NSR05402

500 mA, 40 V 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 – 570 mV (Typ.) @ I_F = 500 mA
- Low Reverse Current – 3.0 μA (Typ.) @ V_R = 40 V
- ESD Rating – Human Body Model: Class 3B
  – Machine Model: Class C
- 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 and Protection

MAXIMUM RATINGS

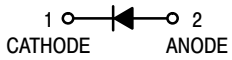
Rating		Symbol	Value	Unit
Reverse Voltage		V_R	40	V
Forward Current (DC)		I_F	500	mA
Forward Surge Current (60 Hz @ 1 cycle)		I_{FSM}	8.0	A
Repetitive Peak Forward Current (Pulse Wave = 1 sec, Duty Cycle = 66%)		I_{FRM}	1.8	A
ESD Rating:	Human Body Model Machine Model	ESD	>8.0 >400	kV V

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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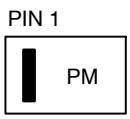
40 V SCHOTTKY BARRIER DIODE





DSN2
(0201)
CASE 152AA

MARKING DIAGRAM



P = Specific Device Code
M = Date Code

ORDERING INFORMATION

Device	Package	Shipping†
NSR05402NXT5G	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.

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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			329 380	°C/W mW
Thermal Resistance Junction–to–Ambient (Note 2) Total Power Dissipation @ T_A = 25°C	$R_{\theta JA}$ P_D			140 895	°C/W mW
Storage Temperature Range	T_{stg}			–40 to +125	°C
Junction Temperature	T_J			+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.

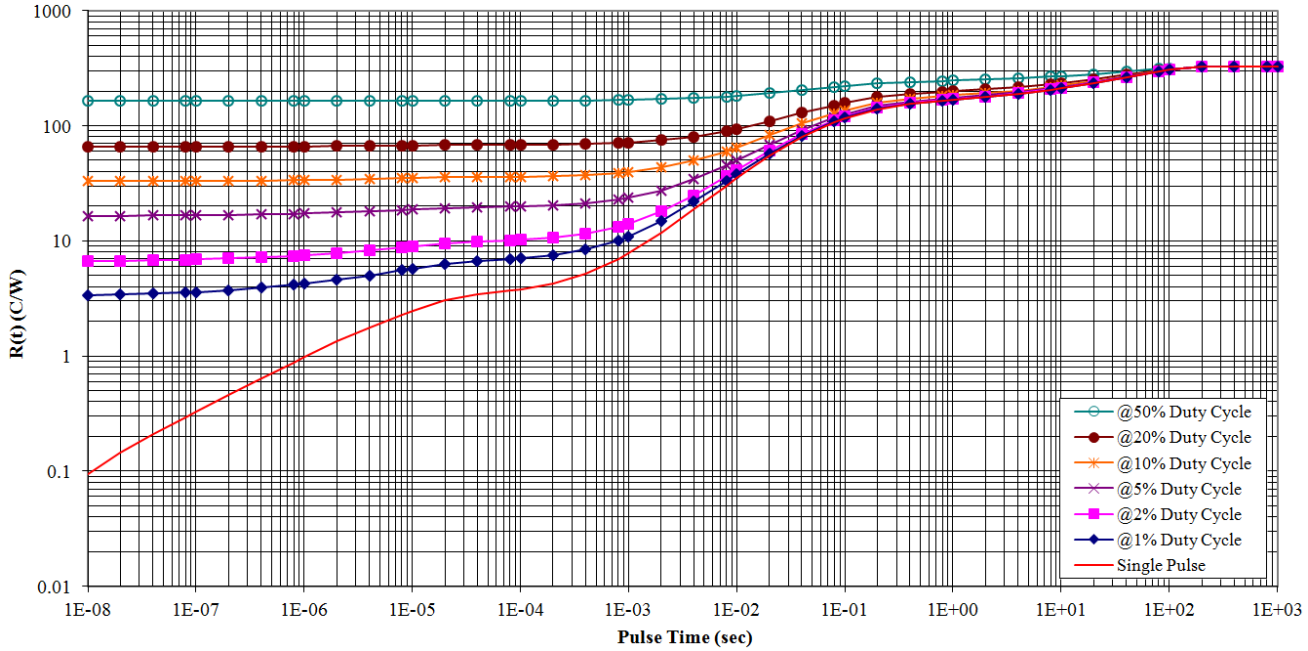


Figure 1. Thermal Response (Note 1)

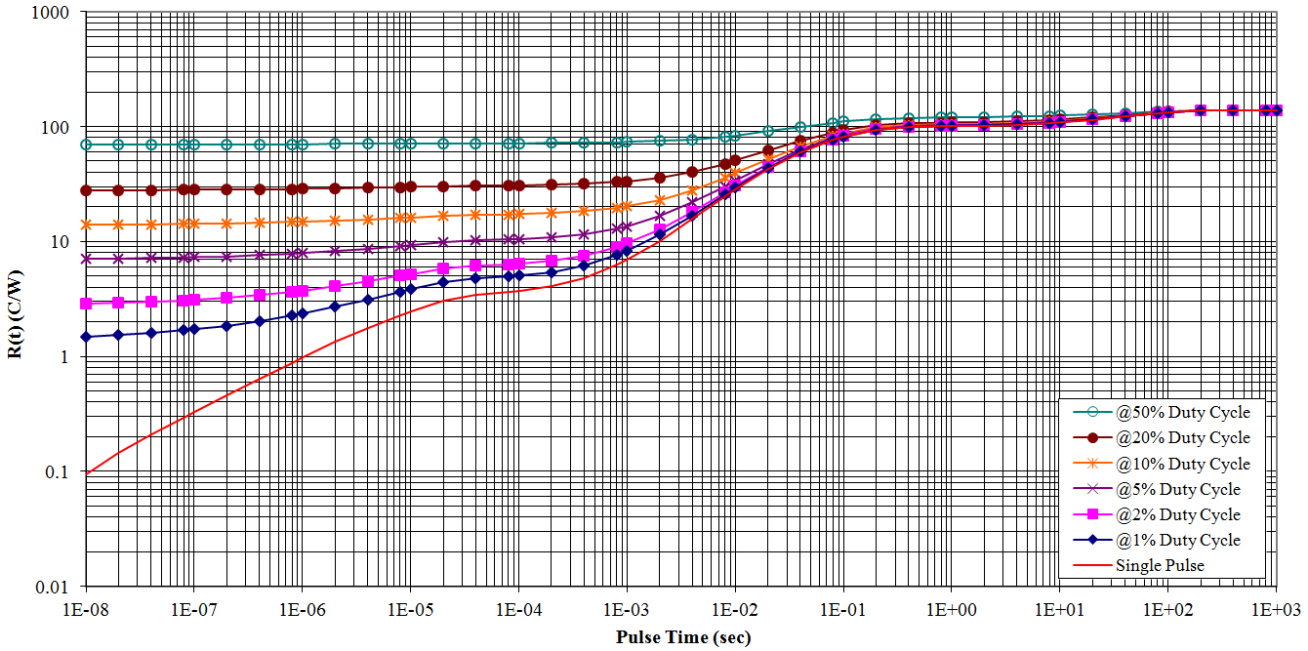
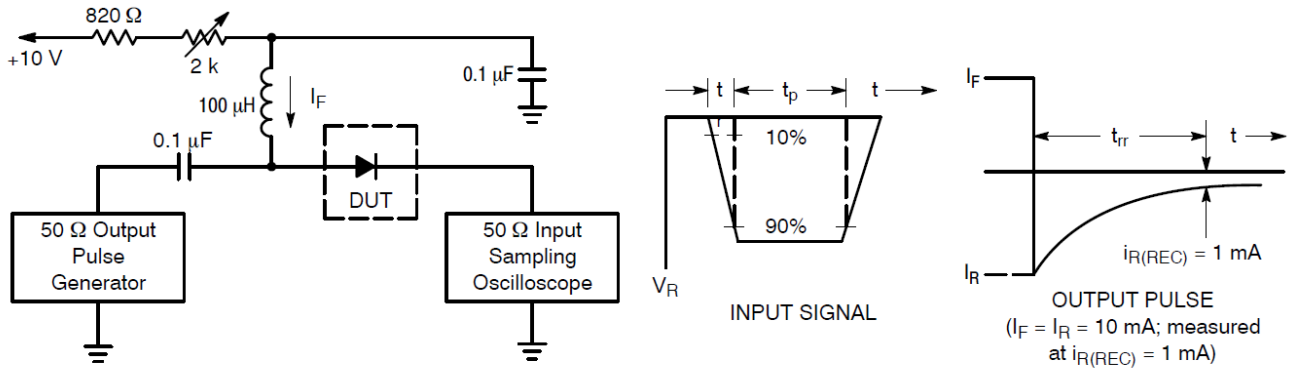


Figure 2. Thermal Response (Note 2)

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

Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Leakage (V_R = 10 V) (V_R = 40 V)	I_R		 0.3 3.0	 4.0 20	μA
Forward Voltage (I_F = 0.1 mA) (I_F = 1 mA) (I_F = 10 mA) (I_F = 100 mA) (I_F = 200 mA) (I_F = 500 mA)	V_F		 180 230 310 400 450 570	 220 255 350 440 480 620	mV
Total Capacitance (V_R = 5.0 V, f = 1.0 MHz)	C_T		9.5		pF
Reverse Recovery Time (I_F = I_R = 10 mA, $I_{R(REC)}$ = 1.0 mA), Figure 3	trr		5.9		ns
Peak Forward Recovery Voltage (V_R = 1.0 V, f = 1.0 MHz), Figure 4	V_{FRM}		558		mV



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

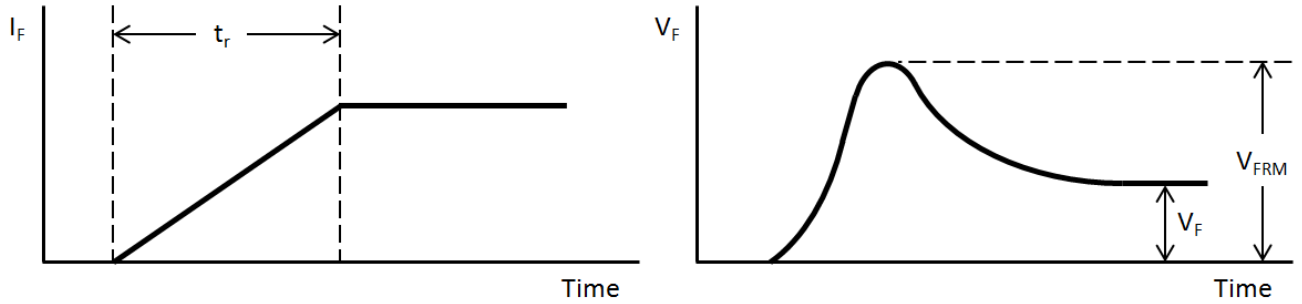
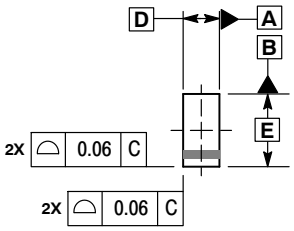


Figure 4. Peak Forward Recover Voltage Definition

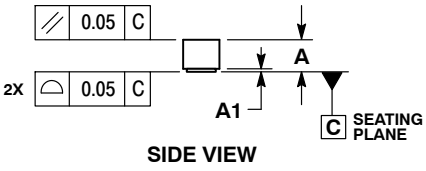
NSR05402

PACKAGE DIMENSIONS

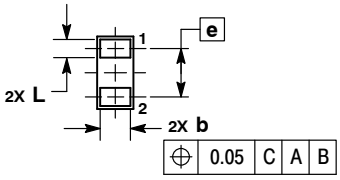
DSN2, 0.6x0.3, 0.4P, (0201)
CASE 152AA
ISSUE B



TOP VIEW



SIDE VIEW

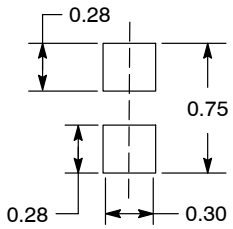


BOTTOM VIEW

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

	MILLIMETERS	
DIM	MIN	MAX
A	0.24	0.30
A1	0.00	0.01
b	0.20	0.22
D	0.30 BSC	
E	0.60 BSC	
e	0.40 BSC	
L	0.10	0.12

MOUNTING FOOTPRINT*



DIMENSIONS: MILLIMETERS

See Application Note AND8398/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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