



## General Description

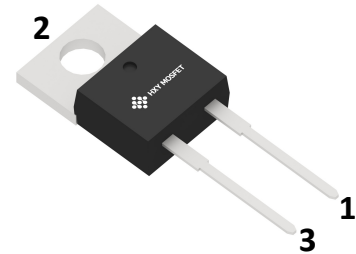
This product family offers state of the art performance. It is designed for high frequency applications where high efficiency and high reliability are required.

## Features

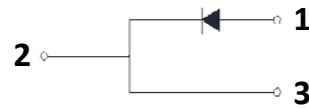
- Low conduction loss due to low  $V_F$
- Extremely low switching loss by tiny  $Q_C$
- Highly rugged due to better surge current
- Industrial standard quality and reliability

## Applications

- UPS
- Power Inverter
- High performance SMPS
- Power factor correction



TO-220H-2L



| Ordering Part Number | Package    | Marking    |
|----------------------|------------|------------|
| HC3D08065A           | TO-220H-2L | HC3D08065A |





**Maximum Ratings** (at  $T_j = 25^\circ\text{C}$ , unless otherwise specified)

| Parameter                                                                                                                                                                        | Symbol       | Value         | Unit                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|----------------------|
| Repetitive Peak Reverse Voltage                                                                                                                                                  | $V_{RRM}$    | 650           | V                    |
| Surge Peak Reverse Voltage                                                                                                                                                       | $V_{RSM}$    | 650           | V                    |
| DC Peak Reverse Voltage                                                                                                                                                          | $V_R$        | 650           | V                    |
| Continuous Forward Current<br>$T_C = 25^\circ\text{C}$<br>$T_C = 135^\circ\text{C}$<br>$T_C = 160^\circ\text{C}$                                                                 | $I_F$        | 30<br>15<br>8 | A                    |
| Repetitive Peak Forward Surge Current<br>$T_C = 25^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$<br>$T_C = 110^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$ | $I_{FRM}$    | 38<br>25      | A                    |
| Non-Repetitive Forward Surge Current<br>$T_C = 25^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$<br>$T_C = 110^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$  | $I_{FSM}$    | 64<br>53      | A                    |
| $i^2dt$ value<br>$T_C = 25^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$<br>$T_C = 110^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$                         | $\int i^2dt$ | 20.5<br>14    | $\text{A}^2\text{s}$ |
| Power dissipation<br>$T_C = 25^\circ\text{C}$<br>$T_C = 110^\circ\text{C}$                                                                                                       | $P_{tot}$    | 93<br>40      | W                    |
| Operating junction Range                                                                                                                                                         | $T_j$        | -55 to +175   | $^\circ\text{C}$     |
| Storage temperature Range                                                                                                                                                        | $T_{stg}$    | -55 to +150   | $^\circ\text{C}$     |

**Thermal Resistance**

| Parameter                            | Symbol     | Value | Unit               |
|--------------------------------------|------------|-------|--------------------|
| Thermal resistance, junction – case. | $R_{thJC}$ | 1.60  | $^\circ\text{C/W}$ |



**Electrical Characteristic** (at  $T_j = 25^\circ\text{C}$ , unless otherwise specified)

| Parameter               | Symbol | Value |      |      | Unit          | Test Condition                                                                                        |
|-------------------------|--------|-------|------|------|---------------|-------------------------------------------------------------------------------------------------------|
|                         |        | min.  | typ. | max. |               |                                                                                                       |
| Forward Voltage         | $V_F$  | -     | 1.3  | 1.5  | V             | $I_F=8\text{A}$<br>$T_j=25^\circ\text{C}$<br>$T_j=175^\circ\text{C}$                                  |
| Reverse Current         | $I_R$  | -     | -    | 50   | $\mu\text{A}$ | $V_R=650\text{V}$<br>$T_j=25^\circ\text{C}$<br>$T_j=175^\circ\text{C}$                                |
| Total Capacitive Charge | $Q_C$  | -     | 23   | -    | nC            | $V_R=400\text{V}$ , $T_j=25^\circ\text{C}$<br>$Q_C = \int_0^{V_R} C(V) dV$                            |
| Total Capacitance       | $C$    | -     | 466  | -    | pF            | $T_j=25^\circ\text{C}$ , $f=1\text{MHz}$<br>$V_R=0\text{V}$<br>$V_R=200\text{V}$<br>$V_R=400\text{V}$ |

**Characteristics Curve:**

Fig 1: Forward Characteristics

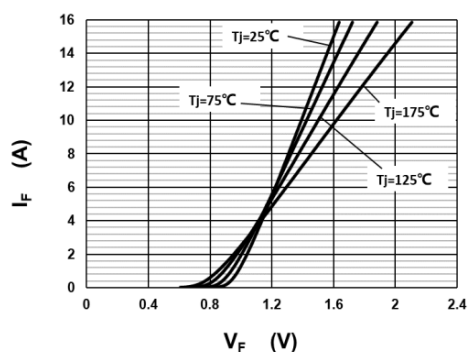


Fig 2: Reverse Characteristics

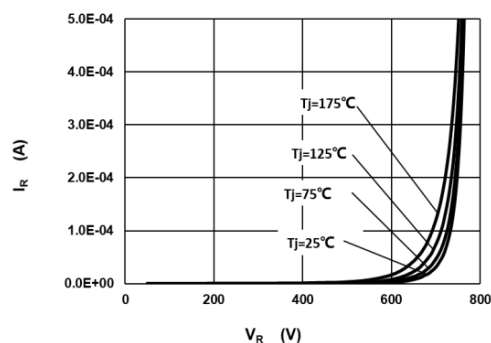


Fig 3: Current Derating

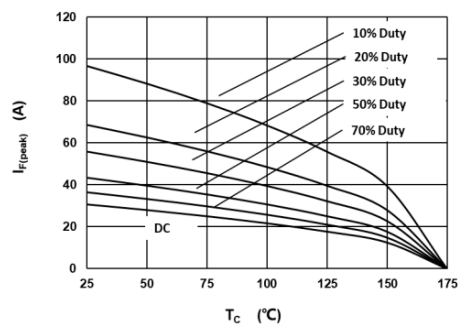


Fig 4: Power Derating

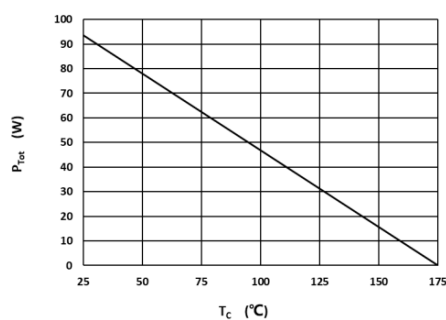




Fig 5: Capacitance vs. Reverse Voltage

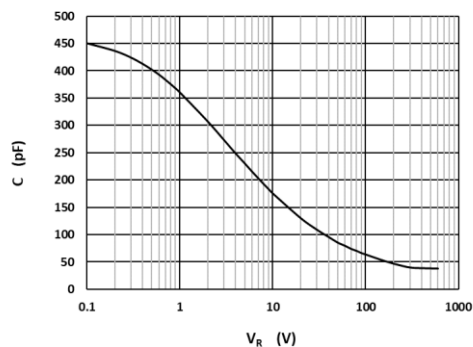


Fig 6: Reverse Charge vs. Reverse Voltage

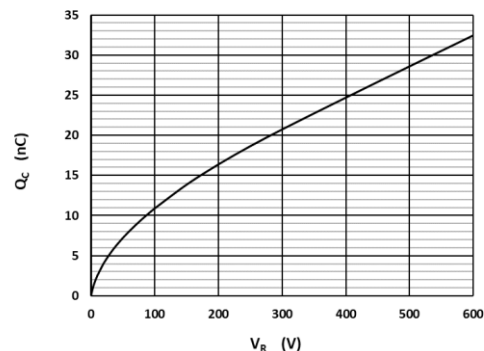


Fig 7: Typical Capacitance Stored Energy

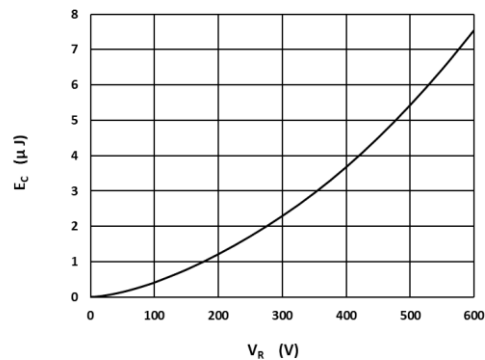
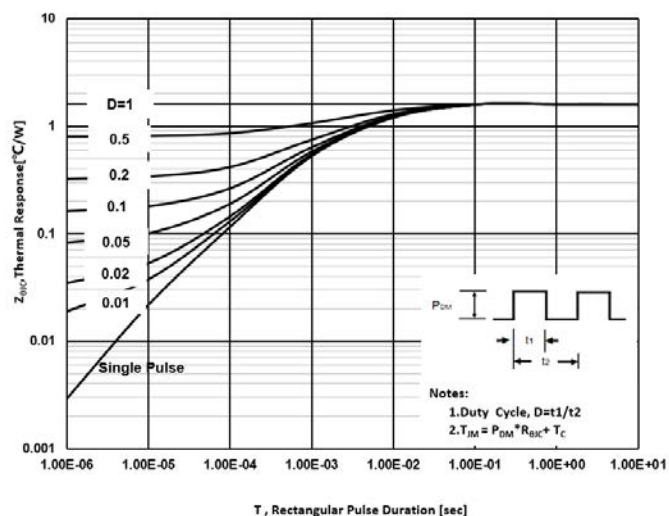
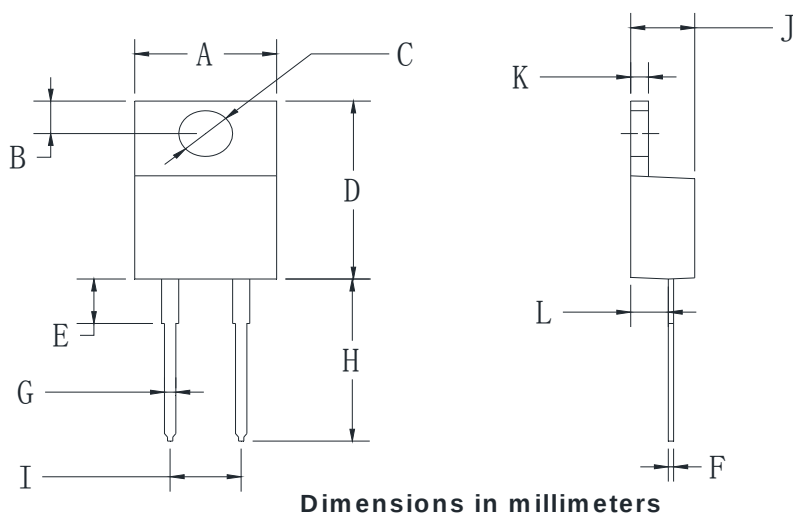


Fig 8: Transient Thermal Impandance





**Package Information**  
**TO-220H-2L**



| TO-220H-2L |       |       |
|------------|-------|-------|
| Dim        | Min   | Max   |
| A          | 9.5   | 10.9  |
| B          | 2.22  | 3.27  |
| C          | 3.34  | 4.31  |
| D          | 14.5  | 15.5  |
| E          | 3.16  | 4.46  |
| F          | 0.28  | 0.64  |
| G          | 0.68  | 0.94  |
| H          | 13.06 | 14.62 |
| I          | 4.55  | 5.60  |
| J          | 4.04  | 5.1   |
| K          | 1.14  | 1.4   |
| L          | 2.14  | 3.19  |



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