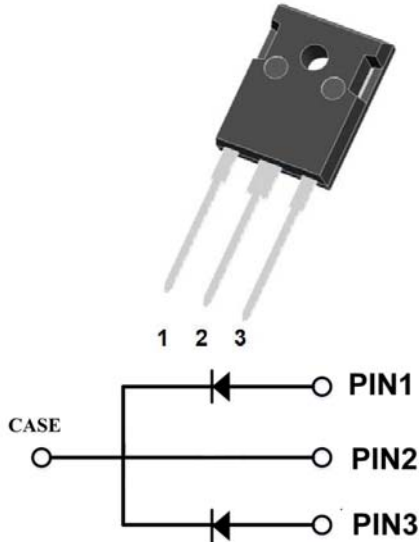


## Silicon Carbide Schottky Diode

$V_{RRM}$	1200V
$I_F$ (135°C)	40A**
$Q_C$	106nC**



### 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-247AB
- **Terminals:** Tin plated leads
- **Polarity:** As marked

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

PARAMETER	SYMBOL	UNIT	VALUE
Device marking code			D112020NCTQG2
Reverse voltage (repetitive peak) @ $T_j=25^\circ\text{C}$	$V_{RRM}$	V	1200
Reverse voltage (Surge Peak) @ $T_j=25^\circ\text{C}$	$V_{RSM}$	V	1200
Reverse voltage (DC) @ $T_j=25^\circ\text{C}$	$V_{DC}$	V	1200
Continuous forward current @ $T_c=25^\circ\text{C}$ (Per Leg/Device)	$I_F$	A	40/80
Continuous forward current @ $T_c=135^\circ\text{C}$ (Per Leg/Device)			20/40
Continuous forward current @ $T_c=163^\circ\text{C}$ (Per Leg/Device)			10/20
Non-repetitive peak forward surge current @ $T_c=25^\circ\text{C}$ , $t_p=10\text{ms}$ , Half Sine Wave	$I_{FSM}$	A	85*
Power Dissipation@ $T_c=25^\circ\text{C}$ (Per Leg/Device)	$P_{TOT}$	W	266/500
Power Dissipation@ $T_c=110^\circ\text{C}$ (Per Leg/Device)			115/216
$i^2t$ Value@ $T_c=25^\circ\text{C}$ , $t_p=10\text{ms}$	$\int i^2 dt$	$\text{A}^2\text{S}$	36*
Operating junction and Storage temperature range	$T_j, T_{stg}$	$^\circ\text{C}$	-55 to +175

\* Per Leg, \*\* Per Device



# YJD112020NCTQG2

## ■Electrical Characteristics (Per Leg)

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS	Typ.	Max.
Forward voltage drop	$V_F$	V	$I_F=10A, T_j=25^\circ C$	1.42	1.54
			$I_F=10A, T_j=175^\circ C$	2.1	-
Reverse leakage current	$I_R$	$\mu A$	$V_R=1200V, T_j=25^\circ C$	1.3	13
			$V_R=1200V, T_j=175^\circ C$	6	-
Total capacitive charge	$Q_C$	nC	$V_R=800V, T_j=25^\circ C, Q_C=\int_0^{V_R} I_R(V)dV$	53	-
Total capacitance	C	pF	$V_R=0V, f=1MHZ$	700	-
			$V_R=400V, f=1MHZ$	49	-
			$V_R=800V, f=1MHZ$	39	-
Capacitance Stored Energy	$E_C$	$\mu J$	$V_R=800V$	14	-

## ■Thermal Characteristics ( $T_a=25^\circ C$ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	VALUE
Thermal resistance	$R_{\theta J-C}$	$^\circ C/W$	0.56* 0.30**

\* Per Leg, \*\* Per Device

## ■Typical Characteristics (Per Leg)

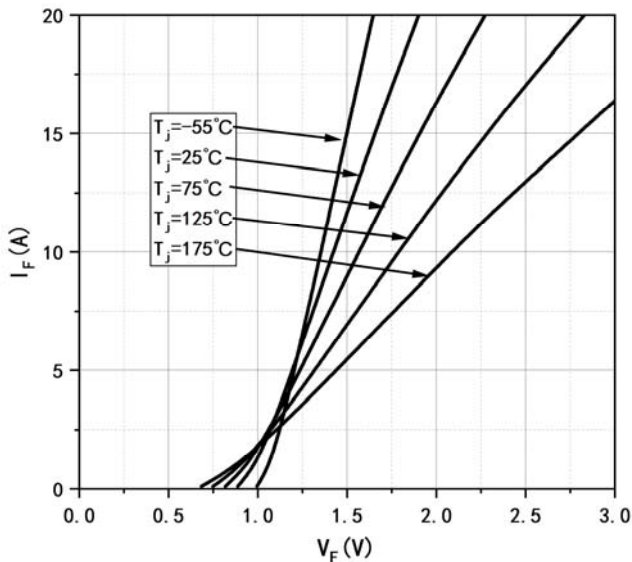


Figure 1. Forward Characteristics

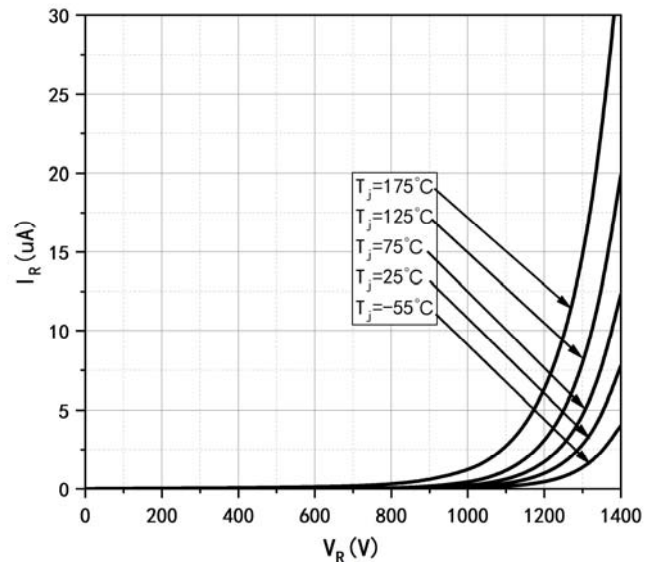


Figure 2. Reverse Characteristic



# YJD112020NCTQG2

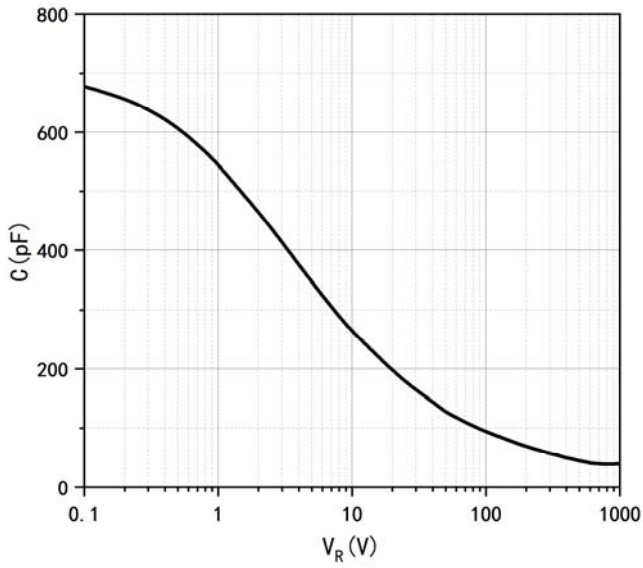


Figure 3. Capacitance vs. Reverse Voltage

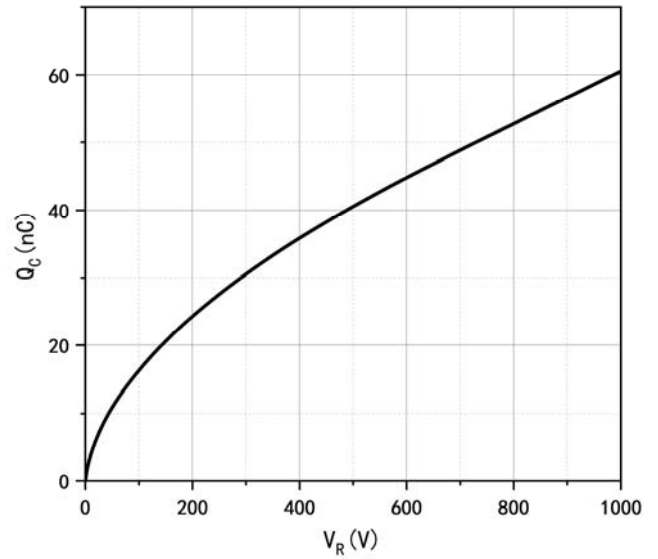


Figure 4. Total Capacitance Charge vs. Reverse Voltage

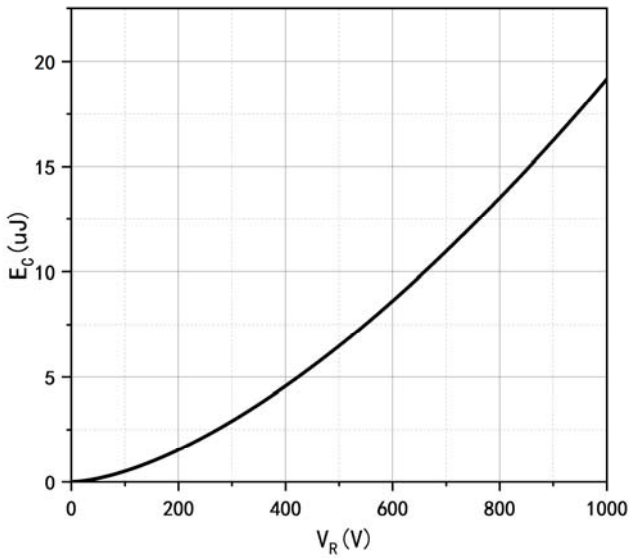


Figure 5. Capacitance Stored Energy

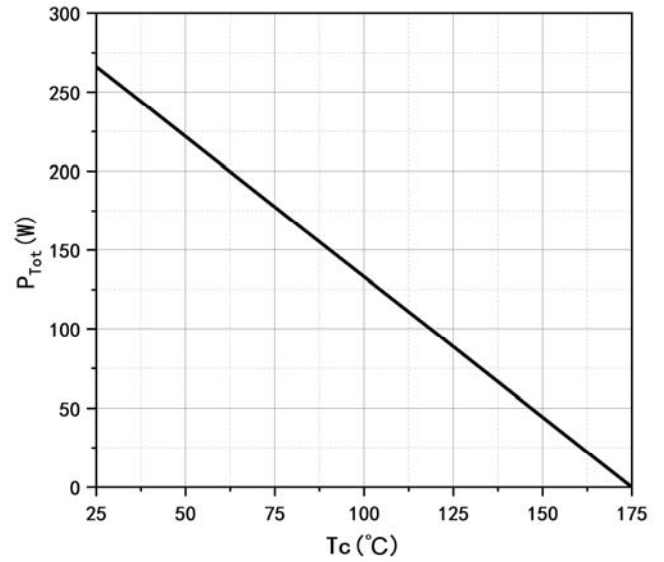


Figure 6. Power Derating

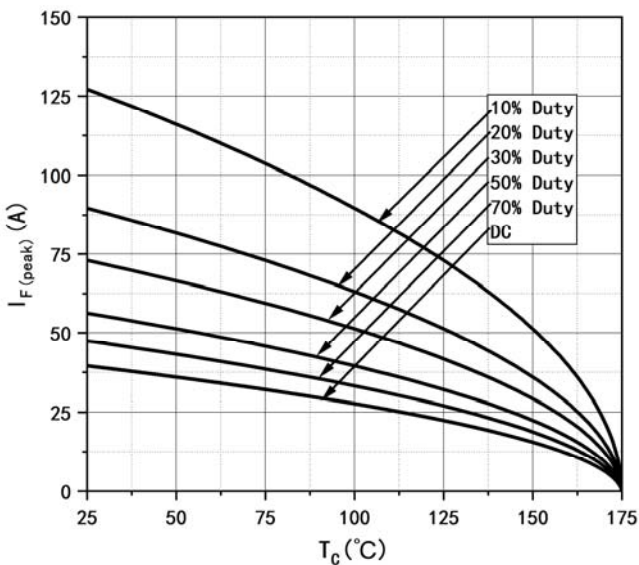


Figure 7. Current Derating



## ■ Typical Characteristics (Device)

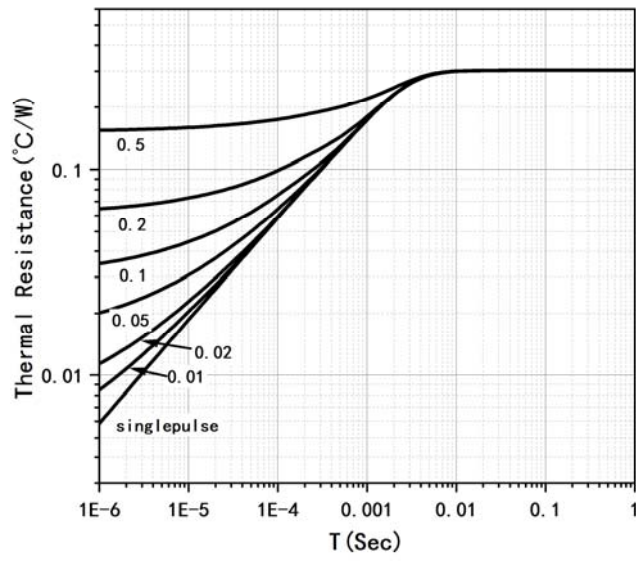
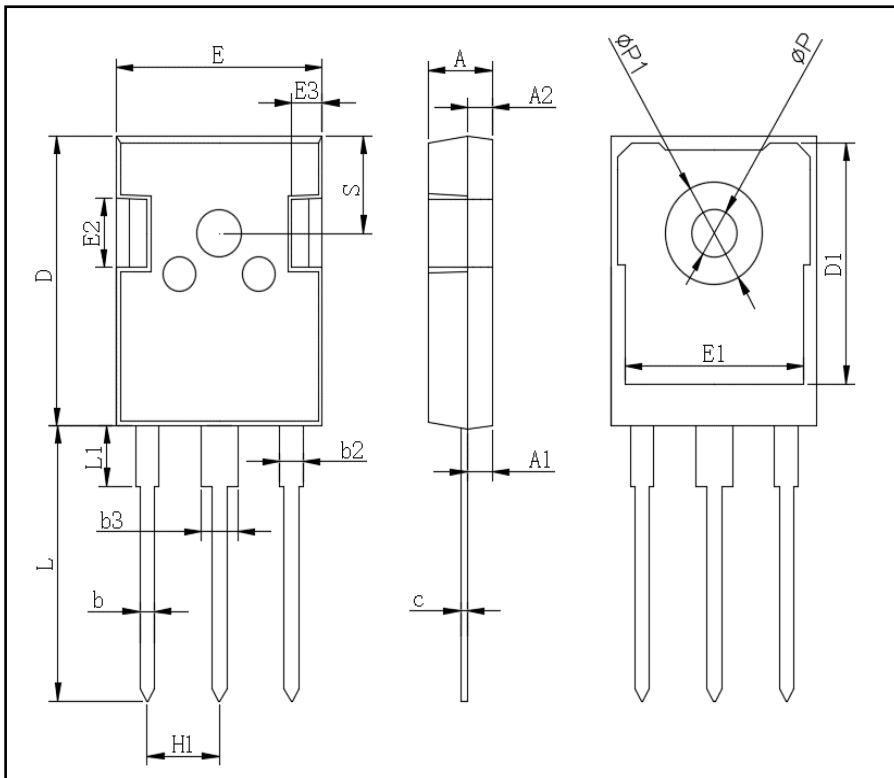


Figure 8. Transient Thermal Impedance



# YJD112020NCTQG2

## ■Outline Dimensions



TO-247AB		
Dim	Min	Max
A	4.80	5.20
A1	2.21	2.61
A2	1.85	2.15
b	1.0	1.4
b2	1.91	2.21
C	0.5	0.7
D	20.70	21.30
D1	16.25	16.85
E	15.50	16.10
E1	13.0	13.6
E2	4.80	5.20
E3	2.30	2.70
L	19.62	20.22
L1	-	4.30
$\Phi P$	3.40	3.80
$\Phi P1$		7.30
S	6.15TYP	
H1	5.44TYP	
b3	2.80	3.20



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