



1200V / 2x15A

# ACC030B12DD

SiC Schottky Barrier Diode

ACTRON TECHNOLOGY CORP.

## 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

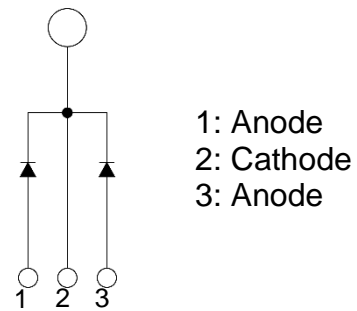
## Outline (TO247-3L)



## Applications

- Power Factor Correction in SMPS
- Solar inverter
- Uninterruptible Power Supply
- EV Charging Stations
- Data Center

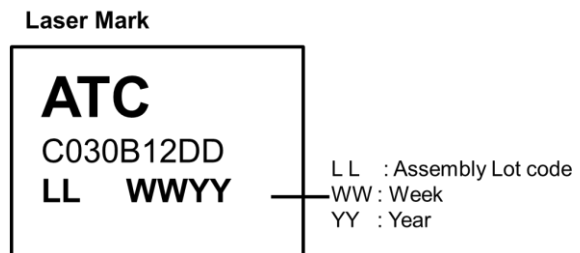
## Circuit Diagram



## Mechanical Characteristics

- TO247-3L package
- Halogen Free
- Pb free lead plating ; RoHS compliant
- Packaging: Tube

## Marking Diagram





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## Parameter and Specification

### Absolute Maximum Rating<sup>(1)</sup>

Parameter	Symbol	Condition	Value	Unit
Repetitive peak reverse voltage	$V_{RM}$	$T_c=25^{\circ}C$	1200	V
Continue forward current	$I_F$	$T_c=135^{\circ}C$	$2 \times 15^{*1}$	A
Surge non-repetitive forward current , sine half-wave	$I_{FSM}$	$T_c=25^{\circ}C, t_p=10ms, \text{Sine half wave}$	$168^{*2}/336^{*3}$	A
		$T_c=110^{\circ}C, t_p=10ms, \text{Sine half wave}$	$126^{*2}/252^{*3}$	
Surge repetitive forward current	$I_{FRM}$	$T_c=25^{\circ}C, t_p=10ms, \text{Sine half wave}$	$76^{*2}/152^{*3}$	A
$I^2t$ value	$\int I^2t$	$T_c=25^{\circ}C, t_p=10ms, \text{Sine half wave}$	$141^{*2}/565^{*3}$	$A^2s$
Total power dissipation	$P_D$	$T_c=25^{\circ}C$	$136^{*2}/272^{*3}$	W
		$T_c=110^{\circ}C$	$59^{*2}/118^{*3}$	
Junction temperature	$T_j$		175	$^{\circ}C$
Storage temperature	$T_{STG}$		-55 ~ 175	$^{\circ}C$

Note :

- (1) \*1 Dual dice
- (2) \*2 per Leg
- (3) \*3 per Device
- (4) Exceeding these ratings may damage the device.

### Thermal Characteristics

Parameter	Symbol	Condition	Typ.	Unit	
Thermal resistance	$\theta_{jc}$	Junction - Case	Per Leg	0.75	$^{\circ}C / W$
			Per Device	0.38	



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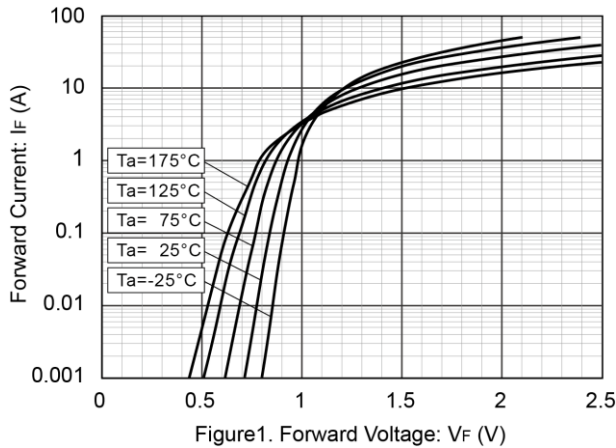
**Electrical Characteristics**

Characteristic	Symbol	Condition	MIN	TYP	MAX	Unit
DC reverse voltage	$V_{DC}$	$T_j = 25^{\circ}C, I_R = 75\mu A$	1200	-	-	V
Forward voltage	$V_F$	$T_j = 25^{\circ}C, I_F = 15A$	-	1.4	1.6	V
		$T_j = 150^{\circ}C, I_F = 15A$	-	1.8	-	
		$T_j = 175^{\circ}C, I_F = 15A$	-	1.9	-	
Reverse current	$I_R$	$T_j = 25^{\circ}C, V_R = 1200V$	-	7.5	75	uA
		$T_j = 150^{\circ}C, V_R = 1200V$	-	30	-	
		$T_j = 175^{\circ}C, V_R = 1200V$	-	56.2	-	
Total capacity charge	$Q_C$	$T_j = 25^{\circ}C, V_R = 800V,$ $Q_C = \int_0^{V_R} C(V)dV$	-	83	-	nC
Total capacitance	$C_{TOT}$	$T_j = 25^{\circ}C, V_R = 1V,$ $F = 1MHz$	-	930	-	pF
		$T_j = 25^{\circ}C, V_R = 800V,$ $F = 1MHz$	-	58	-	
		$T_j = 25^{\circ}C, V_R = 1200V,$ $F = 1MHz$	-	56	-	
Capacitance Stored Energy	$E_C$	$V_R = 800V$	-	25	-	$\mu J$

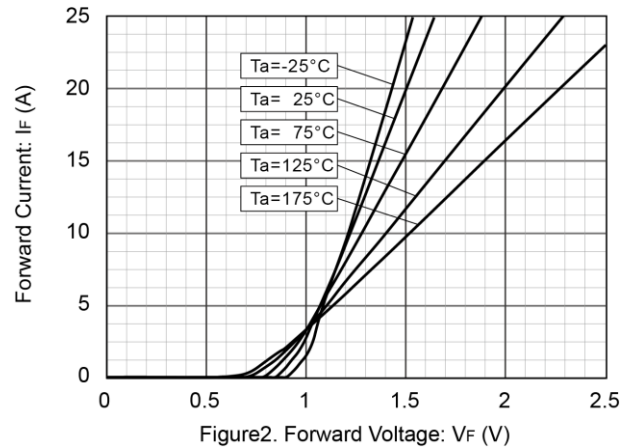


**Electrical Characteristic Curves**

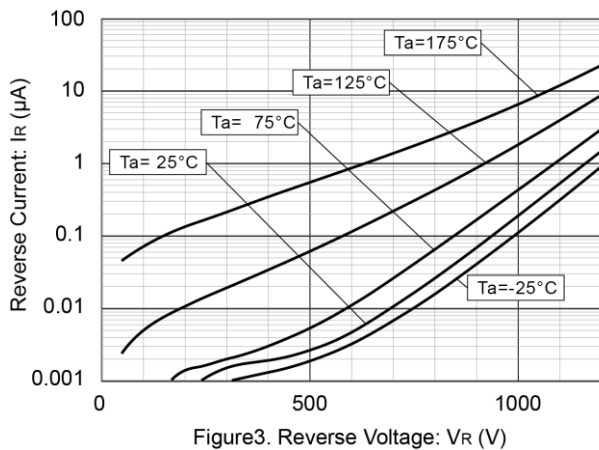
**V<sub>F</sub> – I<sub>F</sub> Characteristics (Per Leg)**



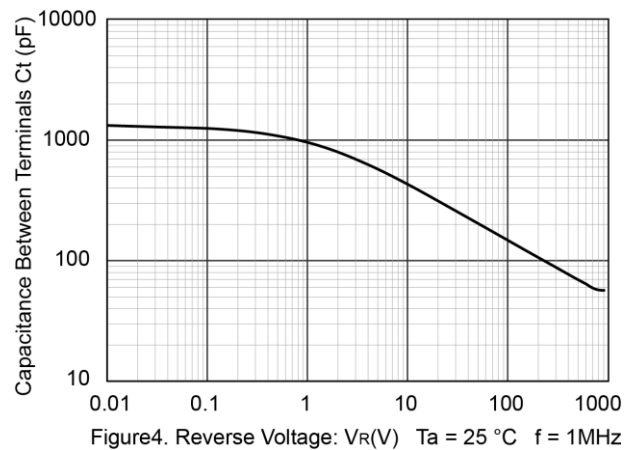
**V<sub>F</sub> – I<sub>F</sub> Characteristics (Per Leg)**



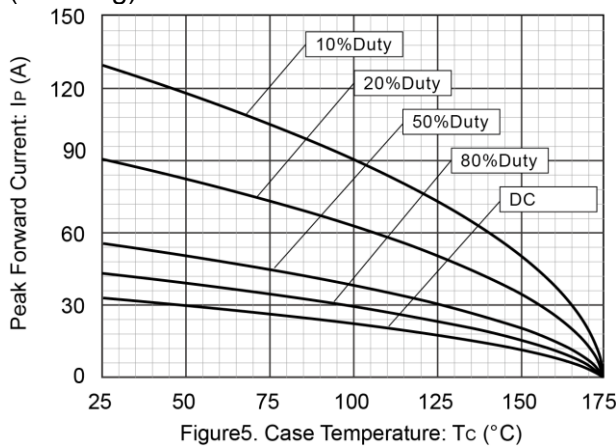
**V<sub>R</sub> – I<sub>R</sub> Characteristics (Per Leg)**



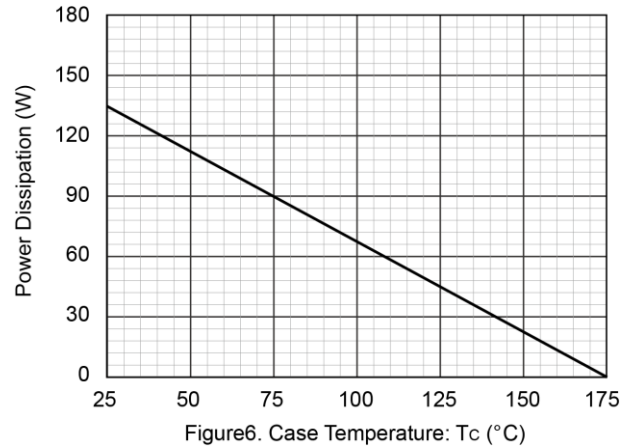
**V<sub>R</sub> – C<sub>t</sub> Characteristics (Per Leg)**



**Maximum I<sub>P</sub> – T<sub>C</sub> Characteristics (Per Leg)**



**Power Dissipation (Per Leg)**





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**I<sub>FSM</sub> – PW Characteristics (Per Leg)**

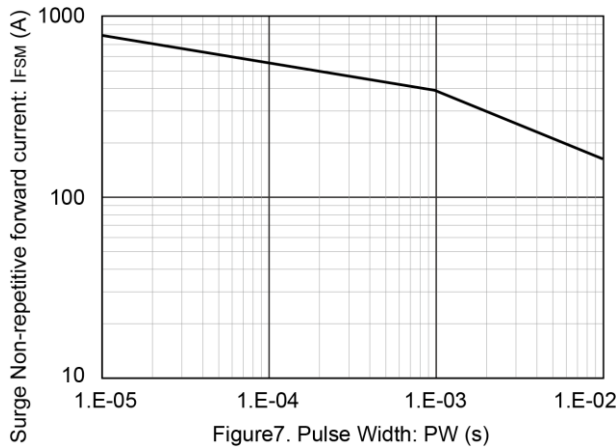


Figure7. Pulse Width: PW (s)

**E<sub>C</sub> – V<sub>R</sub> Characteristics (Per Leg)**

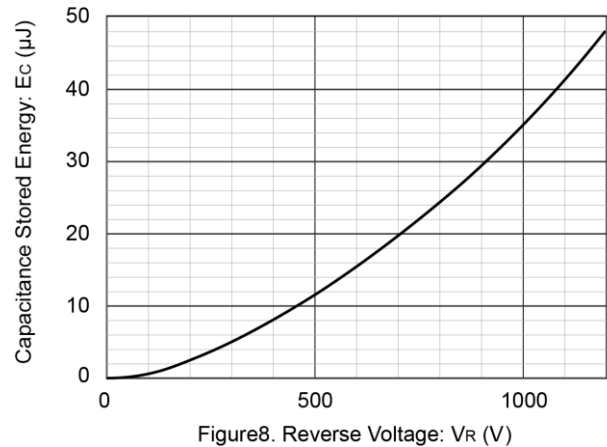


Figure8. Reverse Voltage: V<sub>R</sub> (V)

**Typical Transient Thermal Resistance vs. Pulse Width (Per Leg)**

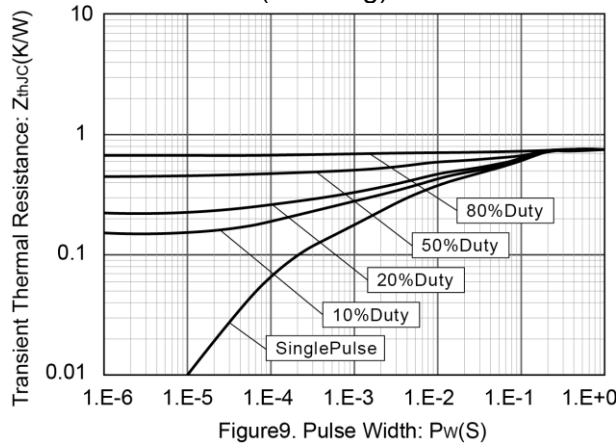


Figure9. Pulse Width: Pw(S)

**Simplified Forward Characteristic (Per Leg)**

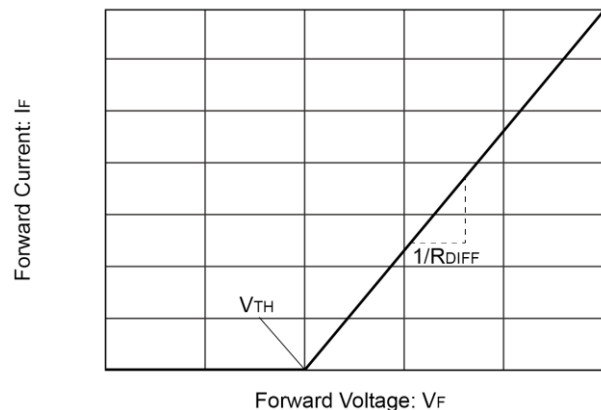


Figure10. Equivalent forward current curve

$$V_F = V_{TH} + R_{DIFF} \times I_F$$

Threshold Voltage(V<sub>TH</sub>):

$$V_{TH}(T_j) = -0.001 \times T_j + 0.953 [V]$$

Differential Resistance(R<sub>DIFF</sub>):

$$R_{DIFF}(T_j) = A \times T_j^2 + B \times T_j + C [\Omega]$$

$$A = 5.0 \times 10^{-7}$$

$$B = 2.0 \times 10^{-4}$$

$$C = 2.55 \times 10^{-2}$$



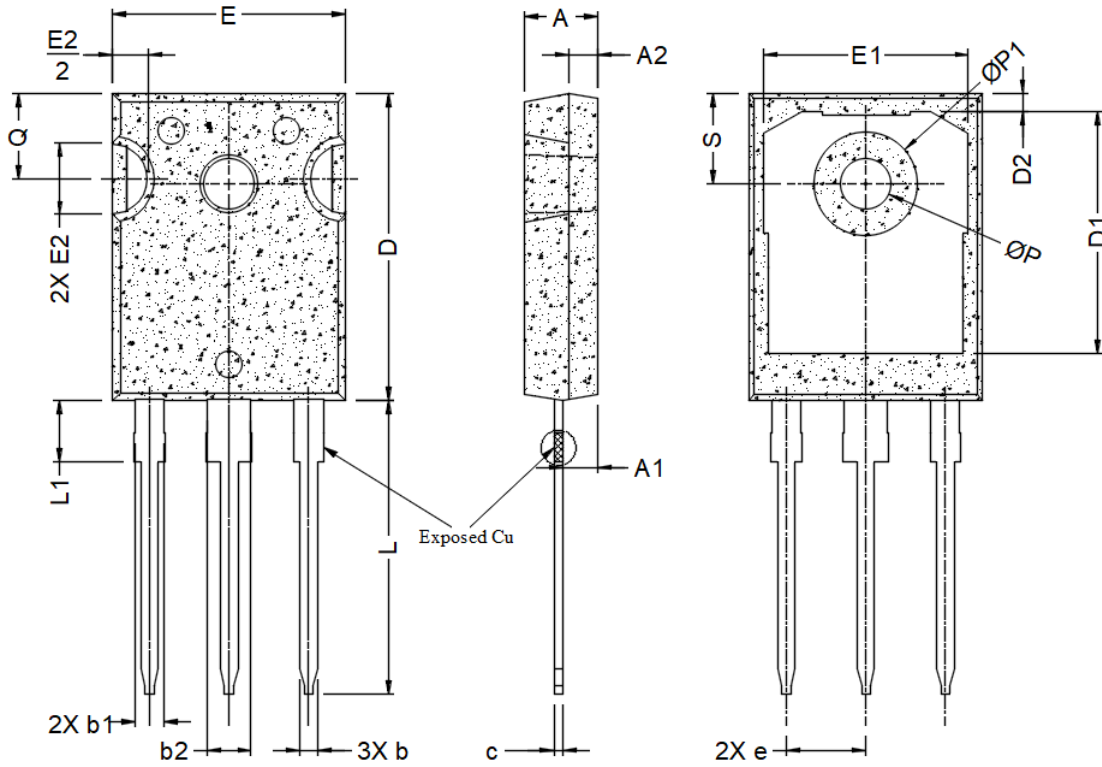
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**Package Outline**



Unit : mm

SYMBOL	DIMENSIONS		
	MIN.	NCM.	MAX.
A	4.83	5.02	5.21
A1	2.29	2.41	2.55
A2	1.50	2.00	2.49
b	1.12	1.20	1.33
b1	1.91	2.00	2.39
b2	2.87	3.00	3.22
c	0.55	0.60	0.69
D	20.80	20.95	21.10
D1	16.25	16.55	17.65
D2	0.51	1.19	1.35
E	15.75	15.94	16.13
E1	13.46	14.02	14.16
E2	4.32	4.91	5.49
e	5.44BSC		
L	19.81	20.07	20.32
L1	4.10	4.19	4.40
ØP	3.56	3.61	3.65
ØP1	7.19REF.		
Q	5.39	5.79	6.20
S	6.04	6.17	6.30