



2002-02-18

## PRODUKTINFORMATION

Vi reserverar oss mot fel samt förbehåller oss rätten till ändringar utan föregående meddelande

### **ELFA artikelnr**

**70-229-81 30CPF02 diodT0-247AC**

**70-229-99 30CPF04 diodT0-247AC**

**70-230-05 30CPF06 diodT0-247AC**

**70-233-36 30EPF02 diodT0-247**

**70-233-44 30EPF04 diodT0-247**

**70-233-51 30EPF06 diodT0-247**



**QUIETIR Series**  
**30EPF.. 30CPF..**

**FAST SOFT RECOVERY  
RECTIFIER DIODE**

$V_F < 1.2V @ 10A$   
 $t_{rr} = 60ns$   
 $V_{RRM} 200 \text{ to } 600V$

**Description/Features**

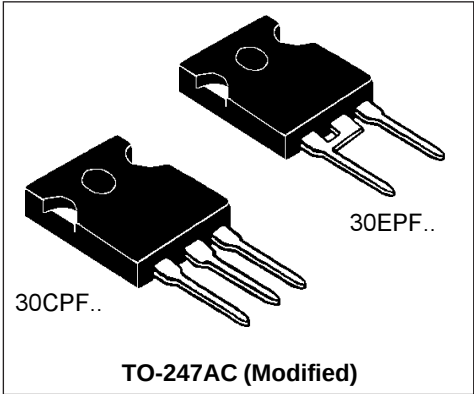
The 30EPF.. & 30CPF.. soft recovery **QUIETIR** rectifier series has been optimized for combined short reverse recovery time and low forward voltage drop.  
The glass passivation ensures stable reliable operation in the most severe temperature and power cycling conditions.

- Typical applications are:
- Output rectification and freewheeling in inverters, choppers and converters
  - and input rectifications where severe restrictions on conducted EMI should be met.
  - 30CPF series is a drop in replacement for 25CPF Series (parallel connection only)

**Major Ratings and Characteristics**

| Characteristics                 | 30EPF..<br>30CPF.. | Units       |
|---------------------------------|--------------------|-------------|
| $I_{F(AV)}$ Sinusoidal waveform | 30                 | A           |
| $V_{RRM}$                       | 200 to 600         | V           |
| $I_{FSM}$                       | 350                | A           |
| $V_F @ 10A, T_J = 25^{\circ}C$  | 1.2                | V           |
| $t_{rr} @ 1A, 100A/\mu s$       | 60                 | ns          |
| $T_J$                           | -40 to 150         | $^{\circ}C$ |

**Package Outline**



## Voltage Ratings

| Part Number      | $V_{RRM}$ , maximum peak reverse voltage<br>V | $V_{RSM}$ , maximum non repetitive peak reverse voltage<br>V | $I_{RRM}$<br>150°C<br>mA |
|------------------|-----------------------------------------------|--------------------------------------------------------------|--------------------------|
| 30EPF02, 30CPF02 | 200                                           | 300                                                          | 2                        |
| 30EPF04, 30CPF04 | 400                                           | 500                                                          |                          |
| 30EPF06, 30CPF06 | 600                                           | 700                                                          |                          |

## Absolute Maximum Ratings

| Parameters                                                 | 30.PF.. | Units         | Conditions                                                  |
|------------------------------------------------------------|---------|---------------|-------------------------------------------------------------|
| $I_{F(AV)}$ Max. Average Forward Current                   | 30      | A             | @ $T_C = 98^\circ\text{C}$ , 180° conduction half sine wave |
| $I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current | 300     | A             | 10ms Sine pulse, rated $V_{RRM}$ applied                    |
|                                                            | 350     |               | 10ms Sine pulse, no voltage reappplied                      |
| $I^2t$ Max. $I^2t$ for fusing                              | 450     | $A^2s$        | 10ms Sine pulse, rated $V_{RRM}$ applied                    |
|                                                            | 636     |               | 10ms Sine pulse, no voltage reappplied                      |
| $I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ for fusing                | 6360    | $A^2\sqrt{s}$ | $t = 0.1$ to 10ms, no voltage reappplied                    |

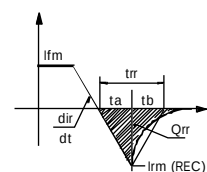
## Electrical Specifications

| Parameters                            | 30.PF.. | Units     | Conditions                      |
|---------------------------------------|---------|-----------|---------------------------------|
| $V_{FM}$ Max. Forward Voltage Drop    | 1.41    | V         | @ 30A, $T_J = 25^\circ\text{C}$ |
| $r_t$ Forward slope resistance        | 12.5    | $m\Omega$ | $T_J = 150^\circ\text{C}$       |
| $V_{F(TO)}$ Threshold voltage         | 0.9     | V         |                                 |
| $I_{RM}$ Max. Reverse Leakage Current | 0.1     | mA        | $T_J = 25^\circ\text{C}$        |
|                                       | 2.0     |           | $T_J = 150^\circ\text{C}$       |

$V_R = \text{rated } V_{RRM}$

## Typical Recovery Characteristics

| Parameters                        | 30.PF.. | Units   | Conditions                                    |
|-----------------------------------|---------|---------|-----------------------------------------------|
| $t_{rr}$ Reverse Recovery Time    | 160     | ns      | $I_F @ 20A_{pk}$<br>@ 100A/ $\mu s$<br>@ 25°C |
| $I_{rr}$ Reverse Recovery Current | 10      | A       |                                               |
| $Q_{rr}$ Reverse Recovery Charge  | 1.25    | $\mu C$ |                                               |
| S Snap Factor $t_b/t_a$           | 0.6     | typical |                                               |



### Thermal-Mechanical Specifications

| Parameters                                              | 30.PF..    | Units   | Conditions                            |
|---------------------------------------------------------|------------|---------|---------------------------------------|
| $T_J$ Max. Junction Temperature Range                   | -40 to 150 | °C      |                                       |
| $T_{stg}$ Max. Storage Temperature Range                | -40 to 150 | °C      |                                       |
| $R_{thJC}$ Max. Thermal Resistance Junction to Case     | 0.8        | °C/W    | DC operation                          |
| $R_{thJA}$ Max. Thermal Resistance Junction to Ambient  | 40         | °C/W    |                                       |
| $R_{thCS}$ Typical Thermal Resistance, Case to Heatsink | 0.2        | °C/W    | Mounting surface , smooth and greased |
| wt Approximate Weight                                   | 6 (0.21)   | g (oz.) |                                       |
| T Mounting Torque                                       | Min.       | 6 (5)   | Kg-cm<br>(lbf-in)                     |
|                                                         | Max.       | 12 (10) |                                       |
| Case Style                                              | TO-247AC   |         | JEDEC (Modified)                      |

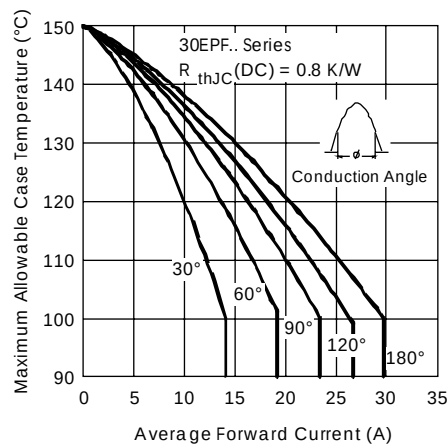


Fig. 1 - Current Rating Characteristics

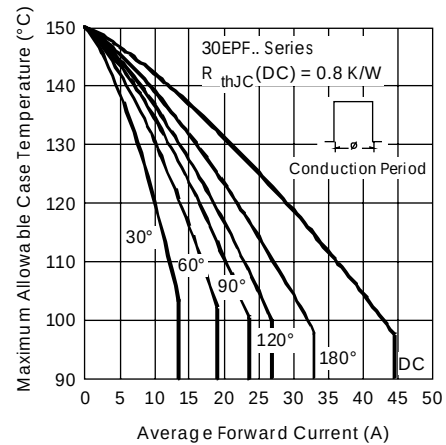


Fig. 2 - Current Rating Characteristics

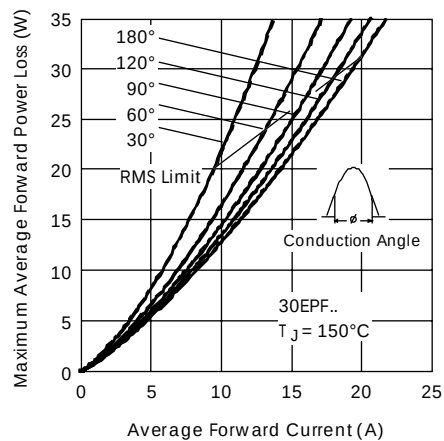


Fig. 3 - Forward Power Loss Characteristics

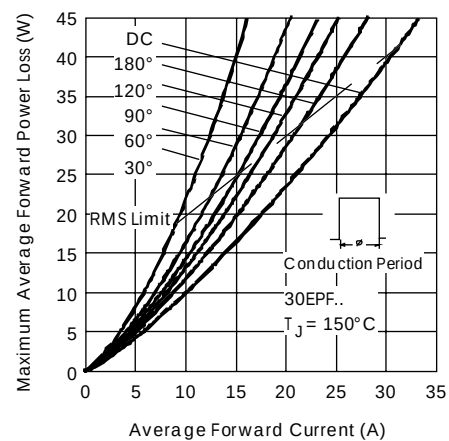


Fig. 4 - Forward Power Loss Characteristics

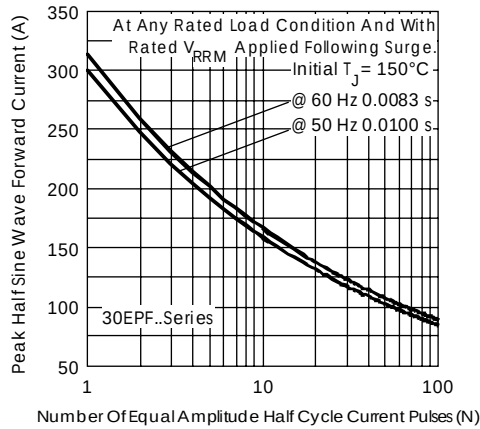


Fig. 5 - Maximum Non-Repetitive Surge Current

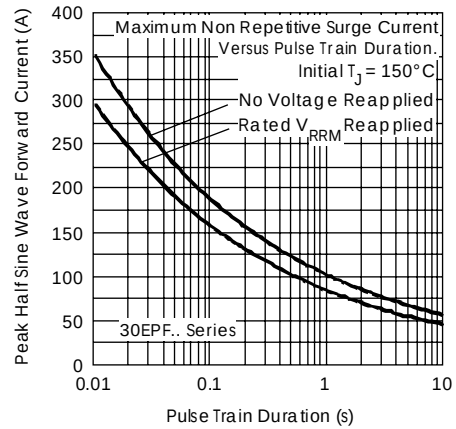


Fig. 6 - Maximum Non-Repetitive Surge Current

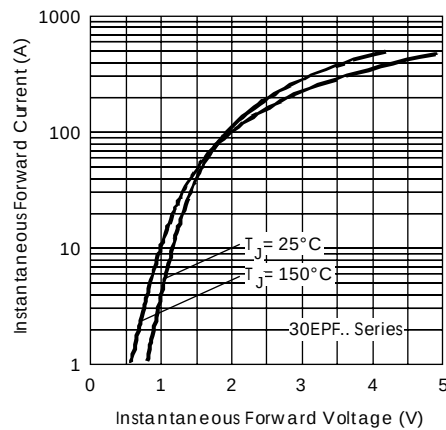


Fig. 7 - Forward Voltage Drop Characteristics

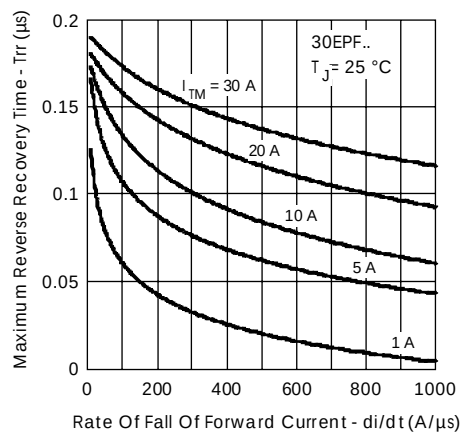


Fig. 8 - Recovery Time Characteristics,  $T_J = 25^\circ\text{C}$

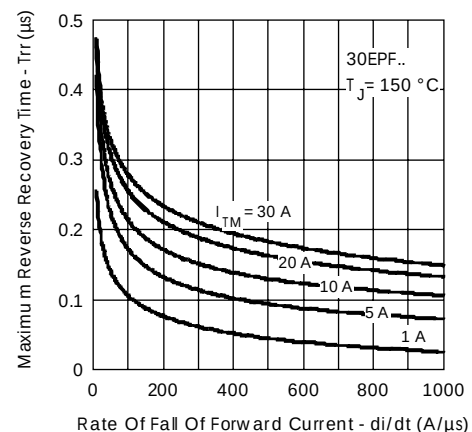


Fig. 9 - Recovery Time Characteristics,  $T_J = 150^\circ\text{C}$

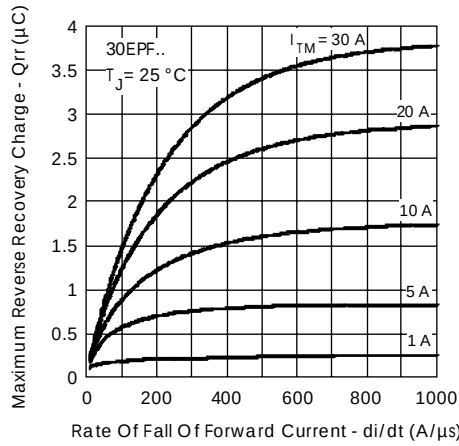


Fig. 10 - Recovery Charge Characteristics,  $T_J = 25^\circ\text{C}$

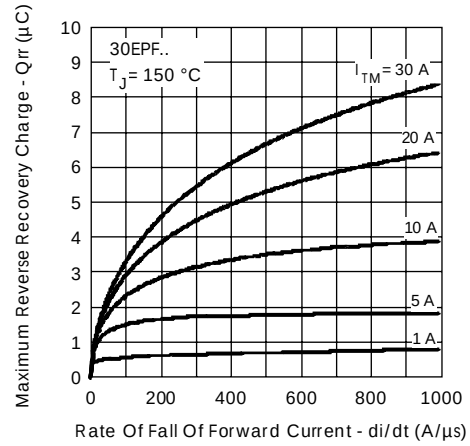


Fig. 11 - Recovery Charge Characteristics,  $T_J = 150^\circ\text{C}$

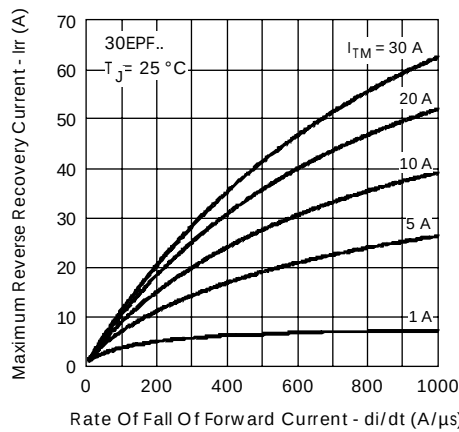


Fig. 12 - Recovery Current Characteristics,  $T_J = 25^\circ\text{C}$

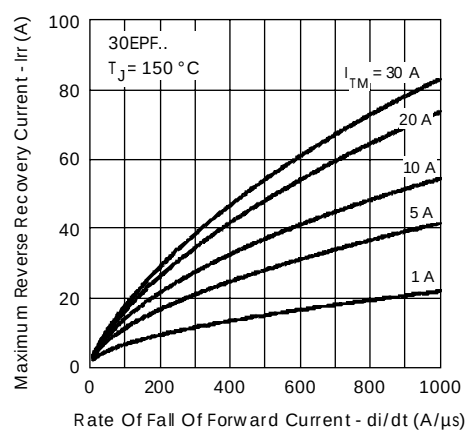


Fig. 13 - Recovery Current Characteristics,  $T_J = 150^\circ\text{C}$

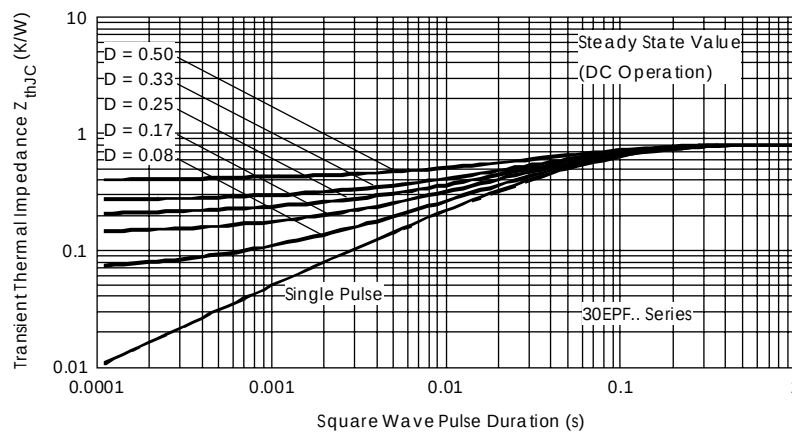
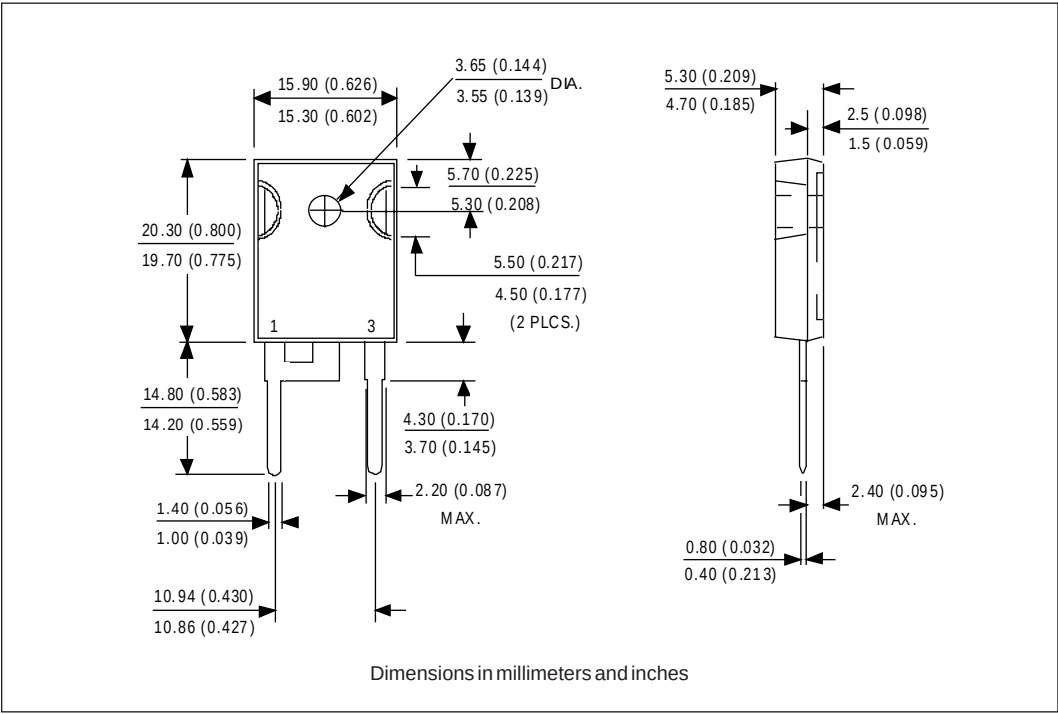


Fig. 14 - Thermal Impedance  $Z_{thJC}$  Characteristics

Outline Table



Ordering Information Table

| Device Code |   |   |   |    |
|-------------|---|---|---|----|
| 30          | E | P | F | 06 |
| 1           | 2 | 3 | 4 | 5  |

1

-

Current Rating

2

-

Circuit Configuration:  
E = Single Diode

3

-

Package:  
P = TO-247AC (Modified)

4

-

Type of Silicon:  
F = Fast Recovery

5

-

Voltage code: Code x 100 =  $V_{RRM}$

02 = 200V

04 = 400V

06 = 600V

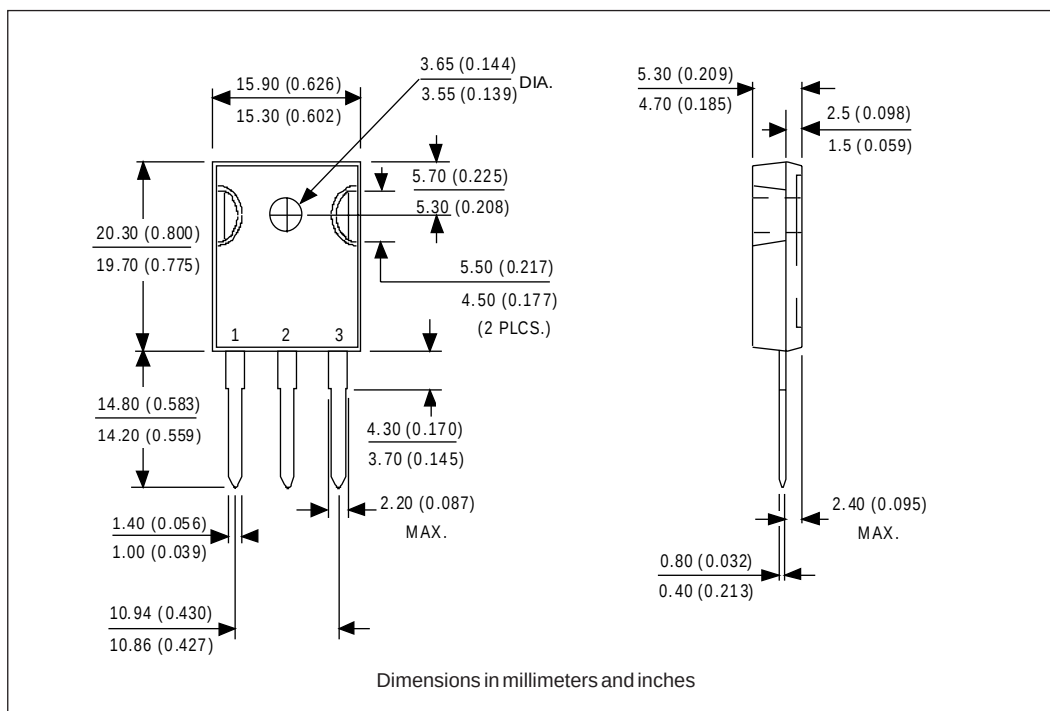
BASE  
CATHODE

2

1 3

CATHODE ANODE

## Outline Table



## Ordering Information Table

| Device Code |                                                                |   |   |    |
|-------------|----------------------------------------------------------------|---|---|----|
| 30          | C                                                              | P | F | 06 |
| 1           | 2                                                              | 3 | 4 | 5  |
| 1           | - Current Rating                                               |   |   |    |
| 2           | - Circuit Configuration:                                       |   |   |    |
|             | C = Single Diode, 3 pins                                       |   |   |    |
| 3           | - Package:                                                     |   |   |    |
|             | P = TO-247AC                                                   |   |   |    |
| 4           | - Type of Silicon:                                             |   |   |    |
|             | F = Fast Recovery                                              |   |   |    |
| 5           | - Voltage code: Code x 100 = $V_{RRM}$                         |   |   |    |
|             | <div>02 = 200V</div> <div>04 = 400V</div> <div>06 = 600V</div> |   |   |    |

