

# NSR05F40NXT5G

## Schottky Barrier Diode

These Schottky barrier diodes are optimized for low forward voltage drop and low leakage current and are offered in a Chip Scale Package (CSP) to reduce board space. The low thermal resistance enables designers to meet the challenging task of achieving higher efficiency and meeting reduced space requirements.

### Features

- Low Forward Voltage Drop – 420 mV @ 500 mA
- Low Reverse Current – 15  $\mu$ A @ 10 V VR
- 500 mA of Continuous Forward Current
- ESD Rating – Human Body Model: Class 3B
  - Machine Model: Class C
- High Switching Speed
- NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- 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 and Protection

### Markets

- Mobile Handsets
- MP3 Players
- Digital Camera and Camcorders
- Notebook PCs & PDAs
- GPS

### 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)	$I_{FSM}$	10	A
Repetitive Peak Forward Current (Pulse Wave = 1 sec, Duty Cycle = 66%)	$I_{FRM}$	4.0	A
ESD Rating: Human Body Model Machine Model	ESD	> 8 > 400	kV V

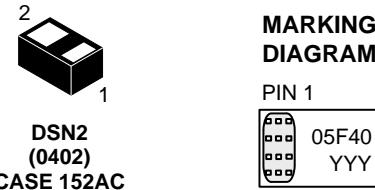
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



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## 40 V SCHOTTKY BARRIER DIODE



05F40 = Specific Device Code  
YYY = Year Code

### ORDERING INFORMATION

Device	Package	Shipping†
NSR05F40NXT5G	DSN2 (Pb-Free)	5000 / Tape & Reel
NSVR05F40NXT5G	DSN2 (Pb-Free)	5000 / 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.

# NSR05F40NXT5G

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Min	Typ	Max	Unit
Thermal Resistance Junction-to-Ambient (Note 1) Total Power Dissipation @ $T_A = 25^\circ\text{C}$	$R_{\theta,JA}$ $P_D$			240 521	°C/W mW
Thermal Resistance Junction-to-Ambient (Note 2) Total Power Dissipation @ $T_A = 25^\circ\text{C}$	$R_{\theta,JA}$ $P_D$			94 1.3	°C/W W
Storage Temperature Range	$T_{\text{stg}}$	−40 to +125			°C
Junction Operating Temperature Range	$T_J$	−40 to +150			°C

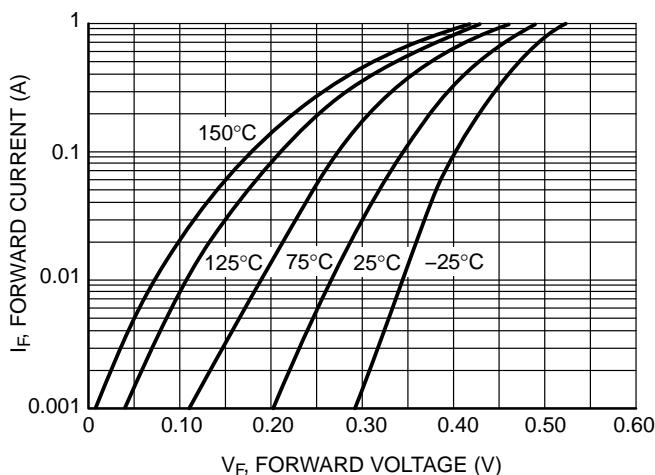
1. Mounted onto a 4 in square FR-4 board 50 mm sq. 1 oz. Cu 0.06" thick single sided. Operating to steady state.
2. Mounted onto a 4 in square FR-4 board 1 in sq. 1 oz. Cu 0.06" thick single sided. Operating to steady state.

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

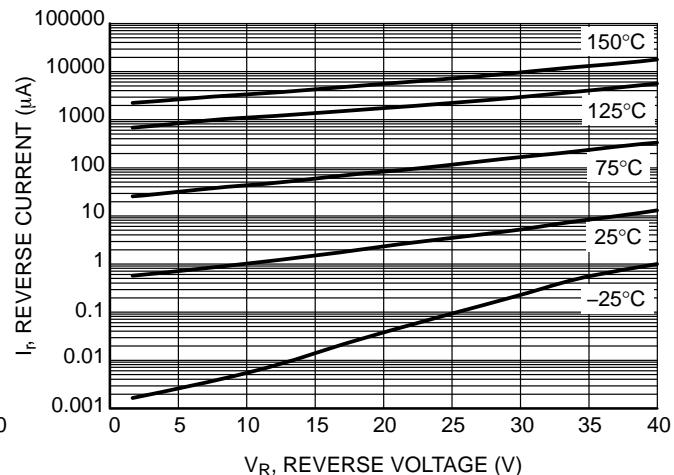
Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Leakage ( $V_R = 10\text{ V}$ ) ( $V_R = 40\text{ V}$ )	$I_R$			15 75	µA
Forward Voltage ( $I_F = 100\text{ mA}$ ) ( $I_F = 500\text{ mA}$ )	$V_F$		0.340 0.420	0.360 0.460	V
Total Capacitance ( $V_R = 1\text{ V}$ , $f = 1\text{ MHz}$ ) ( $V_R = 10\text{ V}$ , $f = 1\text{ MHz}$ )	$C_T$		70 27	80 35	pF

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.

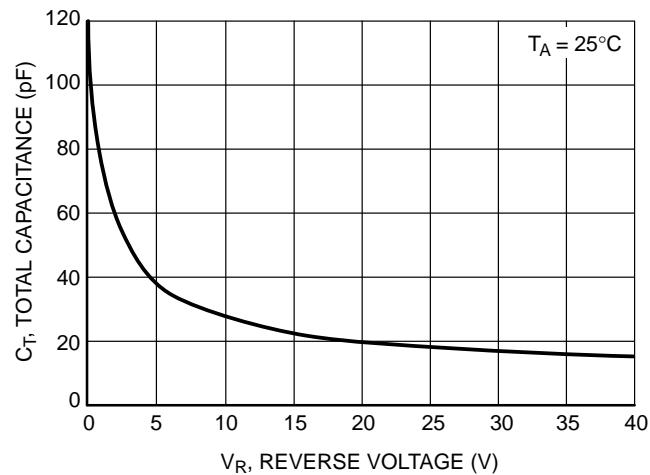
**TYPICAL CHARACTERISTICS**



**Figure 1. Forward Voltage**



**Figure 2. Leakage Current**



**Figure 3. Total Capacitance**

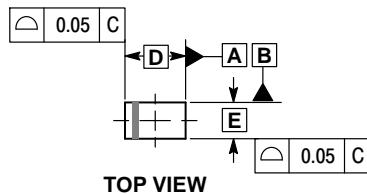
# NSR05F40NXT5G

## PACKAGE DIMENSIONS

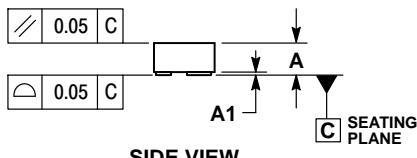
DSN2, 1.0x0.6, 0.575P, (0402)

CASE 152AC

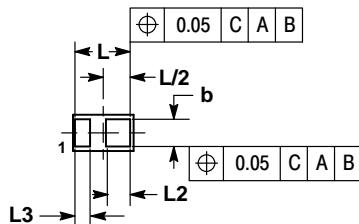
ISSUE C



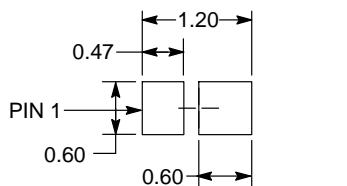
TOP VIEW



SIDE VIEW



RECOMMENDED  
SOLDER FOOTPRINT\*



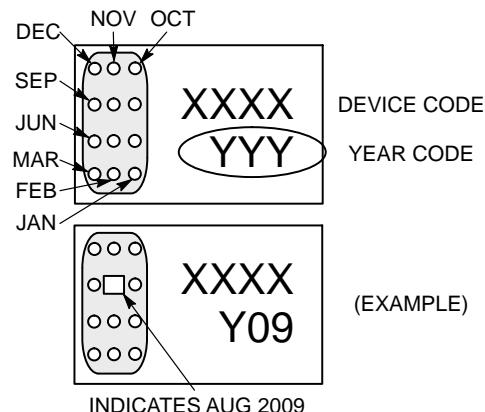
DIMENSIONS: MILLIMETERS

### NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.

MILLIMETERS		
DIM	MIN	MAX
A	0.25	0.31
A1	—	0.05
b	0.45	0.55
D	1.00 BSC	
E	0.60 BSC	
L	0.85	0.95
L2	0.35	0.45
L3	0.20	0.30

### CATHODE BAND MONTH CODING



(EXAMPLE)

INDICATES AUG 2009

See Application Note AND8464/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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