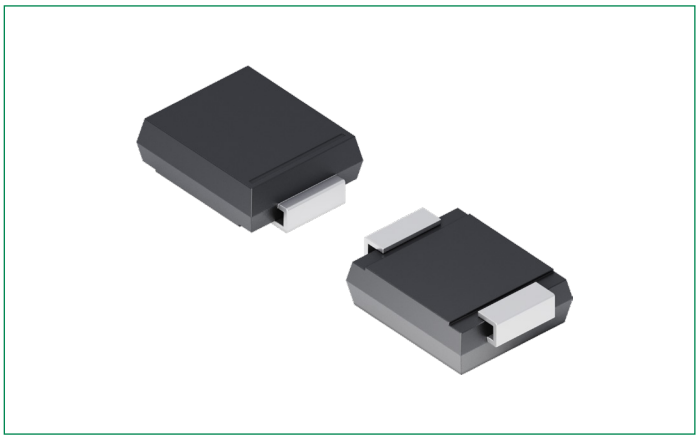
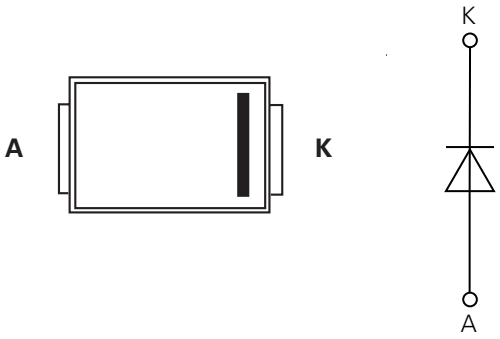
DK010S3ARP

1000 V, 10 A Rectifier

RoHS | AUTOMOTIVE GRADE



Pinout Diagram (DO-214AB)



A: Anode; **K:** Cathode

Description

This silicon rectifier features glass-passivated junctions for enhanced stability and is assembled in a small-size DO-214AB package which supports automated assembly. This device features PPAP-3.

Features

- Reverse leakage current, $I_R \leq 5$ µA @ 25 °C
- Forward voltage, $V_F \leq 1.2$ V @ 25 °C
- Increased maximum virtual junction temperature from 125 °C to 150 °C
- AEC-Q101 qualified and PPAP capable

Benefits

- Low standby losses
- High efficiency
- Higher current in the same package
- Ensures compliance with automotive industry standards

Applications

- On-board charger
- Reverse polarity protection and freewheeling in BMS
- Switch mode power supplies (SMPS)

Product Summary

Characteristic	Value	Unit
V_{RRM}	1000	V
$I_{F(AV)}$	10	A

Revised: TK.12/10/2025

Maximum Ratings

Symbol	Characteristics	Conditions	Value	Units
V_{RSM}	Non-repetitive Peak Reverse Voltage	–	1200	V
V_{RRM}	Peak Repetitive Reverse Voltage	–	1000	V
$I_{F(AV)}$	Average Forward Current	T_c = 80 °C, T_{vj} = 150 °C, rectangular, d = 0.5	10	A
I_{FSM}	Peak Non-repetitive Surge Current	t_p = 10 ms (50 Hz), half sine wave, T_{vj} (initial) = 25 °C	265	A
		t_p = 8.3 ms (60 Hz), half sine wave, T_{vj} (initial) = 25 °C	320	
I^2t	I^2t Value	t_p = 8.3 ms	425	A^2s
T_{vj}	Operating Junction Temperature Range	–	–40 to +150	°C
T_{stg}	Storage Temperature Range	–	–40 to +150	°C

Electrical Characteristics – Static (T_{vj} = 25 °C, unless otherwise specified)

Symbol	Characteristics	Conditions		Value			Units
				Min.	Typ.	Max.	
V_F	Forward Voltage	I_F = 10 A, T_{vj} = 25 °C		–	0.9	1.2	V
		I_F = 20 A, T_{vj} = 25 °C		–	1.0	1.3	
I_{RRM}	Reverse Leakage Current	V_{RRM}	T_{vj} = 25 °C	–	–	5	µA
			T_{vj} = 125 °C	–	–	300	

Electrical Characteristics – Dynamic (T_{vj} = 25 °C, unless otherwise specified)

Symbol	Characteristics	Conditions	Value			Units
			Min.	Typ.	Max.	
t_{rr}	Reverse Recovery Time	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A	–	5	–	µs

Thermal Specifications

Symbol	Characteristics	Value	Unit
$R_{th(j-c)}$	Thermal Resistance, Junction to Case	9	K/W
$R_{th(j-a)}$	Thermal Resistance, Junction to Ambient	75	K/W

Characteristic Curves

Figure 1. Typical Forward Characteristics

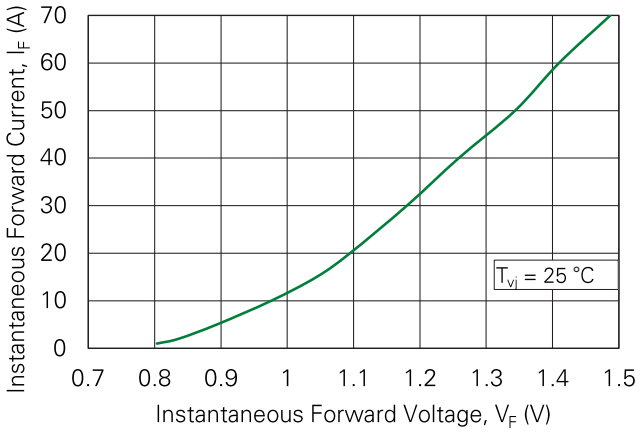


Figure 2. Typical Power Dissipation vs. Average Forward On-state Current

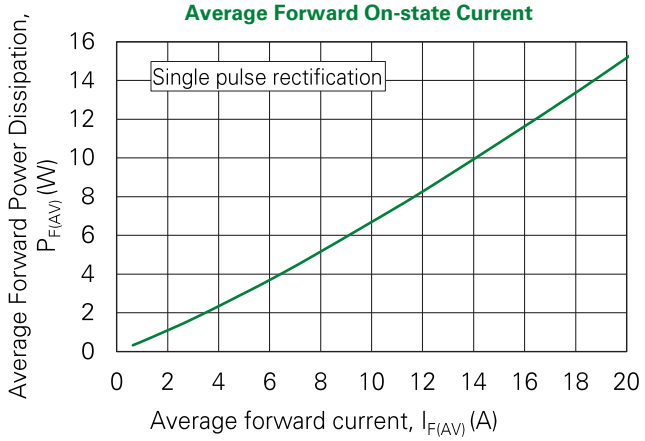


Figure 3. Maximum Allowable Case Temperature vs. Average On-state Current

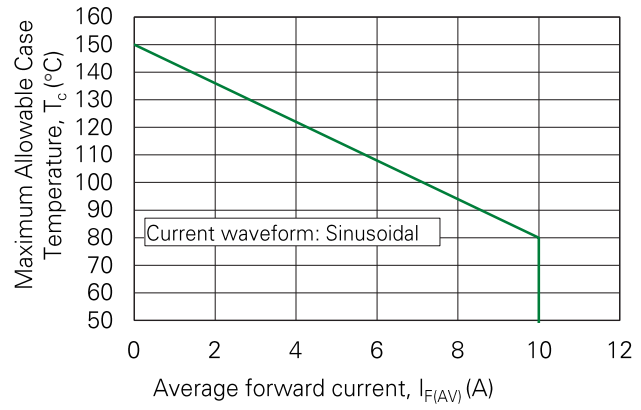


Figure 4. Surge Peak On-state Current vs. Number of Cycles

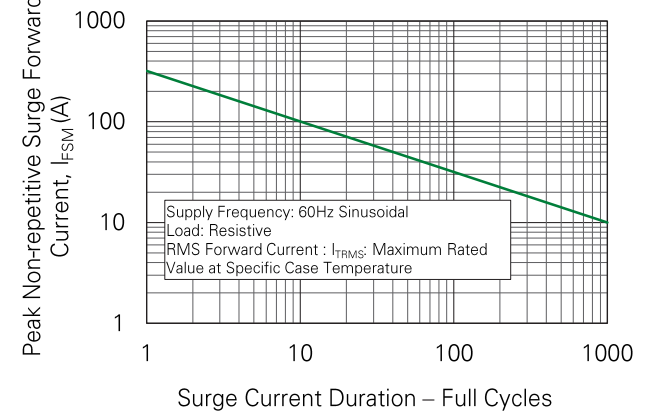
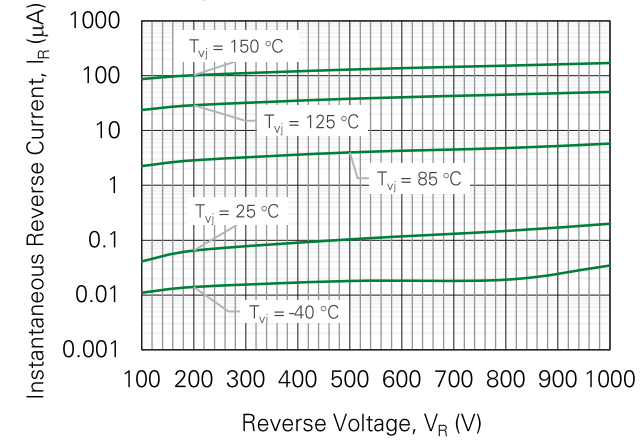
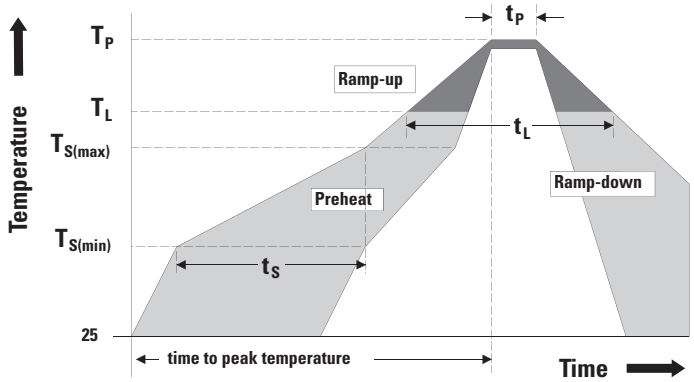


Figure 5. Typical Reverse Characteristics



Soldering Parameters

Characteristic		Value
Reflow Condition		Pb – Free assembly
Pre-heat	Temperature Min ($T_{s(min)}$)	150 °C
	Temperature Max ($T_{s(max)}$)	200 °C
	Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp) (T_L) to peak		3 °C/second max.
$T_{S(max)}$ to T_L - Ramp-up Rate		3 °C/second max.
Reflow	Temperature (T_L) (Liquidus)	217 °C
	Time (t_L)	60 – 150 seconds
Peak Temperature (T_P)		$260^{+0/-5}$ °C
Time within 5 °C of actual peak Temperature (t_p)		30 seconds
Ramp-down Rate		6 °C/second max.
Time 25 °C to peak Temperature (T_P)		8 minutes max.
Do Not Exceed		280 °C



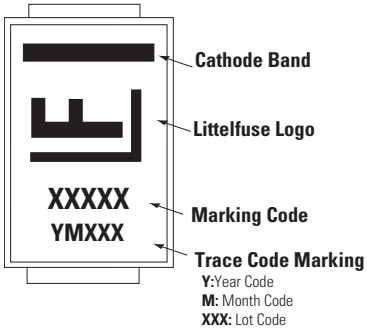
Physical Specifications

Characteristic	Value
Terminal Finish	100% Matte Tin-plated
Body Material	UL Recognized Epoxy Meeting Flammability Rating V-0
Terminal Material	Copper Alloy

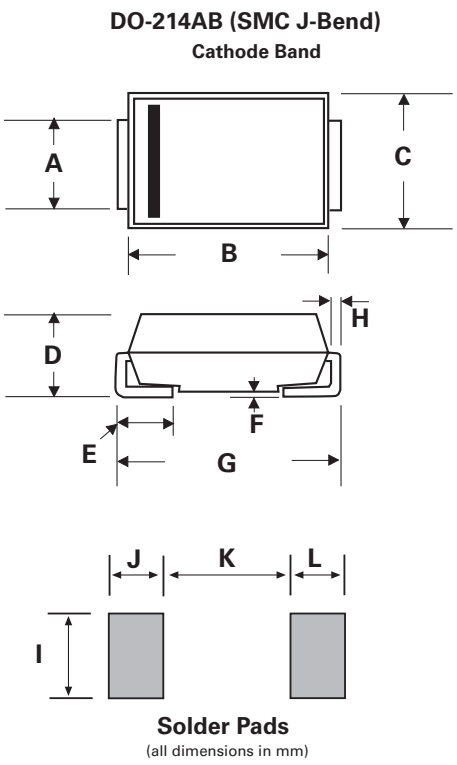
Packing Options

Part Number	Marking	Package	Packing Mode	Base Quantity
DK010S3ARP	DK10A	DO-214AB	Tape and Reel – 16 mm tape/ 13" reel	3000

Part Marking



Package Dimensions DO-214AB



Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max
A	2.900	3.200	0.114	0.126
B	6.600	7.110	0.260	0.280
C	5.590	6.220	0.220	0.245
D	2.060	2.620	0.079	0.103
E	0.760	1.520	0.030	0.060
F	0.051	0.203	0.002	0.008
G	7.750	8.130	0.305	0.320
H	0.152	0.305	0.006	0.012
I	3.300	–	0.129	–
J	2.400	–	0.094	–
K	–	4.200	–	0.165
L	2.400	–	0.094	–

Tape and Reel Specification