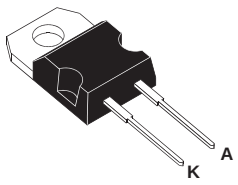
# STPR1520D/F

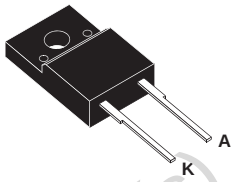
## ULTRA-FAST RECOVERY RECTIFIER DIODES

### MAIN PRODUCTS CHARACTERISTICS

| | |
|---|---|
| $I_{F(AV)}$ | 15 A |
| $V_{RRM}$ | 200 V |
| Tj (max) | 150°C |
| $V_F$ (max) | 0.99 V |
| trr (max) | 30 ns |




**TO-220AC**
**STPR1520D**




**ISOWATT220AC**
**STPR1520F**

### FEATURES

- SUITED FOR SMPS
- LOW LOSSES
- LOW FORWARD AND REVERSE RECOVERY TIME
- HIGH SURGE CURRENT CAPABILITY
- HIGH AVALANCHE ENERGY CAPABILITY

### DESCRIPTION

Low cost single chip rectifier suited for switchmode power supply and high frequency DC to DC converters.

Packaged in TO-220AC and ISOWATT220AC, this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.

Obsolete Product(s) - Obsolete Product(s)

| Symbol | Parameter | | | Value | Unit |
|---|---|---|---|---|---|
| $V_{RRM}$ | Repetitive peak reverse voltage | | | 200 | V |
| $I_{F(RMS)}$ | RMS forward current | | | 30 | A |
| $I_{F(AV)}$ | Average forward current $\delta = 0.5$ | TO-220AC | Tc = 115°C | 15 | A |
| | | ISOWATT220AC | Tc = 70°C | | |
| $I_{FSM}$ | Surge non repetitive forward current | | Tp = 10 ms Sinusoidal | 150 | A |
| $T_{stg}$ | Storage temperature range | | | - 65 to + 150 | °C |
| Tj | Maximum operating junction temperature | | | + 150 | |

## THERMAL RESISTANCES

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $R_{th(j-c)}$ | Junction to case | TO-220AC | 2 | °C/W |
| | | ISOWATT220AC | 4.5 | |

## STATIC ELECTRICAL CHARACTERISTICS

| Symbol | Parameters | Test conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| $I_R$ * | Reverse leakage current | Tj = 25°C | $V_R = V_{RRM}$ | | | 50 | µA |
| | | Tj = 100°C | | | | 1 | mA |
| $V_F$ ** | Forward voltage drop | Tj = 125°C | $I_F$ = 15 A | | | 0.99 | V |
| | | Tj = 125°C | $I_F$ = 30 A | | | 1.20 | |
| | | Tj = 25°C | $I_F$ = 30 A | | | 1.25 | |

Pulse test : * tp = 5 ms, δ < 2 %
** tp = 380 µs, δ < 2 %

To evaluate the conduction losses use the following equation :
$P = 0.78 \times I_{F(AV)} + 0.014 \times I_F{}^2{}_{(RMS)}$

## RECOVERY CHARACTERISTICS

| Symbol | Test conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| trr | $T_j$ = 25°C | $I_F$ = 0.5A Irr = 0.25A $I_R$ = 1A | | | 30 | ns |
| tfr | $T_j$ = 25°C | $I_F$ = 1A tr = 10 ns $V_{FR} = 1.1 \times V_F$ | | 20 | | |
| $V_{FP}$ | $T_j$ = 25°C | $I_F$ = 1A tr = 10 ns | | 3 | | V |

**Fig. 1:** Average forward power dissipation versus average forward current.

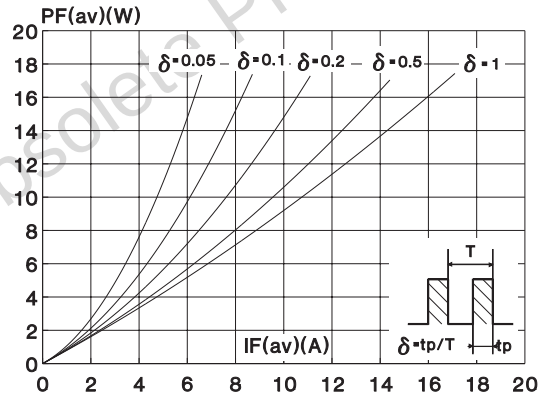
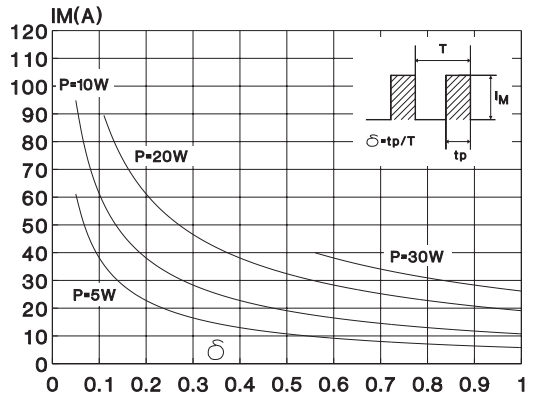



**Fig. 2:** Peak current versus form factor.




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**Fig. 3:** Average current versus ambient temperature.

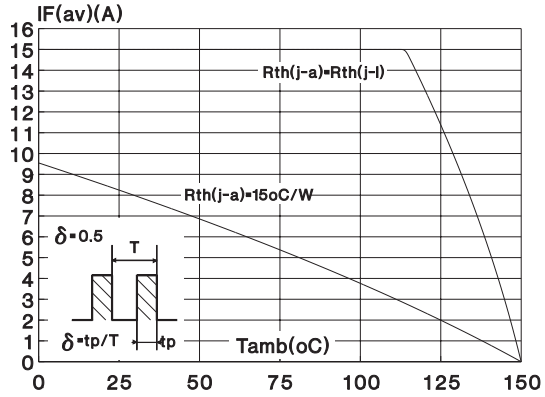



**Fig. 4:** Average current versus ambient temperature.

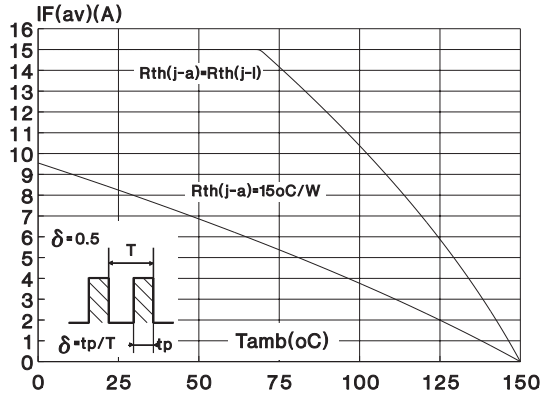



**Fig. 5:** Non repetitive surge peak forward current versus overload duration (maximum values) (TO-220AC)

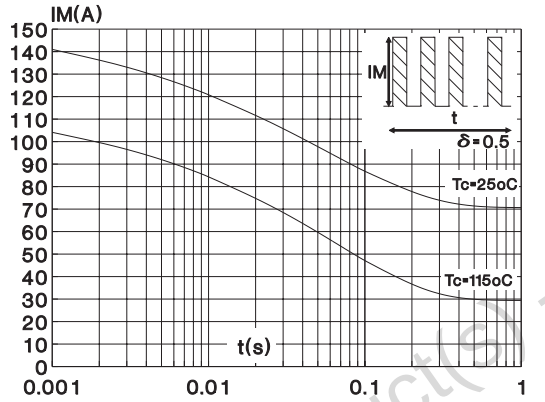



**Fig. 6:** Non repetitive surge peak forward current versus overload duration (maximum values) (ISOWATT220AC).

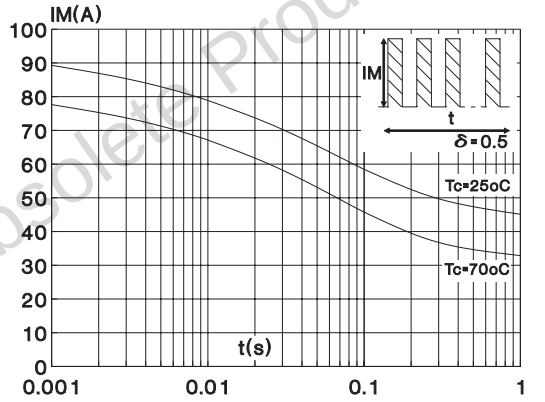



**Fig. 7:** Relative variation of thermal transient impedance junction to case versus pulse duration (TO-220AC).

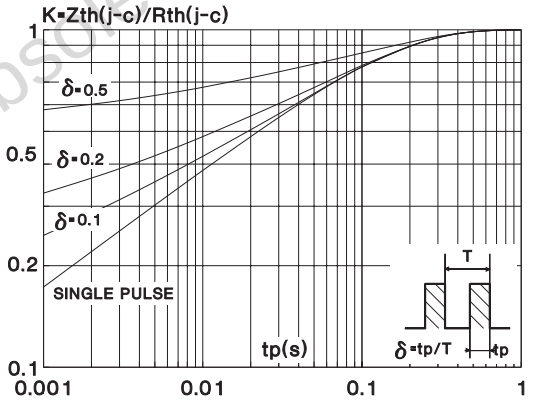
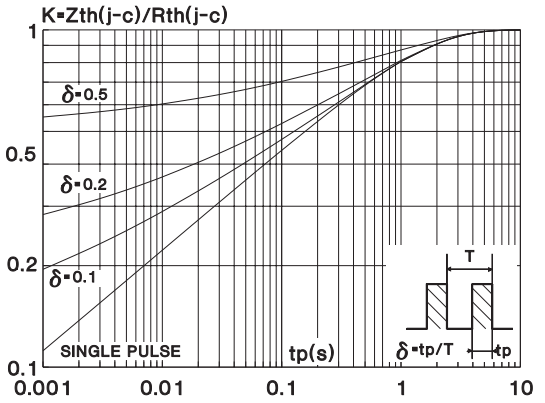



**Fig. 8:** Relative variation of thermal transient impedance junction to case versus pulse duration (ISOWATT220AC).




Obsolete Product(s) - Obsolete Product(s)

**Fig. 9:** Forward voltage drop versus forward current.

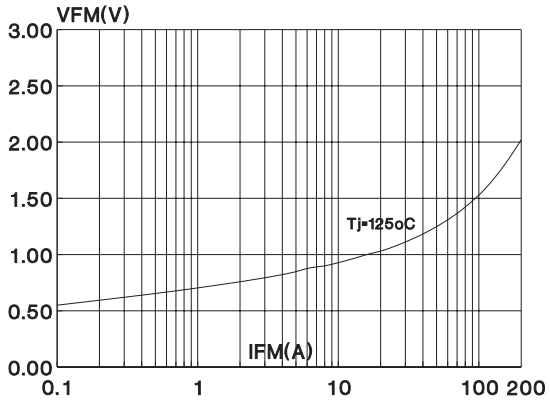



**Fig. 10:** Junction capacitance versus reverse voltage applied (typical values).

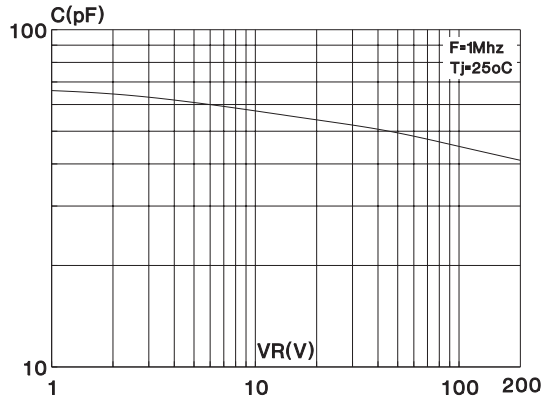



**Fig. 11:** Recovery charge versus $dI_F/dt$.

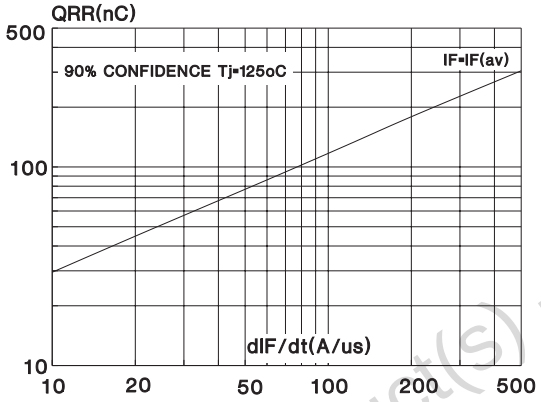



**Fig. 12:** Peak reverse current versus $dI_F/dt$.

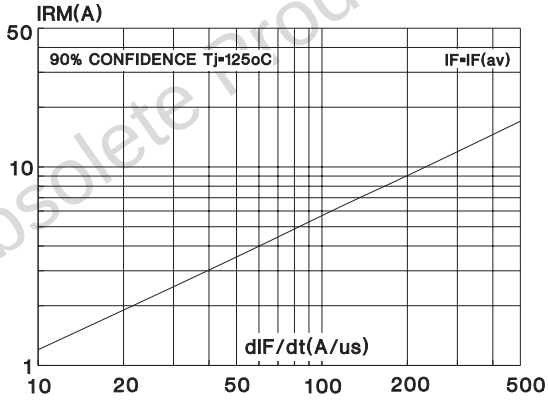
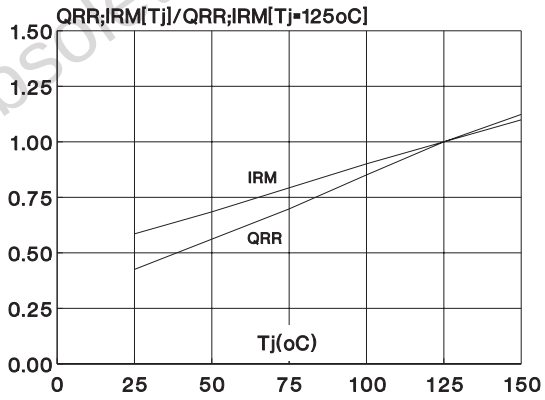


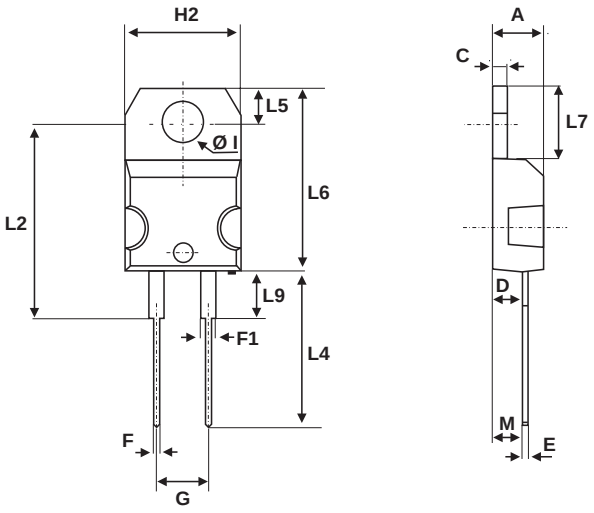

**Fig. 13:** Dynamic parameters versus junction temperature.




Obsolete Product(s) - Obsolete Product(s)

## PACKAGE MECHANICAL DATA

TO-220AC

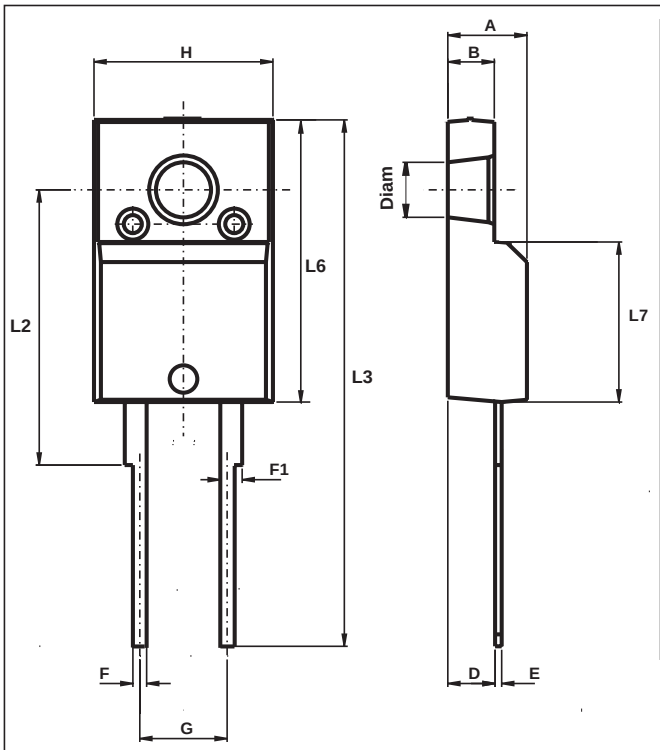



| REF. | DIMENSIONS | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 4.40 | 4.60 | 0.173 | 0.181 |
| C | 1.23 | 1.32 | 0.048 | 0.051 |
| D | 2.40 | 2.72 | 0.094 | 0.107 |
| E | 0.49 | 0.70 | 0.019 | 0.027 |
| F | 0.61 | 0.88 | 0.024 | 0.034 |
| F1 | 1.14 | 1.70 | 0.044 | 0.066 |
| G | 4.95 | 5.15 | 0.194 | 0.202 |
| H2 | 10.00 | 10.40 | 0.393 | 0.409 |
| L2 | 16.40 typ. | | 0.645 typ. | |
| L4 | 13.00 | 14.00 | 0.511 | 0.551 |
| L5 | 2.65 | 2.95 | 0.104 | 0.116 |
| L6 | 15.25 | 15.75 | 0.600 | 0.620 |
| L7 | 6.20 | 6.60 | 0.244 | 0.259 |
| L9 | 3.50 | 3.93 | 0.137 | 0.154 |
| M | 2.6 typ. | | 0.102 typ. | |
| Diam. I | 3.75 | 3.85 | 0.147 | 0.151 |

Obsolete Product(s) - Obsolete Product(s)

## PACKAGE MECHANICAL DATA

ISOWATT220AC




| REF. | DIMENSIONS | | | | | |
|---|---|---|---|---|---|---|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.40 | | 4.60 | 0.173 | | 0.181 |
| B | 2.50 | | 2.70 | 0.098 | | 0.106 |
| D | 2.40 | | 2.75 | 0.094 | | 0.108 |
| E | 0.40 | | 0.70 | 0.016 | | 0.028 |
| F | 0.75 | | 1.00 | 0.030 | | 0.039 |
| F1 | 1.15 | | 1.70 | 0.045 | | 0.067 |
| G | 4.95 | | 5.20 | 0.195 | | 0.205 |
| H | 10.00 | | 10.40 | 0.394 | | 0.409 |
| L2 | | 16.00 | | | 0.630 | |
| L3 | 28.60 | | 30.60 | 1.125 | | 1.205 |
| L6 | 15.90 | | 16.40 | 0.626 | | 0.646 |
| L7 | 9.00 | | 9.30 | 0.354 | | 0.366 |
| Diam | 3.00 | | 3.20 | 0.118 | | 0.126 |

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