

DUAL LOW SIDE DRIVER

Features

- Gate drive supply range from 10.2 V to 20 V
- CMOS Schmitt-triggered inputs
- 3.3V and 5V logic compatible
- Two independent gate drivers
- Matched propagation delay for both channels
- Outputs out of phase with inputs
- Leadfree, RoHS compliant

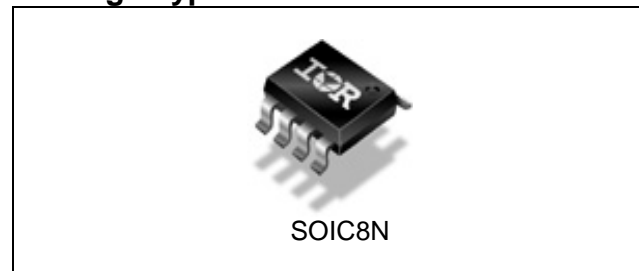
Typical Applications

- General Purpose Dual Low Side Driver
- DC-DC converters

Product Summary

| | |
|--------------------------------|----------------|
| Topology | General Driver |
| V_{OUT} | 10V - 20V |
| I_{o+} & I_{o-} (typical) | 2.3A & 3.3A |
| t_{on} & t_{off} (typical) | 50ns & 50ns |

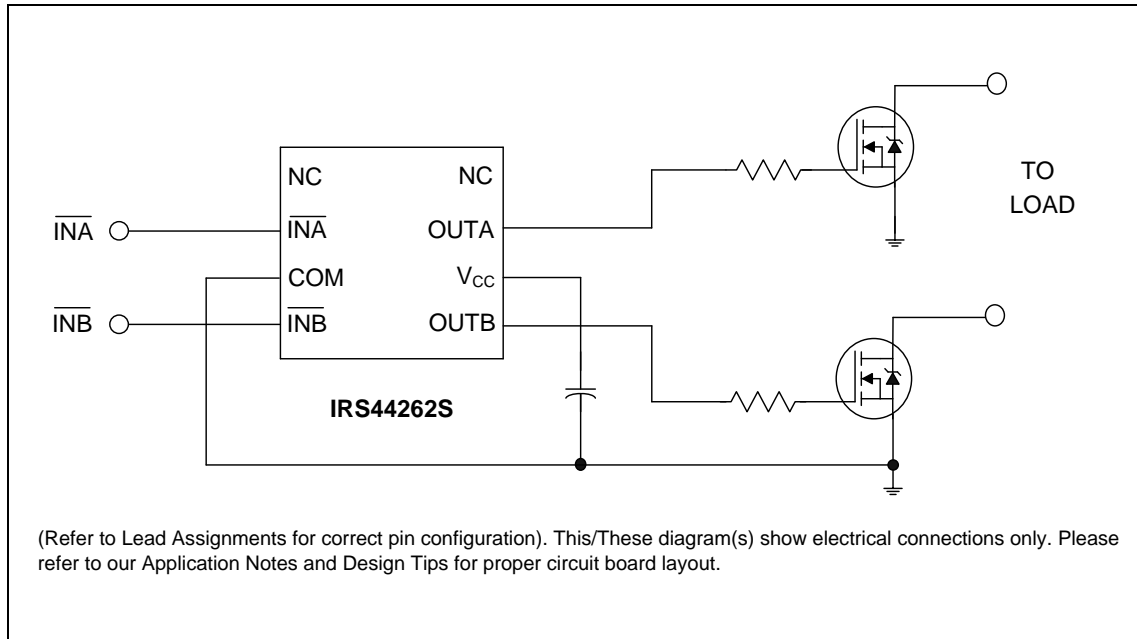
Package Type



Ordering Information

| Base Part Number | Package Type | Standard Pack | | Complete Part Number |
|------------------|--------------|---------------|----------|----------------------|
| | | Form | Quantity | |
| IRS44262S | SOIC8N | Tube/Bulk | 95 | IRS44262SPBF |
| | | Tape and Reel | 2500 | IRS44262STRPBF |

Typical Connection Diagram



| Table of Contents | Page |
|--|-------------|
| Ordering Information | 1 |
| Typical connection diagram | 2 |
| Description | 4 |
| Absolute Maximum Ratings | 5 |
| Recommended Operating Conditions | 5 |
| Static Electrical Characteristics | 6 |
| Dynamic Electrical Characteristics | 6 |
| Functional Block Diagram | 7 |
| Input/Output Pin Equivalent Circuit Diagram | 8 |
| Lead Definitions | 9 |
| Lead Assignments | 9 |
| Application Information and Additional Details | 10 |
| Package Details: SOIC8 | 12 |
| Package Details: SOIC8, Tape and Reel | 13 |
| Part Marking Information | 14 |
| Qualification Information | 15 |

Description

The IRS44262S is a low voltage, high speed power MOSFET and IGBT driver. Proprietary latch immune CMOS technologies enable ruggedized monolithic construction. The logic input is compatible with standard CMOS or LSTTL output. The output drivers feature a high pulse current buffer stage designed for minimum driver cross-conduction. Propagation delays between two channels are matched.

Absolute Maximum Ratings

Absolute Maximum Ratings indicate sustained limits beyond which damage to the device may occur. All voltage

| Symbol | Definition | Min | Max | Units |
|------------|---|------|----------------|---------------------------|
| V_{CC} | Supply voltage | -0.3 | 20 | V |
| V_O | Output voltage | -0.3 | $V_{CC} + 0.3$ | |
| V_{IN} | Logic input voltage | -0.3 | $V_{CC} + 0.3$ | |
| P_D | Package power dissipation @ $T_A \leq 25^\circ\text{C}$ | — | 0.625 | W |
| R_{thJA} | Thermal resistance, junction to ambient | — | 200 | $^\circ\text{C}/\text{W}$ |
| T_J | Junction temperature | — | 150 | $^\circ\text{C}$ |
| T_S | Storage temperature | -55 | 150 | |
| T_L | Lead temperature (soldering, 10 seconds) | — | 300 | |

parameters are absolute voltages referenced to COM. The thermal resistance and power dissipation ratings are measured under board mounted and still air conditions.

Recommended Operating Conditions

For proper operation, the device should be used within the recommended conditions. All voltage parameters are absolute voltages referenced to COM unless otherwise stated in the table. The offset rating is tested with supply of $V_{CC} = 15\text{V}$.

| Symbol | Definition | Min | Max | Units |
|----------|---------------------|------|----------|------------------|
| V_{CC} | Supply voltage | 11.2 | 20 | V |
| V_O | Output voltage | 0 | V_{CC} | |
| V_{IN} | Logic input voltage | 0 | V_{CC} | |
| T_A | Ambient temperature | -40 | 125 | $^\circ\text{C}$ |

Static Electrical Characteristics

$V_{CC} = 15V$, $T_A = 25^\circ C$ unless otherwise specified. The V_{IN} and I_{IN} parameters are referenced to COM and are applicable to input leads: INA and INB. The V_O and I_O parameters are referenced to COM and are applicable to the output leads: OUTA and OUTB.

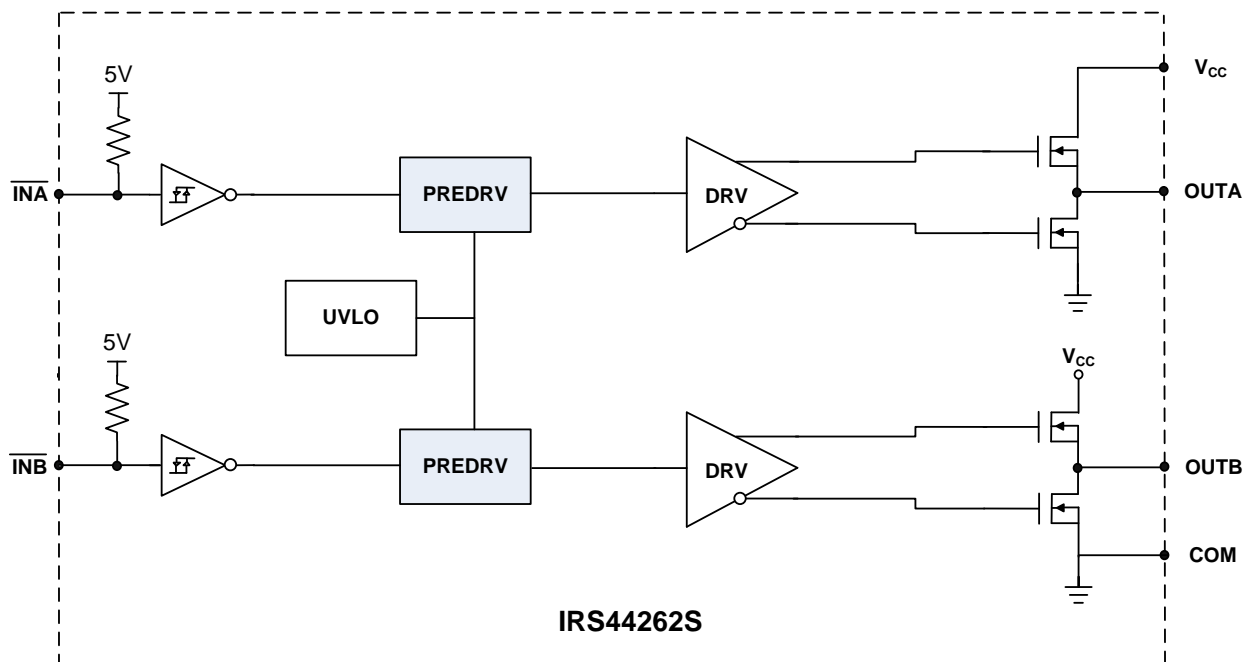
| Symbol | Definition | Min | Typ | Max | Units | Test Conditions |
|-------------|--|-----|------|------|---------|-----------------------------|
| V_{CCUV+} | Vcc supply undervoltage positive going threshold | 9.2 | 10.2 | 11.2 | V | |
| V_{CCUV-} | Vcc supply undervoltage negative going threshold | 8.2 | 9.2 | 10.2 | | |
| V_{CCUVH} | Vcc supply undervoltage lockout hysteresis | | 1.0 | | | |
| V_{IH} | Logic "0" input voltage (OUTA = LO, OUTB = LO) | 2.5 | — | — | V | |
| V_{IL} | Logic "1" input voltage (OUTA = HI, OUTB = HI) | — | — | 0.8 | V | |
| V_{OH} | High level output voltage, $V_{BIAS} - V_O$ | — | — | 1.4 | | $I_O = 0\text{ mA}$ |
| V_{OL} | Low level output voltage, V_O | — | — | 0.15 | | $I_O = 20\text{ mA}$ |
| I_{IN+} | Logic "1" input bias current | — | 5 | 15 | μA | $V_{IN} = 0V$ |
| I_{IN-} | Logic "0" input bias current | -30 | -10 | — | | $V_{IN} = 5V$ |
| I_{QCC} | Quiescent V_{CC} supply current | — | 170 | 340 | | $V_{IN} = 0V$ or $5V$ |
| I_{O+} | Output high short circuit pulsed current | — | 2.3 | — | A | $V_O = 0V$, $V_{IN} = 0V$ |
| I_{O-} | Output low short circuit pulsed current | — | 3.3 | — | | $V_O = 15V$, $V_{IN} = 5V$ |

Dynamic Electrical Characteristics

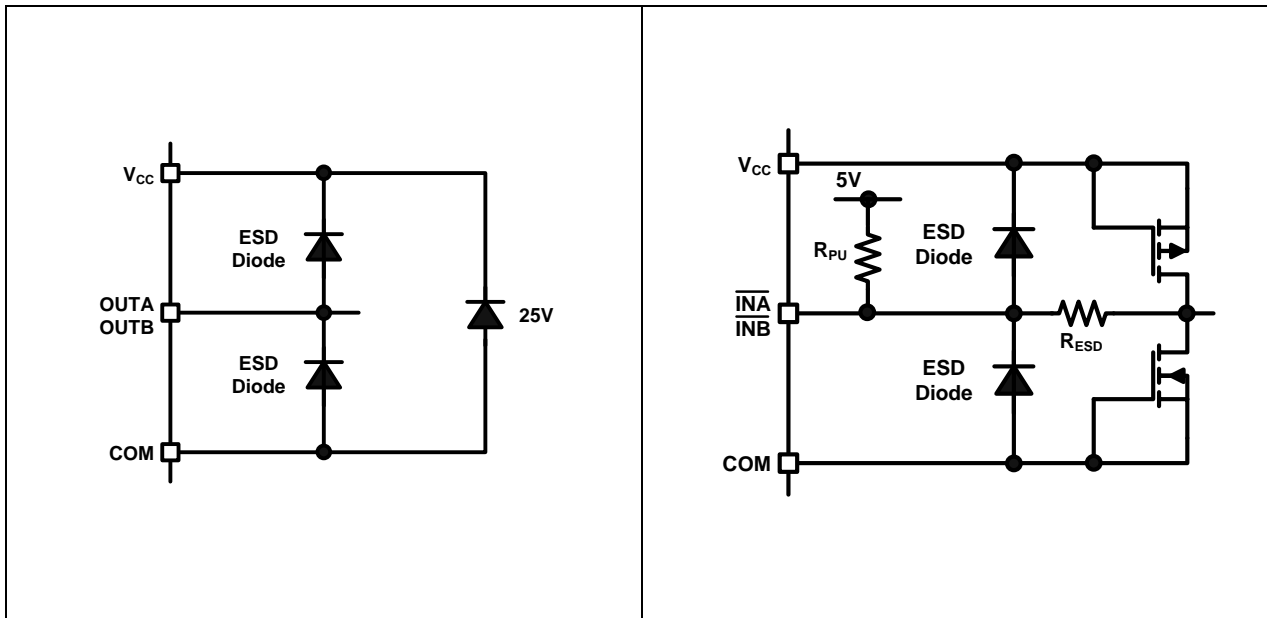
$V_{CC} = 15V$, $T_A = 25^\circ C$, and $C_L = 1000pF$ unless otherwise specified.

| Symbol | Definition | Min | Typ | Max | Units | Test Conditions |
|-----------|----------------------------|-----|-----|-----|-------|-----------------|
| t_{on} | Turn-on propagation delay | — | 50 | 95 | ns | Figure 2 |
| t_{off} | Turn-off propagation delay | — | 50 | 95 | | |
| t_r | Turn-on rise time | — | 25 | 55 | | |
| t_f | Turn-off fall time | — | 25 | 55 | | |

Functional Block Diagram



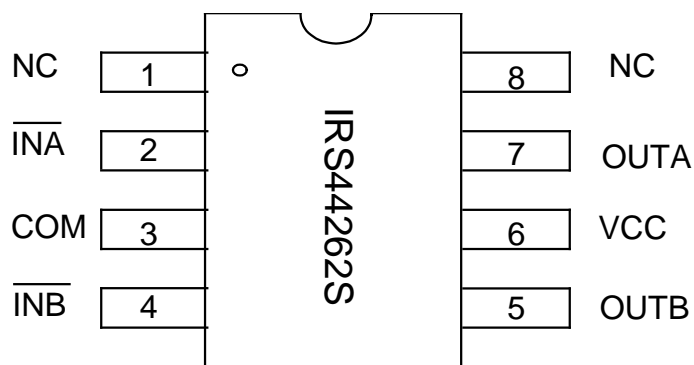
Input/Output Pin Equivalent Circuit Diagrams



Lead Definitions

| PIN | Symbol | Description |
|-----|-------------------------|---|
| 1 | NC | No connection |
| 2 | $\overline{\text{INA}}$ | Logic input for gate driver output (OUTA), out of phase |
| 3 | COM | Ground |
| 4 | $\overline{\text{INB}}$ | Logic input for gate driver output (OUTB), out of phase |
| 5 | OUTB | Gate drive output B |
| 6 | V _{CC} | Supply voltage |
| 7 | OUTA | Gate drive output A |
| 8 | NC | No connection |

Lead Assignments



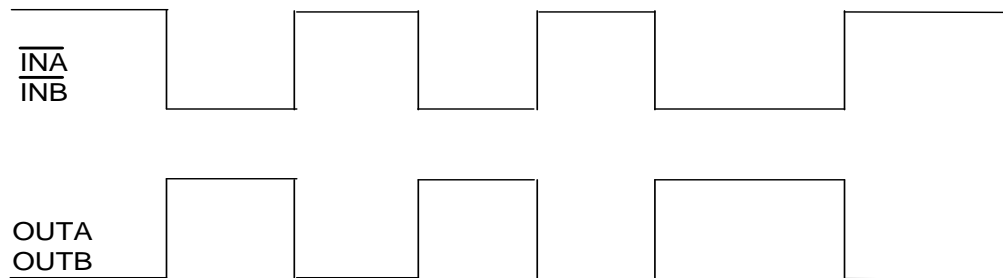


Figure 1: Input/output Timing Diagram

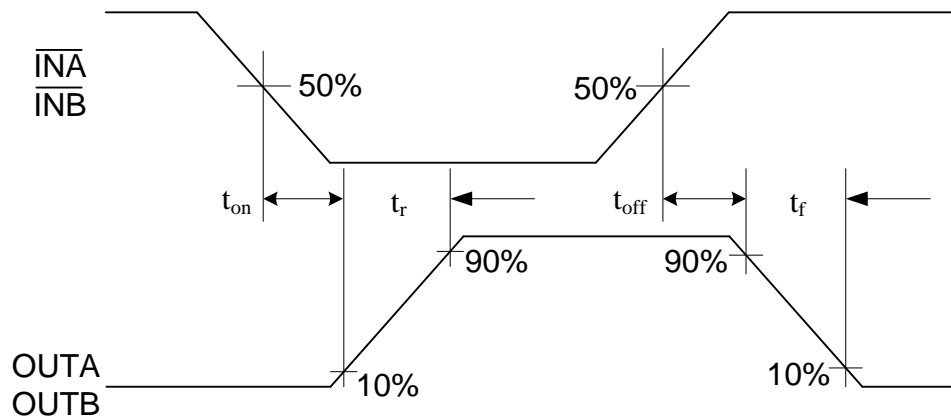


Figure 2: Switching Time Waveform Definitions

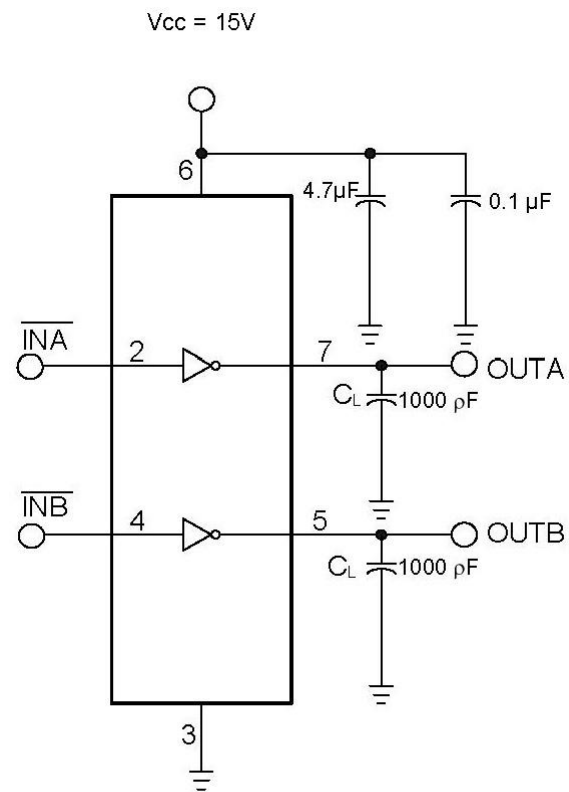
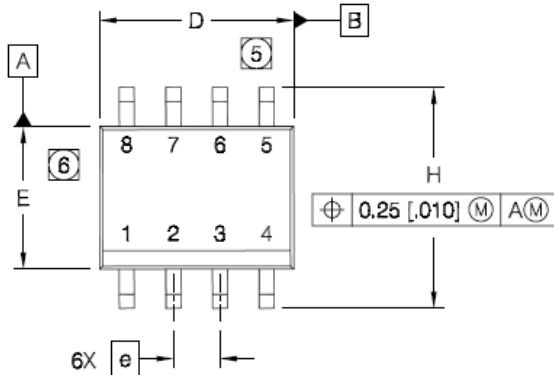
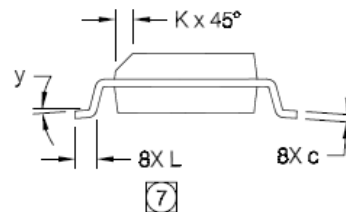
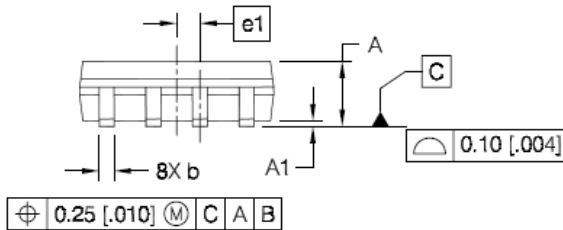


Figure 3: Switching Time Test Circuit

Package Details, SOIC8N

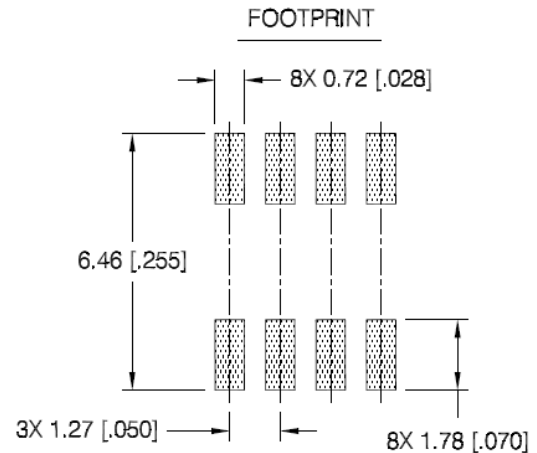


| DIM | INCHES | | MILLIMETERS | |
|-----|------------|-------|-------------|------|
| | MIN | MAX | MIN | MAX |
| A | .0532 | .0688 | 1.35 | 1.75 |
| A1 | .0040 | .0098 | 0.10 | 0.25 |
| b | .013 | .020 | 0.33 | 0.51 |
| c | .0075 | .0098 | 0.19 | 0.25 |
| D | .189 | .1968 | 4.80 | 5.00 |
| E | .1497 | .1574 | 3.80 | 4.00 |
| e | .050 BASIC | | 1.27 BASIC | |
| e1 | .025 BASIC | | 0.635 BASIC | |
| H | .2284 | .2440 | 5.80 | 6.20 |
| K | .0099 | .0196 | 0.25 | 0.50 |
| L | .016 | .050 | 0.40 | 1.27 |
| y | 0° | 8° | 0° | 8° |

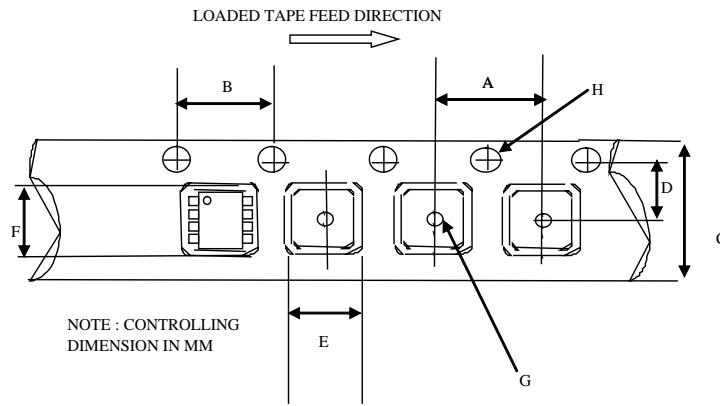


NOTES:

1. DIMENSIONING & TOLERANCING PER ASME Y14.5M-1994.
2. CONTROLLING DIMENSION: MILLIMETER
3. DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
4. OUTLINE CONFORMS TO JEDEC OUTLINE MS-012AA.
- ⑤ DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.15 [0.006].
- ⑥ DIMENSION DOES NOT INCLUDE MOLD PROTRUSIONS. MOLD PROTRUSIONS NOT TO EXCEED 0.25 [0.010].
- ⑦ DIMENSION IS THE LENGTH OF LEAD FOR SOLDERING TO A SUBSTRATE.

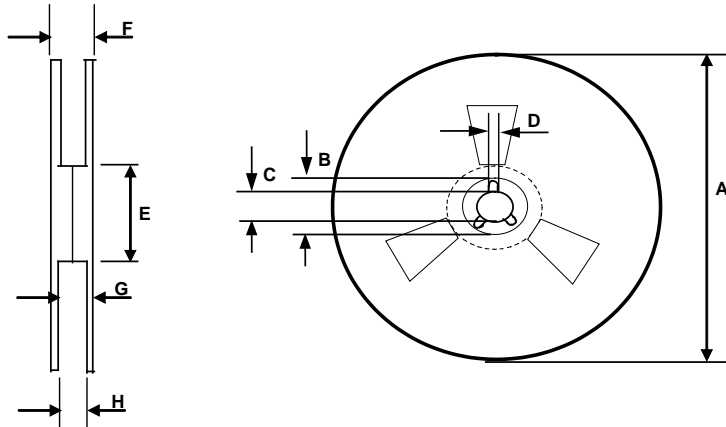


Package details: SOIC8N, Tape and Reel



CARRIER TAPE DIMENSION FOR 8SOICN

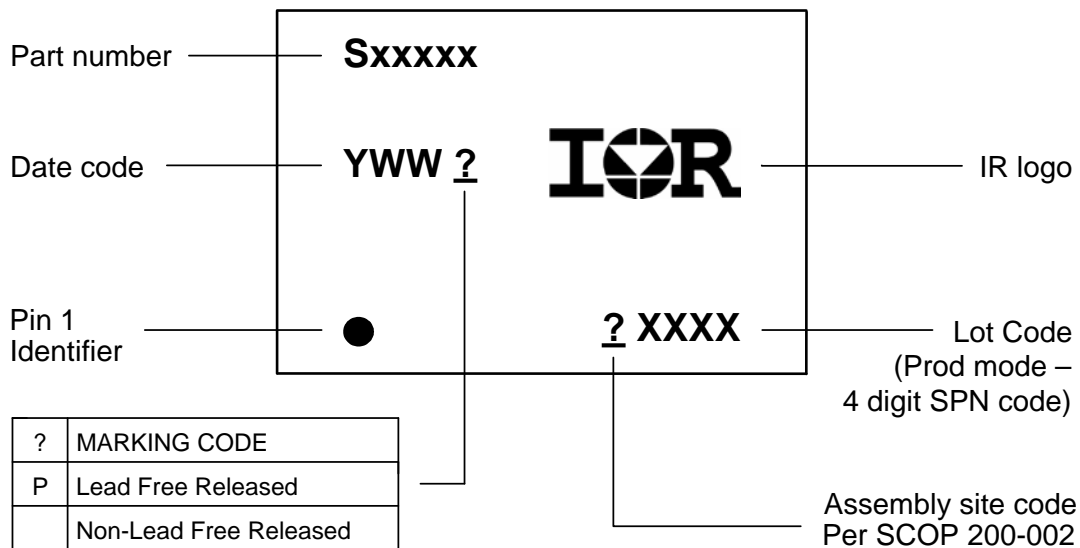
| Code | Metric | | Imperial | |
|------|--------|-------|----------|-------|
| | Min | Max | Min | Max |
| A | 7.90 | 8.10 | 0.311 | 0.318 |
| B | 3.90 | 4.10 | 0.153 | 0.161 |
| C | 11.70 | 12.30 | 0.46 | 0.484 |
| D | 5.45 | 5.55 | 0.214 | 0.218 |
| E | 6.30 | 6.50 | 0.248 | 0.255 |
| F | 5.10 | 5.30 | 0.200 | 0.208 |
| G | 1.50 | n/a | 0.059 | n/a |
| H | 1.50 | 1.60 | 0.059 | 0.062 |



REEL DIMENSIONS FOR 8SOICN

| Code | Metric | | Imperial | |
|------|--------|--------|----------|--------|
| | Min | Max | Min | Max |
| A | 329.60 | 330.25 | 12.976 | 13.001 |
| B | 20.95 | 21.45 | 0.824 | 0.844 |
| C | 12.80 | 13.20 | 0.503 | 0.519 |
| D | 1.95 | 2.45 | 0.767 | 0.096 |
| E | 98.00 | 102.00 | 3.858 | 4.015 |
| F | n/a | 18.40 | n/a | 0.724 |
| G | 14.50 | 17.10 | 0.570 | 0.673 |
| H | 12.40 | 14.40 | 0.488 | 0.566 |

Part Marking Information



Qualification Information[†]

| | | |
|-----------------------------------|------------------|---|
| Qualification Level | | Industrial ^{††} |
| | | Comments: This family of ICs has passed JEDEC's Industrial qualification. IR's Consumer qualification level is granted by extension of the higher Industrial level. |
| Moisture Sensitivity Level | | MSL2 ^{†††} 260°C (per IPC/JEDEC J-STD-020) |
| ESD | Machine Model | Class B (per JEDEC standard JESD22-A115) |
| | Human Body Model | Class 2 (per EIA/JEDEC standard EIA/JESD22-A114) |
| IC Latch-Up Test | | Class 1, Level A (per JESD78) |
| RoHS Compliant | | Yes |

- † Qualification standards can be found at International Rectifier's web site <http://www.irf.com/>
- †† Higher qualification ratings may be available should the user have such requirements. Please contact your International Rectifier sales representative for further information.
- ††† Higher MSL ratings may be available for the specific package types listed here. Please contact your International Rectifier sales representative for further information.

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