

## Low Leakage Schottky Barrier Rectifier

### Characteristics

#### Static Electrical Characteristics

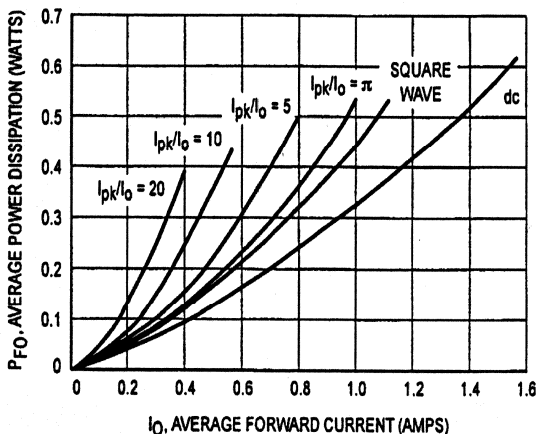
| Symbol      | Parameter                             | Test Conditions                    |                      | Typ | max   | Units         |
|-------------|---------------------------------------|------------------------------------|----------------------|-----|-------|---------------|
| $V_F^{(2)}$ | Maximum forward voltage               | $T_J = 25^\circ\text{C}$           | $I_F = 0.1\text{ A}$ |     | 0.455 | V             |
|             |                                       |                                    | $I_F = 1.0\text{ A}$ |     | 0.530 |               |
|             |                                       |                                    | $I_F = 3.0\text{ A}$ |     | 0.595 |               |
|             |                                       | $T_J = 100^\circ\text{C}$          | $I_F = 0.1\text{ A}$ |     | 0.360 |               |
|             |                                       |                                    | $I_F = 1.0\text{ A}$ |     | 0.455 |               |
|             |                                       |                                    | $I_F = 3.0\text{ A}$ |     | 0.540 |               |
| $I_R^{(2)}$ | Maximum instantaneous reverse current | $T_J = 25^\circ\text{C}$           | $V_R = 20\text{V}$   |     | 10    | $\mu\text{A}$ |
|             |                                       |                                    | $V_R = 10\text{V}$   |     | 1.0   |               |
|             |                                       |                                    | $V_R = 5\text{V}$    |     | 0.5   |               |
|             |                                       | $T_J = 100^\circ\text{C}$          | $V_R = 20\text{V}$   |     | 1600  |               |
|             |                                       |                                    | $V_R = 10\text{V}$   |     | 500   |               |
|             |                                       |                                    | $V_R = 5\text{V}$    |     | 300   |               |
| $C_T$       | Junction capacitance                  | $V_R = 5\text{V}, f = 1\text{MHz}$ |                      |     |       | pF            |

<sup>(2)</sup> Measured with a test pulse of 380 $\mu\text{s}$  to minimize self-heating effect

#### Thermal Characteristics

| Symbol          | Parameter                          | Value | Unit               |
|-----------------|------------------------------------|-------|--------------------|
| $R_{\theta JC}$ | Junction to case (bottom)          | 15    | $^\circ\text{C/W}$ |
| $R_{\theta JA}$ | Junction to ambient <sup>(3)</sup> | 240   | $^\circ\text{C/W}$ |

<sup>(3)</sup> Mounted on FR-4 PC board using 1oz copper with recommended minimum foot print

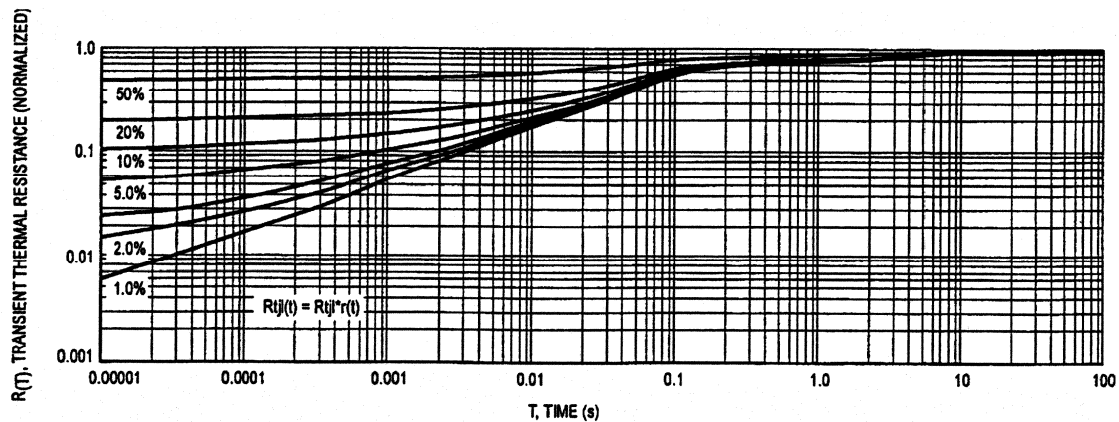


Reverse power dissipation and the possibility of thermal runaway must be considered when operating this device under any reverse voltage conditions. Calculations of  $T_J$  therefore must include forward and reverse power effects. The allowable operating  $T_J$  may be calculated from the equation:

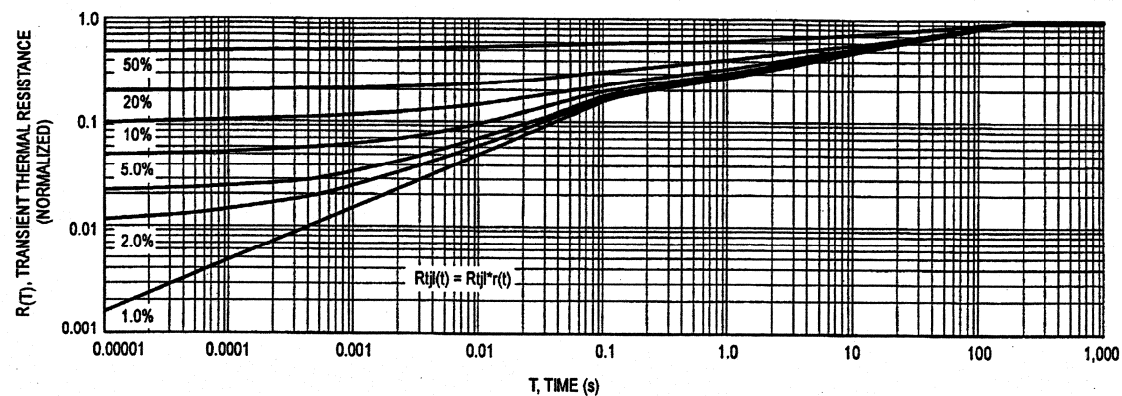
$T_J = T_{J\max} = r(t)(P_f + P_r)$  where  
 $r(t)$  = thermal impedance under given conditions.  
 $P_f$  = forward power dissipation, and  
 $P_r$  = reverse power dissipation

This graph displays the de-rated allowable  $T_J$  due to reverse bias under DC conditions only and is calculated as  $T_J = T_{J\max} - r(t) P_r$ , Where  $r(t) = R_{\theta JA}$ . For other power applications further calculations must be performed.

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Thermal Impedance Junction to Case (bottom)



Thermal Impedance Junction to Ambient

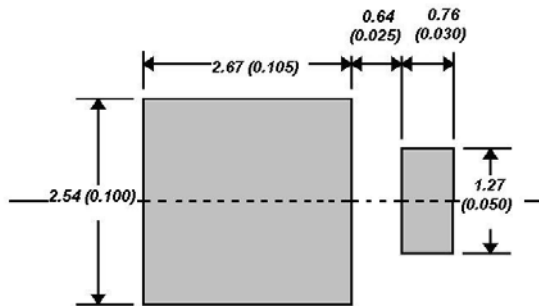
## Mechanical Characteristics

### Physical dimensions

| Ref. | Dimensions  |      |        |       |
|------|-------------|------|--------|-------|
|      | Millimeters |      | Inches |       |
|      | Min.        | Max. | Min.   | Max.  |
| A    | 0.73        | 0.99 | 0.029  | 0.039 |
| B    | 0.40        | 0.66 | 0.016  | 0.026 |
| C    | 1.77        | 2.03 | 0.070  | 0.080 |
| D    | 2.21        | 2.46 | 0.087  | 0.097 |
| E    | 0.50        | 0.76 | 0.020  | 0.030 |
| F    | 1.29        | 1.54 | 0.051  | 0.061 |
| G    | 0.53        | 0.78 | 0.021  | 0.031 |
| H    | 0.10        | 0.20 | 0.004  | 0.008 |
| I    | 1.77        | 2.03 | 0.070  | 0.080 |
| J    | 0.89        | 1.14 | 0.035  | 0.045 |

## Low Leakage Schottky Barrier Rectifier

### Footprint dimensions



Powermite 1<sup>®</sup> footprint dimensions in mm (inches)

### Package materials & information

**Case :** Epoxy meets UL94V-0

**Electrode finish :** Matte Sn plating - fully RoHS compliant

**Marking code :**

**20E**

### Ordering information

| Product order code | Marking | Package                | Weight  | Base qty | Delivery mode           |
|--------------------|---------|------------------------|---------|----------|-------------------------|
| UPS120Ee3 / TR7    | 20E     | Powermite 1 (DO-216AA) | 0.016 g | 3000     | Tape and reel (7 inch)  |
| UPS120Ee3 / TR13   | 20E     | Powermite 1 (DO-216AA) | 0.016 g | 12000    | Tape and reel (13 inch) |

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