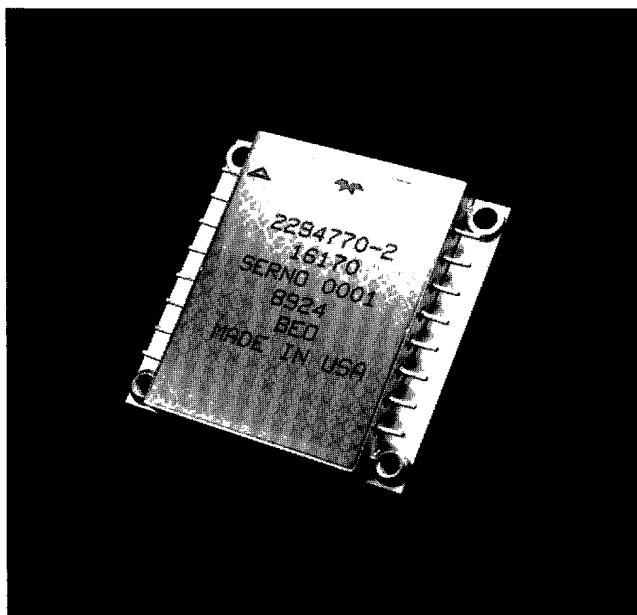




# TELEDYNE MICROELECTRONICS



## Power Hybrid, Diode Assembly P/N 2294770

### DESCRIPTION

The 2294770 Power Hybrid contains four center tapped pairs of diodes: two pairs of Schottky diodes for positive output and two pairs of ultrafast diodes, one for positive output and the other for negative output. These diodes, which can be used in the power stage rectification in power supplies, are particularly suited for low EMI and high efficiency applications due to their ultrafast recovery with soft turn-off and low forward voltage drop.

The components are housed in hermetically sealed 16-pin packages and specified for operation over the temperature range of  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ .

Modular thermally managed power packaging design, certification to MIL-H-38534 and screening to MIL-STD-883 Method 5008 Class "B" or Class "S" makes this hybrid an excellent choice for Military, Avionic (Class "H") and Space (Class "K") applications.

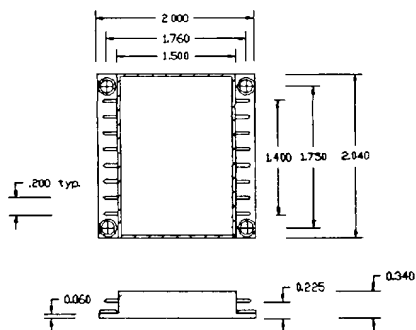
### FEATURES

- Isolated metal hermetic power case
- Low thermal resistance:  $0.3^{\circ}\text{C/W}$  max
- 25A/500V ultrafast recovery diode rectifier max rating
- 50A/50V Schottky rectifier rating
- Certification to MIL-H-38534
- Screening to MIL-STD-883
- Other circuit configurations, diode types, voltage ratings, etc., are also available.

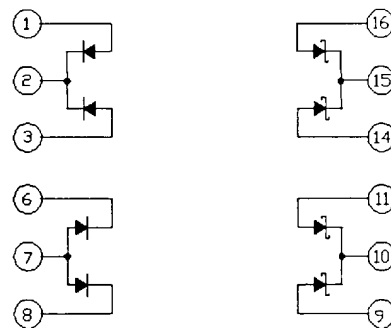
### APPLICATIONS

- Linear and Switching Power Supplies
- Free wheeling diodes
- Inverters

### PACKAGE DIMENSIONS (inches)



### FUNCTIONAL DIAGRAM



### ABSOLUTE MAXIMUM RATINGS ( $T_c = 25^\circ\text{C}$ unless otherwise noted) P/N 2294770

|           |                                                                                                |                                            |
|-----------|------------------------------------------------------------------------------------------------|--------------------------------------------|
| $V_R$     | DC Reverse Voltage                                                                             |                                            |
|           | Schottky Diode                                                                                 | 50V                                        |
|           | Ultrafast Diode                                                                                | 500V                                       |
| $I_o$     | Average Rectified Forward Current, $T_c = 100^\circ$                                           |                                            |
|           | Schottky Diode                                                                                 | 50A                                        |
|           | (Derate above $100^\circ\text{C}$ $T_c$ linearly to zero ampere at $T_c = 150^\circ\text{C}$ ) |                                            |
|           | Ultrafast Diode                                                                                | 25A                                        |
|           | (Derate above $100^\circ\text{C}$ $T_c$ linearly to zero ampere at $T_c = 200^\circ\text{C}$ ) |                                            |
| $I_{FSM}$ | Non-Repetitive Sinusoidal Current Surge/8.3ms                                                  |                                            |
|           | Schottky Diode                                                                                 | 1000A                                      |
|           | Ultrafast Diode                                                                                | 300A                                       |
| $T_j$     | Operating Temperature (junction)                                                               | $-55^\circ\text{C}$ to $150^\circ\text{C}$ |
| $T_{STG}$ | Storage Temperature                                                                            | $-55^\circ\text{C}$ to $150^\circ\text{C}$ |

### THERMAL CHARACTERISTICS

|                |                  |                                   |
|----------------|------------------|-----------------------------------|
| $R\theta_{JC}$ | Junction to Case |                                   |
|                | Schottky         | 0.3 $^\circ\text{C}/\text{W}$ max |
|                | Ultrafast        | 0.3 $^\circ\text{C}/\text{W}$ max |

### ELECTRICAL CHARACTERISTICS ( $T_c = 25^\circ\text{C}$ unless otherwise noted)

| PARAMETER                                        | CONDITIONS      | MIN                              | TYP | MAX  | UNITS |
|--------------------------------------------------|-----------------|----------------------------------|-----|------|-------|
| $V_F$ Instantaneous Forward Voltage <sup>①</sup> |                 |                                  |     |      |       |
|                                                  | Schottky Diode  | IF=50A                           | —   | 1.00 | V     |
|                                                  | Ultrafast Diode | IF=25A                           | —   | 1.60 | V     |
| $I_R$ Reverse Leakage                            |                 |                                  |     |      |       |
|                                                  | Schottky Diode  | VR=50V                           | —   | 5    | mA    |
|                                                  |                 | VR=50V, $T_c=125^\circ\text{C}$  | —   | 100  | mA    |
|                                                  | Ultrafast Diode | VR=500V                          | —   | 50   | uA    |
|                                                  |                 | VR=500V, $T_c=125^\circ\text{C}$ | —   | 5    | mA    |
| $C_J$ Junction Capacitance                       |                 |                                  |     |      |       |
|                                                  | Schottky Diode  | VR=5V, $0.1 < f < 1\text{MHz}$   | —   | 2200 | pF    |
| $dV/dT$ Rate of Rise Off-State                   |                 |                                  |     |      |       |
|                                                  | Schottky Diode  |                                  | —   | 1000 | V/uS  |
| $t_{rr}$ Reverse Recovery Time                   |                 |                                  |     |      |       |
|                                                  | Ultrafast Diode | IF=0.5, $I_R=1\text{A}$          | —   | 50   | nS    |
|                                                  |                 | IRR=0.25A                        |     |      |       |

NOTE: <sup>①</sup> 300 uS pulse width at 2 % duty cycle.

Wherever possible, the information supplied is supported by performance and test data. However, no responsibility is assumed by Teledyne Microelectronics for its use. Teledyne reserves the right to make changes to this device or device specifications.

Contact your local authorized sales representative or the factory direct for any further information on the product