



## 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

Ordering Part Number	Package	Marking
HC1D08065N	QPFN5X6	HC1D08065N





**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 $T_C = 25^\circ\text{C}$ $T_C = 135^\circ\text{C}$ $T_C = 160^\circ\text{C}$	$I_F$	30 15 8	A
Repetitive Peak Forward Surge Current $T_C = 25^\circ\text{C}, t_p = 10\text{ms}$ , Half Sine Pulse $T_C = 110^\circ\text{C}, t_p = 10\text{ms}$ , Half Sine Pulse	$I_{FRM}$	35 20	A
Non-Repetitive Forward Surge Current $T_C = 25^\circ\text{C}, t_p = 10\text{ms}$ , Half Sine Pulse $T_C = 110^\circ\text{C}, t_p = 10\text{ms}$ , Half Sine Pulse	$I_{FSM}$	55 45	A
$i^2dt$ value $T_C = 25^\circ\text{C}, t_p = 10\text{ms}$ , Half Sine Pulse $T_C = 110^\circ\text{C}, t_p = 10\text{ms}$ , Half Sine Pulse	$\int i^2 dt$	15 10	$\text{A}^2\text{s}$
Power dissipation $T_C = 25^\circ\text{C}$ $T_C = 110^\circ\text{C}$	$P_{tot}$	93 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	Typ.	Unit
Thermal resistance, junction – case.	$R_{thJC}$	1.60	$^\circ\text{C/W}$



**Electrical Characteristic** (at Tc = 25 °C, unless otherwise specified)

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

**Characteristics Curve**

Fig 1: Forward Characteristics

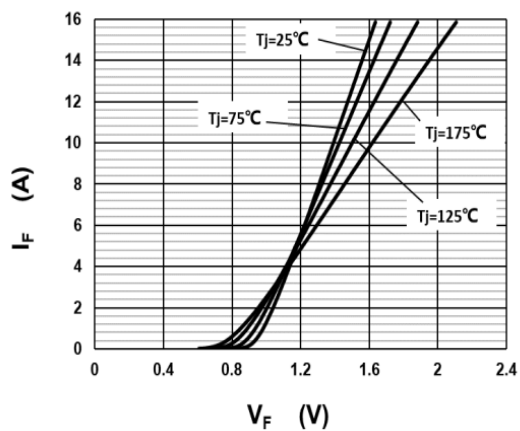


Fig 2: Reverse Characteristics

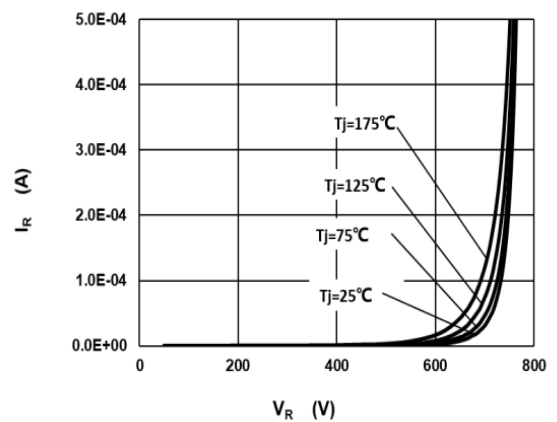




Fig 3: Current Derating

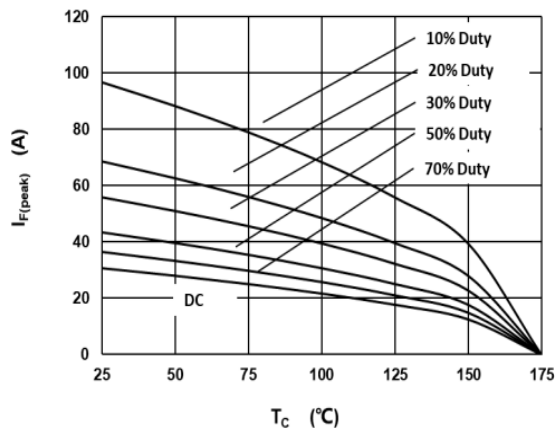


Fig 4: Power Derating

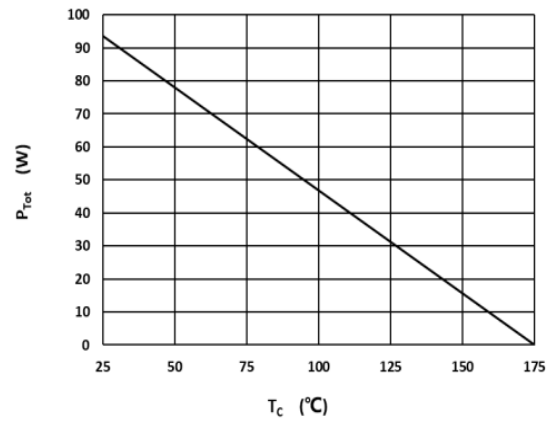


Fig 5: Capacitance vs. Reverse Voltage

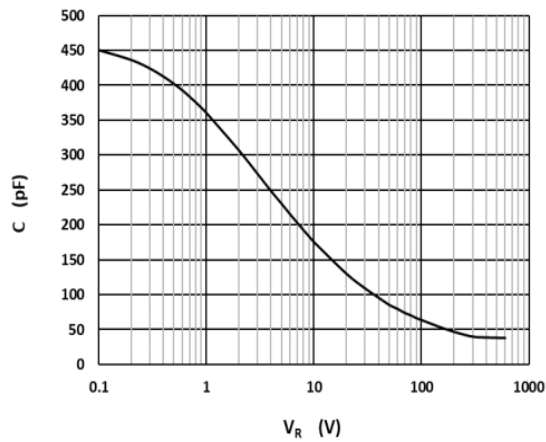


Fig 6: Reverse Charge vs. Reverse Voltage

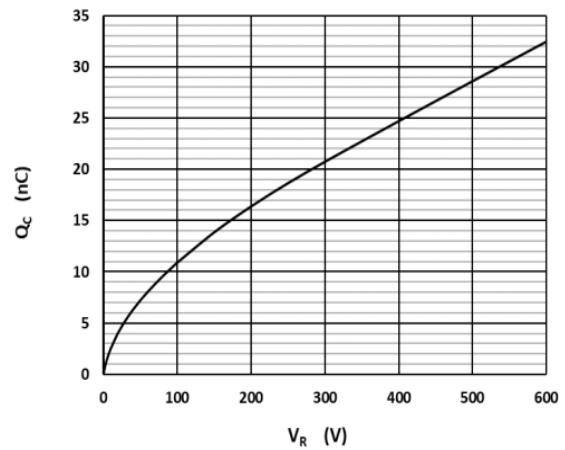


Fig 7: Typical Capacitance Stored Energy

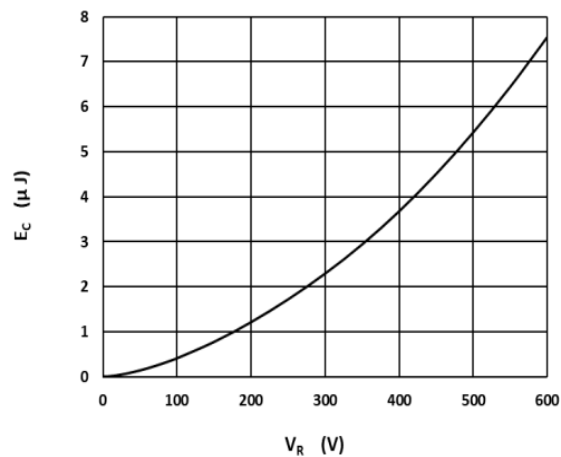
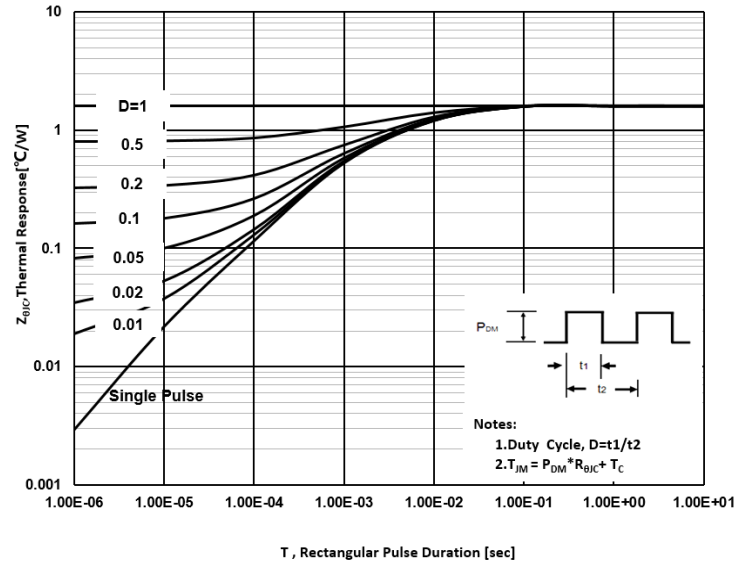




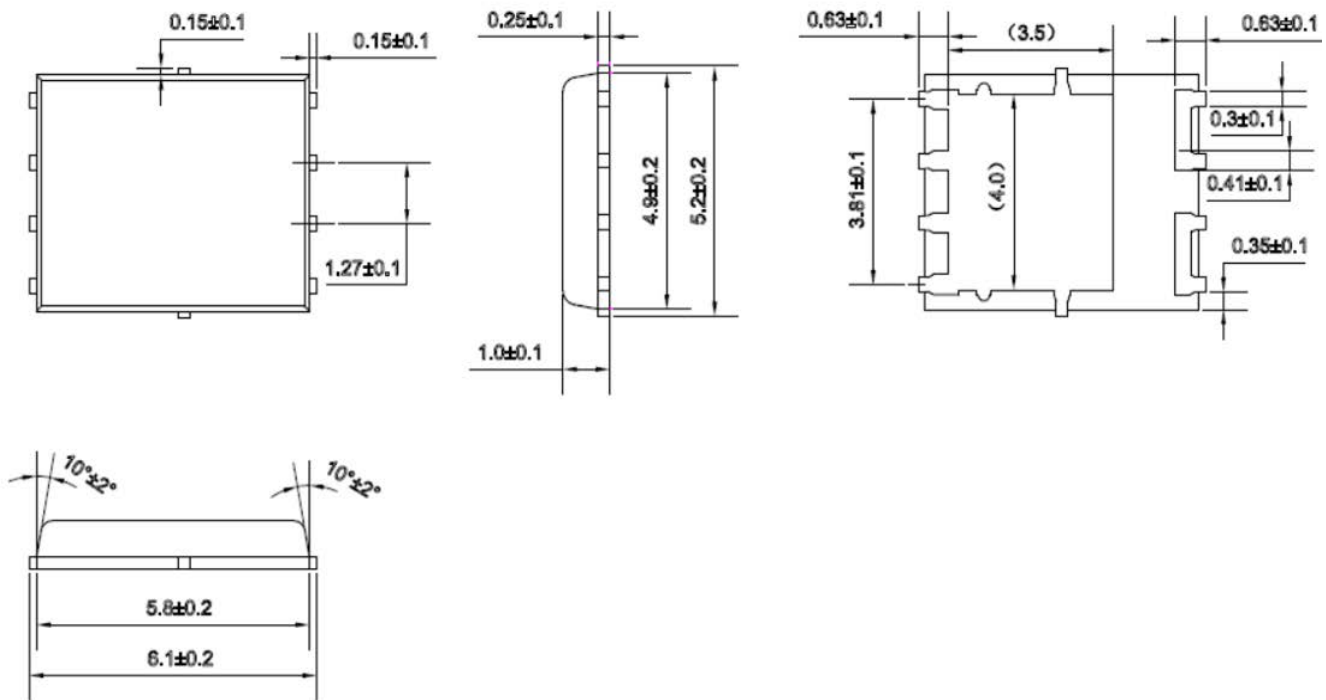
Fig 8: Transient Thermal Impandance





## Package Dimensions

Package PQFN5X6





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