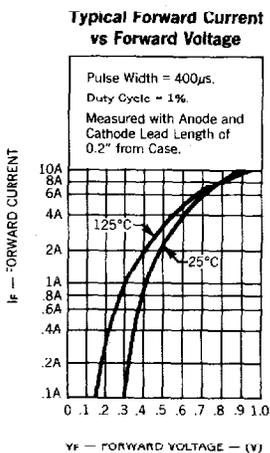
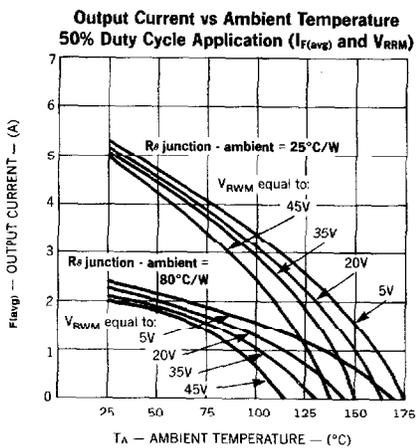
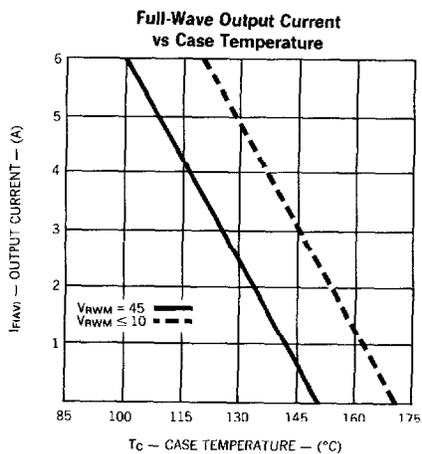
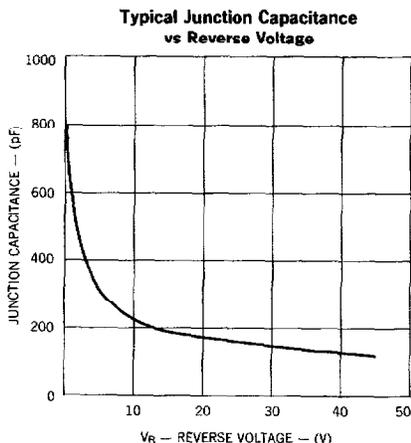
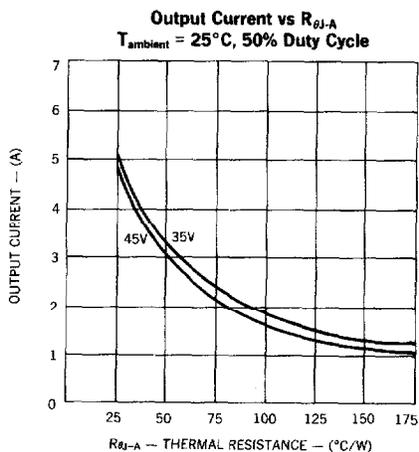
CHARACTERISTICS	SYMBOL	LIMIT	UNITS	CONDITIONS	
Maximum Instantaneous Reverse Current	$i_R$	2	mA	$V_R = 45\text{V}$ Pulse Width = $400\mu\text{s}$ Duty Cycle = 1%	
Maximum Instantaneous Reverse Current	$i_R$	20	mA	$V_R = 45\text{V}$ Pulse Width = $400\mu\text{s}$ Duty Cycle = 1% $T_C = 125^\circ\text{C}$	
Maximum Instantaneous Forward Voltage (Note 1)	$V_F$	0.48	V	$i_F = 1\text{A}$	Pulse Width = $400\mu\text{s}$ Duty Cycle = 1%
		0.56		$i_F = 2\text{A}$	
		0.68		$i_F = 4\text{A}$	
		0.45		$i_F = 2\text{A}$ $T_j = 125^\circ\text{C}$	
Capacitance	$C_T$	450	pF	$V_R = 5\text{V}$	
Voltage Rate of Change	$dv/dt$	1000	V/ $\mu\text{s}$	$V_R = 45\text{V}$	

Note: 1. Measured with anode and cathode lead length of 0.2" from case.

**OPTIONAL HIGH RELIABILITY (HR2) SCREENING**

The following tests are performed on 100% of the devices specified USD245CHR2 and USD245CRHR2.

SCREEN	MIL-STD-750 METHOD	CONDITIONS
1. High Temperature	1032	24 Hours @ $T_A = 150^\circ\text{C}$
2. Temperature Cycle	1051	F, 20 Cycles, $-55$ to $+150^\circ\text{C}$ . No dwell required @ $25^\circ\text{C}$ , $t \geq 10$ min. @ extremes
3. Hermetic Seal a. Fine Leak b. Gross Leak	1071	H, Helium C, Liquid
4. Thermal Impedance		Sage Test
5. Interim Electrical Parameters	GO/NO GO	$V_F$ and $I_R$ @ $25^\circ\text{C}$
6. High Temperature Reverse Blocking	Similar to Method 1040	$\frac{1}{2}$ Sine Reverse, $t = 48$ Hours, $T_C = 125^\circ\text{C}$ , $VRW_M = \text{rating}$ , $F = 50-60$ Hz, $I_O = OA$
7. Final Electrical Parameters	GO/NO GO	$V_F + I_R$ @ $25^\circ\text{C}$ PDA = 10% (Final Electricals)



NOTE: All curves, except Full-Wave Output Current, apply to either leg.