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.

Features

- Low Forward Voltage Drop -580 mV (Typ.) @ $I_F = 500 \text{ mA}$
- Low Reverse Current 2.0 μ A (Typ.) @ $V_R = 40 \text{ V}$
- 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

Typical Applications

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

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Reverse Voltage	V _R	40	V
Forward Current (DC)	IF	500	mA
Forward Surge Current (60 Hz @ 1 cycle)	I _{FSM}	3.0	А
Repetitive Peak Forward Current (Pulse Wave = 1 sec, Duty Cycle = 66%)	I _{FRM}	1.0	А
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.



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SOD-923 CASE 514AB



YK = Specific Device Code M = Date Code



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.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Min	Тур	Max	Unit
Thermal Resistance Junction-to-Ambient (Note 1) Total Power Dissipation @ T _A = 25°C	R _{θJA} P _D			345 360	°C/W mW
Thermal Resistance Junction–to–Ambient (Note 2) Total Power Dissipation @ T _A = 25°C	R _{θJA} 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.

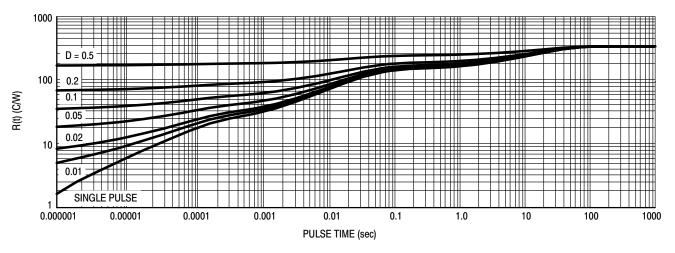


Figure 1. Thermal Response (Note 1)

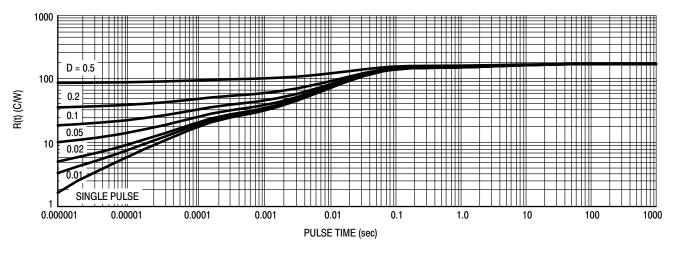
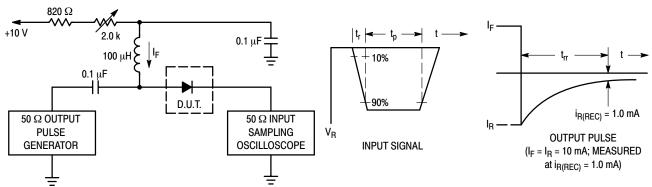


Figure 2. Thermal Response (Note 2)

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

Characteristic	Symbol	Min	Тур	Max	Unit
Reverse Leakage (V _R = 10 V) (V _R = 40 V)	I _R		0.2 2.0	5.0 55	μА
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 $(I_F = I_R = 10 \text{ mA}, I_{R(REC)} = 1.0 \text{ mA}, Figure 3)$	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 k Ω variable resistor adjusted for a Forward Current (IF) of 10 mA.

- 2. Input pulse is adjusted so $I_{R(peak)}$ is equal to 10 mA.
- 3. t_p » t_{rr}

Figure 3. Recovery Time Equivalent Test Circuit

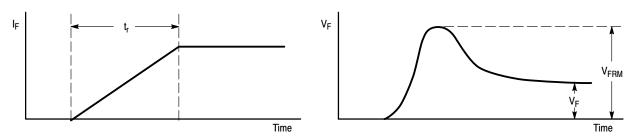


Figure 4. Peak Forward Recovery Voltage Definition

TYPICAL CHARACTERISTICS

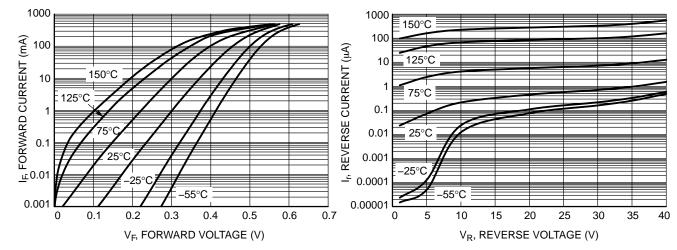


Figure 5. Forward Voltage

Figure 6. Leakage Current

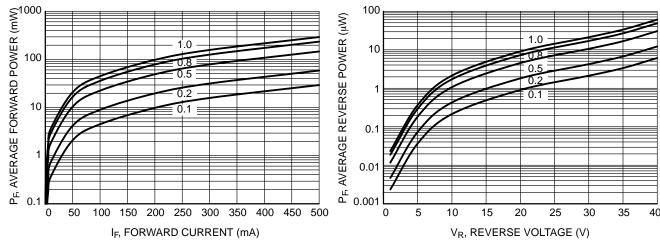


Figure 7. Average Forward Power Dissipation

Figure 8. Average Reverse Power Dissipation

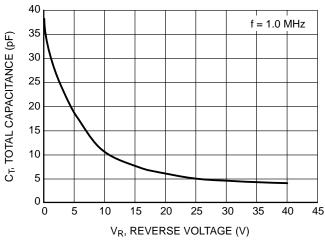


Figure 9. Total Capacitance

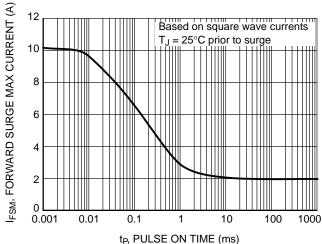


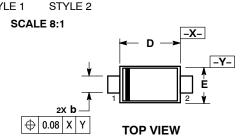
Figure 10. Forward Surge Current

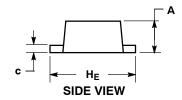


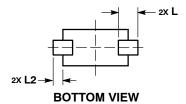


SOD-923 CASE 514AB ISSUE D

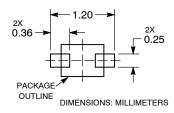
DATE 03 SEP 2020







SOLDERING FOOTPRINT*



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.

- NOTES:
 1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
- Y14.5M, 1994.

 2. CONTROLLING DIMENSION: MILLIMETERS.

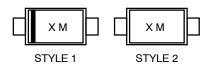
 3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM HICKNESS OF BASE MATERIAL.

 4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

 5. DIMENSION L WILL NOT EXCEED 0.30mm.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	MOM	MAX
Α	0.34	0.37	0.40	0.013	0.015	0.016
b	0.15	0.20	0.25	0.006	800.0	0.010
С	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
Е	0.55	0.60	0.65	0.022	0.024	0.026
HE	0.95	1.00	1.05	0.037	0.039	0.041
L	().19 REI	F	0	.007 RE	F
L2	0.05	0.10	0.15	0.002	0.004	0.006

GENERIC MARKING DIAGRAM*



Χ = Specific Device Code

= 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.

STYLE 2: NO POLARITY STYLE 1: PIN 1. CATHODE (POLARITY BAND) 2. ANODE

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DESCRIPTION:	SOD-923, 1.0X0.6X0.37, MAX HEIGHT 0.40		PAGE 1 OF 1		

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