

1200V 100A Fast Recovery Diode
AKDK2N100WBF

Features:

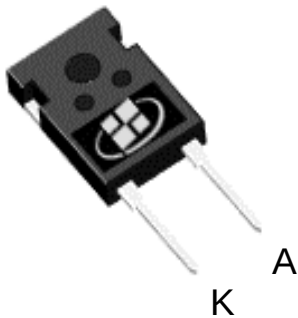
- Ultrafast recovery times
- Soft recovery characteristics
- Low forward voltage
- Low leakage current
- Avalanche energy rated
- RoHS compliant

Applications:

- Power factor correction (PFC)
- Anti-parallel diode
- Switch-mode power supply
- Inverters/converters
- Motor controllers
- Freewheeling diode
- Snubber/clamp diode

Key Performance Parameters:

Parameter	Value	Unit
V_{RRM}	1200	V
I_F	100	A
P_D	500	W
T_J	175	°C



Ordering Information:

Ordering Code	Package Type	Marking Code	Form	Packing
AKDK2N100WBF	TO-247-2L	DK2N100WBF	Tube	300 per box

Thermal and Mechanical Characteristics

Symbol	Parameter	Value	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case, Steady-State	0.26	°C/W
Torque	Maximum Mounting Torque	1.1	N·m

Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Units
V_R	Maximum DC Reverse Voltage	1200	V
V_{RRM}	Maximum Repetitive Peak Reverse Voltage	1200	V
V_{RWM}	Maximum Working Peak Reverse Voltage	1200	V
$I_{F(AV)}$	Maximum Average Forward Current ($T_C = 112^\circ\text{C}$, Duty Cycle = 0.5)	100	A
$I_{F(RMS)}$	RMS Forward Current	140	A
I_{FSM}	Non-repetitive Forward Surge Current($T_J = 45^\circ\text{C}$, 8.3 ms)	540	A
E_{AVL}	Avalanche Energy (40 mH)	50	mJ
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +175	$^\circ\text{C}$
T_L	Lead Temperature for 10 Senconds	300	$^\circ\text{C}$

Static Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
V_F	Forward Voltage	$I_F = 100\text{ A}, T_J = 25^\circ\text{C}$	-	2.05	2.65	V
		$I_F = 200\text{ A}, T_J = 25^\circ\text{C}$	-	2.75	-	V
		$I_F = 100\text{ A}, T_J = 125^\circ\text{C}$	-	2.20	-	V
I_{RM}	Reverse Maximum Leakage Current	$V_R = 1200\text{ V}, T_J = 25^\circ\text{C}$	-	-	100	μA
		$V_R = 1200\text{ V}, T_J = 125^\circ\text{C}$	-	-	500	μA
C_T	Junction Capacitance	$V_R = 200\text{ V}, f = 1\text{ MHz}$	-	47	-	pF

Dynamic Characteristics ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
t_{rr}	Reverse Recovery Time	$I_F = 100\text{ A}$, $di_F/dt = 300\text{ A}/\mu\text{s}$ $V_R = 800\text{ V}$, $T_C = 25^\circ\text{C}$		403		ns
t_{rr}	Reverse Recovery Time	$I_F = 100\text{ A}$, $di_F/dt = 300\text{ A}/\mu\text{s}$ $V_R = 800\text{ V}$, $T_C = 125^\circ\text{C}$		469		ns
Q_{rr}	Reverse Recovery Charge			7720		nC
I_{rrm}	Maximum Reverse Recovery Current			24		A
t_{rr}	Reverse Recovery Time	$I_F = 100\text{ A}$, $di_F/dt = 600\text{ A}/\mu\text{s}$ $V_R = 800\text{ V}$, $T_C = 125^\circ\text{C}$		373		ns
Q_{rr}	Reverse Recovery Charge			9800		nC
I_{rrm}	Maximum Reverse Recovery Current			39		A
t_{rr}	Reverse Recovery Time	$I_F = 100\text{ A}$ $di_F/dt = 1000\text{ A}/\mu\text{s}$ $V_R = 800\text{ V}$, $T_C = 125^\circ\text{C}$		343		ns
Q_{rr}	Reverse Recovery Charge			10900		nC
I_{rrm}	Maximum Reverse Recovery Current			54		A

Notes:

1. Contact ALKAIDSEMI sales for detail information

Electrical Characteristics Diagrams

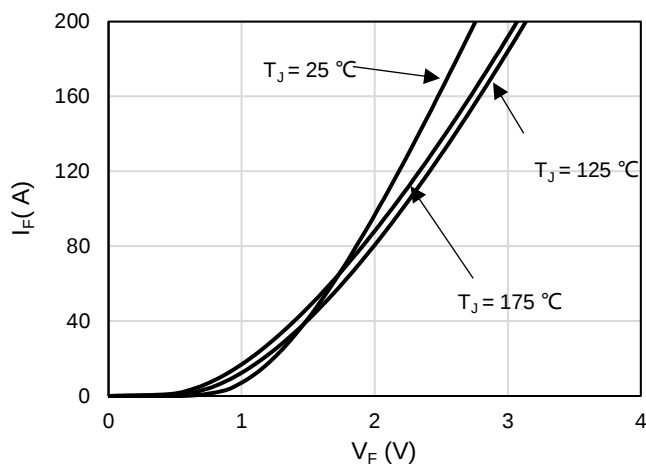


Figure 1: Forward Characteristics

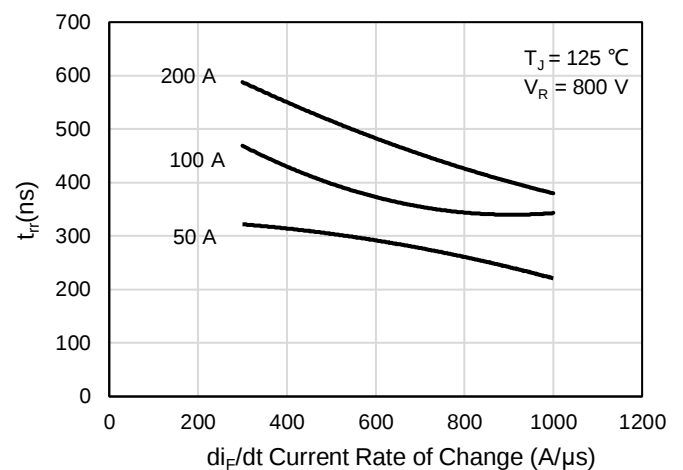


Figure 2: Reverse Recovery Time Characteristics

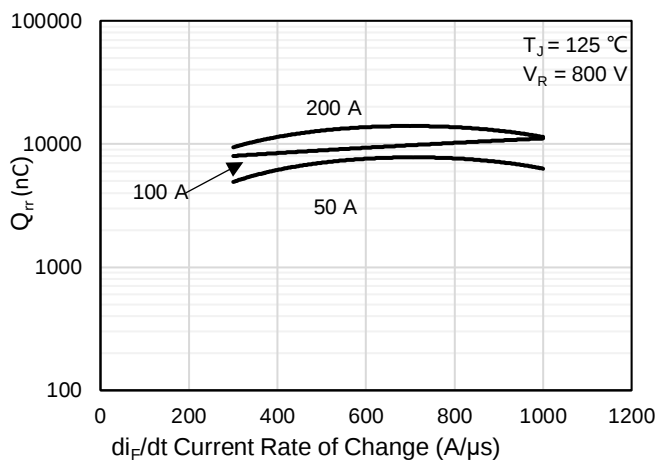


Figure 3: Reverse Recovery Charge Characteristics

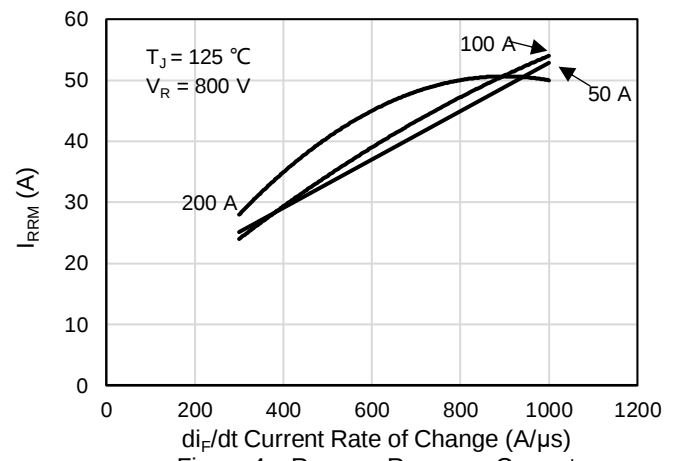


Figure 4: Reverse Recovery Current Characteristics

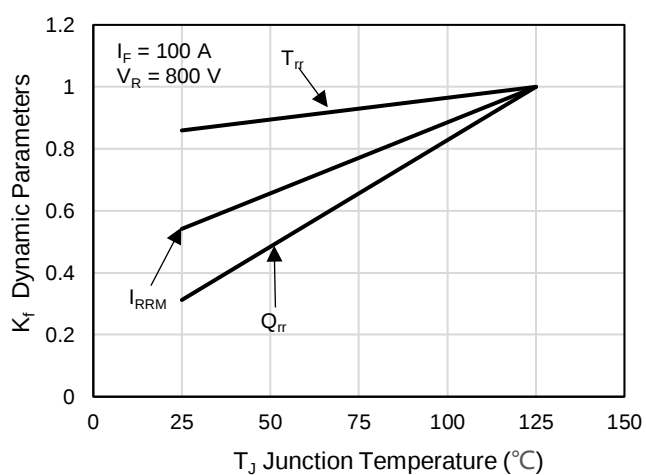


Figure 5: Dynamic vs Junction Temperature

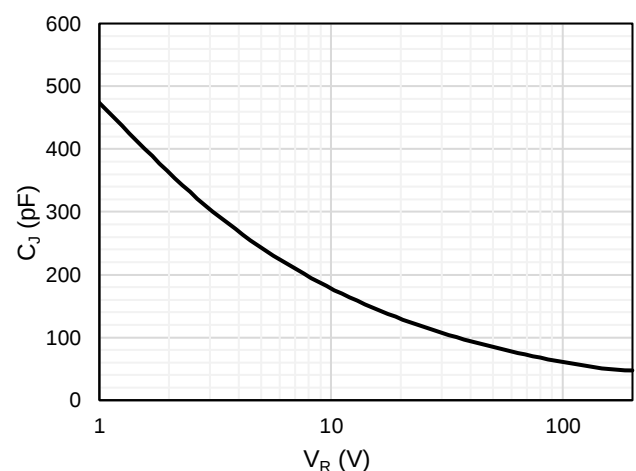
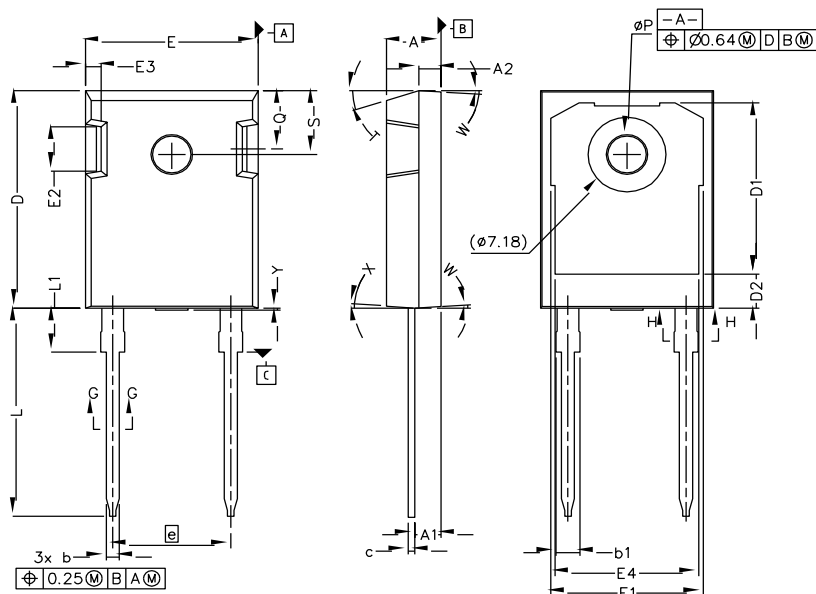


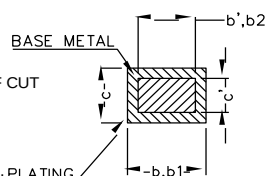
Figure 7: Junction Capacitance vs. Reverse Voltage

Package Outlines



NOTE :

- NOTE 1:
1. ALL METAL SURFACES: TIN PLATED, EXCEPT AREA OF CUT
2. DIMENSIONING & TOLERANCEING CONFORM TO
ASME Y14.5M-1994.
3. ALL DIMENSIONS ARE IN MILLIMETERS.
ANGLES ARE IN DEGREES.
4. DIMENSION DO NOT INCLUDE BURR OR MOLD FLASH. P1



SECTION "G-G" AND "H-H"
SCALE: NONE

SYMBOL	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.83	5.21	.190	.205
A1	2.29	2.54	.090	.100
A2	1.91	2.16	.075	.085
b'	1.07	1.28	.042	.050
b	1.07	1.33	.042	.052
b1	1.91	2.41	.075	.095
b2	1.91	2.16	.075	.085
c'	0.55	0.65	.022	.026
c	0.55	0.68	.022	.027
D	20.80	21.10	.819	.831
D1	16.25	17.35	.640	.683
D2	2.86	3.16	.112	.124
E	15.75	16.13	.620	.635
E1	13.10	14.15	.516	.557
E2	3.68	5.10	.145	.201
E3	1.00	1.90	.039	.075
E4	12.38	13.43	.487	.529
e	10.88 BSC		.428 BSC	
L	19.81	20.32	.780	.800
L1	4.10	4.40	.161	.173
? P	3.51	3.65	.138	.144
Q	5.49	6.00	.216	.236
S	6.04	6.30	.238	.248
T	17.5° REF.			
W	3.5° REF.			
X	4° REF.			
Y	0.020	0.50	0	

Marking Information



Note:

DK2N100WBF = Product Name Code

XXXXXXX = Date Code

Contact ALKAIDSEMI sales for detail information

Revision History

Revision	Release Date	Remark
Rev.1.0	2023/3/20	Initial Release

Disclaimer

The information given in this document describes the independent performance of the product, but similar performance is not guaranteed under other working conditions, and cannot be guaranteed when installed with other products or equipment. To achieve the required performance of the product in actual scenarios, the customer should conduct a complete application test to assess the functionality of the product.

Alkaidsemi assumes no responsibility for equipment failures result from using products at values that exceed the ratings, operating conditions, or other parameters listed in the product specifications.

The product described in this specification is not applicable for aerospace or other applications which requires high reliability. Customers using or selling these products for use in medical, life-saving, or life-sustaining applications do so at their own risk and agree to fully indemnify.

Due to product or technical improvements, the information described or contained herein may be changed without prior notice.