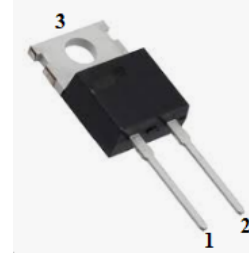




Features

- Shorter recovery time
- High speed switching
- High surge current capability
- Enabling higher frequency and increased power density
- System efficiency improvement
- System cost and size savings due to the reduced cooling requirements

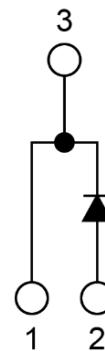
Outline (TO220-2L)



Applications

- Power Factor Correction in SMPS
- Solar inverter
- Uninterruptible Power Supply
- Motor Drives
- Data Center

Circuit Diagram



1: Cathode
2: Anode
3: Cathode

Mechanical Characteristics

- TO220-2L package
- Halogen Free
- Pb free lead plating ; RoHS compliant
- Packaging: Tube

Marking Diagram

Laser Mark



LL : Assembly Lot code
WW : Week
YY : Year



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Parameter and Specification

Absolute Maximum Rating⁽¹⁾

Parameter	Symbol	Condition	Value	Unit
Repetitive peak reverse voltage	V_{RM}	$T_c=25^{\circ}C$	650	V
Continue forward current	I_F	$T_c=135^{\circ}C$	20	A
Surge non-repetitive forward current , sine half-wave	I_{FSM}	$T_c=25^{\circ}C, t_p=10ms, \text{Sine half wave}$	153	A
		$T_c=110^{\circ}C, t_p=10ms, \text{Sine half wave}$	122	
Surge repetitive forward current	I_{FRM}	$T_c=25^{\circ}C, t_p=10ms, \text{Sine half wave}$	72	A
I^2t value	$\int I^2t$	$T_c=25^{\circ}C, t_p=10ms, \text{Sine half wave}$	117	A^2s
Total power dissipation	P_D	$T_c=25^{\circ}C$	162	W
		$T_c=110^{\circ}C$	70	
Junction temperature	T_j		175	$^{\circ}C$
Storage temperature	T_{STG}		-55 ~ 175	$^{\circ}C$

Note :

(1) Exceeding these ratings may damage the device.

Thermal Characteristics

Parameter	Symbol	Condition	Typ.	Unit
Thermal resistance	θ_{jc}	Junction - Case	0.7	$^{\circ}C / W$



AAC020H06DC

650V / 20A

SiC Schottky Barrier Diode

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Electrical Characteristics

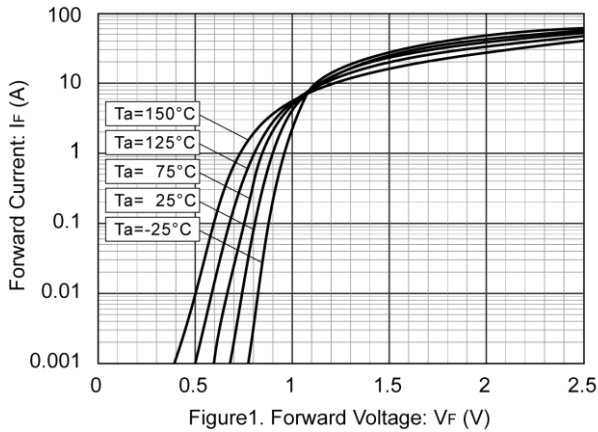
Characteristic	Symbol	Condition	MIN	TYP	MAX	Unit
DC reverse voltage	V_{DC}	$T_j = 25^{\circ}C, I_R = 2.0mA$	650	-	-	V
Forward voltage	V_F	$T_j = 25^{\circ}C, I_F = 20A$	-	1.35	1.5	V
		$T_j = 150^{\circ}C, I_F = 20A$	-	1.6	-	
		$T_j = 175^{\circ}C, I_F = 20A$	-	1.7	-	
Reverse current	I_R	$T_j = 25^{\circ}C, V_R = 650V$	-	4	100	uA
		$T_j = 150^{\circ}C, V_R = 650V$	-	16	-	
		$T_j = 175^{\circ}C, V_R = 650V$	-	30	-	
Total capacity charge	Q_C	$T_j = 25^{\circ}C, V_R = 400V,$ $di/dt = 350A/us$	-	57	-	nC
Total capacitance	C_{TOT}	$T_j = 25^{\circ}C, V_R = 1V,$ $F = 1MHz$	-	965	-	pF
		$T_j = 25^{\circ}C, V_R = 400V,$ $F = 1MHz$	-	88	-	
		$T_j = 25^{\circ}C, V_R = 650V,$ $F = 1MHz$	-	87	-	
Capacitance Stored Energy	E_C	$V_R = 400V$	-	9.2	-	μJ



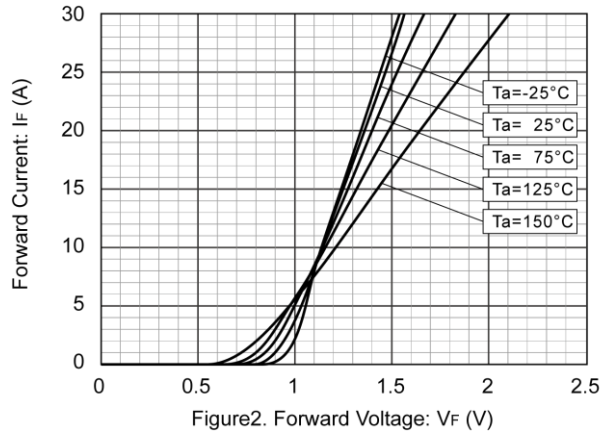
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Electrical Characteristic Curves

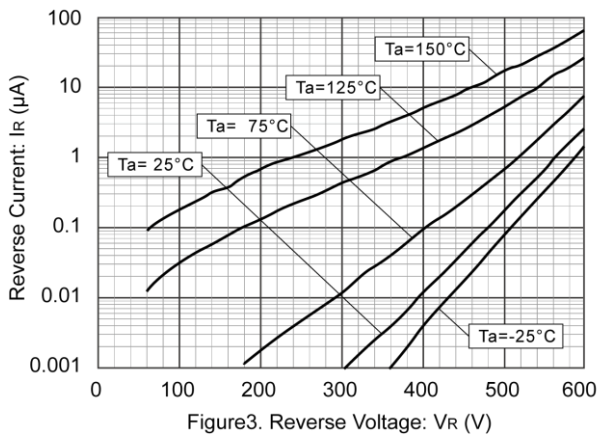
V_F – I_F Characteristics



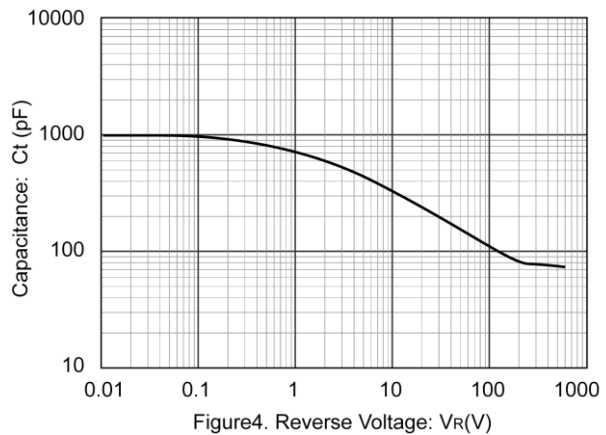
V_F – I_F Characteristics



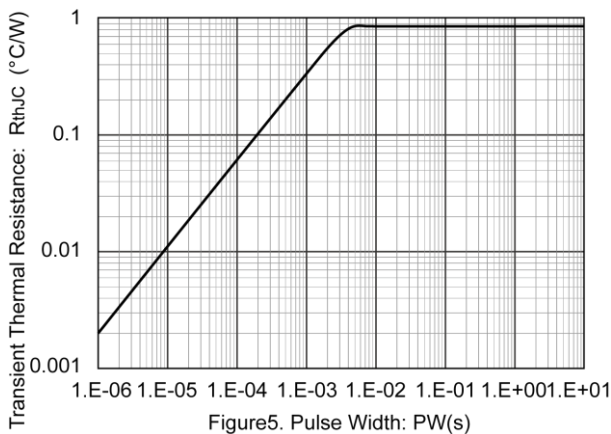
V_R – I_R Characteristics



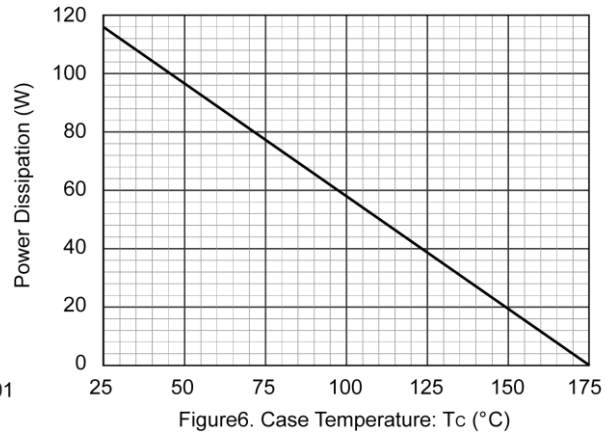
V_R – C_t Characteristics



R_{thJC} –PW Characteristics



Power Dissipation





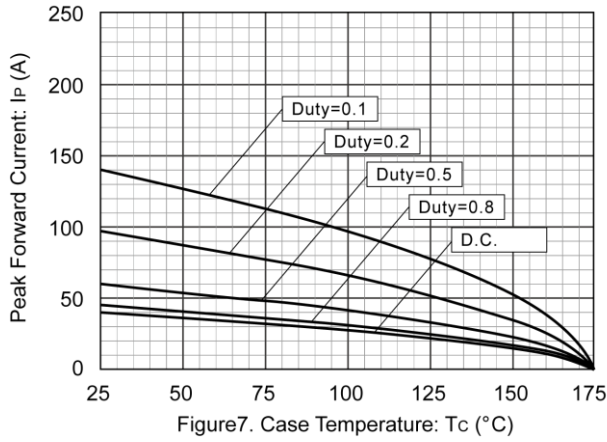
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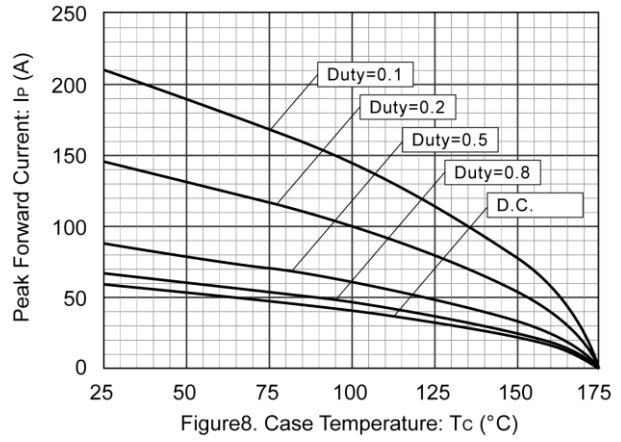
SiC Schottky Barrier Diode

ACTRON TECHNOLOGY CORP.

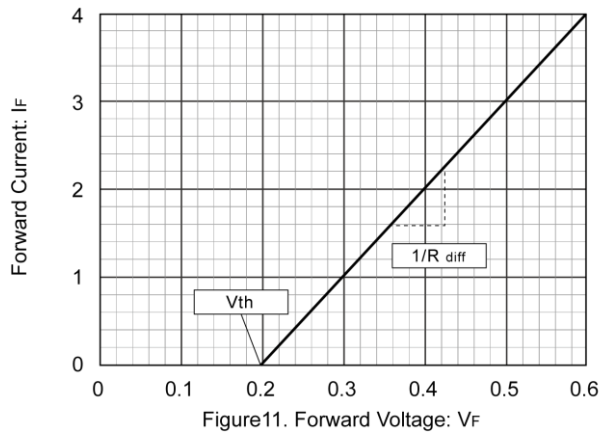
Maximum $I_p - T_c$ Characteristics



Typical $I_p - T_c$ Characteristics



Equivalent Forward Current Curve



$$V_F = V_{th} + R_{diff} I_F$$

$$V_{th}(T_j) = a_0 + a_1 T_j$$

$$R_{diff}(T_j) = b_0 + b_1 T_j + b_2 T_j^2$$

Symbol	Typical	Unit
a_0	0.966	V
a_1	-0.0011	V/ $^{\circ}\text{C}$
b_0	0.0176	Ohm
b_1	3.73E-5	Ohm/ $^{\circ}\text{C}$
b_2	3.84E-7	Ohm/ $^{\circ}\text{C}^2$

T_j in $^{\circ}\text{C}$; $-55^{\circ}\text{C} < T_j < 175^{\circ}\text{C}$; $I_F < 40\text{A}$



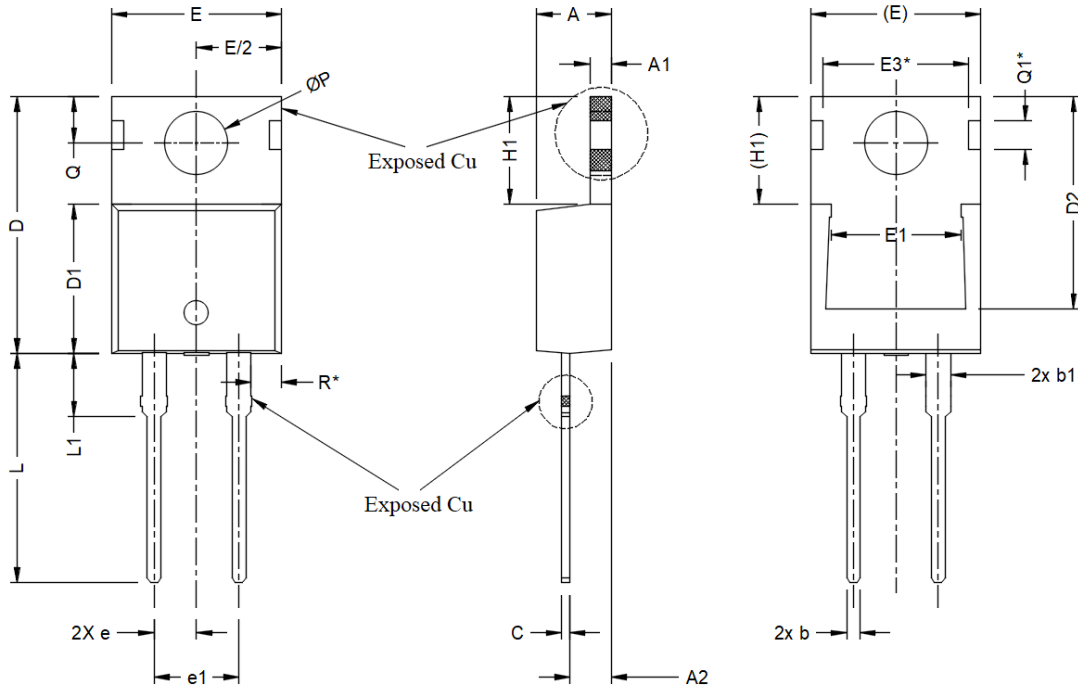
ACTRON TECHNOLOGY CORP.

650V / 20A

AAC020H06DC

SiC Schottky Barrier Diode

Package Outline



Unit : mm

SYMBOL	DIMENSIONS		
	MIN.	NOM.	MAX.
A	4.24	4.44	4.64
A1	1.15	1.27	1.40
A2	2.30	2.48	2.70
b	0.70	0.80	0.90
b1	1.20	1.45	1.70
c	0.40	0.50	0.60
D	14.70	15.37	16.00
D1	8.82	8.92	9.02
D2	12.43	12.73	12.83
E	9.96	10.16	10.36
E1	6.86	7.77	8.89
E3*	8.70 REF.		
e	2.54B SC		
e1	5.08B SC		
H1	6.30	6.45	6.60
L	13.47	13.72	13.97
L1	3.60	3.80	4.00
$\varnothing P$	3.75	3.84	3.93
Q	2.60	2.80	3.00
Q1*	1.73 REF.		
R*	1.82 REF.		