

## HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

### MAIN PRODUCT CHARACTERISTICS

|                |                |
|----------------|----------------|
| $I_{F(AV)}$    | <b>2 x 4 A</b> |
| $V_{RRM}$      | <b>200 V</b>   |
| $t_{rr} (max)$ | <b>35 ns</b>   |

### PRELIMINARY DATASHEET

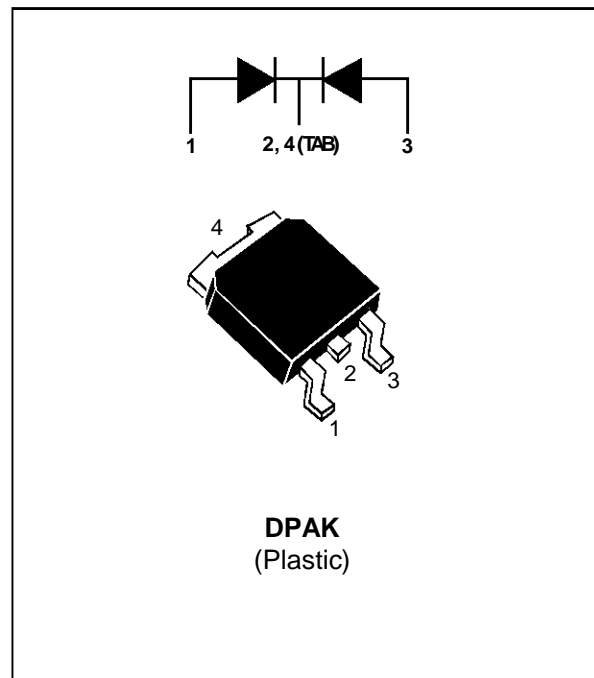
### FEATURES AND BENEFITS

- SUITED FOR SMPS AND DRIVES
- SURFACE MOUNT
- VERY LOW FORWARD LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH SURGE CURRENT CAPABILITY
- SURFACE MOUNT DEVICE
- TAPE AND REEL OPTION : -TR

### DESCRIPTION

Dual rectifier suited for Switch Mode and high frequency converters.

Packaged in DPAK, this surface mount device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.



### ABSOLUTE MAXIMUM RATINGS

| Symbol       | Parameter  |            | Value         | Unit        |
|--------------|--|------------|---------------|-------------|
| $V_{RRM}$    | Repetitive Peak Reverse Voltage  |            | 200           | V           |
| $V_{RSM}$    | Non Repetitive Surge Reverse Voltage                                     |            | 220           | V           |
| $I_{F(RMS)}$ | RMS Forward Current  | Per diode  | 10            | A           |
| $I_{F(AV)}$  | Average Forward Current<br>$T_{case} = 130^{\circ}C \quad \delta = 0.5$  | Per diode  | 5             | A           |
|              |  | Per device | 10            |             |
| $I_{FSM}$    | Surge Non Repetitive Forward Current<br>$t_p = 10 \text{ ms}$ Sinusoidal | Per diode  | 70            | A           |
| Tstg         | Storage Temperature Range  |            | - 40 to + 150 | $^{\circ}C$ |
| Tj           | Max. Junction Temperature  |            | 150           | $^{\circ}C$ |

## STPR1020CB(-TR)

### THERMAL RESISTANCES

| Symbol        | Parameter                           |           | Value | Unit                 |
|---------------|-------------------------------------|-----------|-------|----------------------|
| $R_{th(j-c)}$ | Junction to Case Thermal Resistance | Per diode | 5     | $^{\circ}\text{C/W}$ |
|               |                                     | Total     | 2.7   |                      |
| $R_{th(c)}$   | Coupling                            |           |       | $^{\circ}\text{C/W}$ |

When the diodes 1 and 2 are used simultaneously :

$$\Delta T_j(\text{diode 1}) = P(\text{diode}) \times R_{th}(\text{per diode}) + P(\text{diode 2}) \times R_{th(c)}$$

### STATIC ELECTRICAL CHARACTERISTICS (per diode)

| Symbol     | Tests Conditions        | Tests Conditions            | Min. | Typ. | Max. | Unit          |
|------------|-------------------------|-----------------------------|------|------|------|---------------|
| $I_R^*$    | Reverse leakage Current | $T_j = 25^{\circ}\text{C}$  |      |      | 20   | $\mu\text{A}$ |
|            |                         | $T_j = 100^{\circ}\text{C}$ |      |      | 0.15 | 0.5           |
| $V_F^{**}$ | Forward Voltage drop    | $T_j = 25^{\circ}\text{C}$  |      |      | 1.25 | V             |
|            |                         | $T_j = 100^{\circ}\text{C}$ |      | 0.8  | 0.85 |               |

Pulse test : \*  $t_p = 5 \text{ ms}$ , duty cycle  $< 2 \%$

\*\*  $t_p = 380 \mu\text{s}$ , duty cycle  $< 2\%$

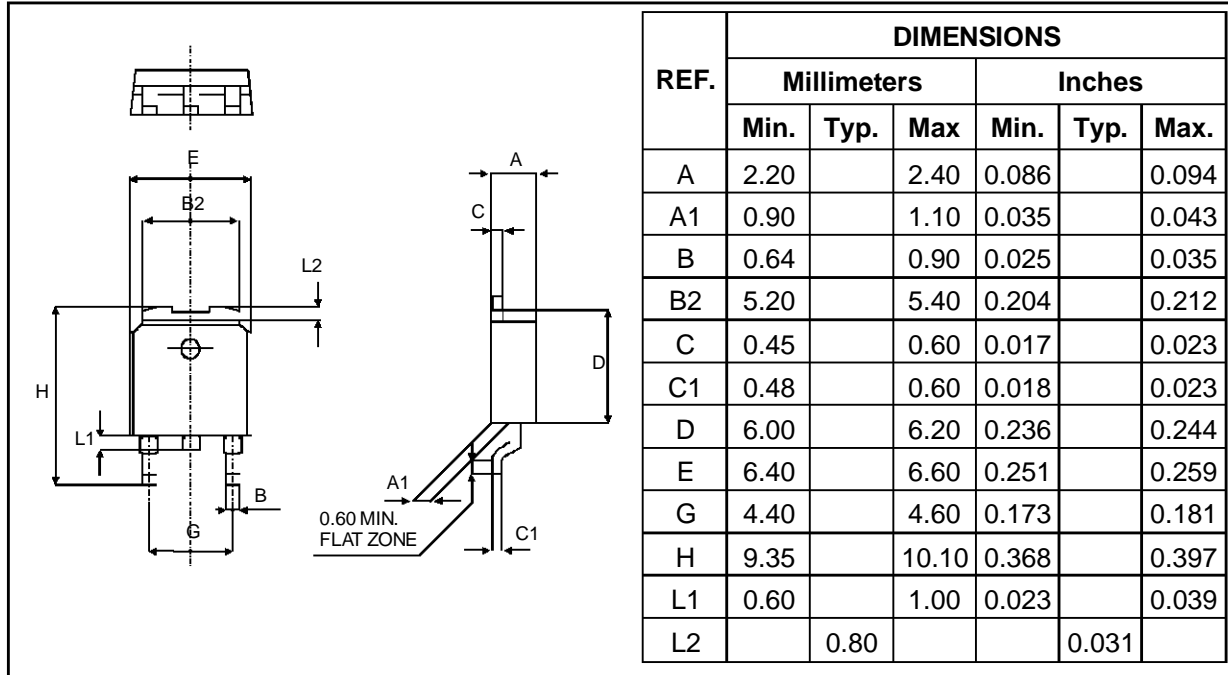
To evaluate the maximum conduction losses use the following equation :

$$P = 0.7 \times I_{F(AV)} + 0.030 I_{F(RMS)}^2$$

### RECOVERY CHARACTERISTICS

| Symbol   | Test Conditions            |  |                              | Min. | Typ. | Max. | Unit |
|----------|----------------------------|--|------------------------------|------|------|------|------|
| $t_{rr}$ | $T_j = 25^{\circ}\text{C}$ | $I_F = 1\text{A}$<br>$V_F = 30\text{V}$        | $di_F/dt = -50 \text{ A/ms}$ |      |      | 35   | ns   |
| $t_{fr}$ | $T_j = 25^{\circ}\text{C}$ | $I_F = 1\text{A}$<br>$V_{FR} = 1.1 \times V_F$ | $t_r = 10 \text{ ns}$        |      | 20   |      | ns   |
| $V_{FP}$ | $T_j = 25^{\circ}\text{C}$ | $I_F = 1\text{A}$                              | $t_r = 10 \text{ ns}$        |      | 5    |      | V    |

**PACKAGE MECHANICAL DATA**  
DPAK



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