



**芯科半导体**

**ELECTRONIC  
PRODUCT**

**浙江芯科半导体有限公司**



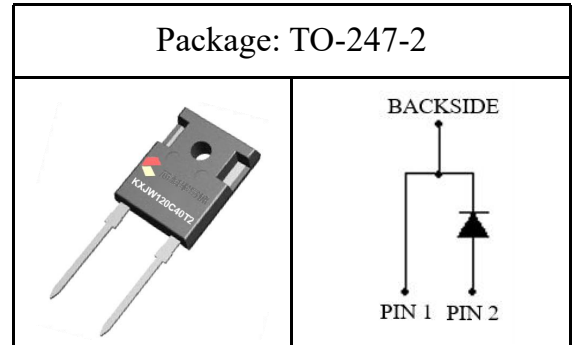
### Features

- ✓ Zero forward recovery voltage
- ✓ Zero reverse recovery current
- ✓ Excellent surge current capability
- ✓ Temperature independent switching
- ✓ Positive temperature coefficient on  $V_F$
- ✓ High frequency operation

Part NO.	KXJW120C40T2
$V_{RRM}$	= 1200 V
$I_F(T_C=150^\circ\text{C})$	= 48 A
$Q_C$	= 175 nC

### Applications

- ✓ Motor drives
- ✓ Uninterruptible power supplies
- ✓ Photovoltaic inverter
- ✓ Switch mode power supplies (SMPS)



### Key performance parameters

Symbol	Parameter	Test conditions	Value	Unit	Note
$V_{RRM}$	Repetitive peak reverse voltage	$T_C= 25^\circ\text{C}$	1200	V	
$V_{RSM}$	Surge peak reverse voltage (DC)	$T_C= 25^\circ\text{C}$	1200	V	
$I_F$	Continuous forward current	$T_C= 25^\circ\text{C}, D=1$ $T_C= 135^\circ\text{C}, D=1$ $T_C= 155^\circ\text{C}, D=1$	119 61 43	A	Fig.2
$I_{FRM}$	Repetitive forward surge current	$t_p=10$ ms, Half sine wave $T_C= 25^\circ\text{C}$ $T_C= 100^\circ\text{C}$	198 174	A	
$I_{FSM}$	Non-repetitive forward surge current	$t_p= 10$ ms, Half sine wave $T_C= 25^\circ\text{C}$ $T_C= 150^\circ\text{C}$	332 307	A	
$\int i^2 dt$	$i^2t$ value	$t_p= 10$ ms, $T_C= 25^\circ\text{C}$ $T_C= 150^\circ\text{C}$	551 471	$\text{A}^2\text{s}$	
$P_{tot}$	Total power dissipation	$T_C= 25^\circ\text{C}$	534	W	Fig.1
$T_j$	Operating junction temperature		-55 ~ 175	$^\circ\text{C}$	
$T_{stg}$	Storage temperature		-55 ~ 175	$^\circ\text{C}$	



## Static electrical characteristics

Symbol	Parameter	Test conditions	Value			Unit	Note
			Min.	Typ.	Max.		
$V_{DC}$	DC blocking voltage	$I_R = 50 \mu A, T_j = 25^\circ C$	1250	-	-	V	
$V_F$	Diode forward voltage	$I_F = 40 A, T_j = 25^\circ C$ $I_F = 40 A, T_j = 150^\circ C$	-	1.45 2	1.5 -	V	Fig.3
$I_R$	Reverse current	$V_R = 1200 V, T_j = 25^\circ C$ $V_R = 1200 V, T_j = 150^\circ C$	-	0.03 5	-	$\mu A$	Fig.4
$C$	Total capacitance	$V_R = 0.1 V, T_j = 25^\circ C, f = 1 MHz$ $V_R = 400 V, T_j = 25^\circ C, f = 1 MHz$ $V_R = 800 V, T_j = 25^\circ C, f = 1 MHz$	-	2417 208 134	-	pF	Fig.8
$Q_C$	Total capacitive charge	$V_R = 800 V, T_j = 25^\circ C$	-	175	-	nC	Fig.5
$E_C$	Capacitance stored energy	$V_R = 800 V, T_j = 25^\circ C$	-	44	-	$\mu J$	Fig.7
$T_{RR}$	Reverse recovery time	$V_R = 800V, I_F = 40A, di/dt = 1000A/\mu s$		19.82		ns	
$Q_{RR}$	Reverse recovery Charge			120		nC	

## Thermal characteristics

Symbol	Parameter	Value		Unit	Note
		Typ	Max		
$R_{\theta JC}$	Thermal resistance from junction to case	0.281	-	$^\circ C/W$	Fig.6
$R_{\theta JA}$	Thermal resistance from junction to ambient	32.21	-	$^\circ C/W$	

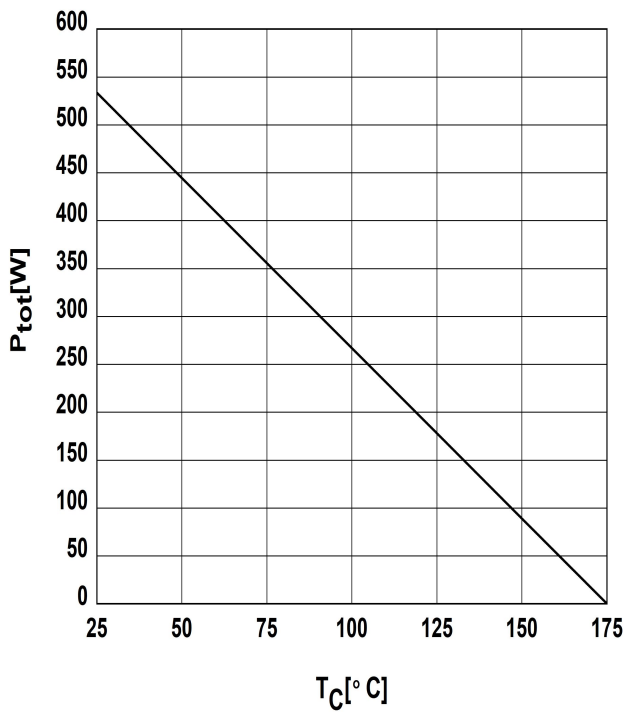


Figure.1 Power dissipation

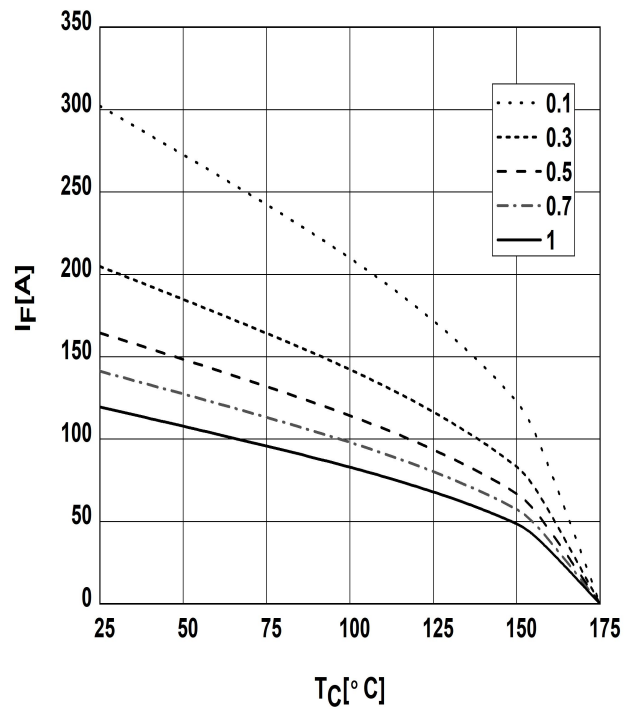


Figure.2 Diode forward current

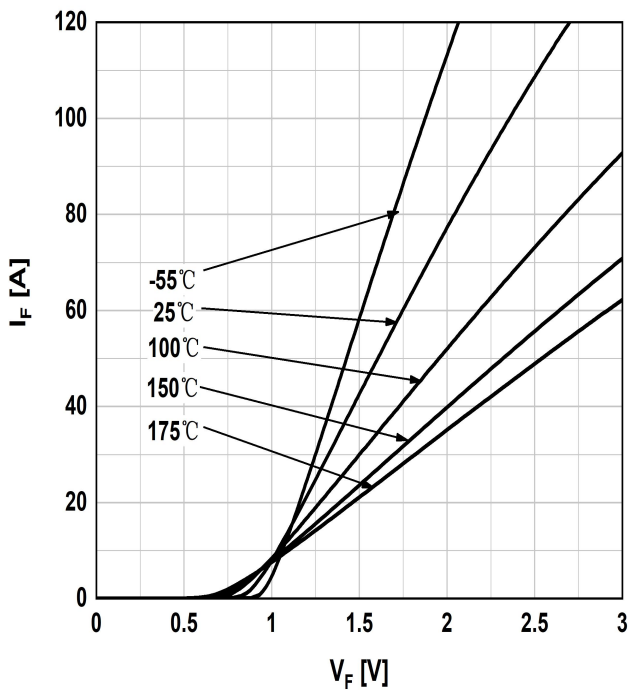


Figure.3 Typical forward characteristics

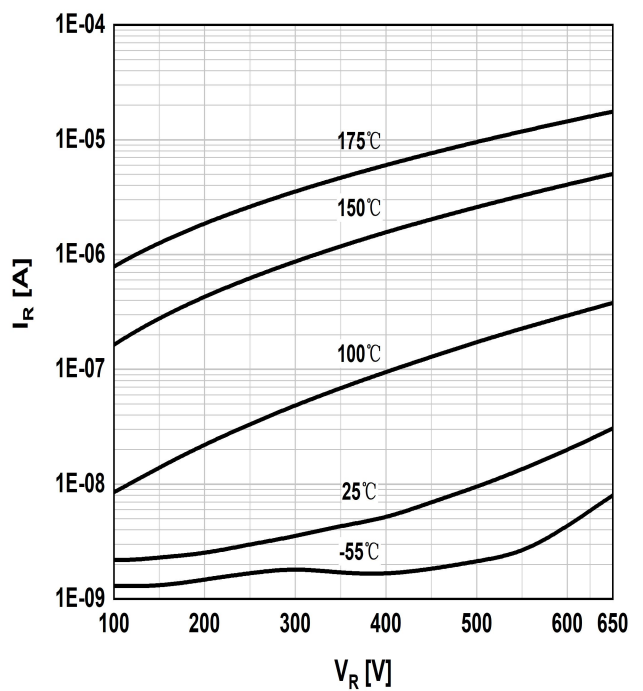


Figure.4 Reverse current vs. reverse voltage

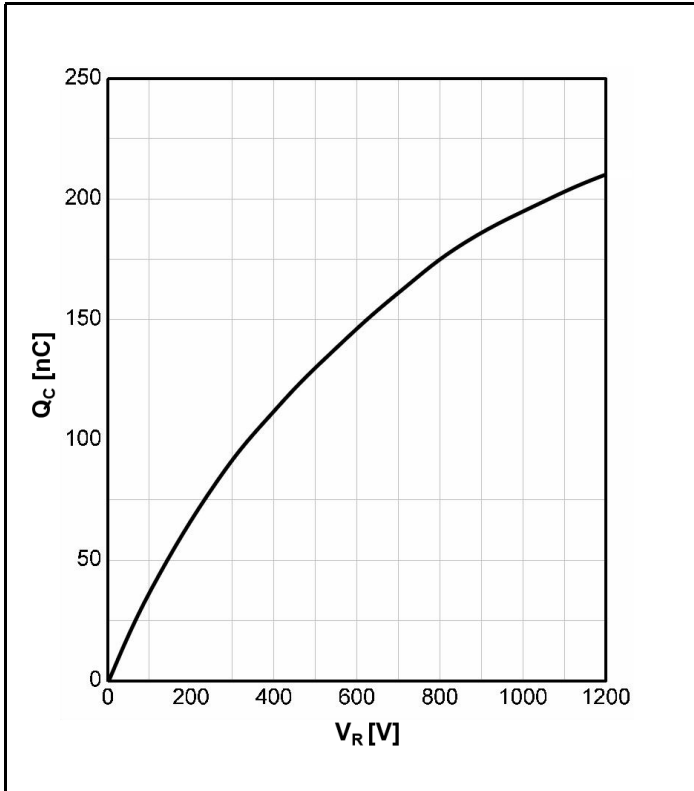


Figure.5 Capacitance charge vs. reverse voltage

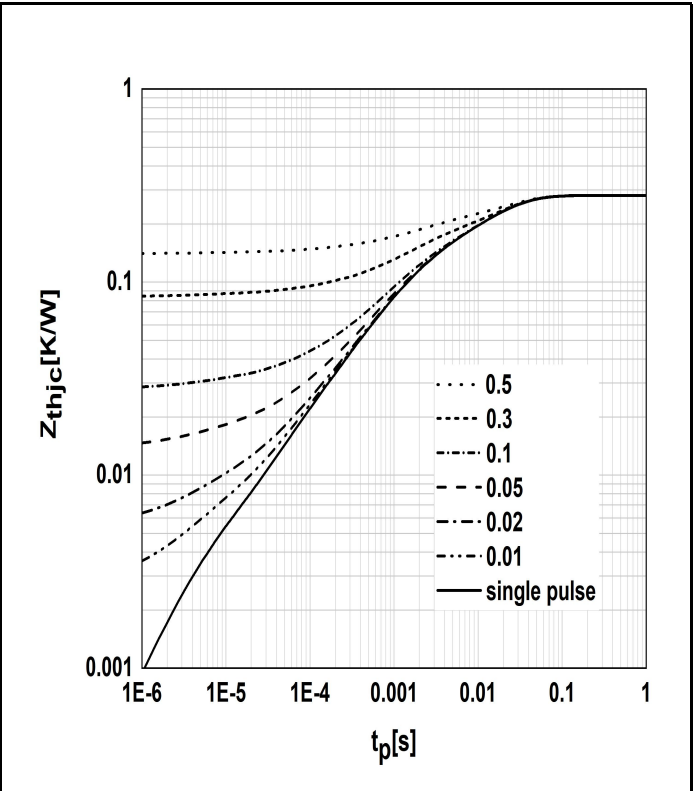


Figure.6 Transient thermal impedance

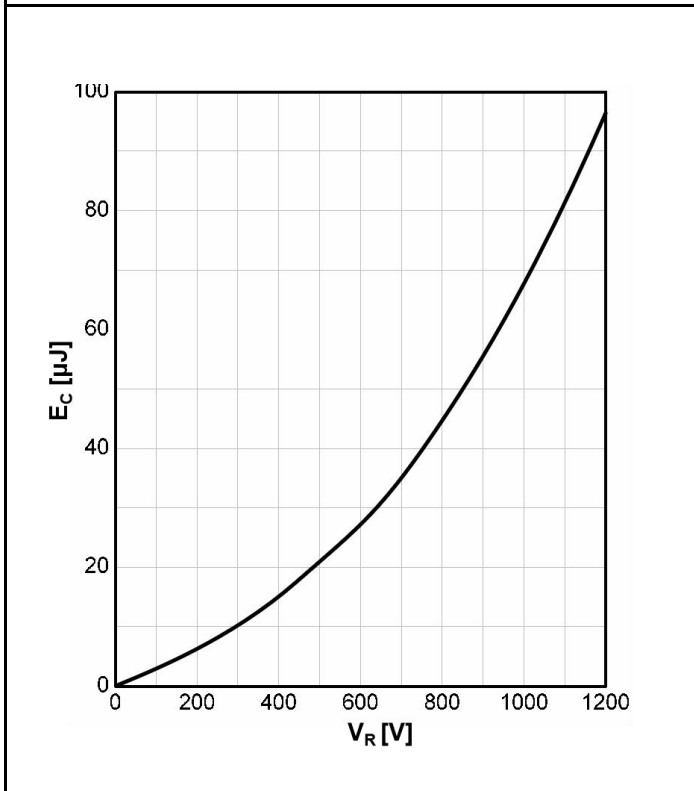


Figure.7 Capacitance stored energy

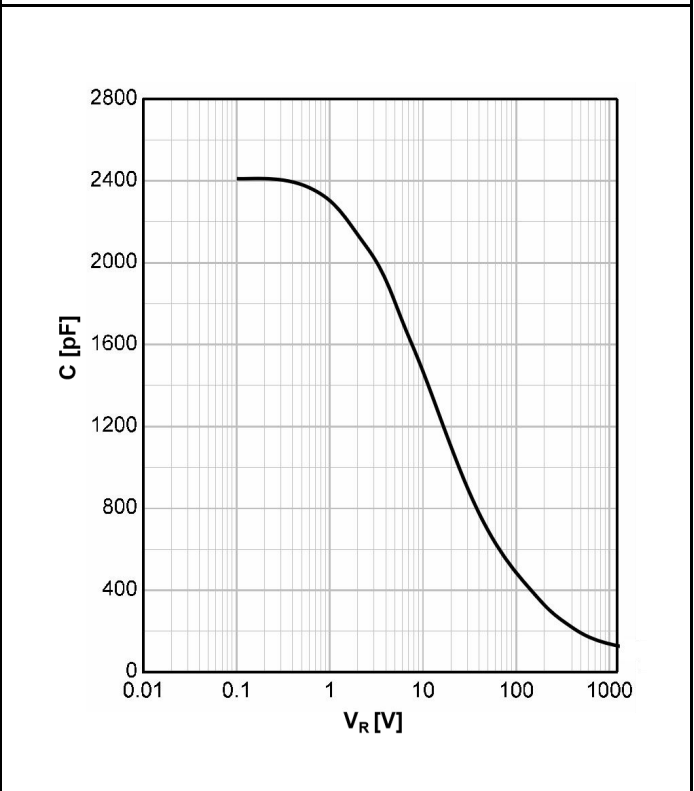


Figure.8 Capacitance vs. reverse voltage



### Package outlines

