



Single Low-Side Driver IC

Features

- CMOS Schmitt-triggered inputs
- Under voltage lockout
- 3.3V logic compatible
- Output in phase with input
- Leadfree, RoHS compliant

Typical Applications

- General Purpose Gate Driver
- DC-DC converters
- Plasma display panel (PDP) applications

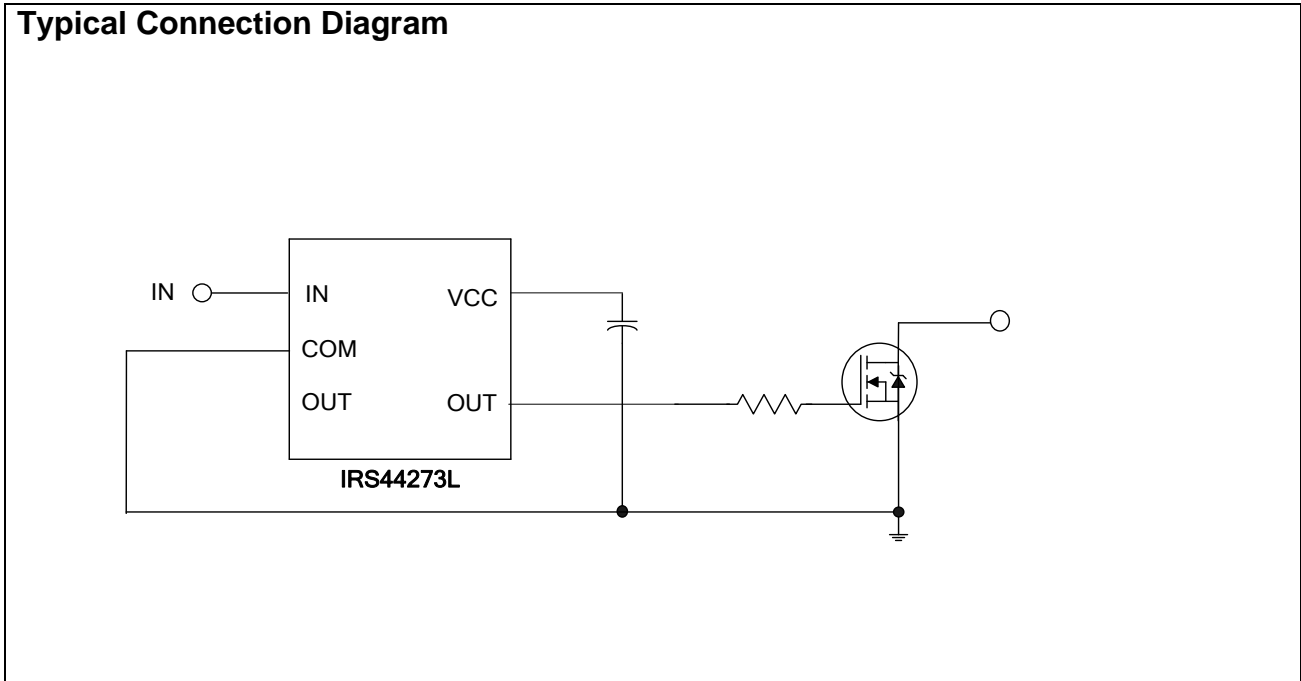
Product Summary

| | |
|----------------------------------------------|----------------|
| Topology | General Driver |
| I _{o+} & I _{o-} (typical) | 1.5A / 1.5A |
| t _{on} & t _{off} (typical) | 50ns & 50ns |

Package Type



Typical Connection Diagram



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Description

The IRS44273L is a low voltage, power MOSFET and IGBT non-inverting gate driver. Proprietary latch immune CMOS technologies enable ruggedized monolithic construction. The logic input is compatible with standard CMOS or LSTTL output. The output driver features a current buffer stage.

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 | | MSL1 ^{†††} 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.

Absolute Maximum Ratings

Absolute maximum ratings indicate sustained limits beyond which damage to the device may occur. The device may not function or not be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. All voltage parameters are absolute voltages referenced to COM. The thermal resistance and power dissipation ratings are measured under board mounted and still air conditions.

| Symbol | Definition | Min | Max | Units |
|------------|---------------------------------------------------------|------|----------------|---------------------------|
| V_{CC} | Fixed supply voltage | -0.3 | 25 | 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 @ $T_A \leq 25^\circ\text{C}$ | — | 250 | mW |
| R_{thJA} | Thermal resistance, junction to ambient | — | 191 | $^\circ\text{C}/\text{W}$ |
| T_J | Junction temperature | — | 150 | $^\circ\text{C}$ |
| T_S | Storage temperature | -55 | 150 | |
| T_L | Lead temperature (soldering, 10 seconds) | — | 300 | |

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} | Fixed supply voltage | --- | 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

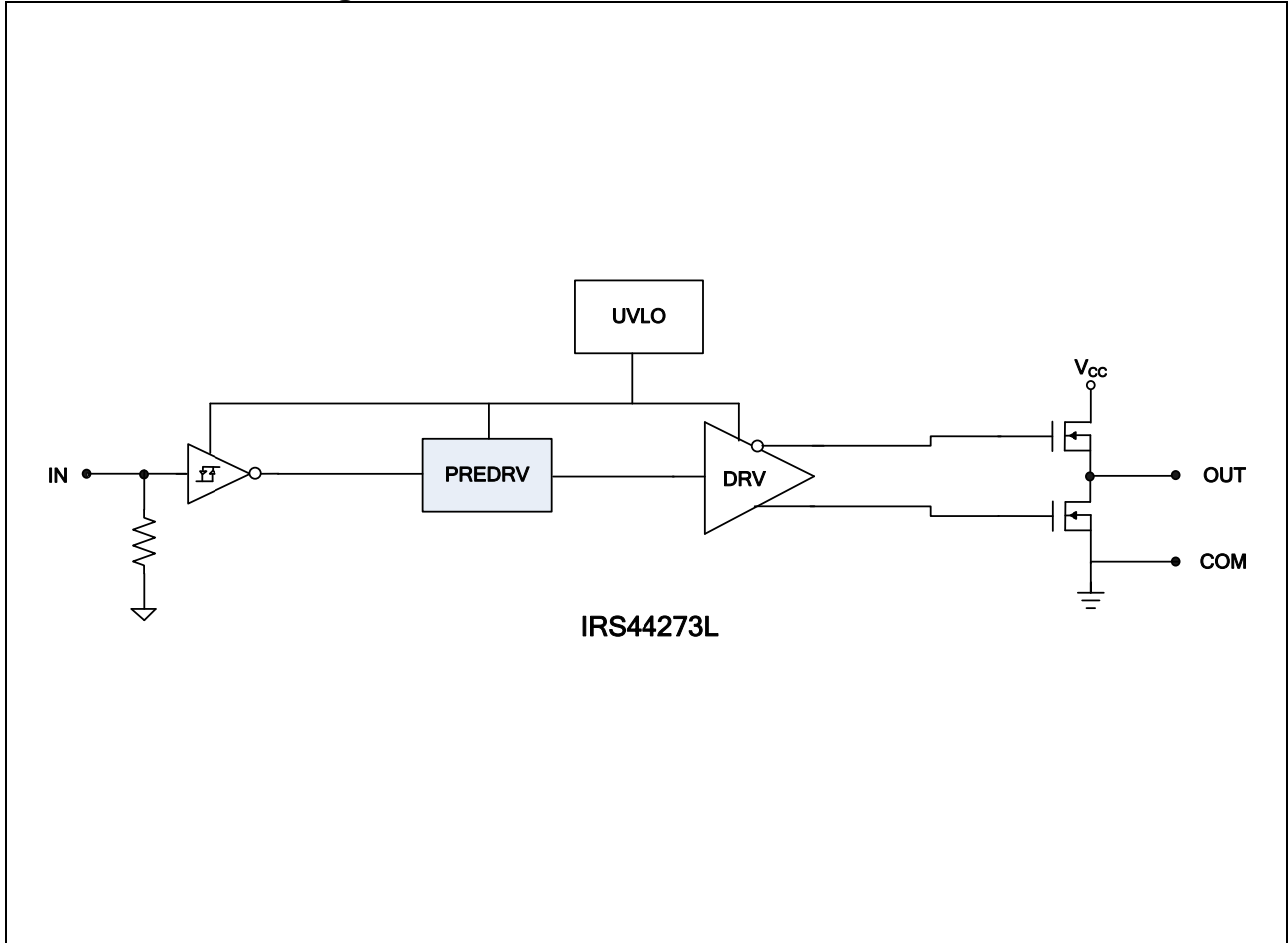
$V_{CC} = 15V$, $T_A = 25^\circ C$ unless otherwise specified. The V_{IN} and I_{IN} parameters are referenced to COM and are applicable to input leads: IN. The V_O and I_O parameters are referenced to COM and are applicable to the output leads: OUT.

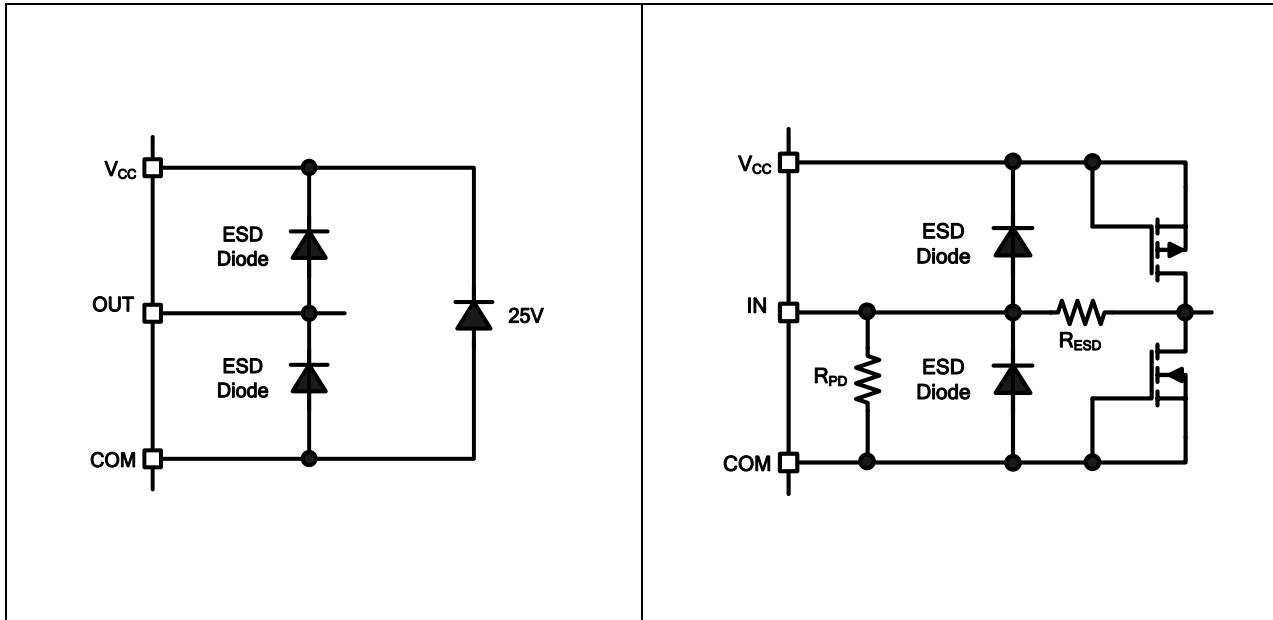
| Symbol | Definition | Min | Typ | Max | Units | Test Conditions |
|-------------|--------------------------------------------------|-----|------|------|-----------------------|------------------------------|
| V_{CCUV+} | Vcc supply undervoltage positive going threshold | 9.2 | 10.2 | 11.2 | V | |
| V_{CCUV-} | Vcc supply undervoltage negative going threshold | 8.2 | 9.2 | 10.2 | | |
| V_{CCUVH} | Vcc supply undervoltage lockout hysteresis | — | 1.0 | — | | |
| V_{IL} | Logic "0" input voltage (OUT = LO) | — | — | 0.8 | | |
| V_{IH} | Logic "1" input voltage (OUT = HI) | 2.5 | — | — | | |
| 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 | $V_{IN} = 5V$ |
| I_{IN-} | Logic "0" input bias current | -30 | -10 | — | | $V_{IN} = 0V$ |
| I_{QCC} | Quiescent V_{CC} supply current | — | 170 | 340 | | $V_{IN} = 0V \text{ or } 5V$ |
| I_{O+} | Output high short circuit pulsed current | — | 1.5 | — | A | $V_O = 0V, V_{IN} = 5V$ |
| I_{O-} | Output low short circuit pulsed current | — | 1.5 | — | | $V_O = 15V, V_{IN} = 0V$ |

Dynamic Electrical Characteristics

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

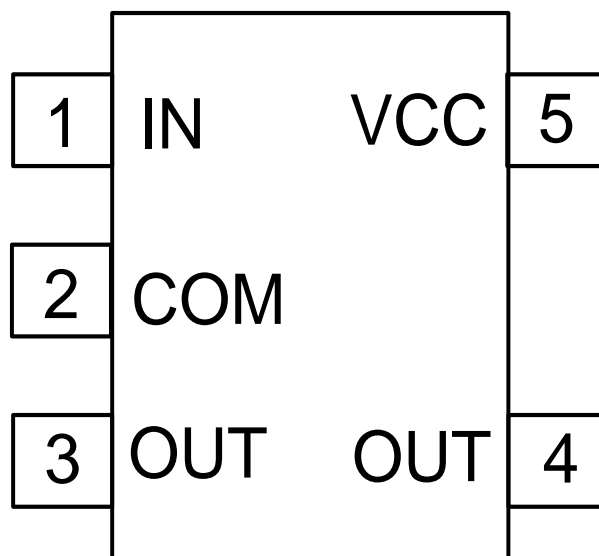
| Symbol | Definition | Min | Typ | Max | Units | Test Conditions |
|-----------|----------------------------|-----|-----|-----|-------|-----------------|
| t_{on} | Turn-on propagation delay | — | 50 | 95 | ns | Figure 2 |
| t_{off} | Turn-off propagation delay | — | 50 | 95 | | |
| t_r | Turn-on rise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

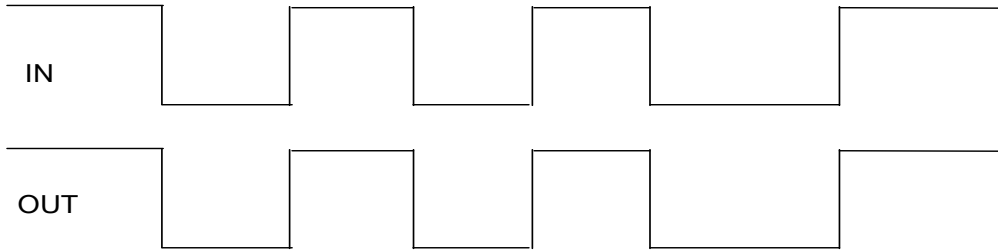
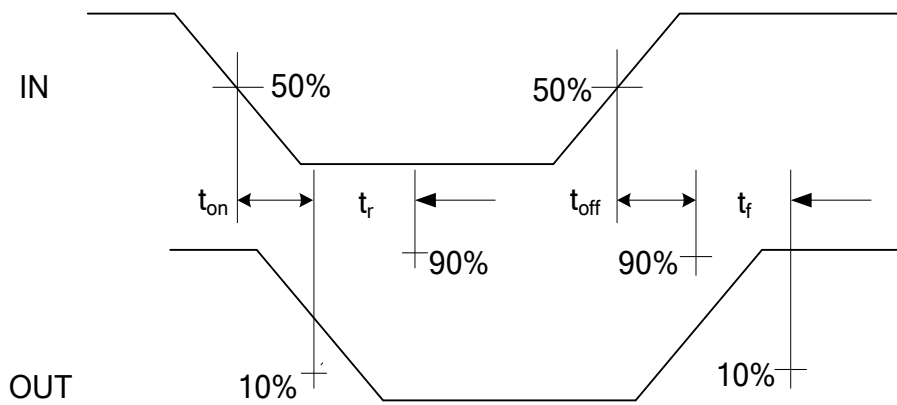
Functional Block Diagram

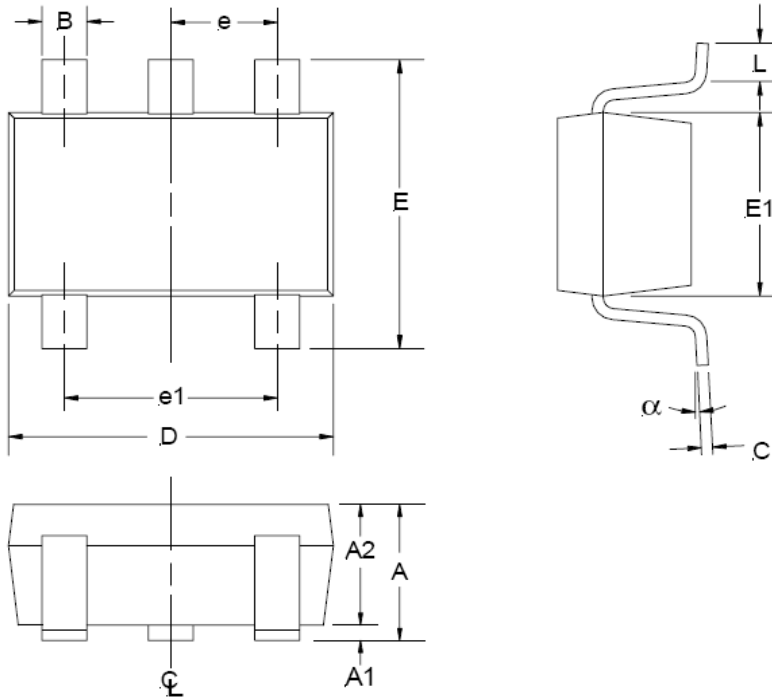
Input/Output Pin Equivalent Circuit Diagrams


Pin Definitions

| PIN | Symbol | Description |
|-----|--------|------------------------------------------|
| 1 | IN | Logic input for gate driver output (OUT) |
| 2 | COM | Ground |
| 3 | OUT | Gate drive output |
| 4 | OUT | Gate drive output |
| 5 | VCC | Supply Voltage |

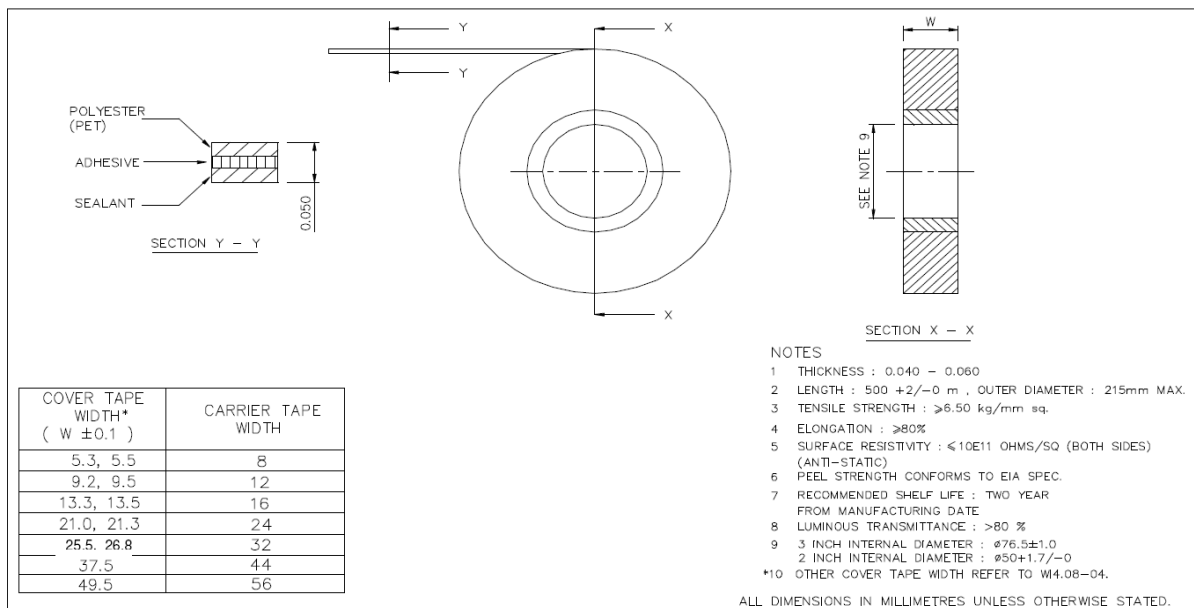
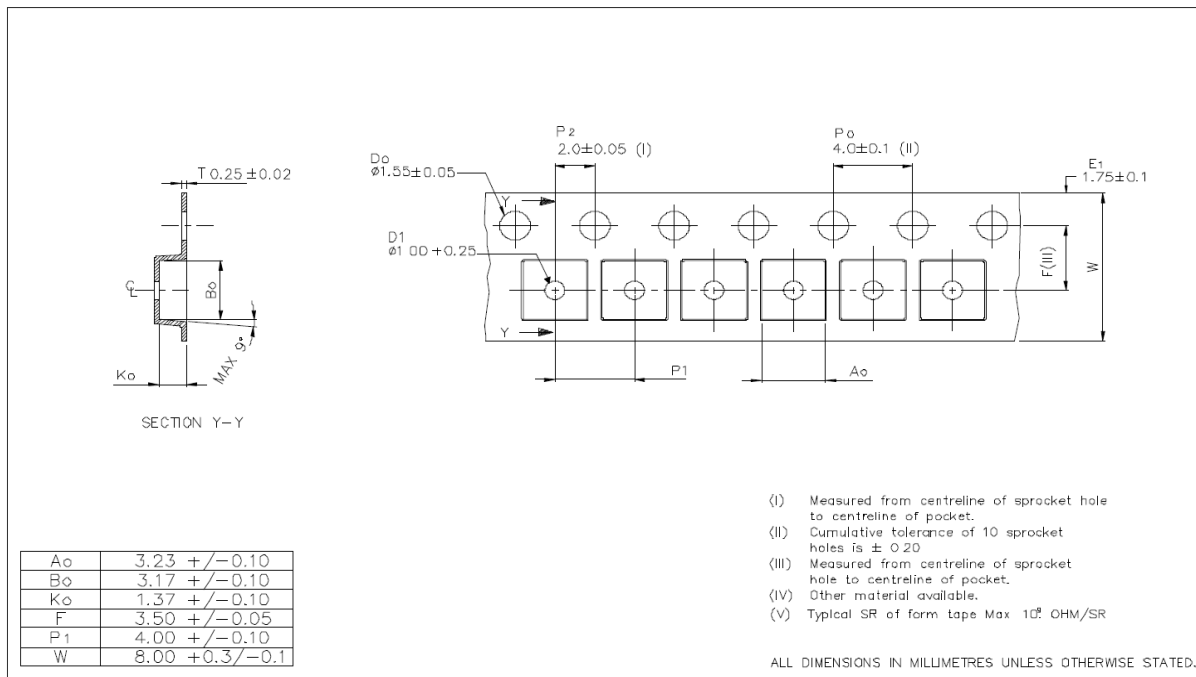
Pin Assignments


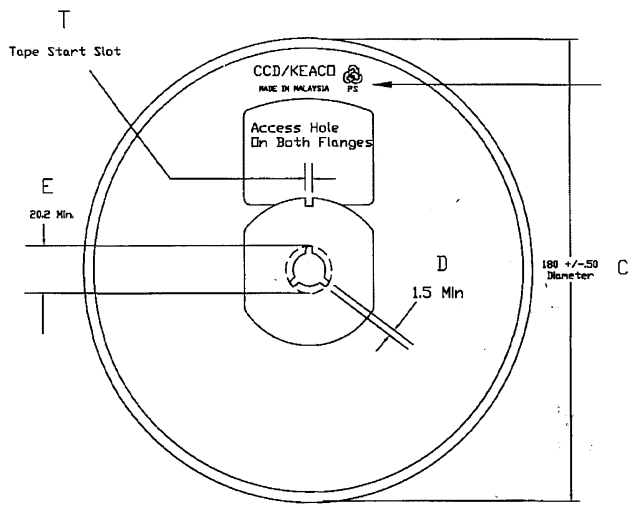
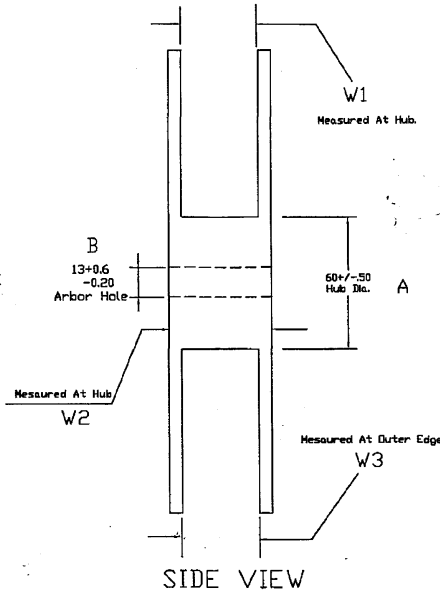
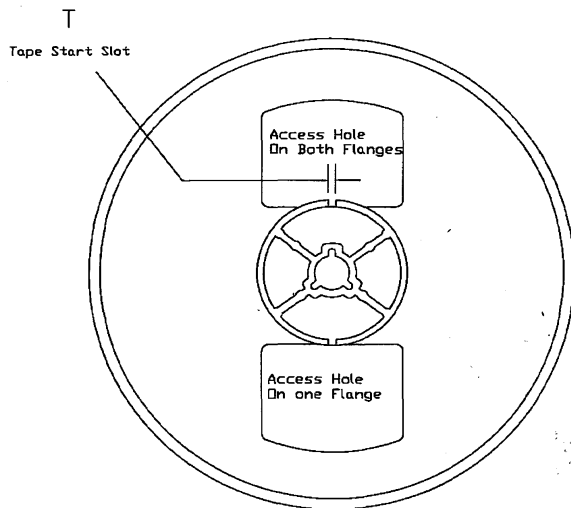
Application Information and Additional Details

Figure 1: Input/output Timing Diagram

Figure 2: Switching Time Waveform Definitions

Package Details, SOT23-5


| SYMBOL | MIN | MAX |
|----------|----------|------|
| A | 0.90 | 1.45 |
| A1 | 0.00 | 0.15 |
| A2 | 0.90 | 1.30 |
| B | 0.25 | 0.50 |
| C | 0.09 | 0.20 |
| D | 2.80 | 3.00 |
| E | 2.60 | 3.00 |
| E1 | 1.50 | 1.75 |
| e | 0.95 REF | |
| e1 | 1.90 REF | |
| L | 0.35 | 0.55 |
| α | 0° | 10° |

NOTE: ALL MEASUREMENTS
ARE IN MILLIMETERS.

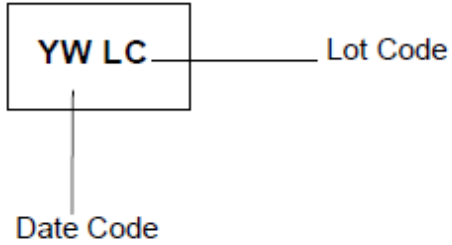
Package details: SOT23-5, Tape and Reel


Package details: SOT23-5, Tape and Reel

FRONT VIEW

SIDE VIEW

BACK VIEW

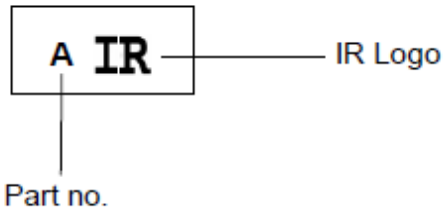
- NOTE:
1. MATERIAL : POLYSTRENE
 2. SURFACE RESISTIVITY : $\leq 10E11$ OHMS/SQ
(EXTERNAL OR DIPPED)
 3. STATIC DECAY : < 2 SEC. AT 50%RH

Part Marking information

Top Marking



BOTTOM MARKING



Ordering Information

| Base Part Number | Package Type | Standard Pack | | Complete Part Number |
|------------------|--------------|---------------|----------|----------------------|
| | | Form | Quantity | |
| IRS44273L | SOT23-5 | Tape and Reel | 3000 | IRS44273LTRPBF |

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