

NSR20305NXT5G

2 A, 30 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 – 550 mV (Typ.) @ $I_F = 2$ A
- Low Reverse Current – 30 μ A (Typ.) @ $V_R = 30$ V
- 2 A of Continuous Forward Current
- 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 & Protection

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Reverse Voltage	V_R	30	V
Forward Current (DC)	I_F	2	A
Forward Surge Current (60 Hz @ 1 cycle)	I_{FSM}	14	A
Repetitive Peak Forward Current (Pulse Wave = 1 sec, Duty Cycle = 66%)	I_{FRM}	2.9	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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DSN2
(0502)
CASE 152AU

MARKING DIAGRAM

PIN 1



5H = Specific Device Code

M = Date Code

PIN CONNECTIONS



ORDERING INFORMATION

Device	Package	Shipping†
NSR20305NXT5G	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.

NSR20305NXT5G

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			255 490	$^\circ\text{C/W}$ mW
Thermal Resistance Junction-to-Ambient (Note 2) Total Power Dissipation @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$ P_D			95 1.32	$^\circ\text{C/W}$ W
Storage Temperature Range	T_{stg}			-40 to +125	$^\circ\text{C}$
Junction Temperature	T_J			+150	$^\circ\text{C}$

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.

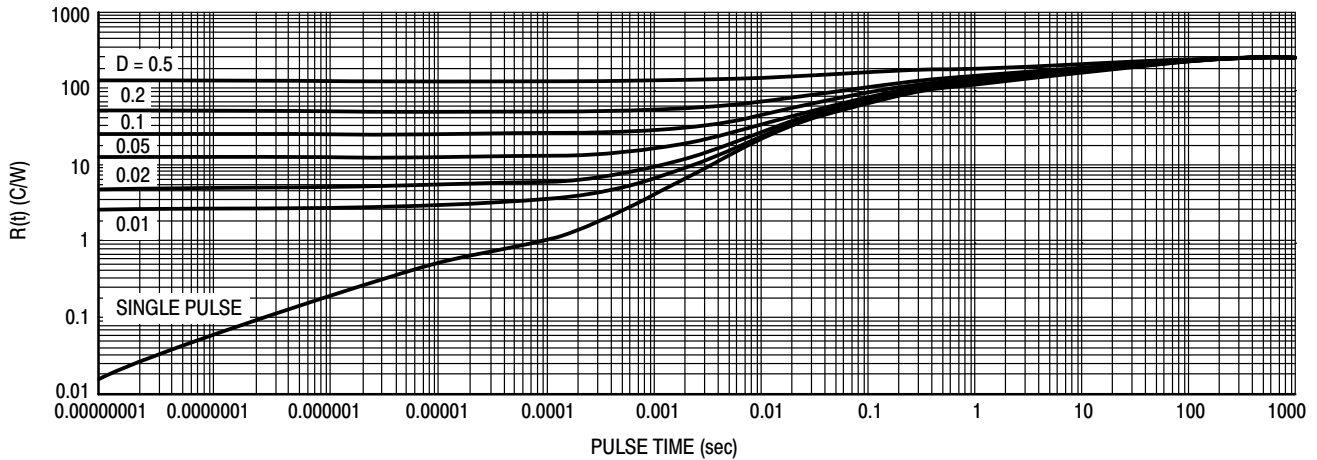


Figure 1. Thermal Response (Note 1)

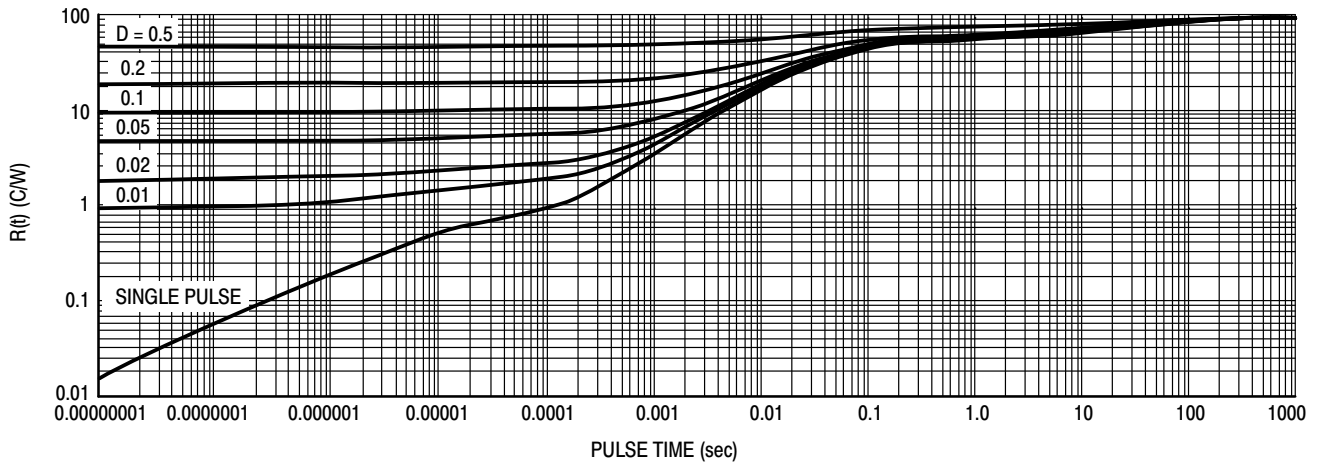
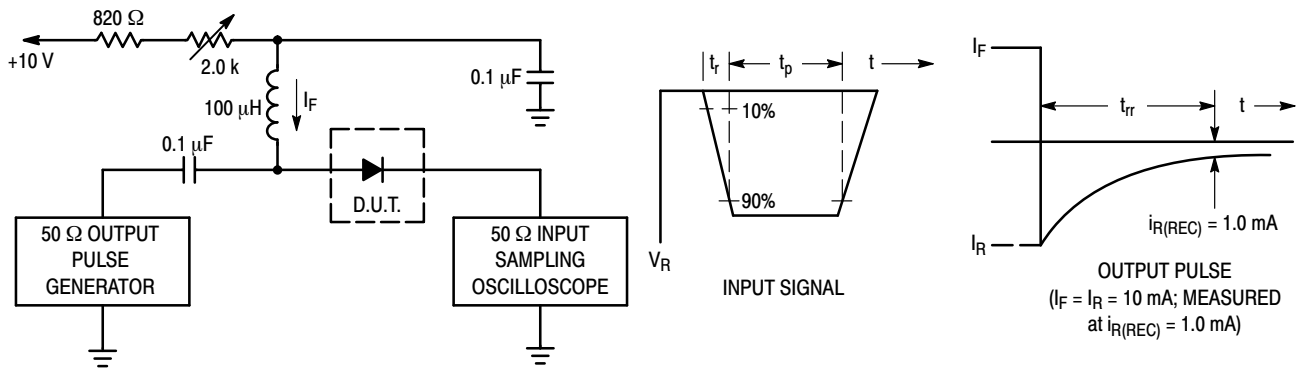


Figure 2. Thermal Response (Note 2)

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

Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Leakage ($V_R = 10\text{ V}$) ($V_R = 30\text{ V}$)	I_R	– –	3 30	15 100	μA
Forward Voltage ($I_F = 10\text{ mA}$) ($I_F = 100\text{ mA}$) ($I_F = 500\text{ mA}$) ($I_F = 1\text{ A}$) ($I_F = 2\text{ A}$)	V_F	– – – – –	255 320 400 455 550	290 360 440 500 600	mV
Total Capacitance ($V_R = 2.0\text{ V}$, $f = 1.0\text{ MHz}$)	C_T	–	100	–	pF
Reverse Recovery Time ($I_F = I_R = 10\text{ mA}$, $I_{R(\text{REC})} = 1.0\text{ mA}$, Figure 3)	t_{rr}	–	40	–	ns
Peak Forward Recover Voltage ($I_F = 100\text{ mA}$, $t_r = 20\text{ ns}$, Figure 4)	V_{FRM}	–	470	–	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 (I_F) of 10 mA.
2. Input pulse is adjusted so $I_{R(\text{peak})}$ is equal to 10 mA.
3. $t_p \gg t_{rr}$

Figure 3. Recovery Time Equivalent Test Circuit

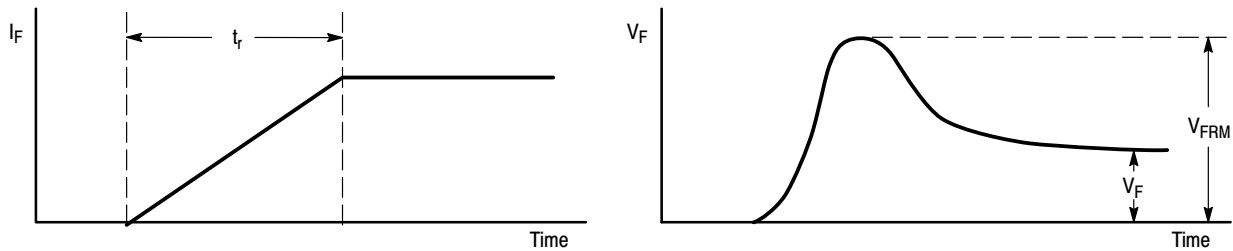


Figure 4. Peak Forward Recover Voltage Definition

TYPICAL CHARACTERISTICS

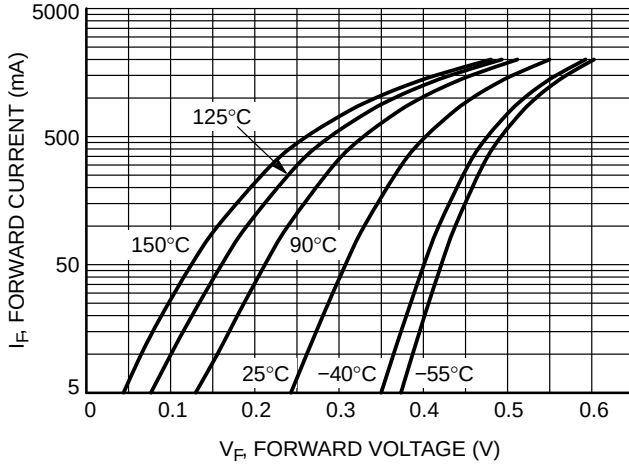


Figure 5. Forward Voltage

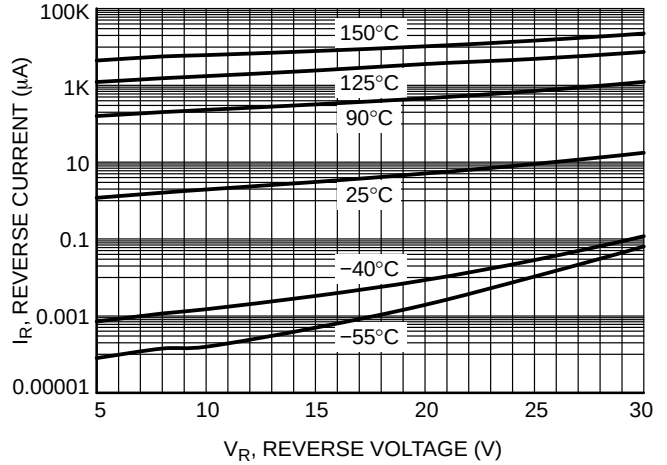


Figure 6. Leakage Current

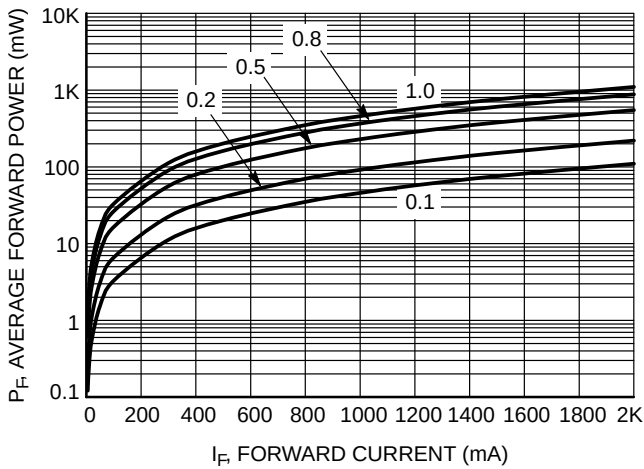


Figure 7. Average Forward Power Dissipation

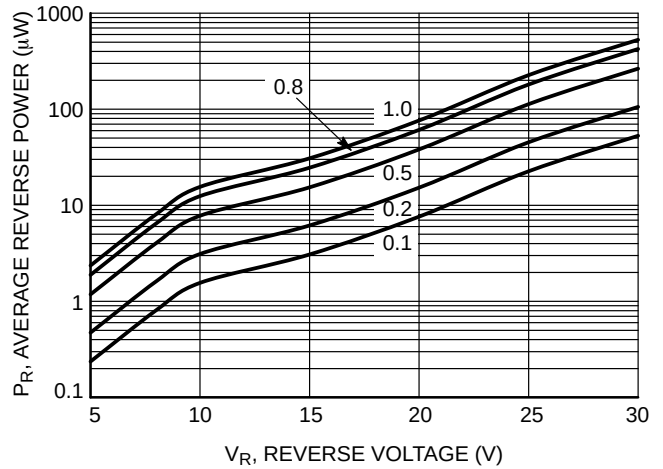


Figure 8. Average Reverse Power Dissipation

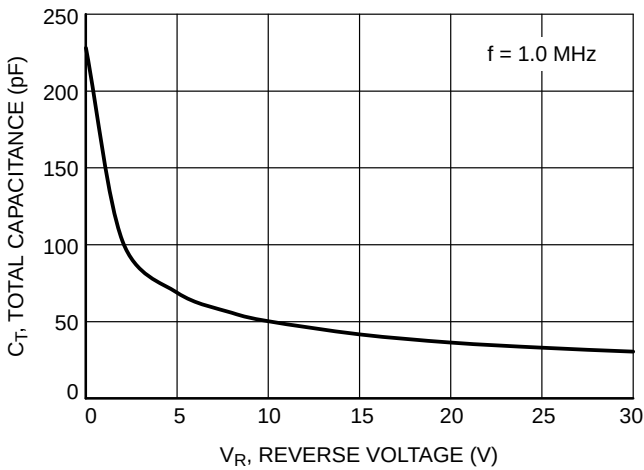


Figure 9. Total Capacitance

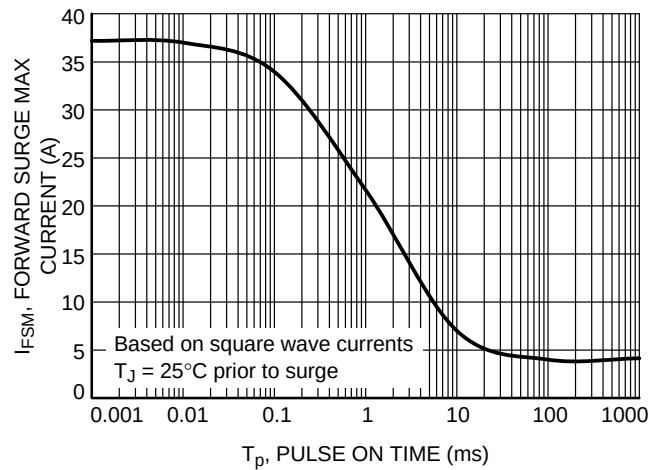


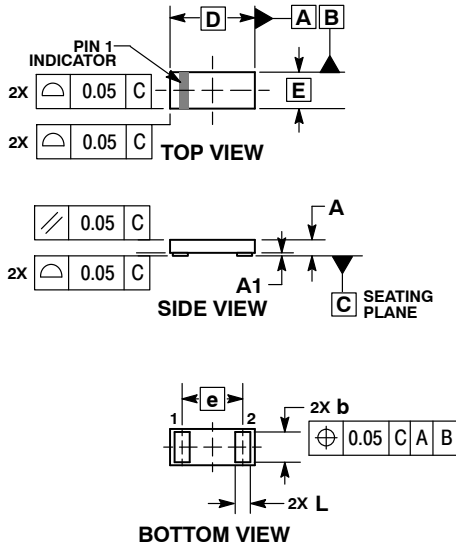
Figure 10. Forward Surge Maximum



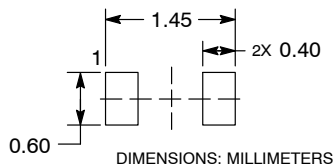
SCALE 8:1

DSN2, 1.4x0.6, 1.00P (0502)
CASE 152AU
ISSUE A

DATE 08 JUN 2016



RECOMMENDED
MOUNTING FOOTPRINT*



See Application Note AND8464/D for more mounting details

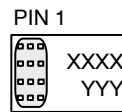
*For additional information on our Pb-Free strategy and soldering details, please download the **onsemi** Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

NOTES:

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

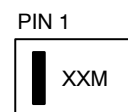
MILLIMETERS		
DIM	MIN	MAX
A	0.25	0.31
A1	0.00	0.05
b	0.45	0.55
D	1.40	BSC
E	0.60	BSC
e	1.00	BSC
L	0.20	0.30

GENERIC
MARKING DIAGRAM1*



XXXX = Specific Device Code
YYY = Year Code

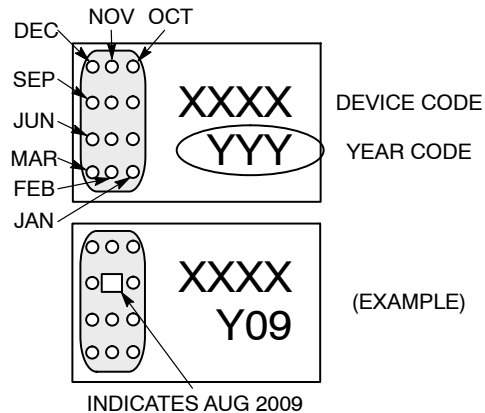
GENERIC
MARKING DIAGRAM2*



XX = Specific Device Code
M = Date Code

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G", may or not be present.

CATHODE BAND MONTH
CODING



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DESCRIPTION:	DSN2, 1.4X0.6, 1.00P (0502)	PAGE 1 OF 1

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