NSR05T40P2

500 mA, 40 V Schottky Barrier Diode

These Schottky barrier diodes are optimized for low forward voltage drop and low leakage current that offers the most optimal power dissipation in applications. They are housed in spacing saving micro−packaging ideal for space constraint applications.

ON Semiconductor®

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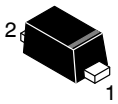
Features

- Low Forward Voltage Drop – 580 mV (Typ.) @ I_F = 500 mA
- Low Reverse Current – 2.0 μA (Typ.) @ V_R = 40 V
- 500 mA of Continuous Forward Current
- ESD Rating: – Human Body Model: Class 3B
  – Charged Device Model: Class IV
- High Switching Speed
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant



SOD−923
CASE 514AB

MARKING DIAGRAM

YK = Specific Device Code
M = Date Code

Typical Applications

- LCD and Keypad Backlighting
- Camera Photo Flash
- Buck and Boost dc−dc Converters
- Reverse Voltage and Current Protection
- Clamping & Protection

DISCONTINUED
THIS DEVICE IS NOT RECOMMENDED FOR NEW DESIGN
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MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Reverse Voltage	V_R	40	V
Forward Current (DC)	I_F	500	mA
Forward Surge Current (60 Hz @ 1 cycle)	I_{FSM}	3.0	A
Repetitive Peak Forward Current (Pulse Wave = 1 sec, Duty Cycle = 66%)	I_{FRM}	1.0	A
ESD Rating: Human Body Model Charged Device Model	ESD	> 8 > 1	kV

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

ORDERING INFORMATION

Device	Package	Shipping†
NSR05T40P2T5G	SOD−923 (Pb−Free)	2 mm Pitch 8000/Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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May, 2024 – Rev. 3
Publication Order Number:
NSR05T40P2/D

THERMAL CHARACTERISTICS

Characteristic	Symbol	Min	Typ	Max	Unit
Thermal Resistance Junction−to−Ambient (Note 1) Total Power Dissipation @ T_A = 25°C	$R_{\theta JA}$ P_D			345 360	°C/W mW
Thermal Resistance Junction−to−Ambient (Note 2) Total Power Dissipation @ T_A = 25°C	$R_{\theta JA}$ P_D			175 715	°C/W mW
Junction and Storage Temperature Range	T_J, T_{stg}	−55 to +150			°C

1. Mounted onto a 4 in square FR−4 board 50 mm sq. 1 oz. Cu 0.06” thick single sided. Operating to steady state.
2. Mounted onto a 4 in square FR−4 board 650 mm sq. 1 oz. Cu 0.06” thick single sided. Operating to steady state.

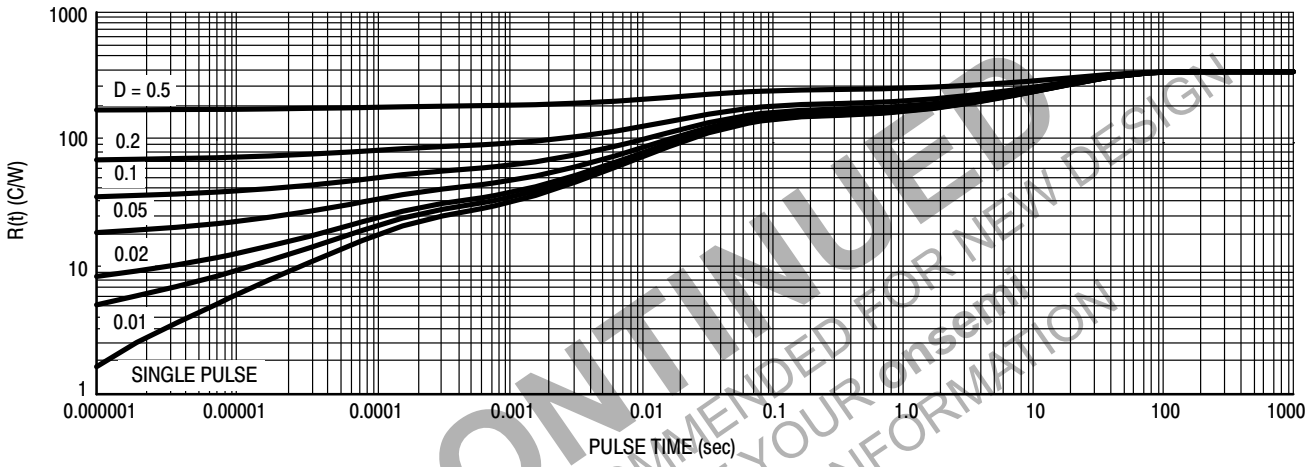

Figure 1. Thermal Response (Note 1)

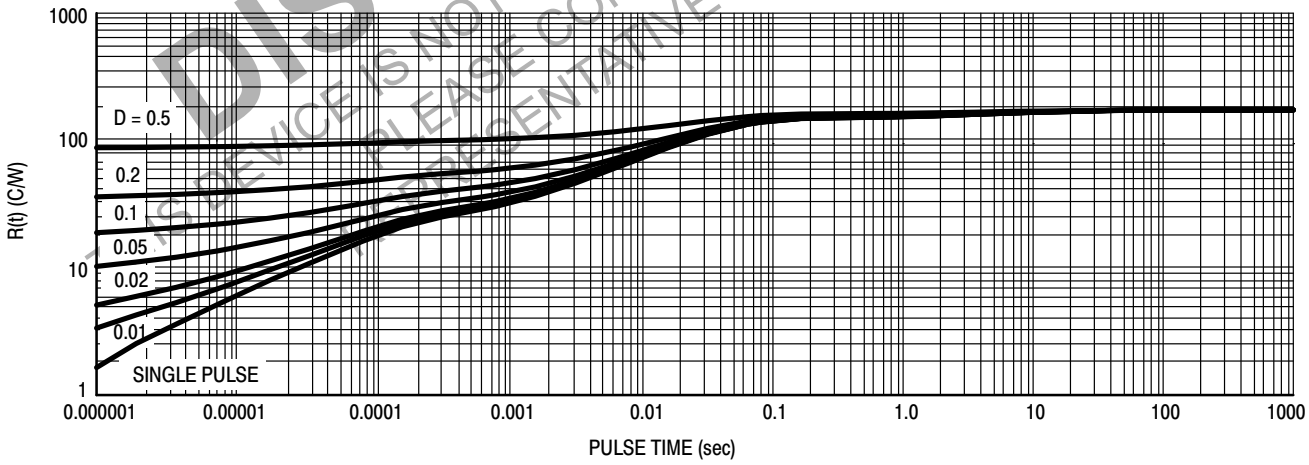

Figure 2. Thermal Response (Note 2)

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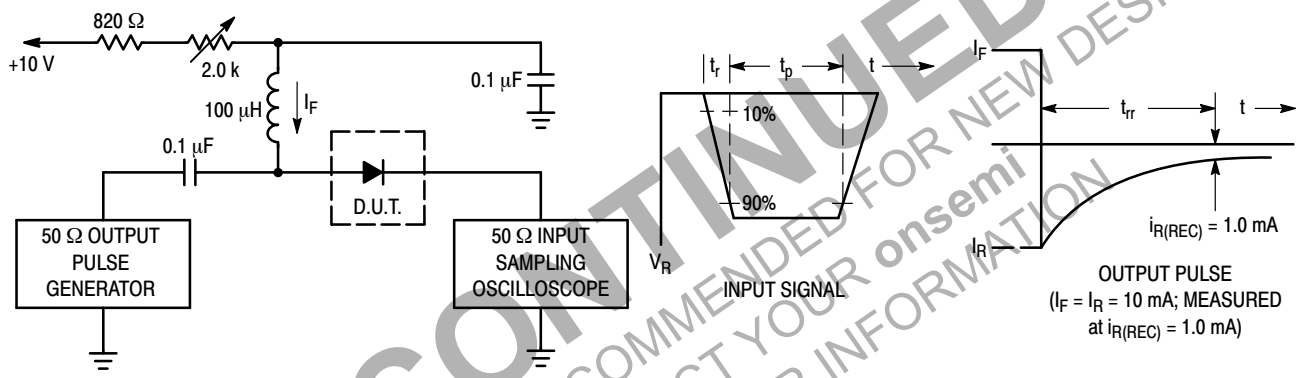
ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Leakage (V_R = 10 V) (V_R = 40 V)	I_R		 0.2 2.0	 5.0 55	μA
Forward Voltage (I_F = 10 mA) (I_F = 100 mA) (I_F = 200 mA) (I_F = 500 mA)	V_F		 360 450 490 580	 410 500 550 700	mV
Total Capacitance (V_R = 1.0 V, f = 1.0 MHz)	C_T		29		pF
Reverse Recovery Time (I_F = I_R = 10 mA, $I_{R(REC)}$ = 1.0 mA, Figure 3)	t_{rr}		8.0		ns
Peak Forward Recovery Voltage (I_F = 100 mA, t_r = 20 ns, Figure 4)	V_{FRM}		560		mV

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.



Notes: 1. A 2.0 kΩ variable resistor adjusted for a Forward Current (I_F) of 10 mA.
2. Input pulse is adjusted so $I_{R(peak)}$ is equal to 10 mA.
3. $t_p \gg t_{rr}$

Figure 3. Recovery Time Equivalent Test Circuit

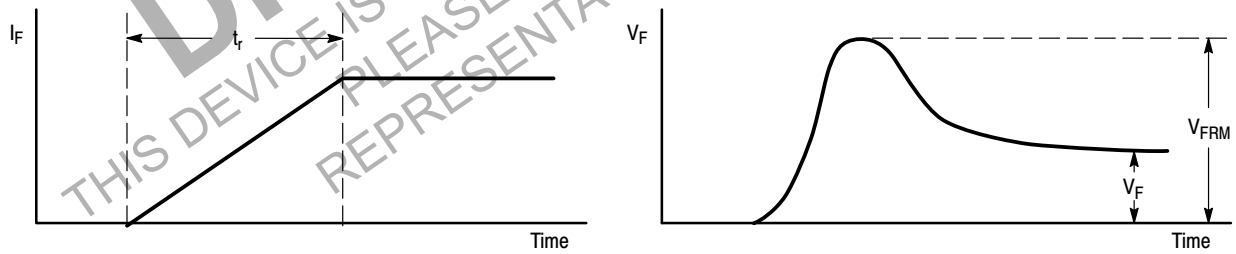


Figure 4. Peak Forward Recovery Voltage Definition

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TYPICAL CHARACTERISTICS

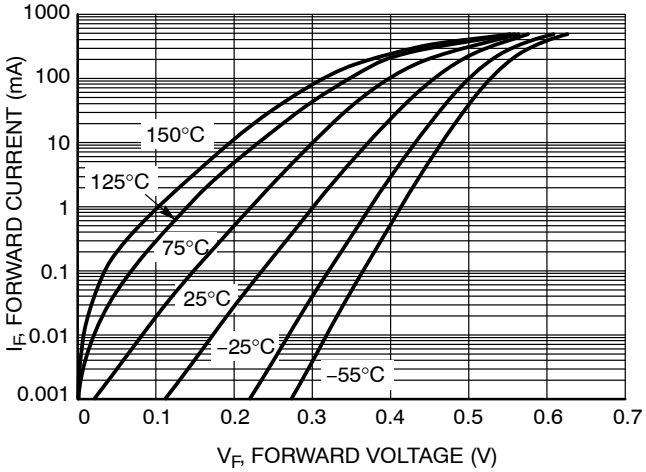

Figure 5. Forward Voltage

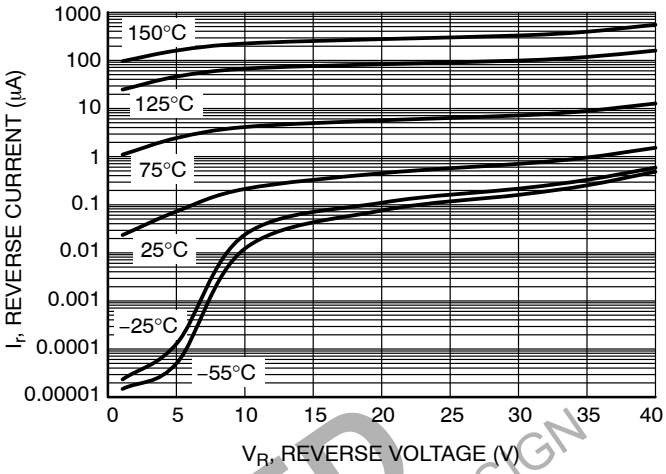

Figure 6. Leakage Current

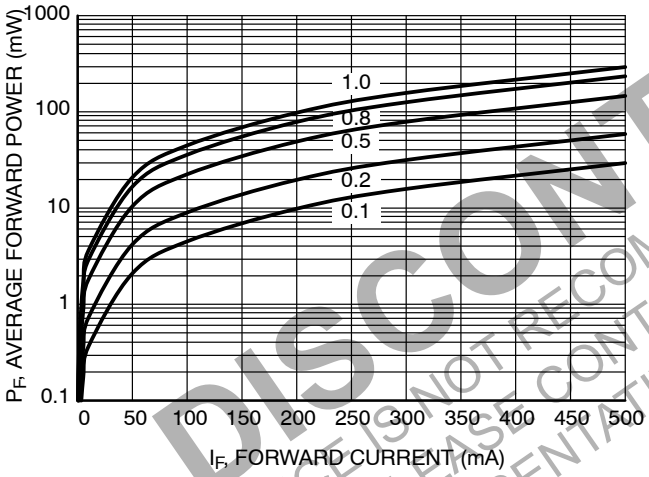

Figure 7. Average Forward Power Dissipation

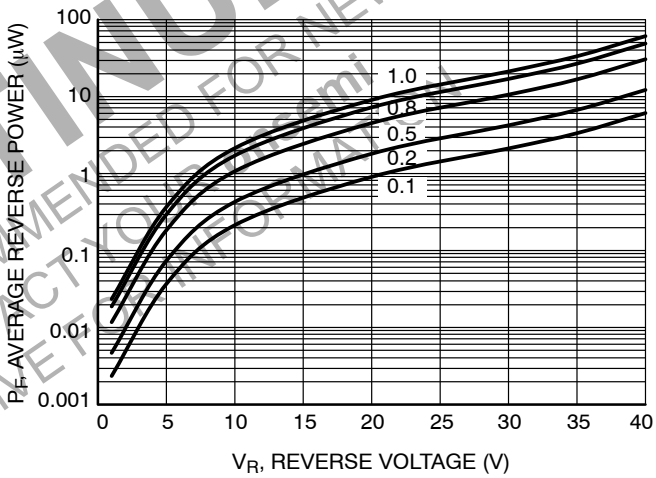

Figure 8. Average Reverse Power Dissipation

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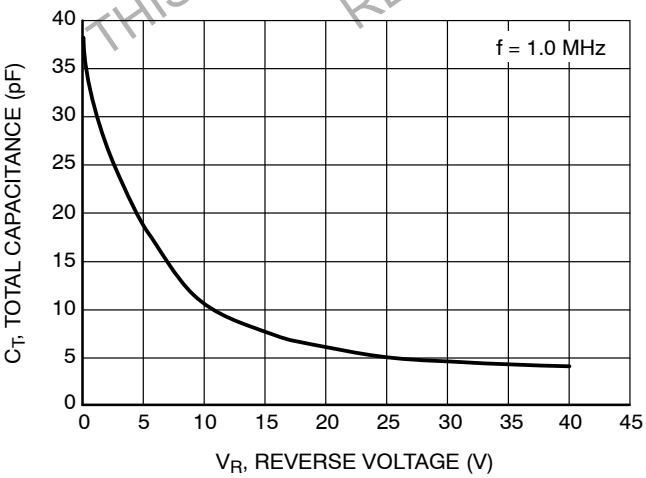


Figure 9. Total Capacitance

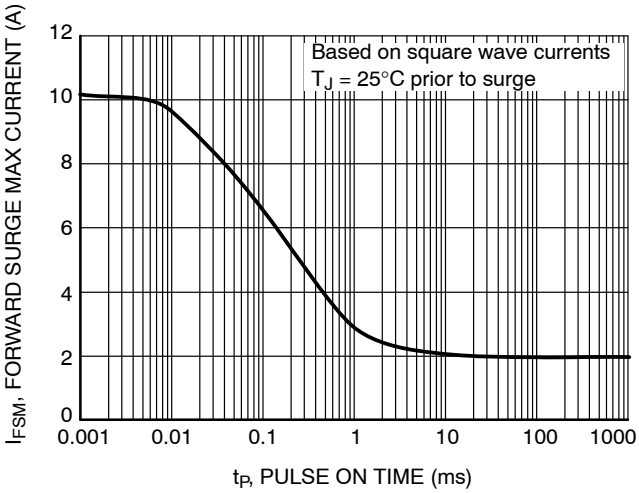
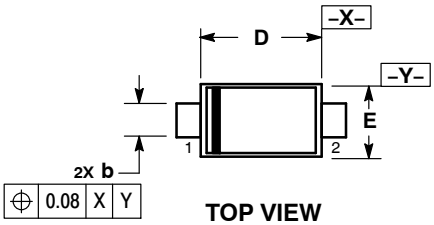


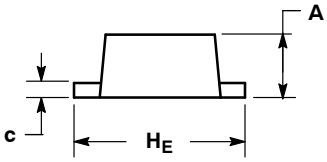
Figure 10. Forward Surge Current

PACKAGE DIMENSIONS

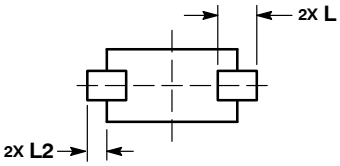
SOD−923
CASE 514AB
ISSUE C



TOP VIEW



SIDE VIEW

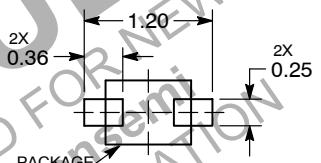


BOTTOM VIEW

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	0.34	0.37	0.40	0.013	0.015	0.016
b	0.15	0.20	0.25	0.006	0.008	0.010
c	0.07	0.12	0.17	0.003	0.005	0.007
D	0.75	0.80	0.85	0.030	0.031	0.033
E	0.55	0.60	0.65	0.022	0.024	0.026
H_E	0.95	1.00	1.05	0.037	0.039	0.041
L	0.19 REF			0.007 REF		
L2	0.05	0.10	0.15	0.002	0.004	0.006

SOLDERING FOOTPRINT*



DIMENSIONS: MILLIMETERS

See Application Note AND8455/D for more mounting details

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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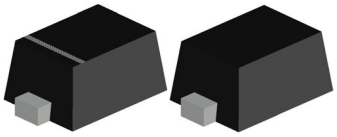
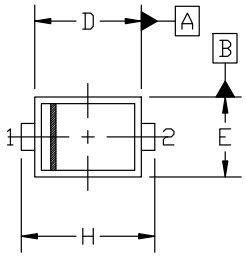


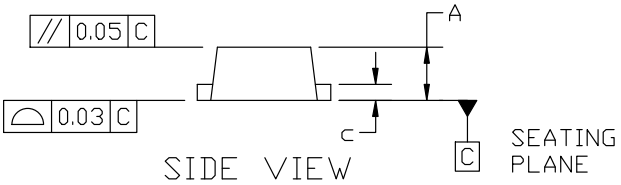
SOD−923 0.80x0.60x0.37
CASE 514AB
ISSUE E

DATE 08 FEB 2024



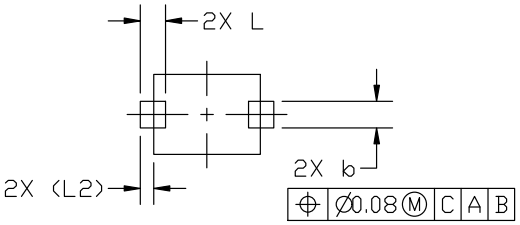
TOP VIEW

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2018.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.
5. DIMENSION L WILL NOT EXCEED 0.30mm.

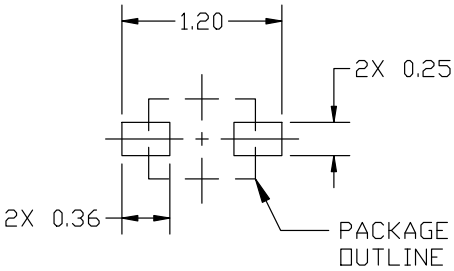


SIDE VIEW

MILLIMETERS			
DIM	MIN.	NOM.	MAX.
A	0.34	0.37	0.40
b	0.15	0.20	0.25
c	0.07	0.12	0.17
D	0.75	0.80	0.85
E	0.55	0.60	0.65
H	0.95	1.00	1.05
L	0.19 REF		
L2	0.05	0.10	0.15



BOTTOM VIEW



RECOMMENDED MOUNTING FOOTPRINT

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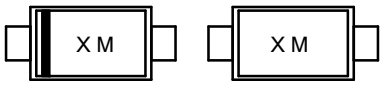
GENERIC MARKING DIAGRAM*



STYLE 1 STYLE 2

X = Specific Device Code
M = Date Code

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

STYLE 1:
PIN 1. CATHODE (POLARITY BAND)
2. ANODE

STYLE 2:
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DESCRIPTION:	SOD−923 0.80x0.60x0.37	PAGE 1 OF 1

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