# STPS16L40CT

## LOW DROP POWER SCHOTTKY RECTIFIER

### MAIN PRODUCTS CHARACTERISTICS

| | |
|---|---|
| $I_{F(AV)}$ | 2 x 8 A |
| $V_{RRM}$ | 40 V |
| Tj (max) | 150 °C |
| $V_F$ (max) | 0.45 V |

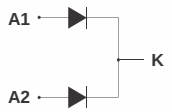
### FEATURES AND BENEFITS

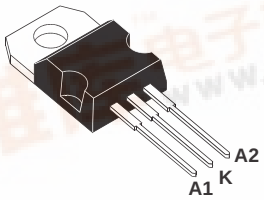
- LOW FORWARD VOLTAGE DROP FOR LESS POWER DISSIPATION
- NEGLIGIBLE SWITCHING LOSSES ALLOWING HIGH FREQUENCY OPERATION
- AVALANCHE RATED

### DESCRIPTION

Dual center tap Schottky barrier rectifier designed for high frequency Switched Mode Power Supplies and high frequency DC to DC converters.

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




TO-220AB

### ABSOLUTE RATINGS (limiting values, per diode)

| Symbol | Parameter | | | Value | Unit |
|---|---|---|---|---|---|
| $V_{RRM}$ | Repetitive peak reverse voltage | | | 40 | V |
| $I_{F(RMS)}$ | RMS forward current | | | 30 | A |
| $I_{F(AV)}$ | Average forward current | Tc = 140°C δ = 0.5 | Per diode | 8 | A |
| | | | Per device | 16 | A |
| $I_{FSM}$ | Surge non repetitive forward current | tp = 10 ms sinusoidal | | 180 | A |
| $I_{RRM}$ | Repetitive peak reverse current | tp=2 µs square F=1kHz | | 1 | A |
| $I_{RSM}$ | Non repetitive peak reverse current | tp = 100 µs square | | 2 | A |
| $T_{stg}$ | Storage temperature range | | | - 65 to + 150 | °C |
| Tj | Maximum operating junction temperature * | | | 150 | °C |
| dV/dt | Critical rate of rise of reverse voltage | | | 10000 | V/µs |

* : $\frac{dPtot}{dTj} < \frac{1}{Rth(j-a)}$ thermal runaway condition for a diode on its own heatsink

## THERMAL RESISTANCES

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $R_{th(j-c)}$ | Junction to case | Per diode<br>Total | 2.2<br>1.3 | °C/W |
| $R_{th(c)}$ | | Coupling | 0.3 | |

When the diodes 1 and 2 are used simultaneously :
$\Delta$ Tj(diode 1) = P(diode1) x $R_{th(j-c)}$(Per diode) + P(diode 2) x $R_{th(c)}$

## STATIC ELECTRICAL CHARACTERISTICS (per diode)

| Symbol | Parameter | Tests Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| $I_R$ * | Reverse leakage current | Tj = 25°C | $V_R = V_{RRM}$ | | | 0.7 | mA |
| | | Tj = 100°C | | | 15 | 35 | mA |
| $V_F$ * | Forward voltage drop | Tj = 25°C | $I_F$ = 8 A | | | 0.5 | V |
| | | Tj = 125°C | $I_F$ = 8 A | | 0.39 | 0.45 | |
| | | Tj = 25°C | $I_F$ = 16 A | | | 0.63 | |
| | | Tj = 125°C | $I_F$ = 16 A | | 0.55 | 0.64 | |

Pulse test : * tp = 380 µs, $\delta$ < 2%

To evaluate the conduction losses use the following equation :
$P = 0.26 \times I_{F(AV)} + 0.024\ I_F^2{}_{(RMS)}$

**Fig. 1:** Average forward power dissipation versus average forward current (per diode).

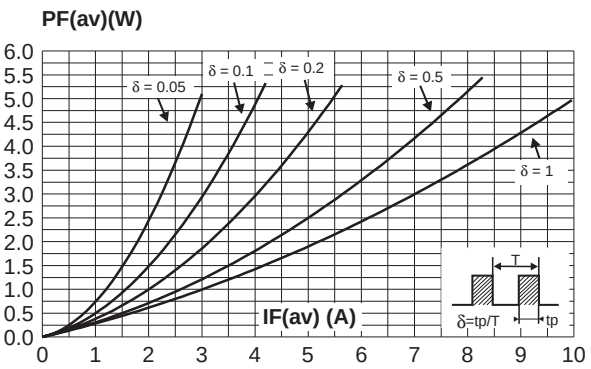



**Fig. 2:** Average current versus ambient temperature ($\delta$ = 0.5) (per diode).

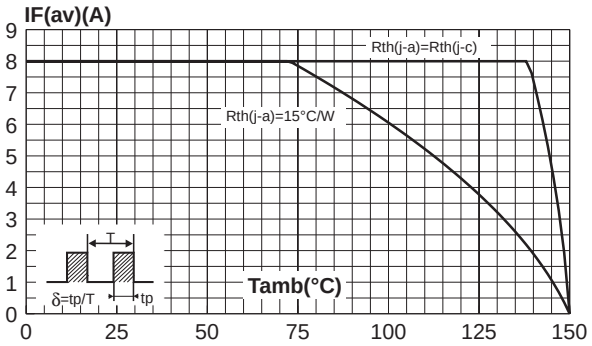


**Fig. 3:** Non repetitive surge peak forward current versus overload duration (maximum values) (per diode).

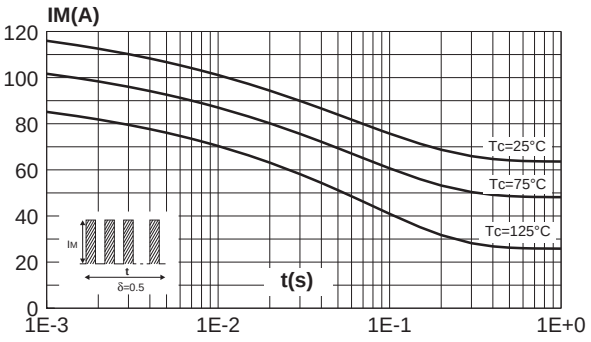



**Fig. 4:** Relative variation of thermal impedance junction to case versus pulse duration .

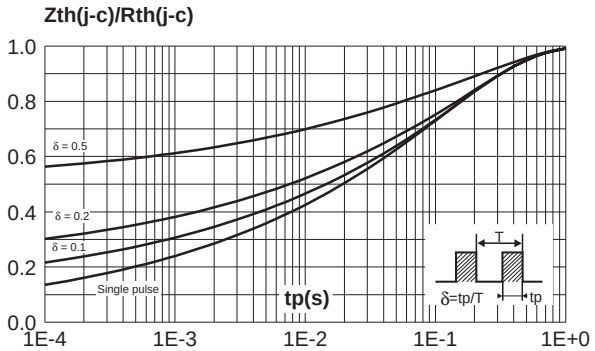



**Fig. 5:** Reverse leakage current versus reverse voltage applied (typical values) (per diode).

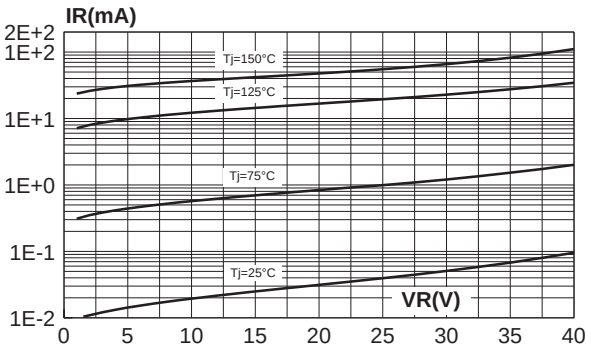



**Fig. 6:** Junction capacitance versus reverse voltage applied (typical values) (per diode).

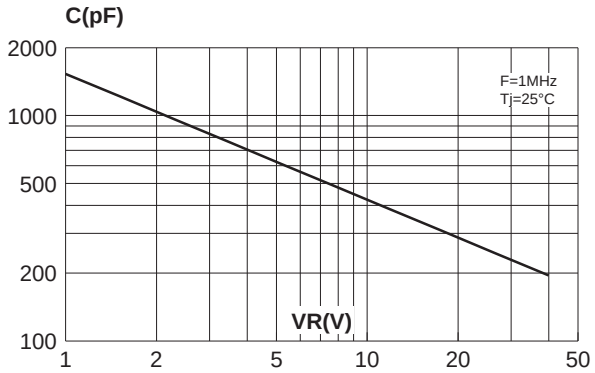
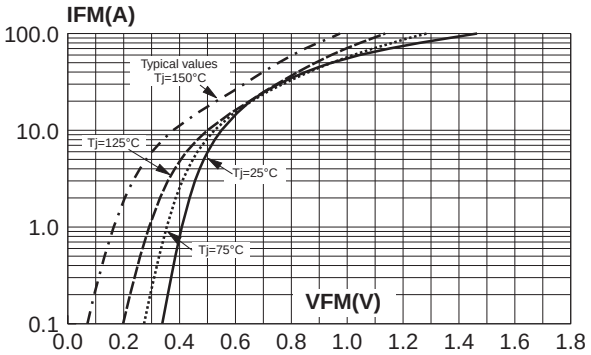
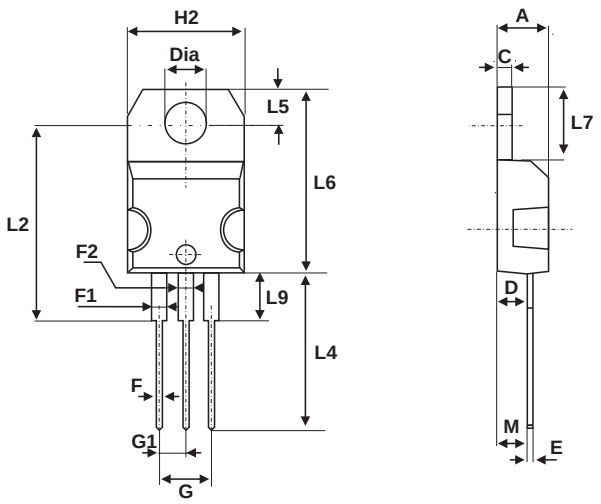



**Fig. 7:** Forward voltage drop versus forward current (maximum values) (per diode).



## PACKAGE MECHANICAL DATA

TO-220AB




| 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 |
| F2 | 1.14 | 1.70 | 0.044 | 0.066 |
| G | 4.95 | 5.15 | 0.194 | 0.202 |
| G1 | 2.40 | 2.70 | 0.094 | 0.106 |
| H2 | 10 | 10.40 | 0.393 | 0.409 |
| L2 | 16.4 typ. | | 0.645 typ. | |
| L4 | 13 | 14 | 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. | 3.75 | 3.85 | 0.147 | 0.151 |

| Ordering type | Marking | Package | Weight | Base qty | Delivery mode |
|---|---|---|---|---|---|
| STPS16L40CT | STPS16L40CT | TO-220AB | 2g | 50 | Tube |

- Epoxy meets UL94,V0
- Cooling method : C
- Recommended torque value : 0.55 m.N
- Maximum torque value : 0.70 m.N