PFC Device Corporation

ESAD9202

the following features are made possible in a single device:

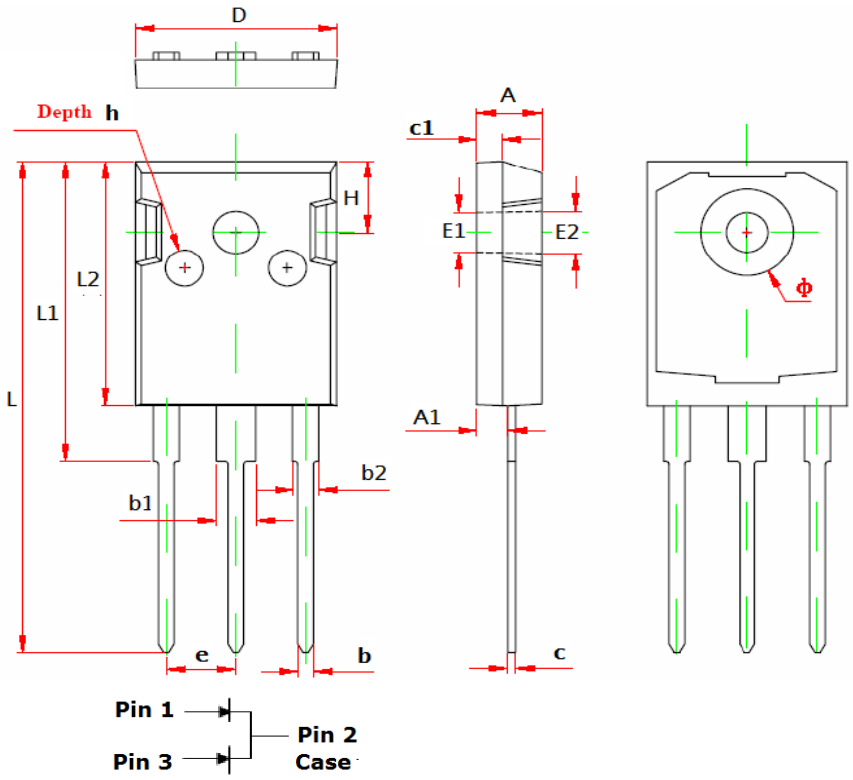
Major ratings and characteristics

Characteristics	Values	Units
$I_{F(AV)}$ Rectangular Waveform	20	A
V_{RRM}	200	V
V_F@10A, Tj=125℃	0.74	V, typ
Tj(operating/storage)	-65 to 175	℃

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

ELECTRICAL:
* Lower Forward Voltage Drop
* Reliable High Temperature Operation
* Softest, fast switching capability
* 175℃ Operating Junction Temperature
* Lead Free Finish, RoHS Compliant

MECHANICAL:
* Molded Plastic TO-247 packages
* Weight : 0.20 ounces (5.60 grams)



ESAD9202		
TO-247		
DIM	MIN	MAX
A	4.70	5.30
A1	2.10	2.60
b	1.00	1.40
b1	2.80	3.20
b2	1.80	2.20
c	0.50	0.80
c1	1.90	2.10
D	15.70	16.30
E1	3.60REF.	
E2	3.80REF.	
L	40.90	41.90
L1	24.60	26.60
L2	21.00	22.00
φ	7.00	7.40
e	5.50TYP.	
H	6.00REF.	
h	2.70REF.	
ALL Dimensions in millimeter		

Maximum Ratings and Electrical Characteristics

(at 25℃ unless otherwise specified)

	SYMBOL			*UNITS*
DC Blocking Voltage Working Peak Reverse Voltage Peak Repetitive Reverse Voltage	V_{RM} V_{RWM} V_{RRM}	200		Volts
Average Rectified Forward Current (Rated V_R-20Khz Square Wave) - 50% duty cycle	I_O	20		Amps
Peak Forward Surge Current - 1/2 60hz	I_{FSM}	250		Amps
Peak Repetitive Reverse Surge Current (2uS-1Khz)	I_{RRM}	1		Amps
Instantaneous Forward Voltage (per leg) I_F = 10A; T_J = 25℃ I_F = 10A; T_J= 125℃	V_F *	Typ 0.84 0.74	Max 0.95 0.85	Volts
Maximum Instantaneous Reverse Current at Rated V_{RM} T_J = 25℃ T_J = 125℃	I_R	Typ 80 1.2	Max 200 15	uA mA
Maximum Reverse Recovery Time (at I_F=0.1A, I_R=0.2A, Irec=0.05A)	Trr	40		nS
Maximum Rate of Voltage Change (at Rated V_R)	dv/dt	10,000		V/uS
Maximum Thermal Resistance JC (per leg) Package = TO-247	R_{thJC}	1.5		℃/W
Operating Junction Temperature	T_J	-65 to +175		℃
Storage Junction Temperature	T_{STG}	-65 to +175		℃

* Pulse width < 300 uS, Duty cycle < 2%

* Conduction Loss (Pcond) = Vto x $I_{F(av)}$ + rd x $I_F{}^2{}_{(RMS)}$ = 0.747 x $IF_{(av)}$ + 0.0092 x $IF^2{}_{(RMS)}$

$I_{F(av)}$: average forward current in the diode

$I_{F(RMS)}$: RMS forward current in the diode.

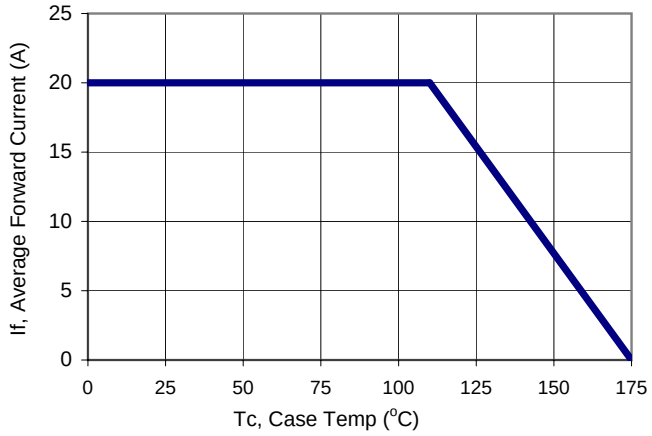


Figure 1: Current Derating, Case

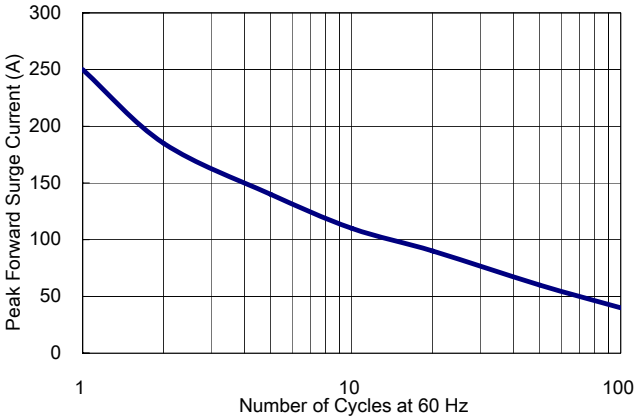


Figure 2: Maximum Repetitive Surge Current

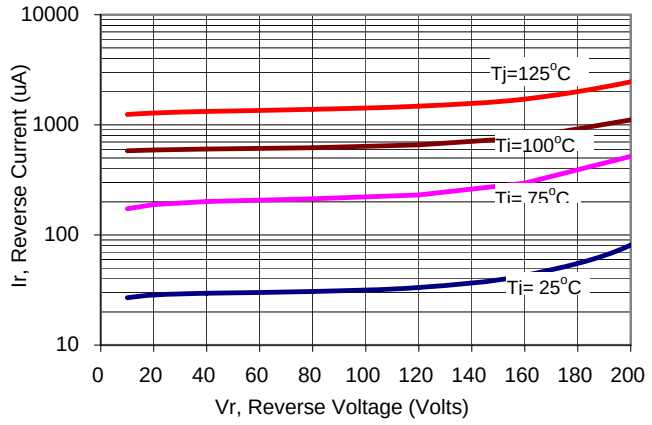


Figure 3: Typical Reverse Current

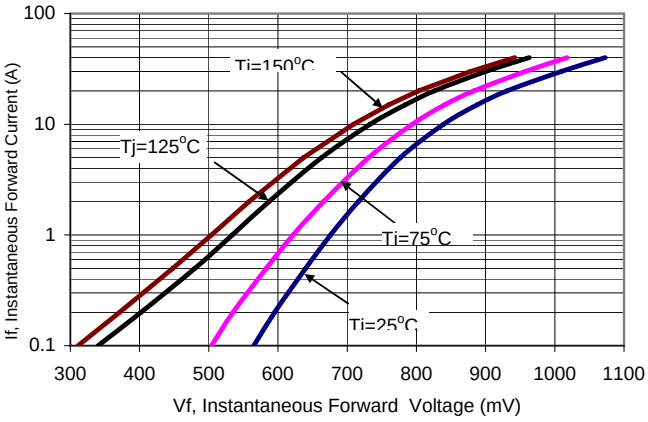


Figure 4: Typical Forward Voltage

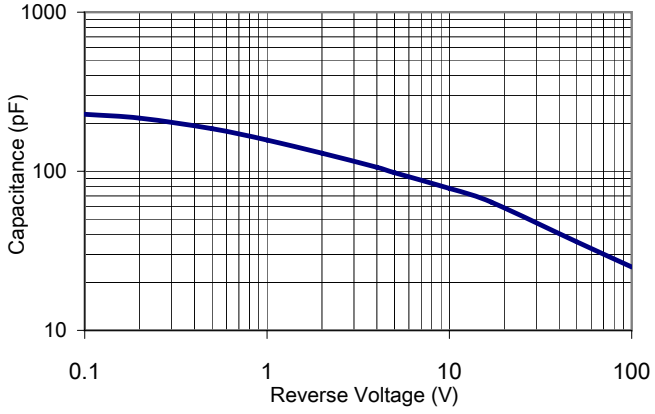


Figure 5: Typical Junction Capacitance

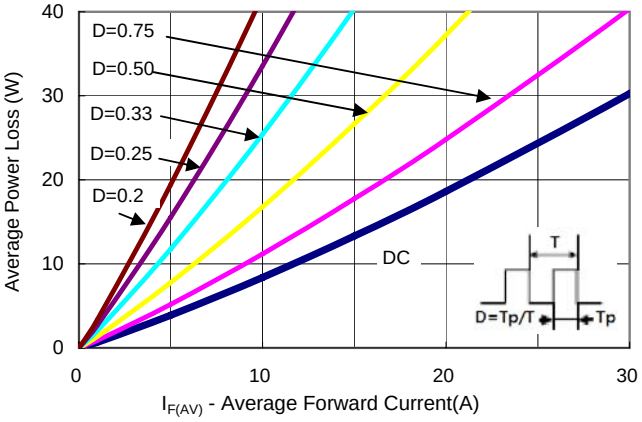


Figure 6: Forward Power Loss characteristics

Note : Formula used T_C=Tj - (Pd +Pd_{REV}) x $Rthj_C$

Pd = Forward power loss = $I_{F(AV)}$ X V_{FM} at ($I_{F(AV)}$ / D) (see figure 6)

Pd_{REV} = Inverse power loss = V_{R1} X I_R (1 -D) ; I_R at V_{R1} =10V

Ordering information

Part Number	Case	Packaging
ESAD9202	TO-247	30 pieces / tube
ESAD9202H	TO-247	30 pieces / tube

Note: For Halogen Free molding compound, add "H" suffix to part number above.

Marking information

ESAD9202 = Product Type Marking Code
YYWW = Date Code
YY = Last two digits of year
WW = Week code
AB = Assembly code
H = Halogen Free (N/A = common molding compound)