

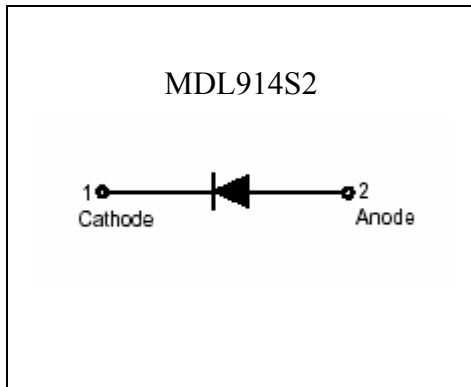
High –speed switching diode

MDL914S2

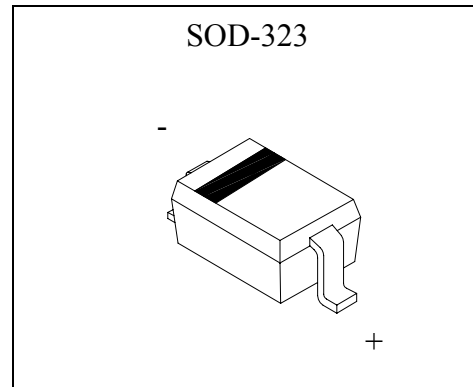
Description

The MDL914S2 is a high-speed switching diode fabricated in planar technology, and encapsulated in the small SOD-323 plastic SMD package.

Symbol



Outline



Features

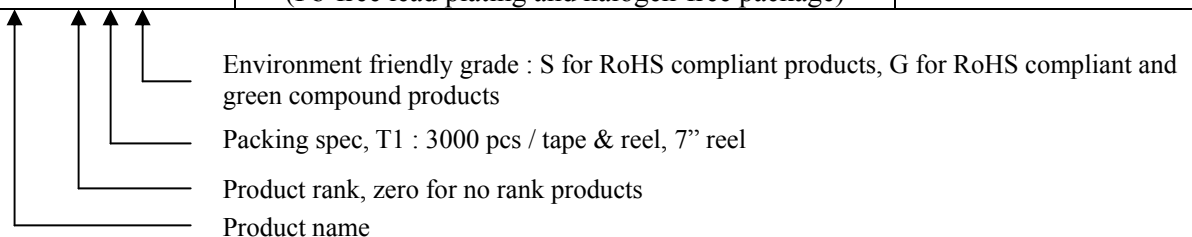
- Small plastic SMD package
- High switching speed: max. 4ns
- Reverse voltage: max. 100V
- Peak forward surge current: max. 500mA.

Applications

- High-speed switching in thick and thin-film circuits.

Ordering Information

Device	Package	Shipping
MDL914S2-0-T1-G	SOD-323 (Pb-free lead plating and halogen-free package)	3000 pcs / tape & reel



**Absolute Maximum Ratings @ $T_A=25^{\circ}\text{C}$**

Parameters	Symbol	Min	Max	Unit
Reverse voltage	V_R	-	100	V
Forward current	I_F	-	250	mA
Repetitive peak forward current	I_{FRM}	-	500	mA
Non-repetitive peak forward current ; square wave, $T_j=25^{\circ}\text{C}$ prior to surge	@ $t=1\mu\text{s}$	-	4	A
	@ $t=1\text{ms}$	-	1	
	@ $t=1\text{s}$	-	0.5	
Junction Temperature	T_j	-	150	$^{\circ}\text{C}$
Storage Temperature	T_{stg}	-65	+150	$^{\circ}\text{C}$

Electrical Characteristics @ $T_A=25^{\circ}\text{C}$ unless otherwise specified

Parameters	Symbol	Conditions	Min	Typ.	Max	Unit
Reverse breakdown voltage	V_R	$I_R=100\mu\text{A}$	100	-	-	V
Forward voltage	V_F	$I_F=1\text{mA}$	-	-	715	mV
		$I_F=10\text{mA}$	-	-	855	mV
		$I_F=50\text{mA}$	-	-	1	V
		$I_F=150\text{mA}$	-	-	1.25	V
Reverse leakage current	I_R	$V_R=20\text{V}$	-	-	30	nA
		$V_R=100\text{V}$	-	-	1	μA
Diode capacitance	C_D	$V_R=0\text{V}$, $f=1\text{MHz}$	-	-	1.5	pF
Reverse recovery time	t_{rr}	when switched from $I_F=10\text{mA}$ to $I_R=10\text{mA}$, $R_L=100\Omega$, measured at $I_R=1\text{mA}$	-	-	4	ns

Thermal Characteristics

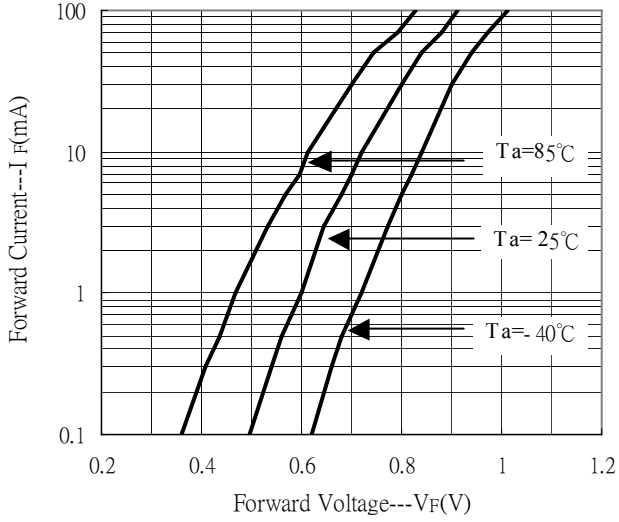
Symbol	Parameter	Conditions	Max	Unit
P_{tot} , $T_a=25^{\circ}\text{C}$ Derate above 25°C	Total device dissipation on FR-4 board	Note 1	200 1.57	mW mW/ $^{\circ}\text{C}$
$R_{th, j-a}$	Thermal resistance from junction to ambient	Note 1	625	$^{\circ}\text{C}/\text{W}$

Note 1: Device mounted on an FR-4 PCB.

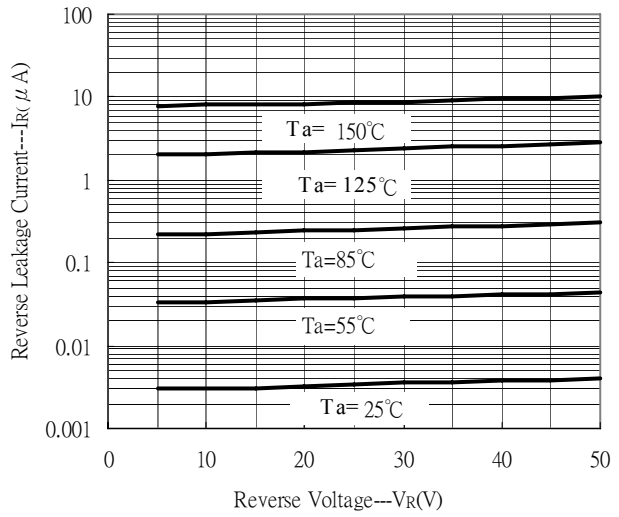


Characteristic Curves

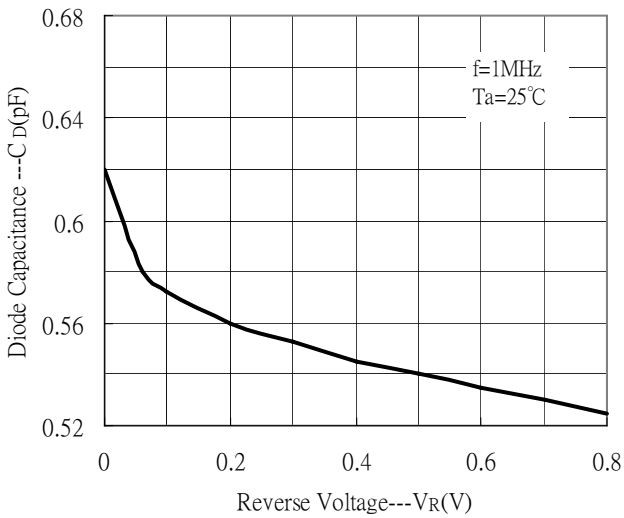
Forward Current vs Forward Voltage



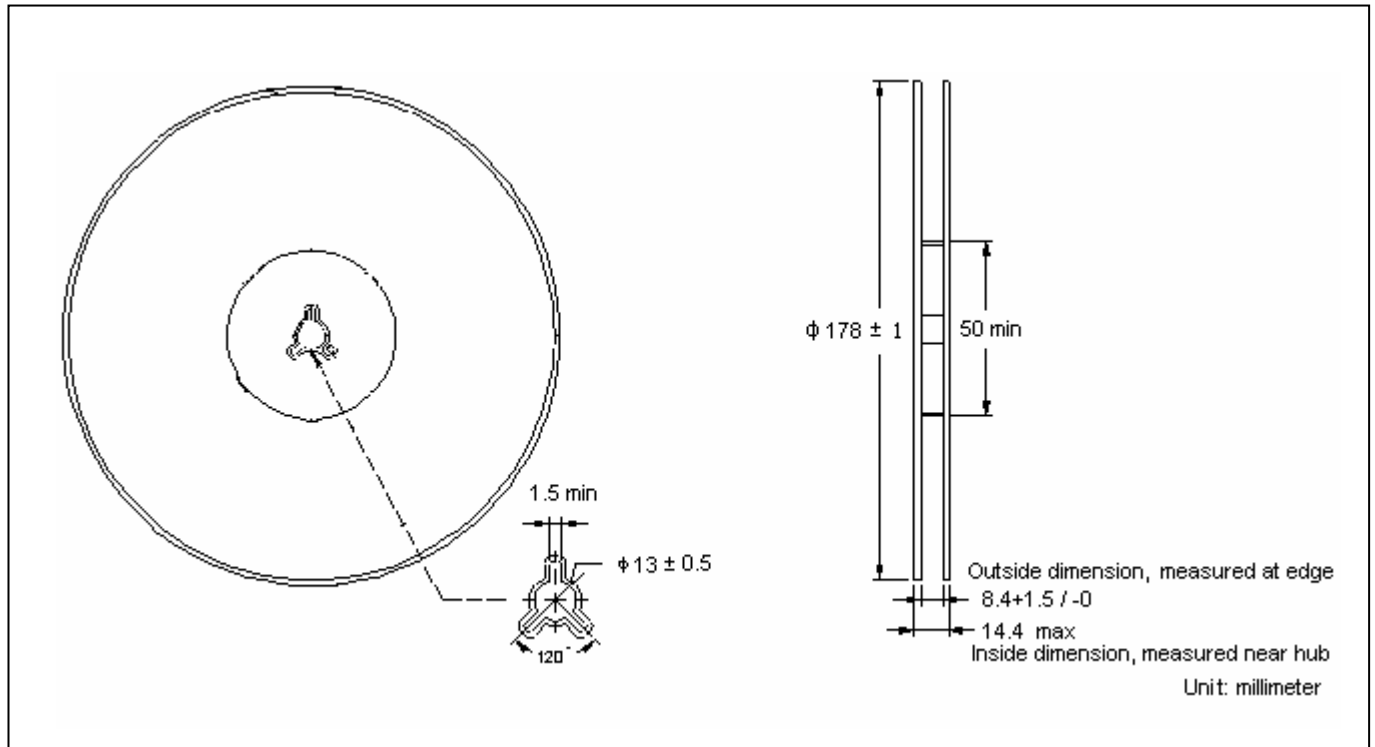
Reverse Leakage Current vs Reverse Voltage



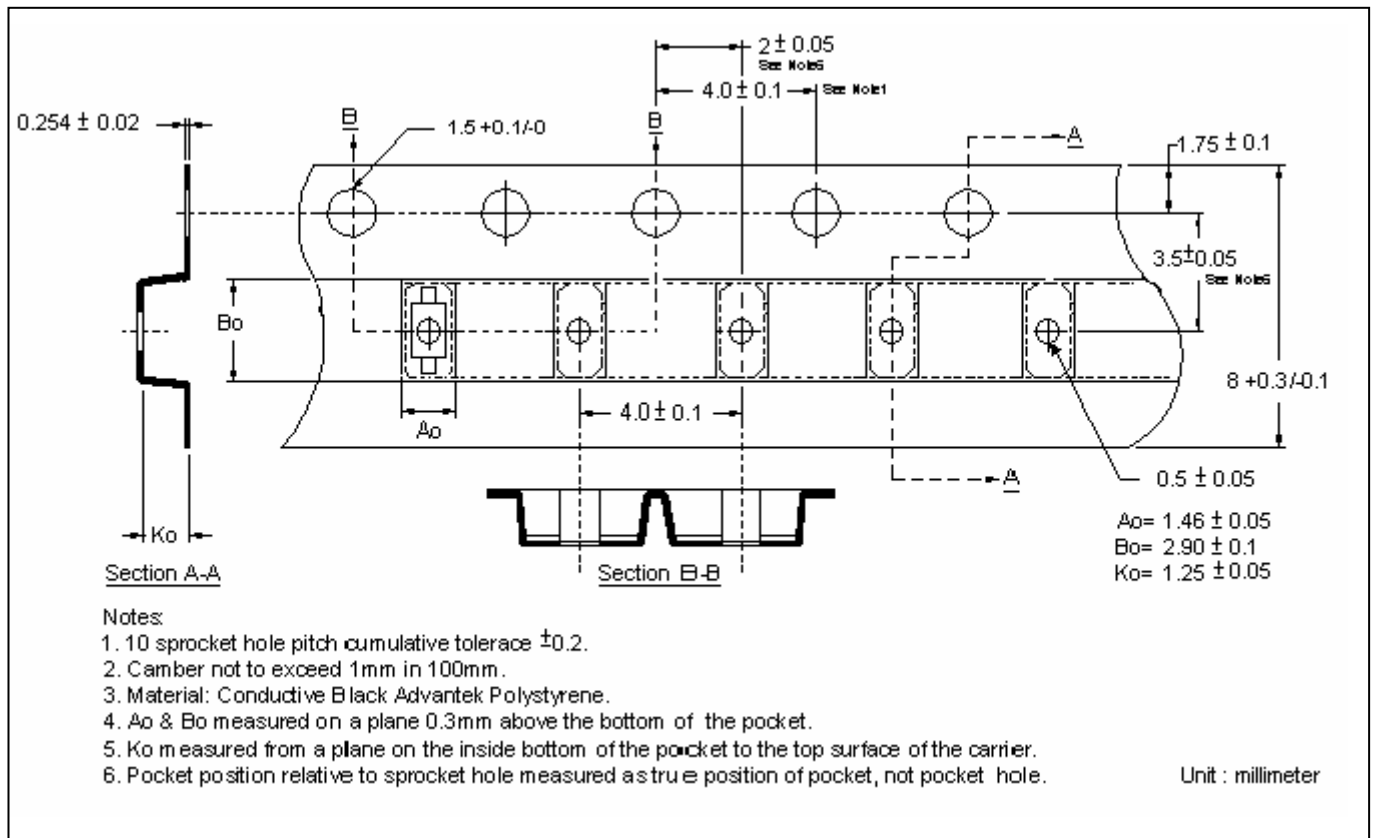
Capacitance vs Reverse Voltage



Reel Dimension



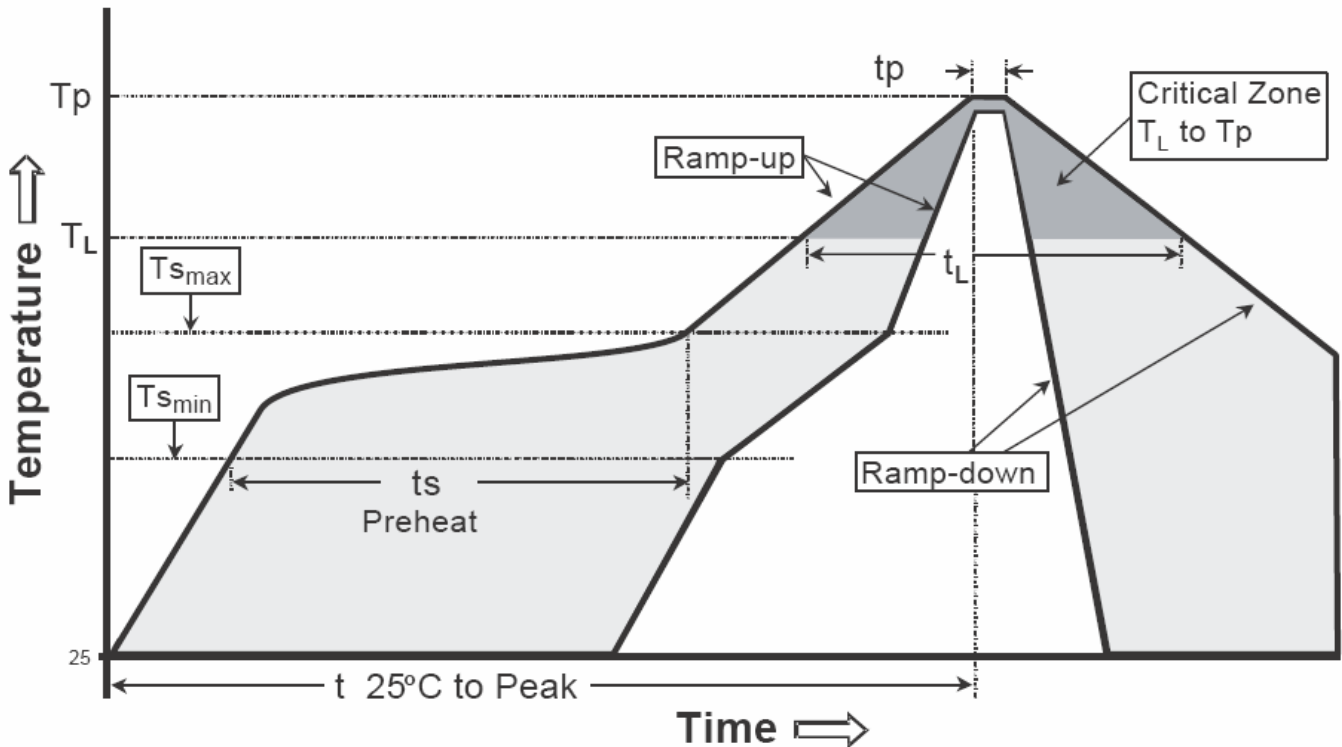
Carrier Tape Dimension



Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

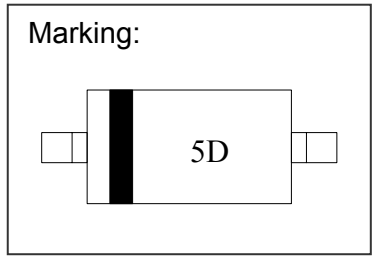
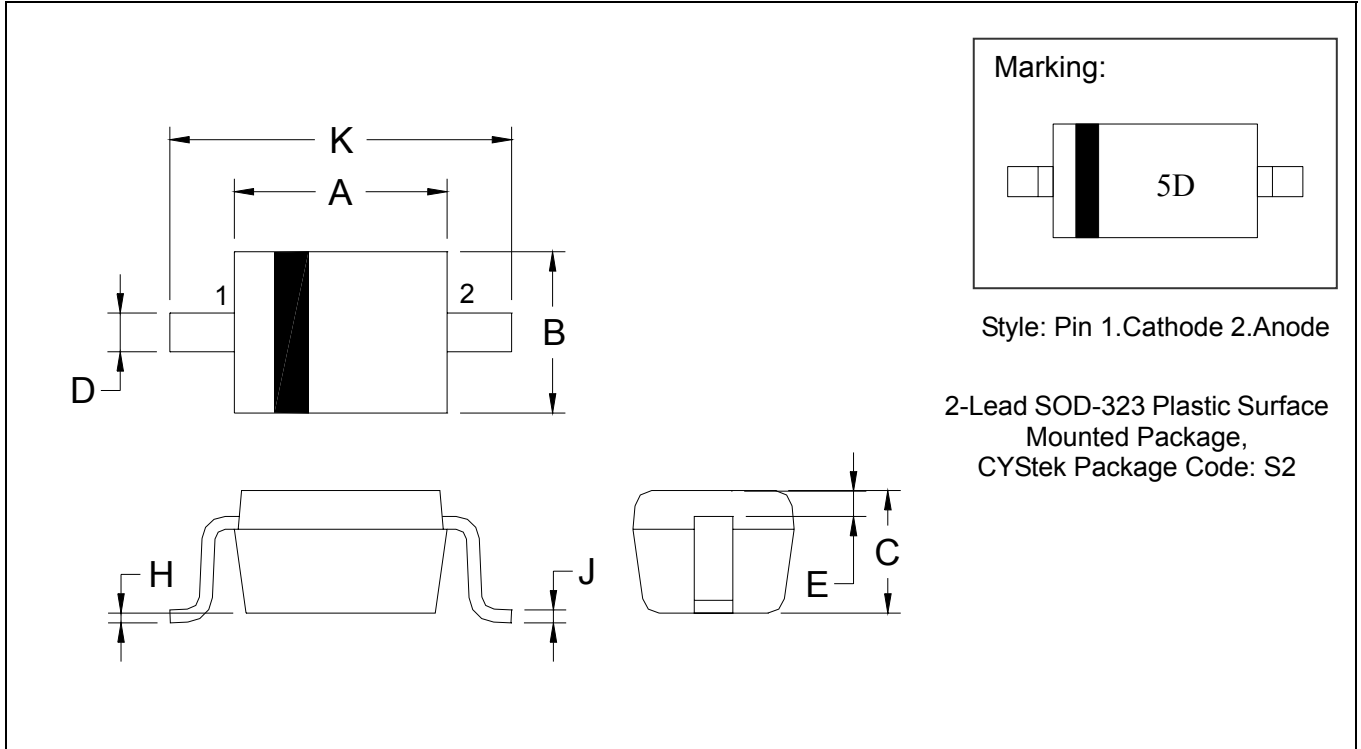
Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (T _{smax} to T _p)	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(T _{s min})	100°C	150°C
-Temperature Max(T _{s max})	150°C	200°C
-Time(t _{s min} to t _{s max})	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (T _L)	183°C	217°C
- Time (t _L)	60-150 seconds	60-150 seconds
Peak Temperature(T _P)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

SOD-323 Dimension



Style: Pin 1.Cathode 2.Anode

2-Lead SOD-323 Plastic Surface Mounted Package,
 CYStek Package Code: S2

*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.0630	0.0709	1.60	1.80	E	0.0060 REF		0.15 REF	
B	0.0453	0.0531	1.15	1.35	H	0.0000	0.0040	0.00	0.10
C	0.0315	0.0394	0.80	1.00	J	0.0035	0.0070	0.089	0.177
D	0.0098	0.0157	0.25	0.40	K	0.0906	0.1063	2.30	2.70

Notes: 1.Controlling dimension : millimeters.
 2.Lead thickness specified per L/F drawing with solder plating.
 3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:

- Lead: Pure tin plated.
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0.

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