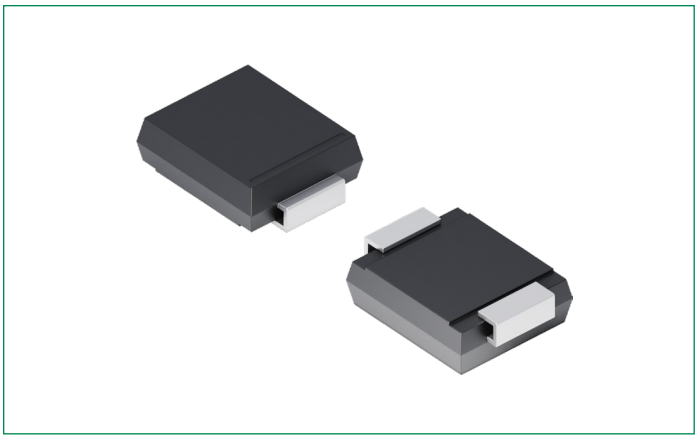
DK610S3RP

1600 V, 10 A Rectifier Diode

RoHS



Description

This 1600 V, 10 A general-purpose rectifier diode uses a single chip in a DO-214AB package and is well suited for DC phase-control applications.

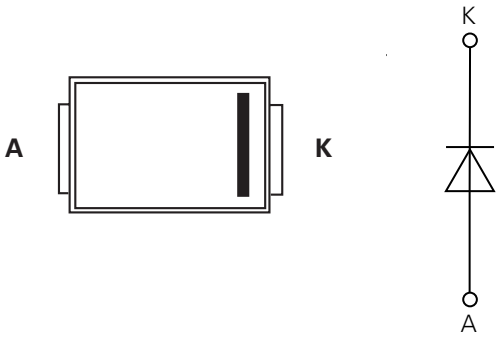
Features

- Reverse leakage current, $I_R \leq 10$ µA @ 25 °C
- Forward voltage, $V_F \leq 1.15$ V @ 25 °C
- Reverse voltage capability up to 1600 V
- DO-214AB package

Benefits

- Long term reliable operation
- High efficiency
- More safety on the high-voltage application
- Space saving and ideal for automated assembly

Pinout Diagram (DO-214AB)



A: Anode; **K:** Cathode

Applications

- For single and three phase bridge configurations
- General-purpose high-voltage rectification

Product Summary

Characteristic	Value	Unit
V_{RRM}	1600	V
$I_{F(AV)}$	10	A

Revised: AO.06/05/2026

Maximum Ratings

Symbol	Characteristics	Conditions	Value	Units
V_{RSM}	Non-repetitive Peak Reverse Blocking	T_{vj} (initial) = 25 °C	1700	V
V_{RRM}	Repetitive Peak Reverse Voltage	T_{vj} (initial) = 25 °C	1600	V
$I_{F(AV)}$	Average Forward Current	T_c = 53 °C, T_{vj} = 175 °C, rectangular, DC	10	A
I_{FSM}	Non-repetitive Surge Forward Current	single half cycle; f = 50 Hz; T_{vj} (initial) = 45 °C	196	A
		single half cycle; f = 60Hz; T_{vj} (initial) = 45 °C	215	
		single half cycle; f = 50Hz; T_{vj} (initial) = 175 °C	178	A
		single half cycle; f = 60 Hz; T_{vj} (initial) = 175 °C	195	
I^2t	I^2t value	t_p = 10 ms, T_{vj} = 45 °C	192	A^2s
		t_p = 8.3 ms, T_{vj} = 45 °C	191	A^2s
		t_p = 10 ms, T_{vj} = 150 °C	158	A^2s
		t_p = 8.3 ms, T_{vj} = 150 °C	157	A^2s
T_{vj}	Virtual junction temperature	–	175	°C
T_{stg}	Storage Temperature Range	–	–55 to +150	°C
T_{op}	Operating Temperature Range	–	–55 to +150	°C

Static Characteristics

Symbol	Characteristics	Conditions		Value			Units
				Min.	Typ.	Max.	
V_F	Forward Voltage	I_F = 10 A	T_{vj} = 25 °C	–	–	1.15	V
		I_F = 20 A		–	–	1.3	V
		I_F = 10 A	T_{vj} = 150 °C	–	–	1.05	V
		I_F = 20 A		–	–	1.2	V
I_R	Reverse Current	$V_R = V_{RRM}$	T_{vj} = 25 °C	–	–	10	uA
			T_{vj} = 150 °C	–	–	200	
$V_{(TO)}$	Threshold Voltage	T_{vj} = 175 °C		–	–	0.57	V
r_T	Slope Resistance	T_{vj} = 175 °C		–	–	15	mΩ

Thermal Specifications

Symbol	Characteristics	Value	Unit
$R_{th(j-c)}$	Thermal Resistance, Junction to Case	17	K/W
$R_{th(j-a)}$	Thermal Resistance, Junction to Ambient	75	K/W

Note: Mounted on a 1S1P 1" square FR-4 board, top layer pad size 3.0 mm * 3.8 mm & 2 oz 1" square copper plane

Characteristic Curves

Fig. 1. Forward Current Versus Voltage Drop (per diode)

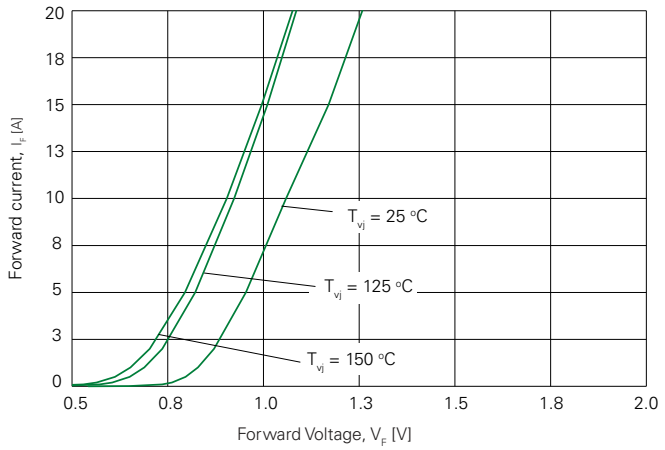


Fig. 2. Forward Power Loss Characteristic

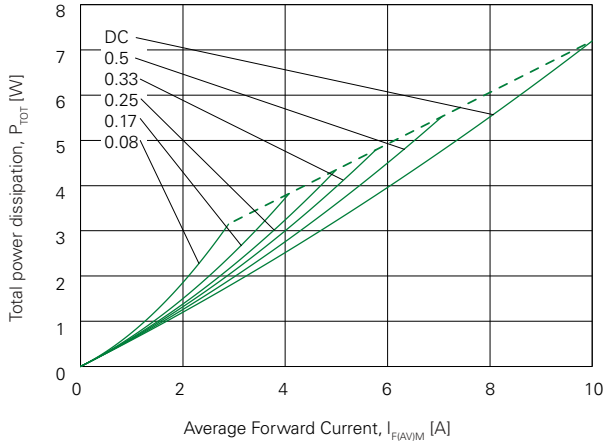


Fig. 3. Power Dissipation vs. Ambient Temperature

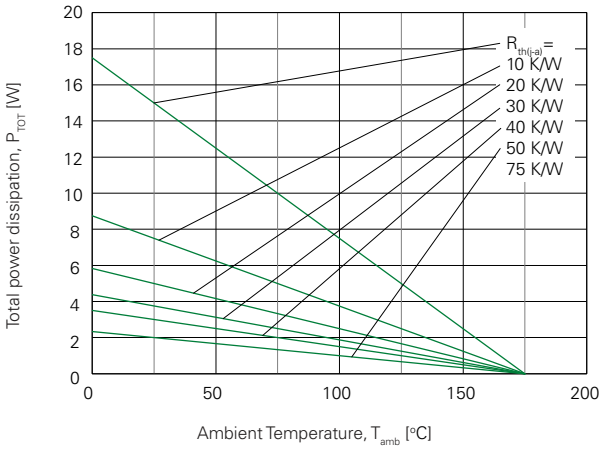


Fig. 4. Max. Forward Current vs. Case Temperature

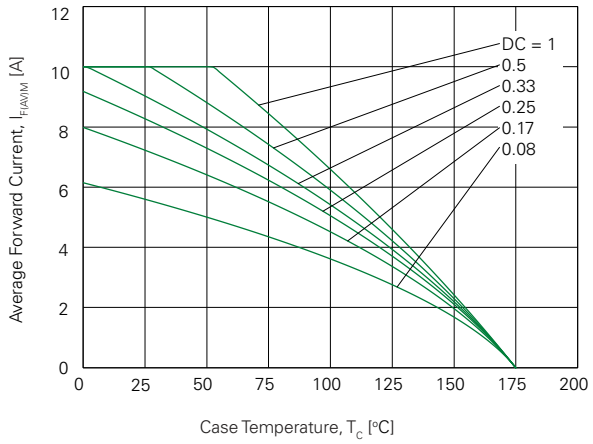
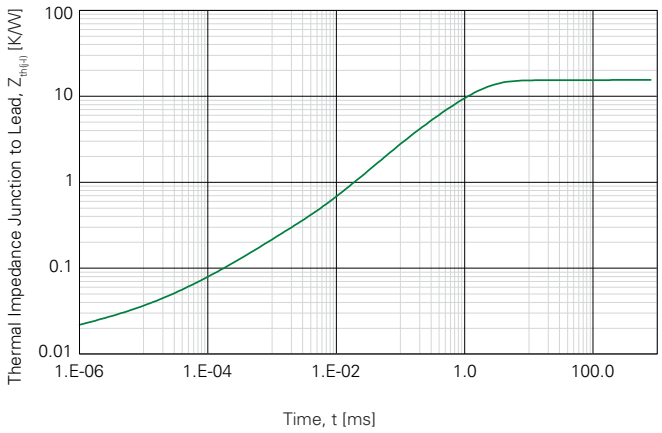
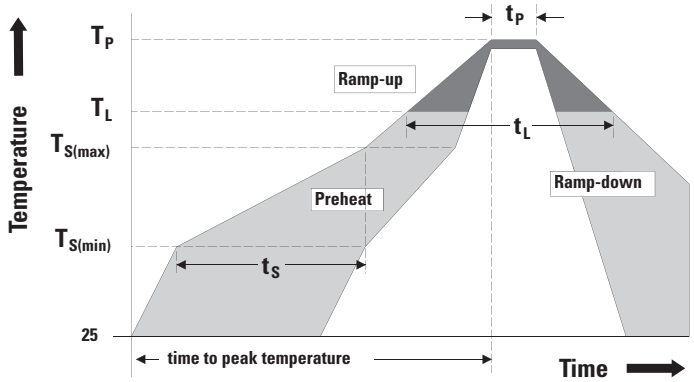


Fig. 5. Transient Thermal Impedance Junction to Lead



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 K/s max.
$T_{S(max)}$ to T_L - Ramp-up Rate		3 K/s 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 K/s max.
Time 25 °C to peak Temperature (T_P)		8 minutes max.
Do Not Exceed		280 °C



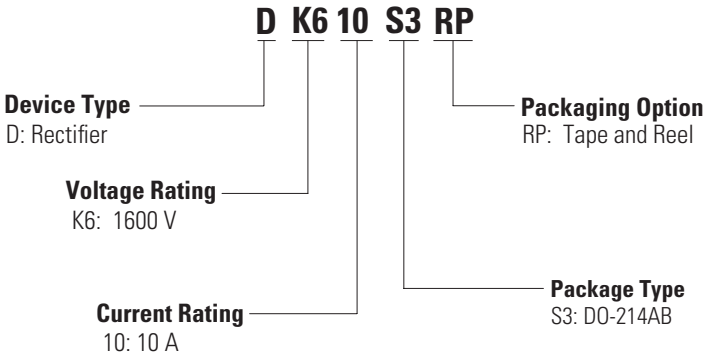
Physical Specifications

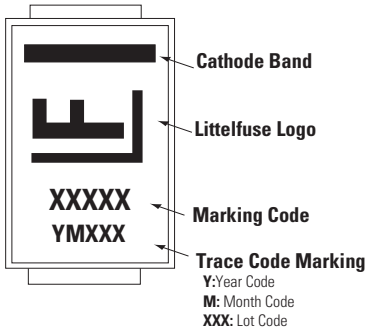
Characteristic	Value
Terminal Finish	100% Matte Tin-plated
Body Material	UL Recognized Epoxy Meeting Flammability Rating V-0
Terminal Material	Copper Alloy

Packing Options

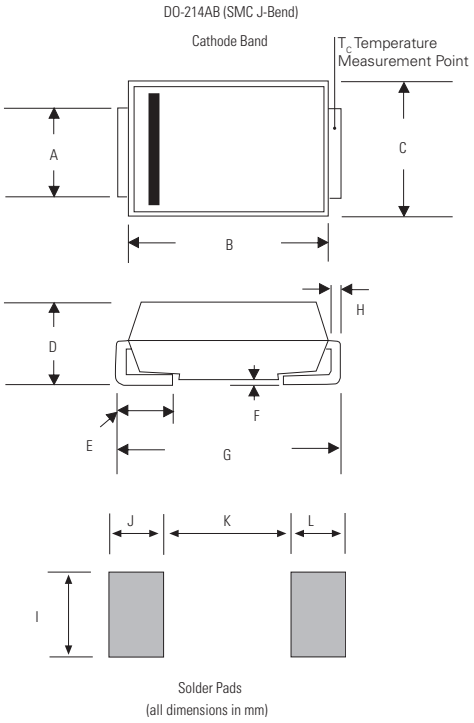
Part Number	Marking	Package	Packing Mode	Base Quantity
DK610S3RP	DK610	DO-214AB	Tape and Reel – 16 mm tape/ 13" reel	3000

Part Numbering and 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