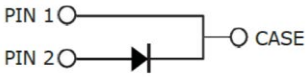
## General Description

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


TO-252-2L
Package




## 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 |
|---|---|---|
| HC3D10120E | TO-252-2L | HC3D10120E |

## Maximum Ratings (at Tj = 25 °C, unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Repetitive Peak Reverse Voltage | $V_{RRM}$ | 1200 | V |
| Surge Peak Reverse Voltage | $V_{RSM}$ | 1200 | V |
| DC Peak Reverse Voltage | $V_R$ | 1200 | V |
| Continuous Forward Current<br>$T_C$ = 25°C<br>$T_C$ = 135°C<br>$T_C$ = 160°C | $I_F$ | <br>30<br>15<br>10 | A |
| Repetitive Peak Forward Surge Current<br>$T_C$ = 25°C,$t_p$=10ms,Half Sine Pulse<br>$T_C$ = 110°C,$t_p$=10ms,Half Sine Pulse | $I_{FRM}$ | <br>57<br>41.5 | A |
| Non-Repetitive Forward Surge Current<br>$T_C$ = 25°C,$t_p$=10ms,Half Sine Pulse<br>$T_C$ = 110°C,$t_p$=10ms,Half Sine Pulse | $I_{FSM}$ | <br>90<br>69.5 | A |
| $i^2dt$ value<br>$T_C$ = 25°C,$t_p$=10ms,Half Sine Pulse<br>$T_C$ = 110°C,$t_p$=10ms,Half Sine Pulse | $\int i^2dt$ | <br>40.5<br>24 | $A^2s$ |
| Power dissipation<br>$T_C$ = 25°C<br>$T_C$ = 110°C | $P_{tot}$ | <br>115<br>50 | W |
| Operating junction Range | $T_j$ | -55 to +175 | °C |
| Storage temperature Range | $T_{stg}$ | -55 to +150 | °C |

## Thermal Resistance

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Thermal resistance, junction – case. | $R_{thJC}$ | 1.30 | °C/W |

## Electrical Characteristic (at Tj = 25 °C, unless otherwise specified)

| Parameter | Symbol | Value | | | Unit | Test Condition |
|---|---|---|---|---|---|---|
| | | min. | typ. | max. | | |
| Forward Voltage | $V_F$ | - | 1.4 | 1.7 | V | $I_F$=2A, $T_j$=25°C |
| | | - | 2.0 | - | | $T_j$=175°C |
| Reverse Current | $I_R$ | - | - | 100 | μA | $V_R$=1200V, $T_j$=25°C |
| | | - | - | 200 | | $T_j$=175°C |
| Total Capacitive Charge | $Q_C$ | - | 48 | - | nC | $V_R$=800V，$T_j$=25℃ $Q_C = \int_0^{V_R} C(V)dV$ |
| Total Capacitance | C | - | 695 | - | pF | $T_j$=25℃, f=1MHz, $V_R$=0V |
| | | - | 46 | - | | $V_R$=400V |
| | | - | 35 | - | | $V_R$=800V |

## Characteristics Curve:

Fig 1: Forward Characteristics

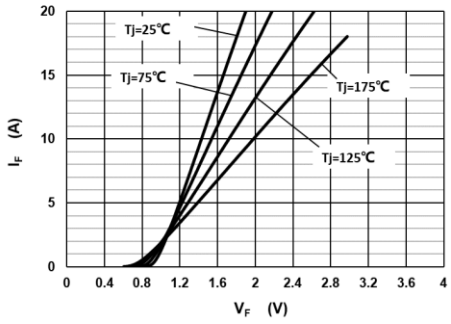



Fig 2: Reverse Characteristics

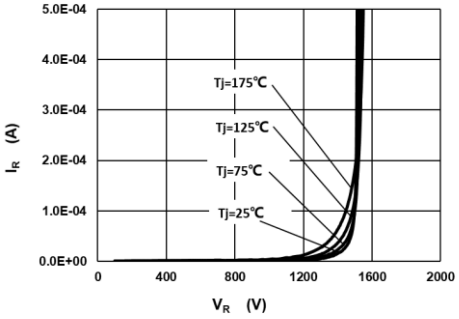



Fig 3: Current Derating

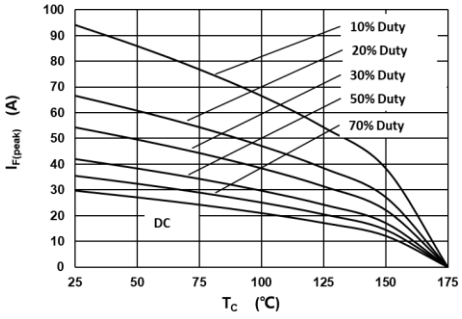



Fig 4: Power Derating

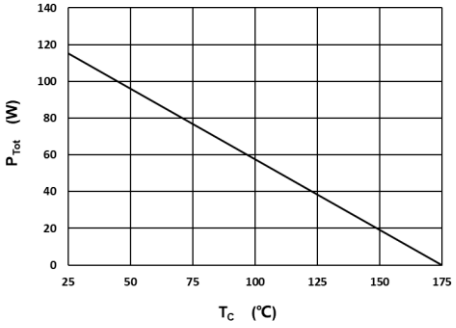


Fig 5: Capacitance vs. Reverse Voltage

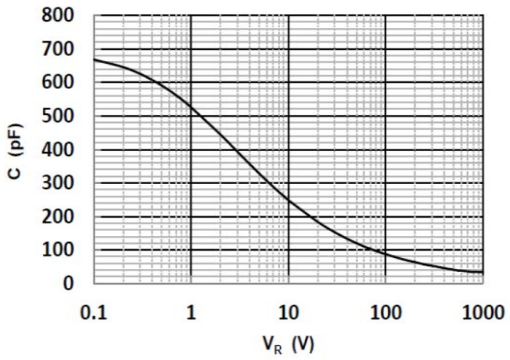



Fig 6: Reverse Charge vs. Reverse Voltage

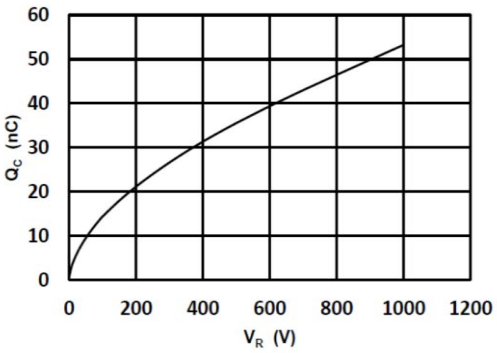



Fig 7: Typical Capacitance Stored Energy

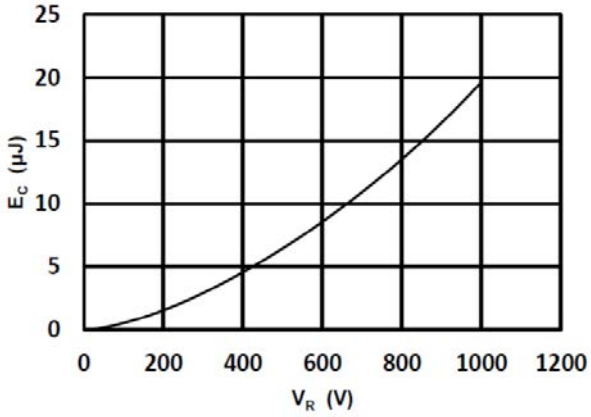
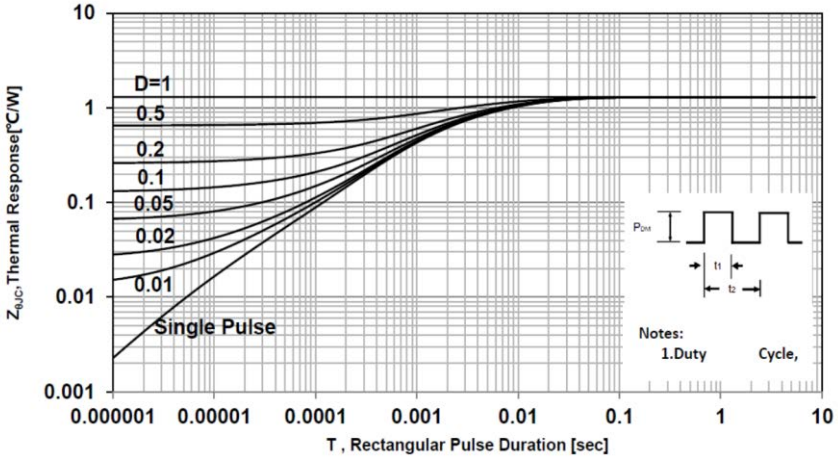
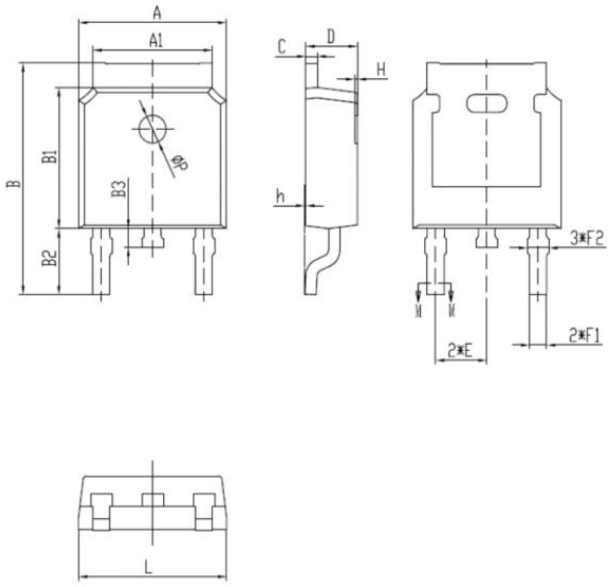



Fig 8: Transient Thermal Impandance



## Package Dimensions

Package TO-252-2L




| 项目 | 规范(mm) | |
|---|---|---|
| | MIN | MAX |
| A | 6.50 | 6.70 |
| A1 | 5.16 | 5.46 |
| B | 9.77 | 10.17 |
| B1 | 6.00 | 6.20 |
| B2 | 2.60 | 3.00 |
| B3 | 0.70 | 0.90 |
| C | 0.45 | 0.61 |
| D | 2.20 | 2.40 |
| E | 2.186 | 2.386 |
| F1 | 0.67 | 0.87 |
| F2 | 0.76 | 0.96 |
| H | 0.00 | 0.30 |
| h | 0.00 | 0.127 |
| L | 6.50 | 6.70 |
| ΦP | 1.10 | 1.30 |

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