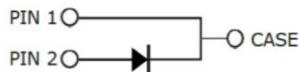


**TO-252-2**



### Package Pin Definitions

- Pin1- Cathode
- Pin2- Anode

| Part Number | Marking  | Package  |
|-------------|----------|----------|
| XCH20065DAC | 20065DAC | TO-252-2 |

$$V_{RRM} = 650 \text{ V}$$

$$I_F(T_C=155^\circ\text{C}) = 20\text{A}$$

$$V_F(T_J=25^\circ\text{C}) = 1.3\text{V}$$

### Features

- Low reverse current
- Good surge current capability
- Low capacitive charge
- No reverse recovery current
- Halogen free, RoHs compliant

### Benefits

- System efficiency improvement over Si diodes
- Higher switching frequency
- Increased power density
- Essentially no switching losses

### Applications

- Switch mode power supplies (SMPS)
- Uninterruptible power supplies
- On Board Charger
- UPS

### Maximum Ratings ( $T_C=25^\circ\text{C}$ unless otherwise specified)

| Symbol        | Parameter                            | Test conditions                                                                                                               | Value          | Unit             |
|---------------|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|----------------|------------------|
| $V_{RRM}$     | Repetitive peak reverse voltage      |                                                                                                                               | 650            | V                |
| $V_{RSM}$     | Non-repetitive peak reverse voltage  |                                                                                                                               | 650            | V                |
| $I_F$         | Continuous forward current           | $T_C=25^\circ\text{C}$<br>$T_C=135^\circ\text{C}$<br>$T_C=155^\circ\text{C}$                                                  | 58<br>30<br>20 | A                |
| $I_{FRM}$     | Repetitive forward surge current     | $T_C=25^\circ\text{C}$ , $t_p=10\text{ms}$ , Half Sine Pulse<br>$T_C=110^\circ\text{C}$ , $t_p=10\text{ms}$ , Half Sine Pulse | 90<br>54       | A                |
| $I_{FSM}$     | Non-Repetitive forward surge current | $T_C=25^\circ\text{C}$ , $t_p=10\text{ms}$ , Half Sine Pulse<br>$T_C=110^\circ\text{C}$ , $t_p=10\text{ms}$ , Half Sine Pulse | 160<br>140     | A                |
| $\int i^2 dt$ | $i^2t$ value                         | $T_C=25^\circ\text{C}$ , $t_p=10\text{ms}$ , Half Sine Pulse<br>$T_C=110^\circ\text{C}$ , $t_p=10\text{ms}$ , Half Sine Pulse | 128<br>98      | A <sup>2</sup> S |
| $P_{tot}$     | Power dissipation                    | $T_C=25^\circ\text{C}$<br>$T_C=110^\circ\text{C}$                                                                             | 136<br>59      | W                |
| $T_J$         | Operating junction temperature       |                                                                                                                               | -55~175        | $^\circ\text{C}$ |
| $T_{stg}$     | Storage temperature                  |                                                                                                                               | -55~175        | $^\circ\text{C}$ |

### Thermal Characteristics

| Symbol       | Parameter                                | Value |      |      | Unit |
|--------------|------------------------------------------|-------|------|------|------|
|              |                                          | Min.  | Typ. | Max. |      |
| $R_{th(jc)}$ | Thermal resistance from junction to case |       | 1.10 |      | °C/W |

### Electrical Characteristics ( $T_j=25^{\circ}\text{C}$ unless otherwise specified)

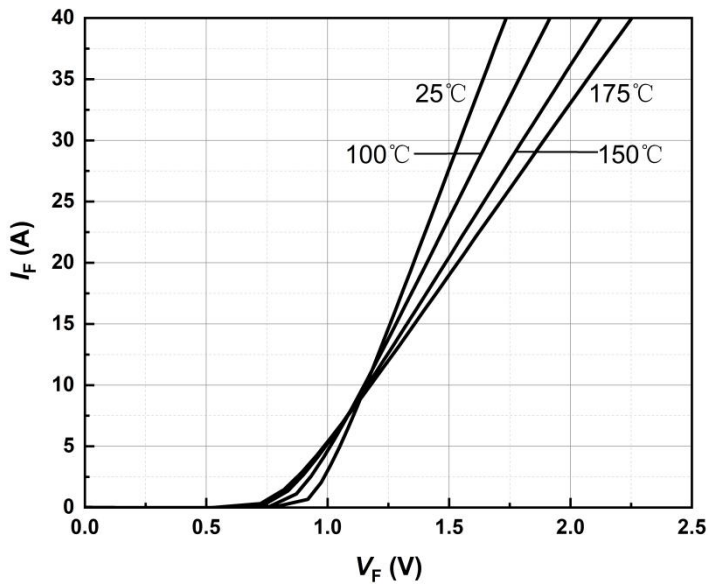
#### Static Characteristics

| Symbol   | Parameter             | Test conditions                                                                         | Value |            |           | Unit          |
|----------|-----------------------|-----------------------------------------------------------------------------------------|-------|------------|-----------|---------------|
|          |                       |                                                                                         | Min.  | Typ.       | Max.      |               |
| $V_{DC}$ | DC blocking voltage   | $T_j=25^{\circ}\text{C}$                                                                | 650   |            |           | V             |
| $V_F$    | Diode forward voltage | $I_F=20\text{A } T_j=25^{\circ}\text{C}$<br>$I_F=20\text{A } T_j=175^{\circ}\text{C}$   |       | 1.3<br>1.5 | 1.5       | V             |
| $I_R$    | Reverse current       | $V_R=650\text{V } T_j=25^{\circ}\text{C}$<br>$V_R=650\text{V } T_j=175^{\circ}\text{C}$ |       | 10<br>40   | 80<br>200 | $\mu\text{A}$ |

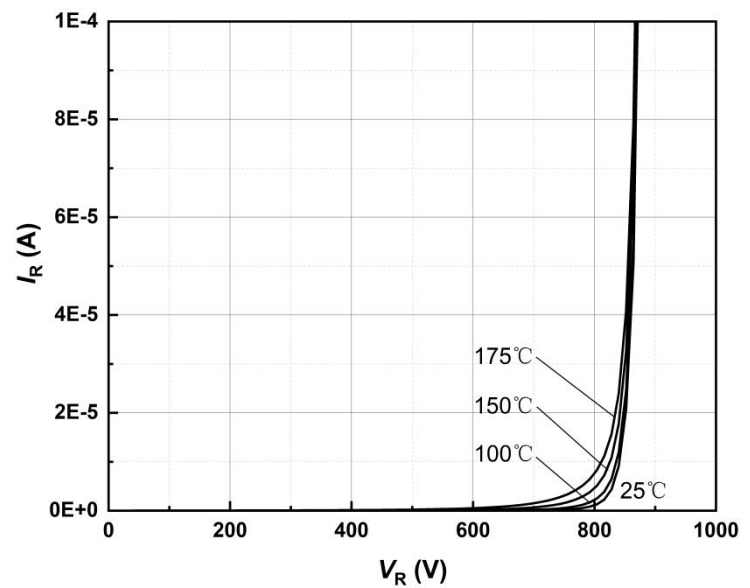
#### AC Characteristics ( $T_j=25^{\circ}\text{C}$ unless otherwise specified)

| Symbol | Parameter               | Test conditions                                                                                        | Value |                   |      | Unit |
|--------|-------------------------|--------------------------------------------------------------------------------------------------------|-------|-------------------|------|------|
|        |                         |                                                                                                        | Min.  | Typ.              | Max. |      |
| $Q_C$  | Total capacitive charge | $V_R=400\text{V } T_j=25^{\circ}\text{C}$<br>$Q_C = \int_0^{V_R} C(V)dV$                               |       | 62                |      | nC   |
| $C$    | Total capacitance       | $V_R=0\text{V } f=1\text{MHz}$<br>$V_R=200\text{V } f=1\text{MHz}$<br>$V_R=400\text{V } f=1\text{MHz}$ |       | 1176<br>119<br>98 |      | pF   |

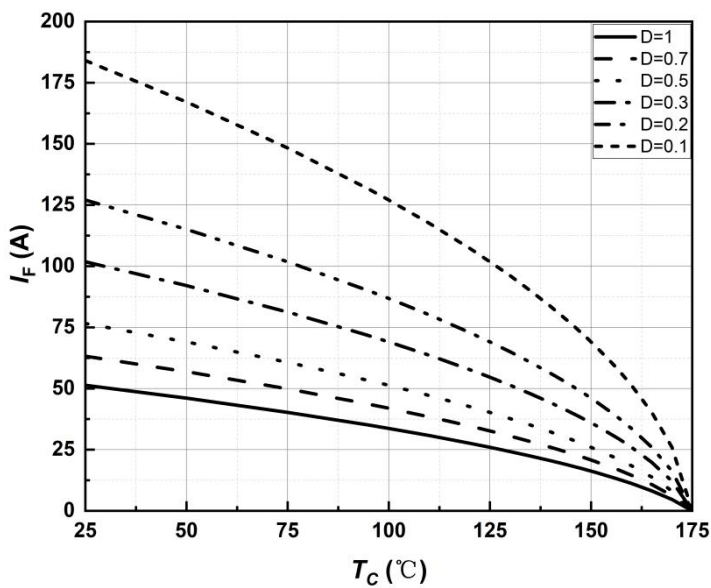
**Typical Performance**



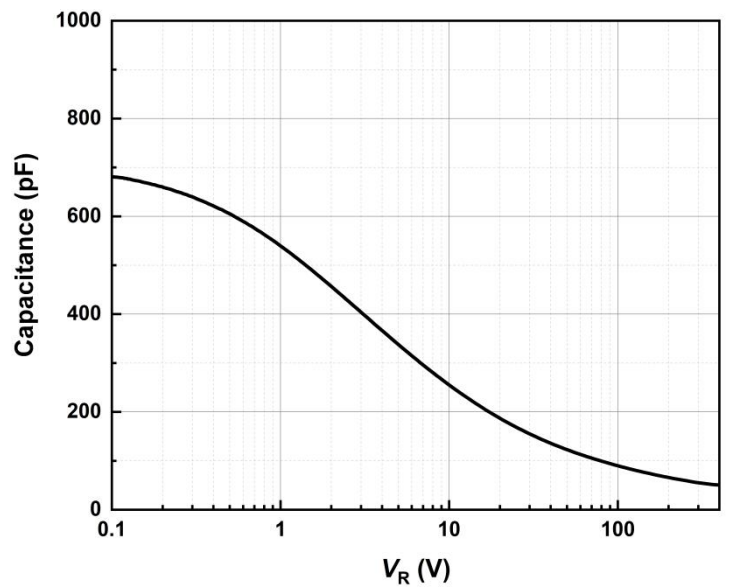
**Figure 1. Typical forward characteristics**



**Figure 2. Typical reverse current as function of reverse voltage**

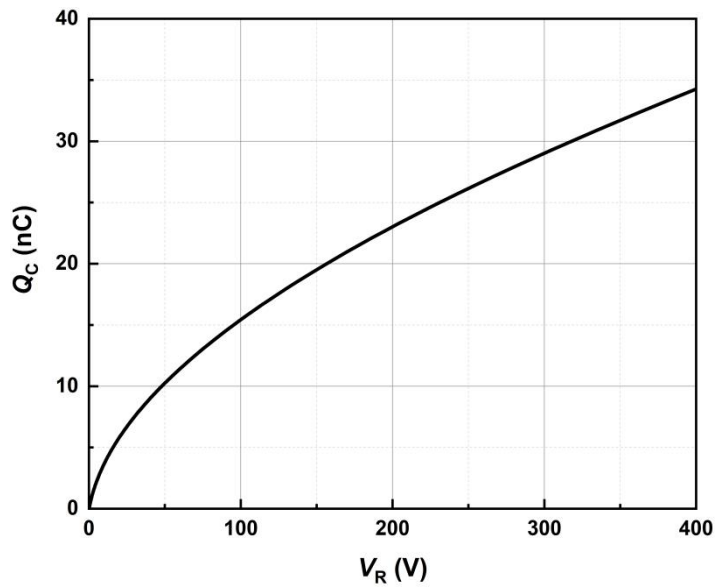


**Figure 3. Diode forward current as function of temperature, D=duty cycle**

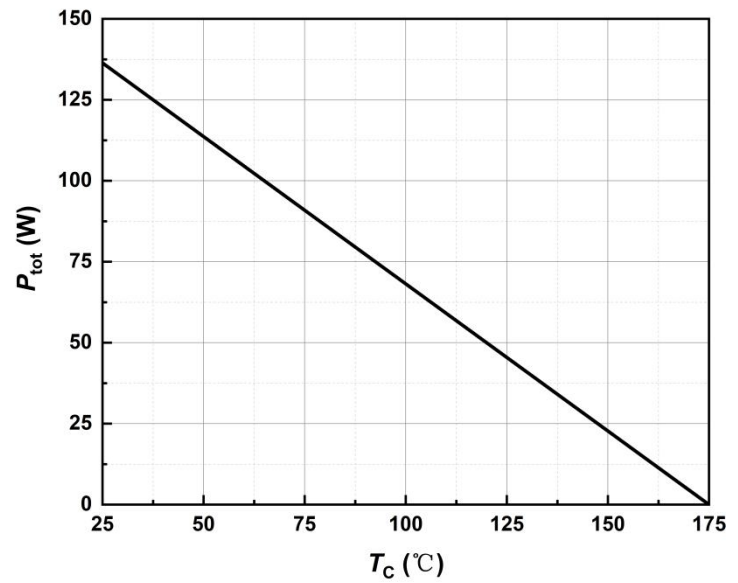


**Figure 4. Typical capacitance as function of reverse voltage,  $C=f(V_R)$ ;  $T_J=25^\circ\text{C}$**

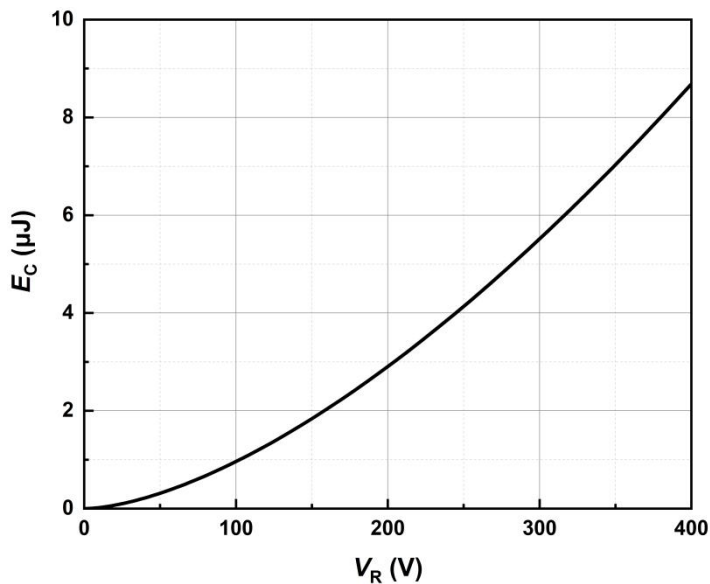
**Typical Performance**



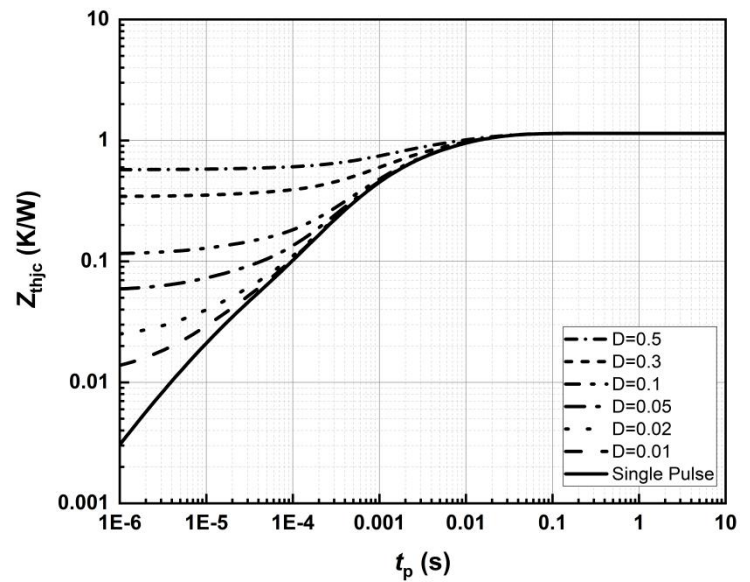
**Figure 5. Typical reverse charge as function of reverse voltage**



**Figure 6. Power dissipation as function of case temperature**

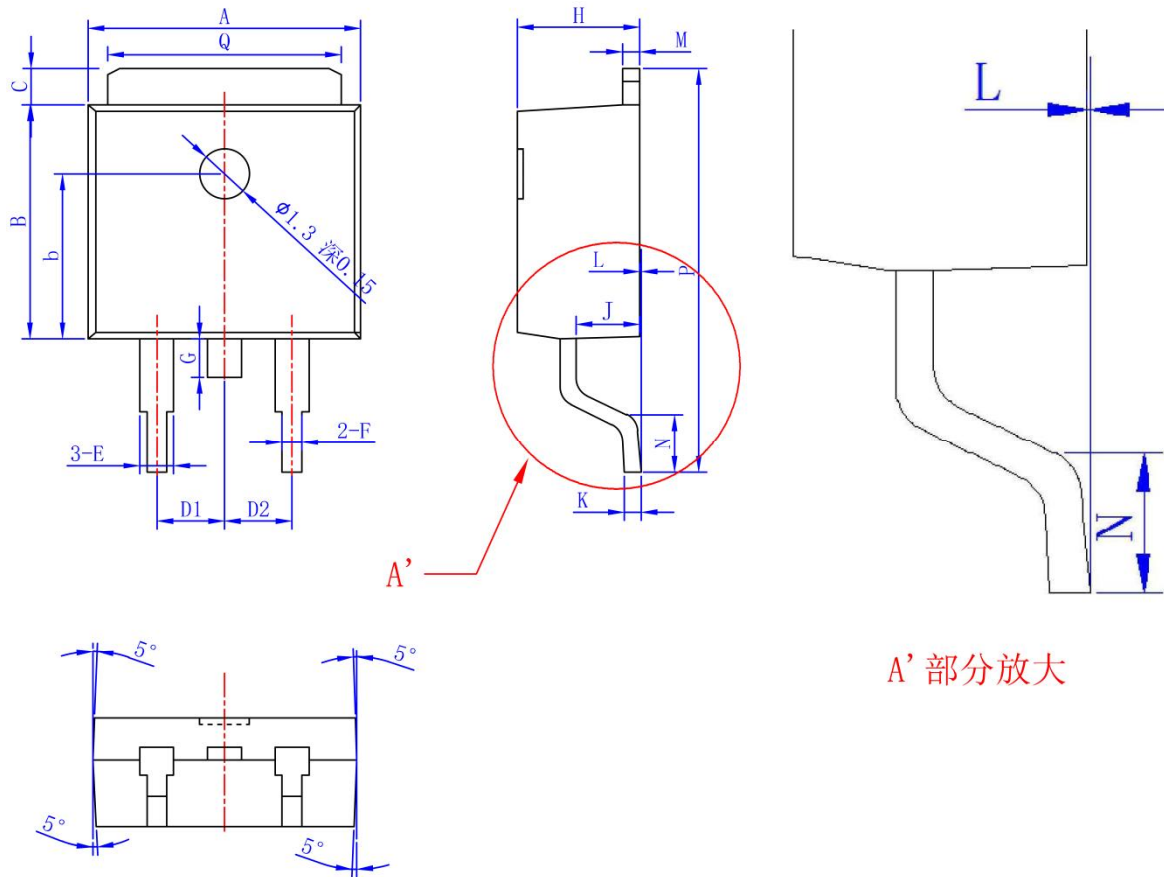


**Figure 7. Capacitance stored energy**



**Figure 8. Max. transient thermal impedance**

**Package Dimensions**



A' 部分放大

| SYMBOL    | MM   |         |       |
|-----------|------|---------|-------|
|           | MIN  | NOM     | MAX   |
| *A        | 6.30 | 6.55    | 6.90  |
| *B        | 5.90 | 6.10    | 6.30  |
| b         | 4.10 | 4.30    | 4.50  |
| C         | 0.90 | 1.00    | 1.10  |
| *D1       |      | 2.29BSC |       |
| *D2       |      | 2.29BSC |       |
| *E        | 0.61 | 0.76    | 0.91  |
| *F        | 0.50 | 0.60    | 0.70  |
| G         | 0.60 | 0.80    | 1.00  |
| *H        | 2.10 | 2.30    | 2.50  |
| *J        | 0.90 | 1.00    | 1.10  |
| *K        | 0.40 | 0.50    | 0.60  |
| *L        | 0.00 | 0.05    | 0.127 |
| *M        | 0.45 | 0.50    | 0.55  |
| *N        | 1.39 |         | 1.77  |
| *P        | 9.60 | 9.90    | 10.30 |
| Q         | 5.10 | 5.30    | 5.50  |
| 带*为必须检验尺寸 |      |         |       |