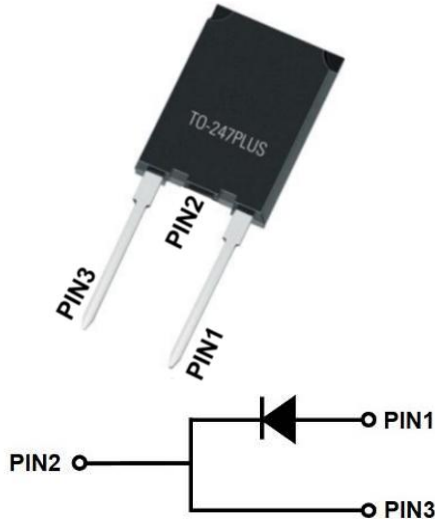


## Silicon Carbide Schottky Diode

$V_{RRM}$	1200V
$I_{F(135^{\circ}C)}$	138A
$Q_C$	663nC



### Features

- Positive temperature coefficient
- Temperature-independent switching
- Maximum working temperature at 175 °C
- Unipolar devices and zero reverse recovery current
- Zero forward recovery current
- Essentially no switching losses
- Reduction of heat sink requirements
- High-frequency operation
- Reduction of EMI

### Typical Applications

Typical applications are in power factor correction(PFC), solar inverter, uninterruptible power supply, motor drives, photovoltaic inverter, electric car and charger.

### Mechanical Data

- **Package:** TO-247PLUS-2L  
Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant, halogen-free
- **Terminals:** Tin plated leads
- **Polarity:** As marked

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

PARAMETER	SYMBOL	UNIT	VALUE
Device marking code			D1120120NSYG4
Reverse voltage (Repetitive peak) @ $T_j=25^{\circ}C$	$V_{RRM}$	V	1200
Reverse voltage (Surge peak) @ $T_j=25^{\circ}C$	$V_{RSM}$	V	1200
Reverse voltage (DC) @ $T_j=25^{\circ}C$	$V_{DC}$	V	1200
Continuous forward current @ $T_C=25^{\circ}C$	$I_F$	A	297
Continuous forward current @ $T_C=135^{\circ}C$			138
Continuous forward current @ $T_C=142^{\circ}C$			120
Non-repetitive peak forward surge current @ $T_C=25^{\circ}C$ , $t_p=10ms$ , Half Sine Wave	$I_{FSM}$	A	720
Non-repetitive peak forward surge current @ $T_C=150^{\circ}C$ , $t_p=10ms$ , Half Sine Wave			600
Power Dissipation@ $T_C=25^{\circ}C$	$P_{TOT}$	W	1153
Power Dissipation@ $T_C=110^{\circ}C$			500
$i^2t$ Value@ $T_C=25^{\circ}C$ , $t_p=10ms$	$\int i^2dt$	$A^2S$	2592
Operating junction and Storage temperature range	$T_j, T_{stg}$	$^{\circ}C$	-55 to +175



# YJD1120120NSYG4

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

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS	Min.	Typ.	Max.
Reverse voltage (DC)	$V_{DC}$	V	$I_R=0.25\text{mA}$ , $T_j=25^\circ\text{C}$	1200	-	-
Forward voltage	$V_F$	V	$I_F=120\text{A}$ , $T_j=25^\circ\text{C}$	-	1.45	1.65
			$I_F=120\text{A}$ , $T_j=175^\circ\text{C}$	-	2.0	-
Reverse current	$I_R$	$\mu\text{A}$	$V_R=1200\text{V}$ , $T_j=25^\circ\text{C}$	-	1	25
			$V_R=1200\text{V}$ , $T_j=175^\circ\text{C}$	-	50	-
Total capacitive charge	$Q_C$	nC	$V_R=800\text{V}$ , $T_j=25^\circ\text{C}$ , $Q_C=\int_0^{V_R} I_C(V)dV$	-	663	-
Total capacitance	C	pF	$V_R=0\text{V}$ , $f=1\text{MHZ}$	-	9320	-
			$V_R=400\text{V}$ , $f=1\text{MHZ}$	-	623	-
			$V_R=800\text{V}$ , $f=1\text{MHZ}$	-	468	-
Capacitance stored energy	$E_C$	$\mu\text{J}$	$V_R=800\text{V}$	-	189	-

## ■Thermal Characteristics

PARAMETER	SYMBOL	UNIT	Typ.
Thermal resistance	$R_{\theta\text{-JC}}$	$^\circ\text{C/W}$	0.13

## ■Typical Characteristics (Typical)

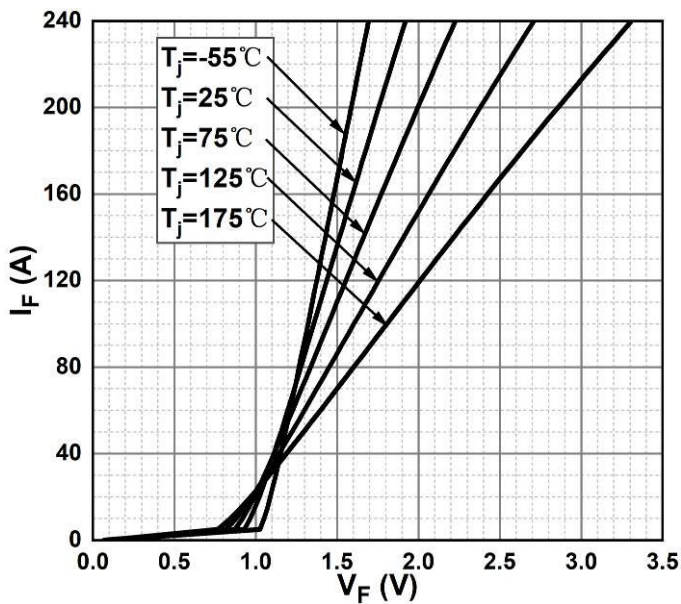


Figure 1. Forward Characteristics

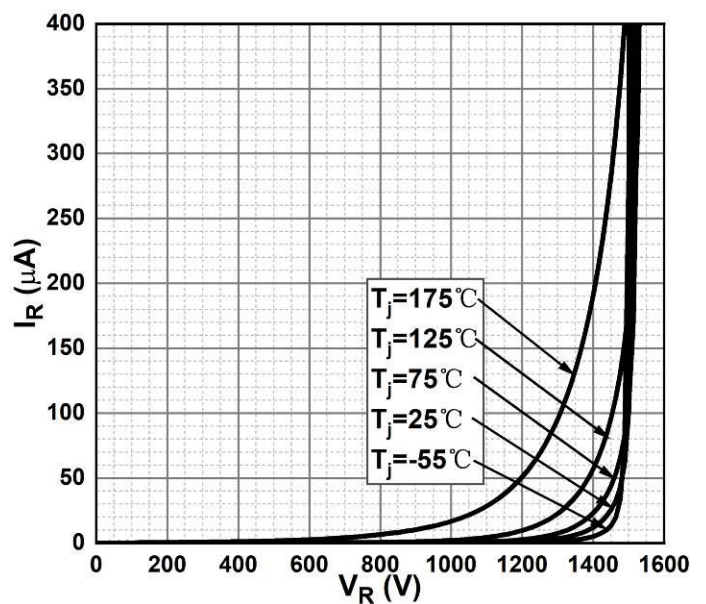


Figure 2. Reverse Characteristics



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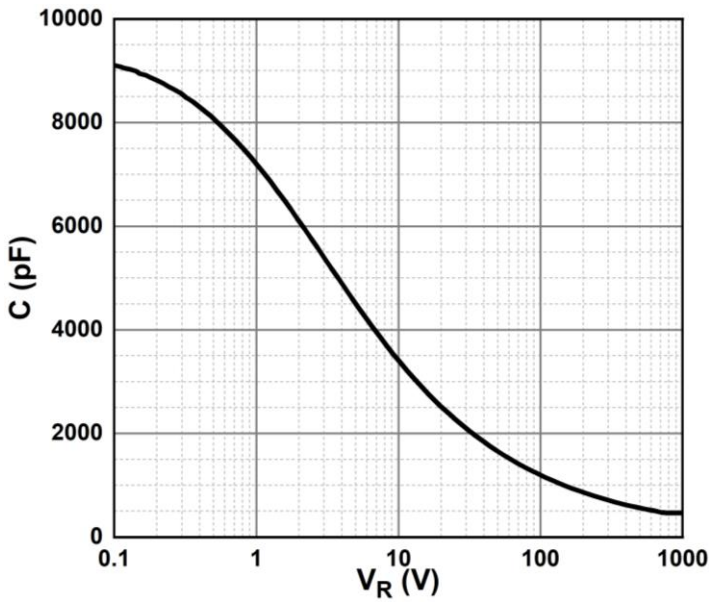


Figure 3. Capacitance vs. Reverse Voltage

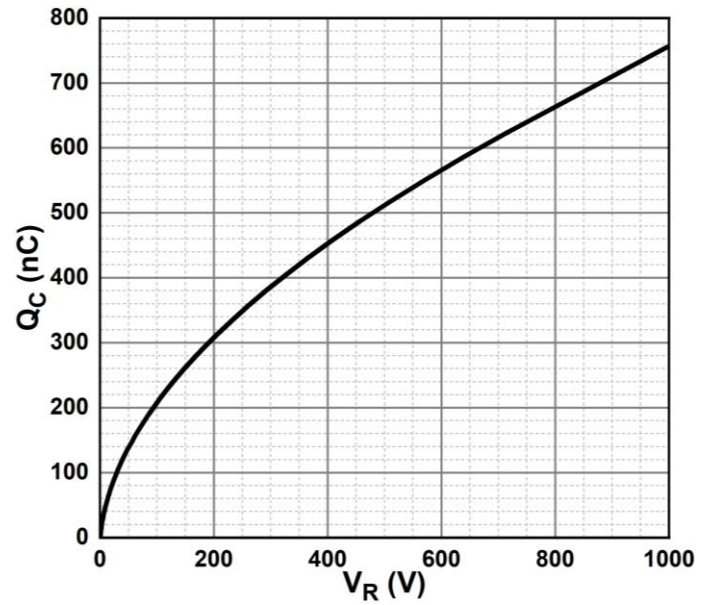


Figure 4. Total Capacitance Charge vs. Reverse Voltage

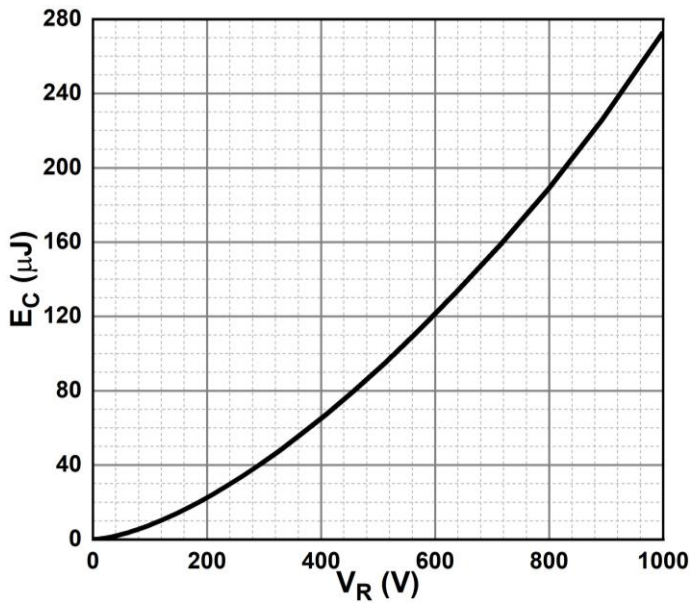


Figure 5. Capacitance Stored Energy

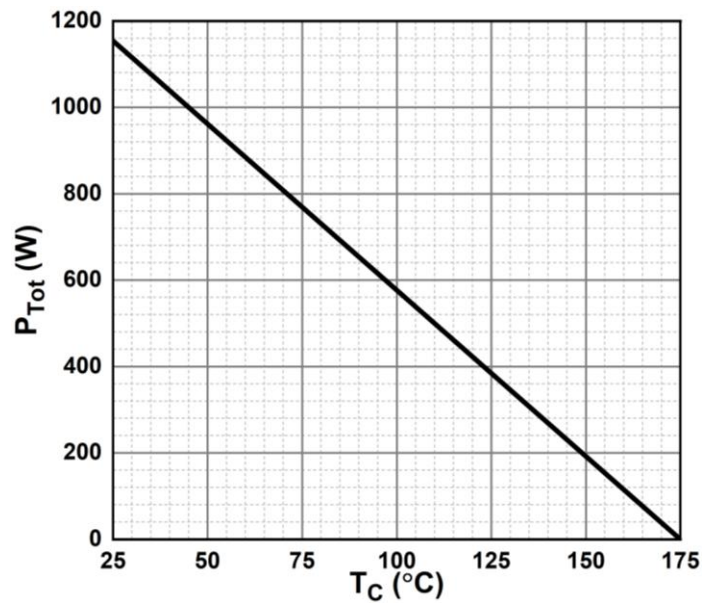


Figure 6. Power Derating

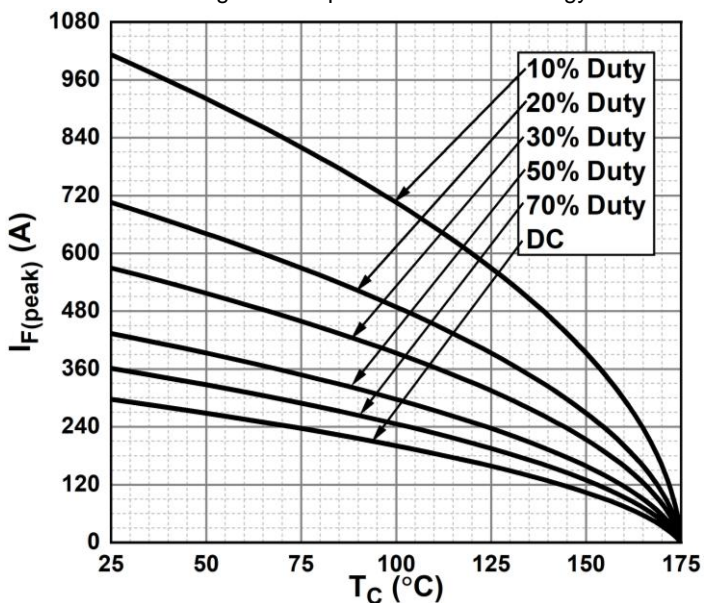


Figure 7. Current Derating

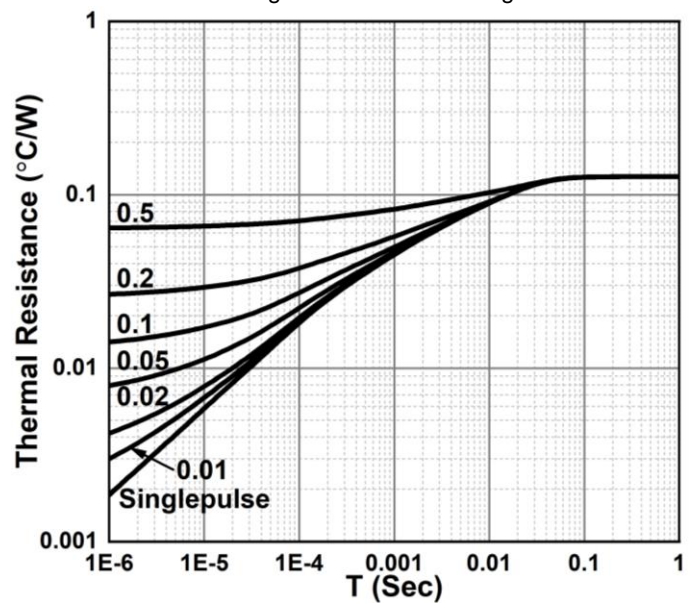
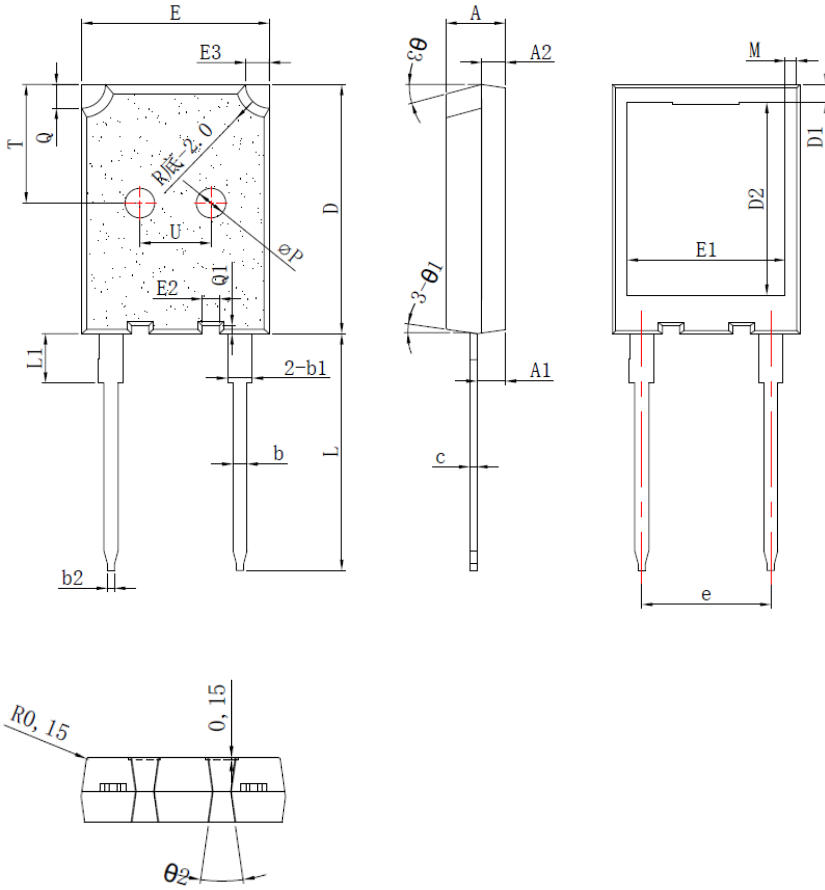


Figure 8. Transient Thermal Impedance



# YJD1120120NSYG4

## ■Outline Dimensions



TO-247PLUS-2L			
Symbol	mm		
	Min	Nom	Max
A	4.90	5.00	5.10
A1	2.30	2.40	2.50
A2	1.90	2.00	2.10
b	1.15	1.20	1.25
b1	1.95	2.10	2.25
b2	0.45	0.60	0.75
C	0.55	0.60	0.68
D	20.90	21.00	21.10
D1	1.00	1.20	1.40
D2	16.05	16.35	16.65
E	15.70	15.80	15.90
E1	13.10	13.30	13.50
E2	1.25	1.45	1.65
E3	1.80	2.00	2.20
e	10.83	10.88	10.93
L	19.80	19.95	20.10
L1	-	-	4.30
M	0.50	0.70	0.90
$\Phi P$	2.30	2.50	2.70
Q	1.80	2.00	2.20
Q1	0.50	0.68	0.80
T	9.80	10.00	10.20
U	5.80	6.00	6.20
$\theta1$	5°	7°	9°
$\theta2$	13°	16°	19°
$\theta3$	13°	15°	17°



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