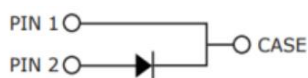


TO-263-2



Package Pin Definitions

- Pin1- Cathode
- Pin2- Anode

Part Number	Marking	Package
XCH20065JAS	20065JAS	TO-263-2

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

$$I_F(T_C=153^\circ\text{C}) = 20\text{A}$$

$$V_F(T_J=25^\circ\text{C}) = 1.35\text{V}$$

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	$T_C=25^\circ\text{C}$ $T_C=135^\circ\text{C}$ $T_C=153^\circ\text{C}$	51 26 20	A
I_{FRM}	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	102 63	A
I_{FSM}	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	150 120	A
$\int i^2 dt$	i^2t 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	112 72	A ² S
P_{tot}	Power dissipation	$T_C=25^\circ\text{C}$ $T_C=110^\circ\text{C}$	150 65	W
T_J	Operating junction temperature		-55~175	$^\circ\text{C}$
T_{stg}	Storage temperature		-55~150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Value			Unit
		Min.	Typ.	Max.	
$R_{th(jc)}$	Thermal resistance from junction to case		1.00		°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	$I_F=20\text{A } T_j=25^{\circ}\text{C}$ $I_F=20\text{A } T_j=175^{\circ}\text{C}$		1.35 1.7	1.5 1.8	V
I_R	Reverse current	$V_R=650\text{V } T_j=25^{\circ}\text{C}$ $V_R=650\text{V } T_j=175^{\circ}\text{C}$		2 10	40 100	μA

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	$V_R=400\text{V } T_j=25^{\circ}\text{C}$ $Q_C = \int_0^{V_R} C(V)dV$		52		nC
C	Total capacitance	$V_R=1\text{V } f=1\text{MHz}$ $V_R=200\text{V } f=1\text{MHz}$ $V_R=400\text{V } f=1\text{MHz}$		1018 104 89		pF

Typical Performance

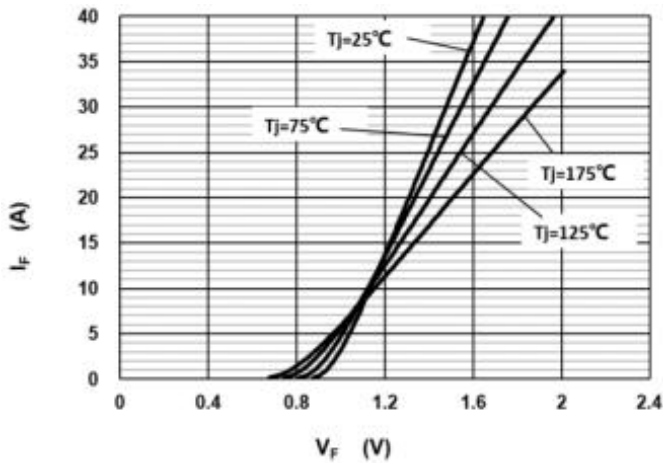


Figure 1. Typical forward characteristics

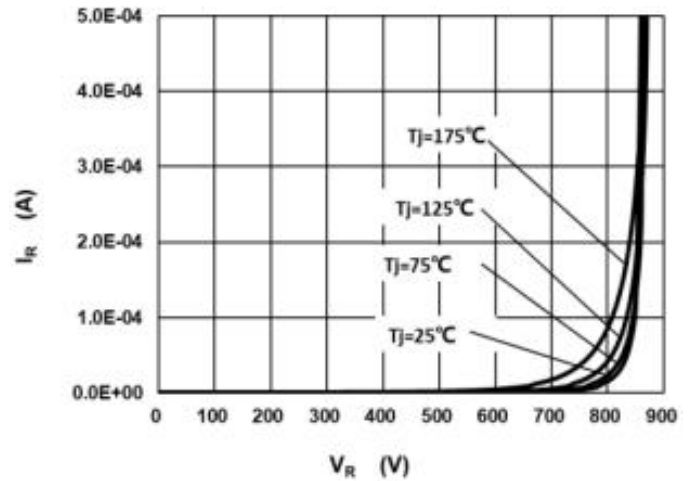


Figure 2. Typical reverse current as function of reverse voltage

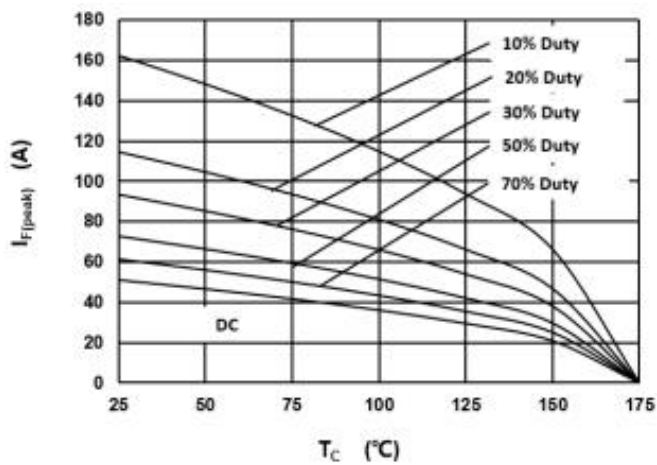


Figure 3. Diode forward current as function of temperature, D=duty cycle

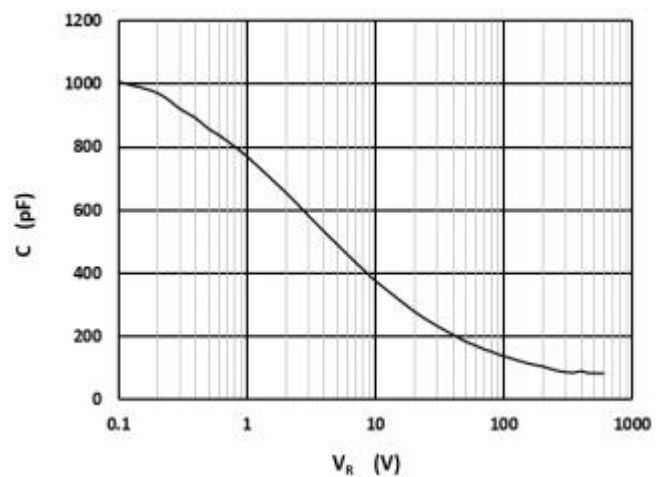


Figure 4. Typical capacitance as function of reverse voltage, $C=f(V_R)$; $T_J=25^\circ\text{C}$

Typical Performance

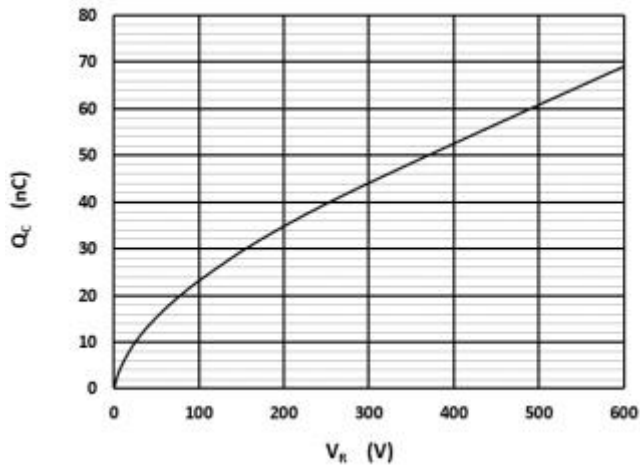


Figure 5. Typical reverse charge as function of reverse voltage

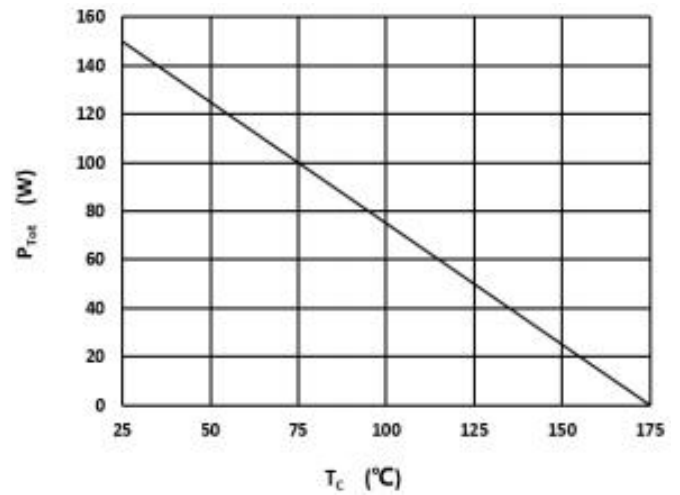


Figure 6. Power dissipation as function of case temperature

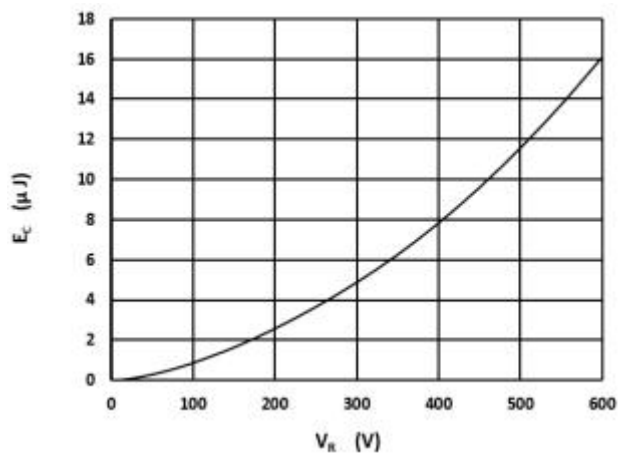


Figure 7. Capacitance stored energy

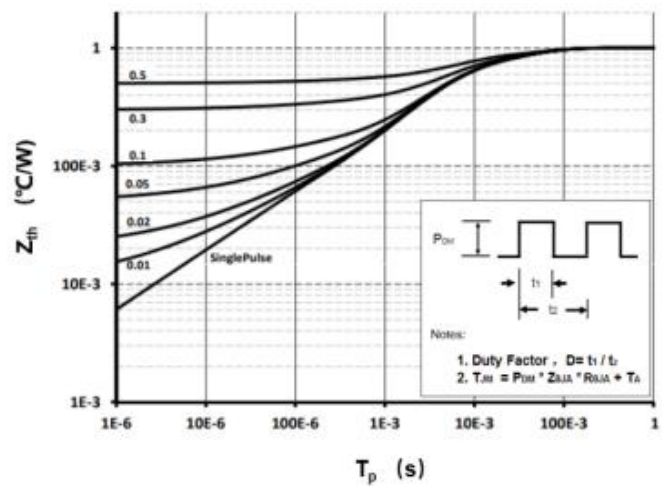


Figure 8. Max. transient thermal impedance

Technical drawing of a mechanical part, showing three views: front, side, and top. The drawing includes dimensions and tolerances for various features.

Front View Dimensions:

- Total height: $15.10^{+0.1}_{-0.1}$
- Top flange diameter: 10.12 ± 0.10
- Top flange thickness: 1.26 ± 0.10
- Bottom flange diameter: 0.81 ± 0.05
- Bottom flange thickness: 1.55 ± 0.10
- Bottom flange diameter (inner): 2.54 ± 0.10

Side View Dimensions:

- Top flange diameter: 4.6 ± 0.05
- Top flange thickness: 1.27 ± 0.015
- Top flange width: 9.11
- Top flange angle: 7°
- Top flange radius: $0.10 \sim 0.25$
- Top flange diameter (inner): 0.381 ± 0.05
- Top flange thickness (inner): 1.9 ± 0.1
- Top flange diameter (inner, bottom): 2.15 ± 0.10
- Top flange angle (inner): 7°
- Top flange radius (inner): $0.10 \sim 0.25$
- Top flange diameter (inner, bottom): 0.381 ± 0.05
- Top flange thickness (inner): 1.9 ± 0.1
- Top flange diameter (inner, bottom): 2.15 ± 0.10

Top View Dimensions:

- Top flange diameter: 4.6 ± 0.05