



## General Description

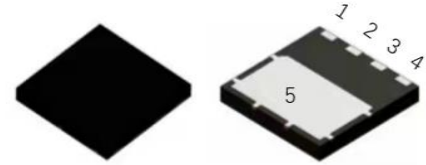
This product family offers state of the art performance. It is designed for high frequency applications where high efficiency and high reliability are required.

## 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



DFN8X8  
Package



| Ordering Part Number | Package | Marking    |
|----------------------|---------|------------|
| HC1D06065L           | DFN8X8  | HC1D06065L |





**Maximum Ratings** (at  $T_C = 25^\circ\text{C}$ , 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>$T_C = 162^\circ\text{C}$                                                                 | $I_F$         | 23<br>12<br>6 | A                    |
| Repetitive Peak Forward Surge Current<br>$T_C = 25^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$<br>$T_C = 110^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$ | $I_{FRM}$     | 28<br>17      | A                    |
| Non-Repetitive Forward Surge Current<br>$T_C = 25^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$<br>$T_C = 110^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$  | $I_{FSM}$     | 48<br>43      | A                    |
| $i^2dt$ value<br>$T_C = 25^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$<br>$T_C = 110^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$                         | $\int i^2 dt$ | 11.4<br>9.1   | $\text{A}^2\text{s}$ |
| Power dissipation<br>$T_C = 25^\circ\text{C}$<br>$T_C = 110^\circ\text{C}$                                                                                                       | $P_{tot}$     | 71<br>30      | 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     | Typ. | Unit               |
|--------------------------------------|------------|------|--------------------|
| Thermal resistance, junction – case. | $R_{thJC}$ | 2.1  | $^\circ\text{C/W}$ |



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

| Parameter               | Symbol | Value |      |      | Unit          | Test Condition                                                                                        |
|-------------------------|--------|-------|------|------|---------------|-------------------------------------------------------------------------------------------------------|
|                         |        | min.  | typ. | max. |               |                                                                                                       |
| Forward Voltage         | $V_F$  | -     | 1.3  | 1.5  | V             | $I_F=6\text{A}$<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 | $Q_C$  | -     | 18   | -    | 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      | -     | 358  | -    | 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

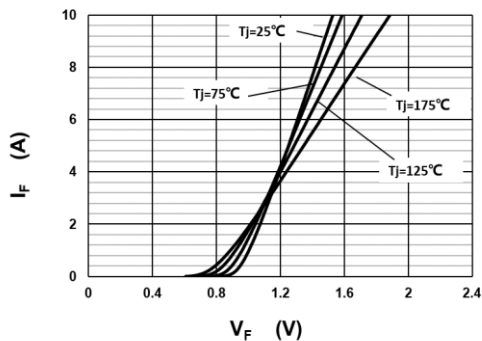


Fig 2: Reverse Characteristics

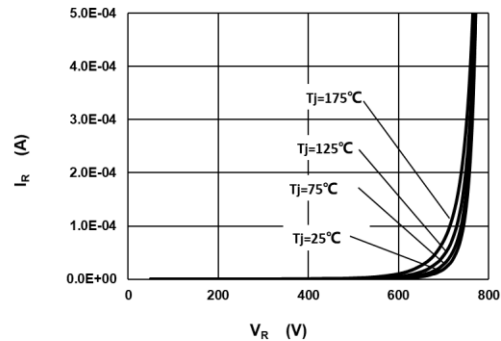




Fig 3: Current Derating

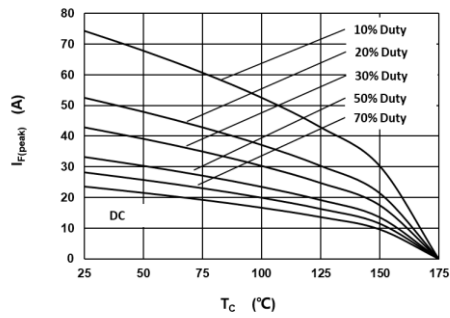


Fig 4: Power Derating

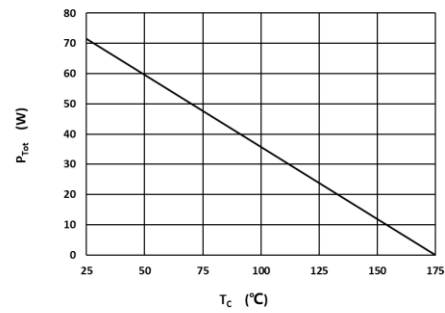


Fig 5: Capacitance vs. Reverse Voltage

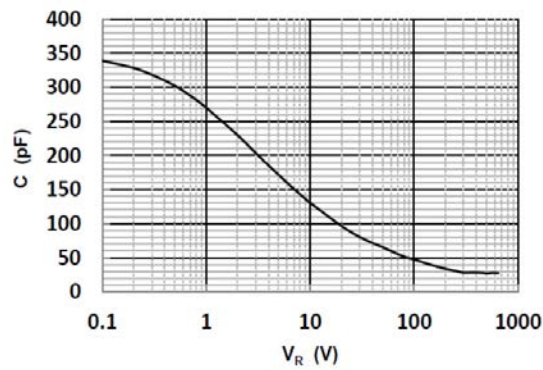


Fig 6: Reverse Charge vs. Reverse Voltage

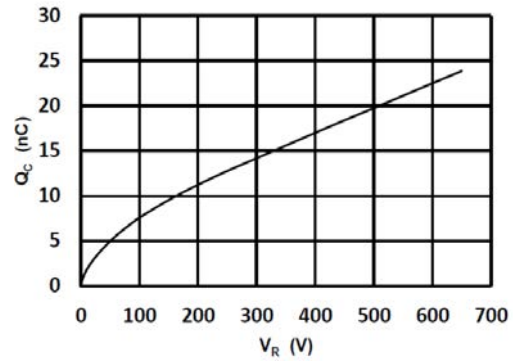


Fig 7: Typical Capacitance Stored Energy

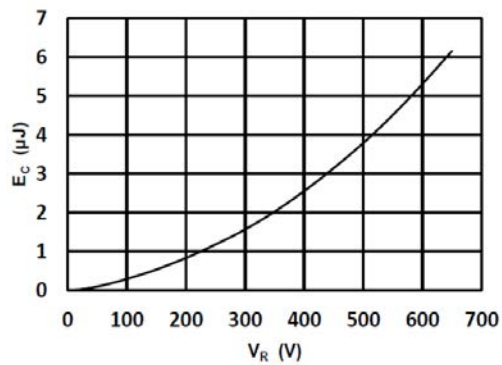
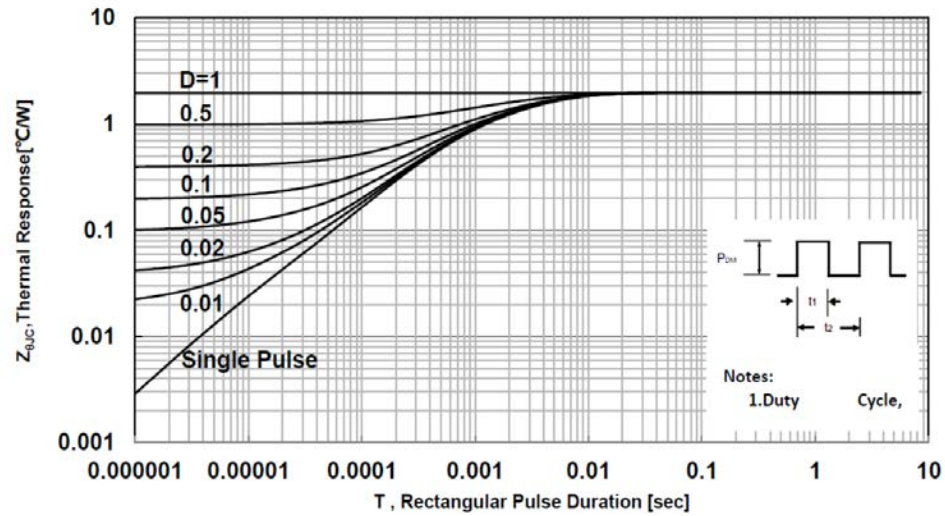




Fig 8: Transient Thermal Impandance

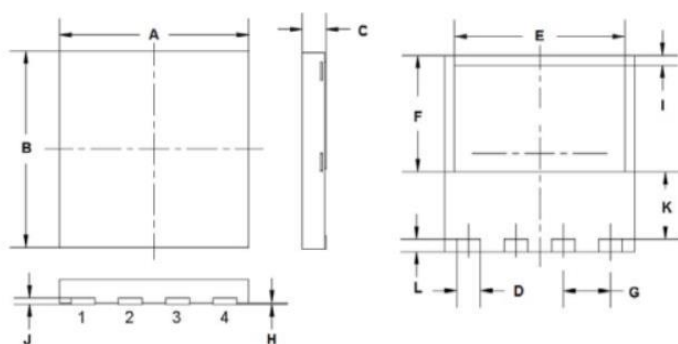




## Package Dimensions

Package DFN8X8

Unit: mm



| Dimension | Min. | Max. |
|-----------|------|------|
| A         | 7.90 | 8.10 |
| B         | 7.90 | 8.10 |
| C         | 0.75 | 0.95 |
| D         | 0.90 | 1.10 |
| E         | 7.10 | 7.30 |
| F         | 4.65 | 4.85 |
| G         | 1.80 | 2.20 |
| H         | 0.00 | 0.05 |
| I         | 0.30 | 0.50 |
| J         | 0.10 | 0.30 |
| K         | 2.65 | 2.85 |
| L         | 0.40 | 0.60 |



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