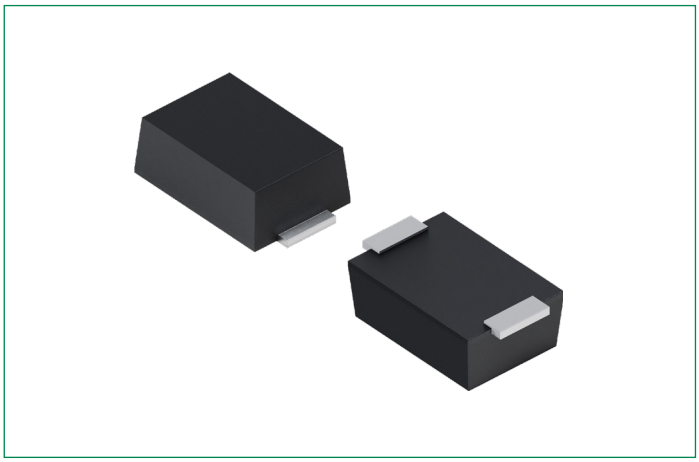
Dxx01 Series
1 A Rectifiers

RoHS | AUTOMOTIVE GRADE



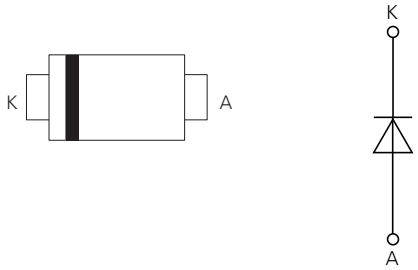
Description

These silicon rectifiers have glass-passivated junctions, providing stable operation. They are assembled in a small-size SOD-123FL package which is ideal for automated assembly. All devices feature PPAP-3.

Features

- Reverse leakage current $I_R \leq 10$ µA @ 25 °C
- Forward voltage $V_F \leq 1.1$ V @ 25 °C
- SOD-123FL package
- Increased maximum virtual junction temperature from 125 °C to 150 °C
- AEC-Q101 qualified

Pinout Diagram



A: Anode; **K:** Cathode

Benefits

- Low stand-by losses
- High efficiency
- Reduces the PCB area and ideal for automated assembly
- Higher current in the same package
- Ensures compliance with automotive industry standards

Applications

- Automotive reverse battery protection
- DC-DC converter
- Switch Mode Power Supplies (SMPS)

Product Summary

Characteristic	Value	Unit
V_{RRM}	600	V
$I_{F(AV)}$	1	A

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Maximum Ratings

Symbol	Characteristics	Conditions	Value	Units
V_{RRM}	Repetitive Peak Reverse Voltage	T_{vj} = 25 °C	600	V
$I_{F(AV)}$	Average Forward Current	T_c = 127 °C	1	A
I_{FSM}	Non-repetitive Surge Forward Current	Single half cycle; f = 50 Hz; T_{vj} (initial) = 25 °C	25	A
		Single half cycle; f = 60 Hz; T_{vj} (initial) = 25 °C	30	A
I^2t	I^2t Value	t_p = 8.3 ms	3.7	A^2s
T_{vj}	Virtual Junction Temperature Range	–	–55 to +150	°C
T_{stg}	Storage Temperature Range	–	–55 to +150	°C

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

Symbol	Characteristics	Conditions		Maximum Value	Units
V_F	Forward Voltage	I_F = 1 A, t_p = 380 µs		1.1	V
I_R	Reverse Current	$V_R = V_{RRM}$	T_{vj} = 25 °C	10	µA
			T_{vj} = 125 °C	50	
			T_{vj} = 150 °C	200	

Thermal Specifications

Symbol	Characteristics	Value			Unit
		Min.	Typ.	Max.	
$R_{th(j-c)}$	Thermal Resistance Junction to Case	–	20	–	K/W
$R_{th(j-a)}$	Thermal Resistance Junction to Ambient	–	80	–	K/W

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Characteristic Curves

Figure 1. Typical On-state Current vs. On-state Voltage

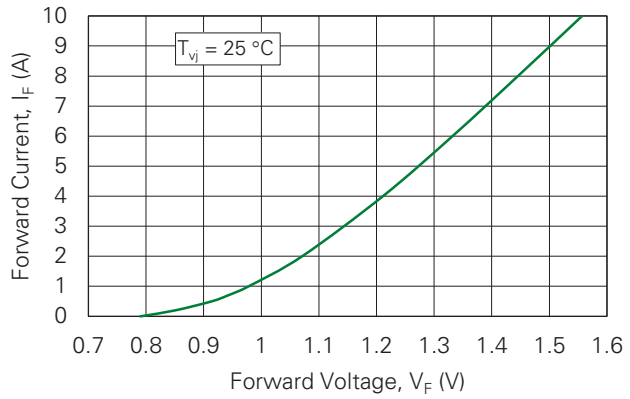


Figure 2. Typical Power Dissipation vs. Average Forward On-state Current

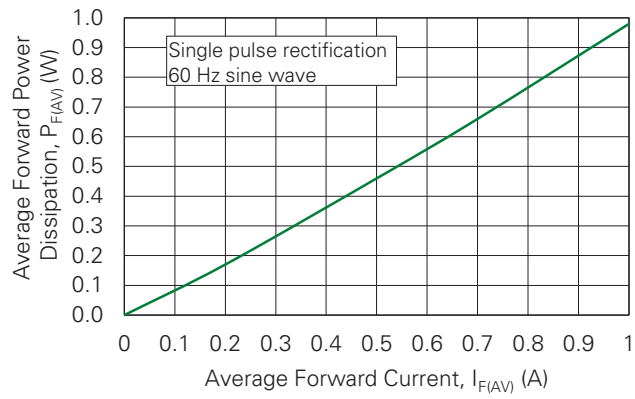


Figure 3. Maximum Allowable Case Temperature vs. Average On-state Current

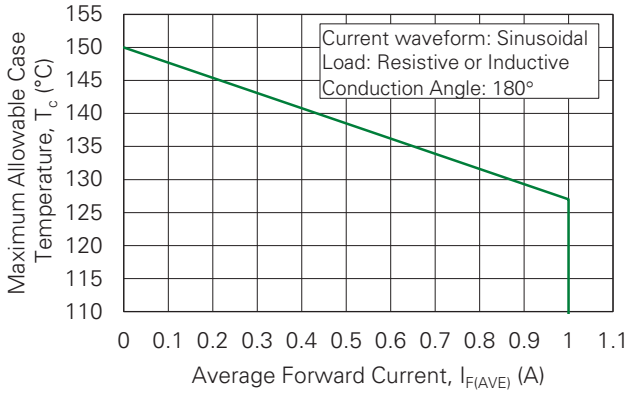
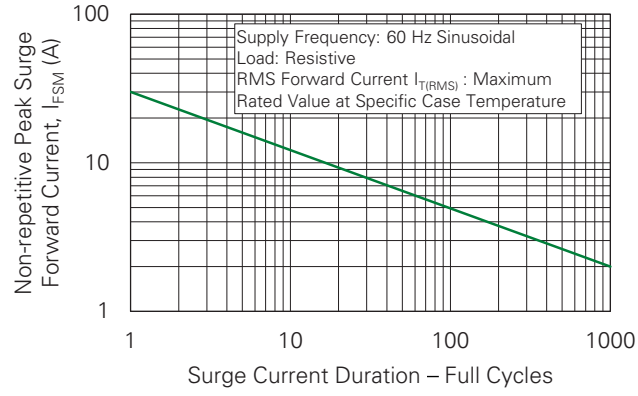


Figure 4. Surge Peak On-state Current vs. Number of Cycles



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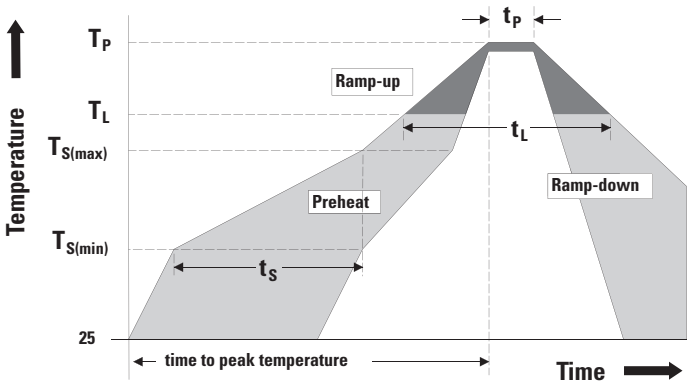
Soldering Parameters

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 – 120 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		260 °C



Physical Specifications

Characteristic	Value
Terminal Finish	100% Matte Tin-plated
Body Material	UL Recognized compound meeting flammability rating V-0
Terminal Material	Copper Alloy

Environmental Specifications

Test	Specifications and Conditions
High Temperature Voltage Blocking	MIL-STD-750, M-1040, Condition A Rated V_{RRM}, 150 °C, 1008 hours
Temperature/Humidity	EIA / JEDEC, JESD22-A101, 1008 hours; 320 V DC: 85 °C; 85% relative humidity
Temperature Cycling	MIL-STD-750, M-1051,1000 cycles; -55°C to +150 °C; 15-min dwell-time
Resistance to Solder Heat	MIL-STD-750: Method 2031, 260 °C, 10 seconds
Solderability	ANSI/J-STD-002
High Temperature Storage	MIL-STD-750, Method 1031, 150 °C, 1008 hours

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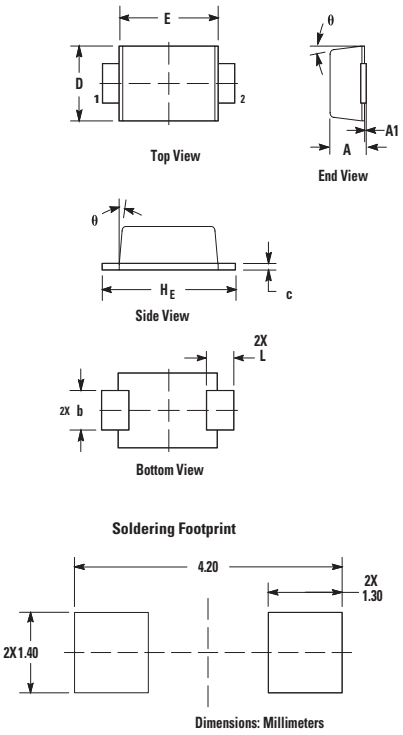
Part Outline Drawing SOD-123FL



Symbol	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max
A	1.20	1.30	140	0.047	0.051	0.055
A1	0.00	0.05	0.10	0	0.002	0.004
b	1.10	1.20	1.30	0.043	0.047	0.051
c	0.10	0.17	0.25	0.004	0.007	0.01
D	2.25	2.35	2.45	0.089	0.093	0.096
E	3.25	3.35	3.45	0.128	0.132	0.136
L	0.35	0.47	0.60	0.014	0.019	0.024
H_E	3.75	3.85	3.95	0.148	0.152	0.156
θ	2°	–	8°	2°	–	8°

Product Selector

Part Number	Voltage	Type	Package
	600 V		
D6001S4ARP	X	Rectifier	SOD-123FL

Packing Options

Part Number	Marking	Weight	Packing Mode	Base Quantity
D6001S4ARP	D601A	0.0268 g	Tape and Reel	5000

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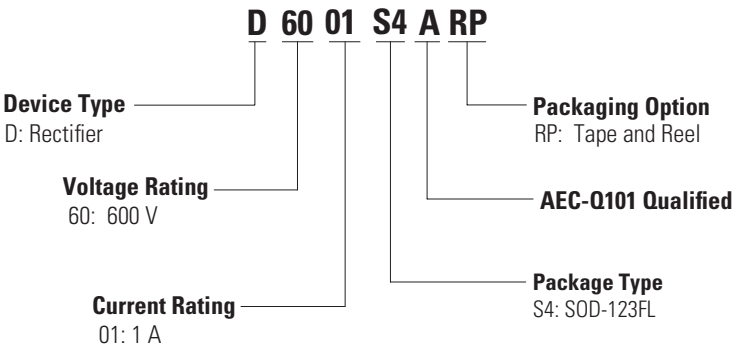
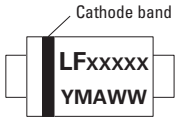
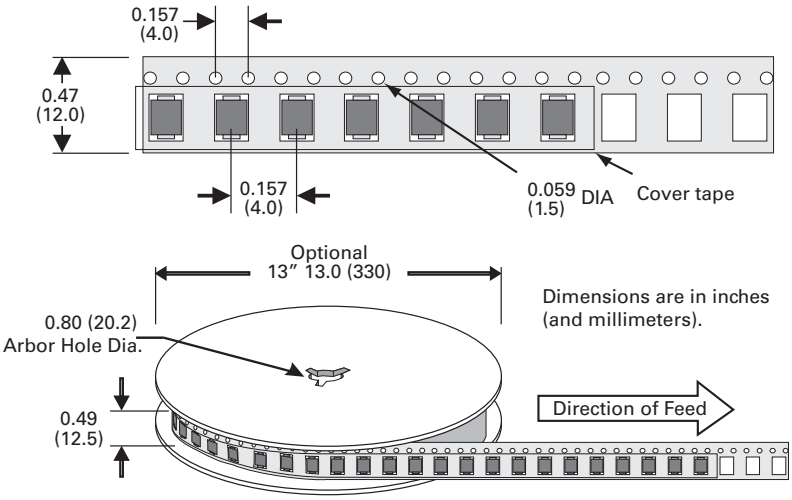
Part Numbering and Marking

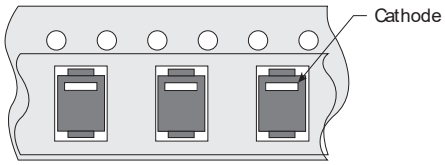




LF = Littelfuse Logo
XXXXX = Marking Code
Y = Year
M = Month
A = Assembly Location
WW = Lot Code

Packing Specification





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