



## 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

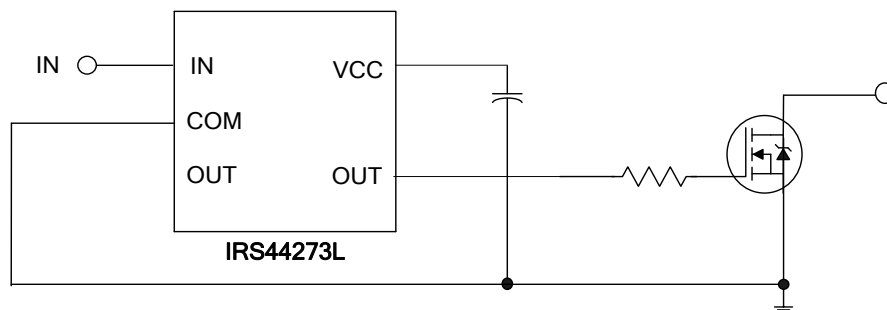
|                                |                |
|--------------------------------|----------------|
| Topology                       | General Driver |
| $I_{O+}$ & $I_{O-}$ (typical)  | 1.5A / 1.5A    |
| $t_{on}$ & $t_{off}$ (typical) | 50ns & 50ns    |

### Package Type



5 Lead SOT23

### Typical Connection Diagram



### Ordering Information

| Base Part Number          | Package Type | Standard Pack |          | Orderable Part Number |
|---------------------------|--------------|---------------|----------|-----------------------|
|                           |              | Form          | Quantity |                       |
| <a href="#">IRS44273L</a> | SOT23-5      | Tape and Reel | 3000     | IRS44273LTRPBF        |

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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<sup>†</sup>**

|                                   |                  |                                                                                                                                                                     |
|-----------------------------------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Qualification Level</b>        |                  | Industrial <sup>††</sup>                                                                                                                                            |
|                                   |                  | 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. |
| <b>Moisture Sensitivity Level</b> |                  | MSL1 <sup>†††</sup> 260°C<br>(per IPC/JEDEC J-STD-020)                                                                                                              |
| <b>ESD</b>                        | Machine Model    | Class B<br>(per JEDEC standard JESD22-A115)                                                                                                                         |
|                                   | Human Body Model | Class 2<br>(per EIA/JEDEC standard EIA/JESD22-A114)                                                                                                                 |
| <b>IC Latch-Up Test</b>           |                  | Class 1 Level A<br>(per JESD78)                                                                                                                                     |
| <b>RoHS Compliant</b>             |                  | 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

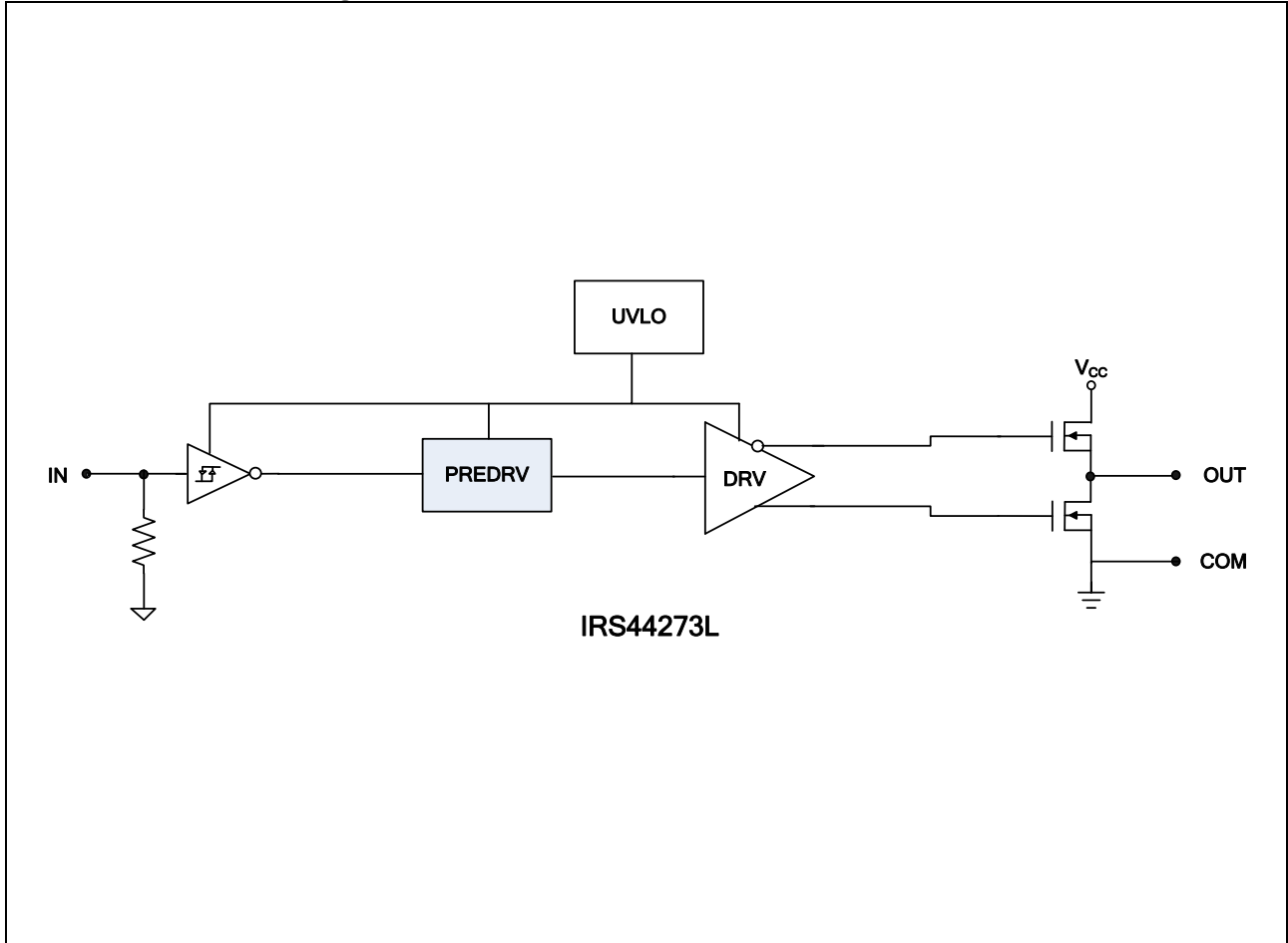
$V_{CC} = 15V$ ,  $T_A = 25^\circ C$  unless otherwise specified. The  $V_{IN}$  and  $I_{IN}$  parameters are referenced to COM and are applicable to input leads: IN. The  $V_O$  and  $I_O$  parameters are referenced to COM and are applicable to the output leads: OUT.

| 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 | $\mu A$ | $I_O = 20 \text{ mA}$        |
| $I_{IN+}$   | Logic "1" input bias current                     | —   | 5    | 15   |         | $V_{IN} = 5V$                |
| $I_{IN-}$   | Logic "0" input bias current                     | -30 | -10  | —    |         | $V_{IN} = 0V$                |
| $I_{OCC}$   | 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  | —    |         | $V_O = 15V, V_{IN} = 0V$     |

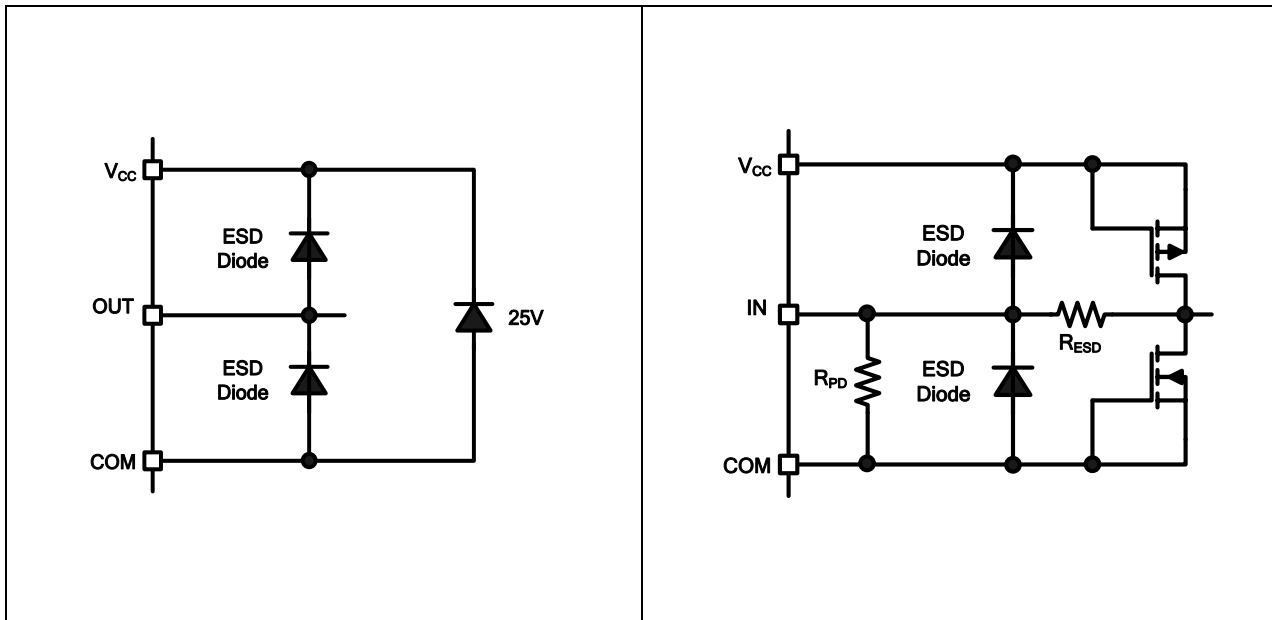
## Dynamic Electrical Characteristics

$V_{CC} = 15V$ ,  $T_A = 25^\circ C$ , 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**


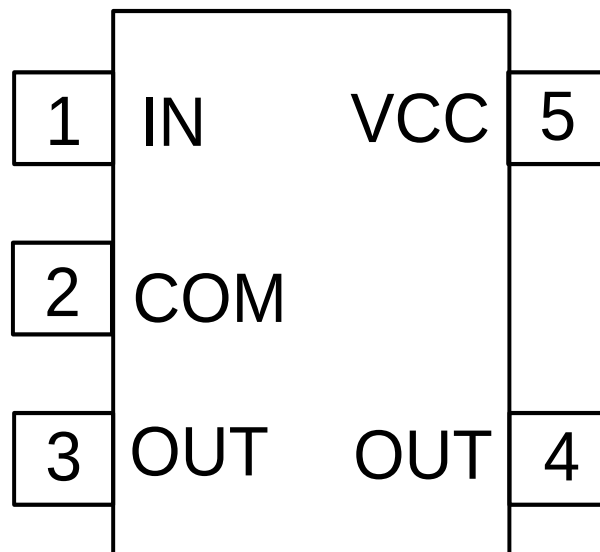
### Input/Output Pin Equivalent Circuit Diagrams



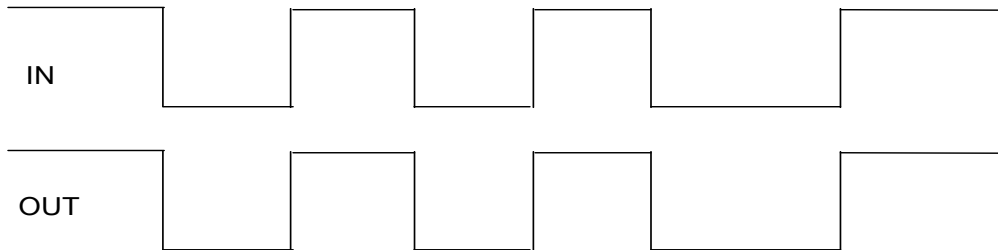
## Pin Definitions

| 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                           |

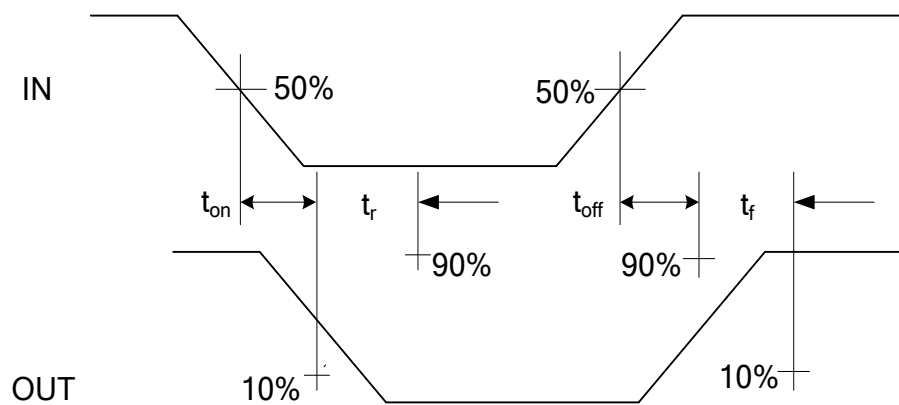
## Pin Assignments



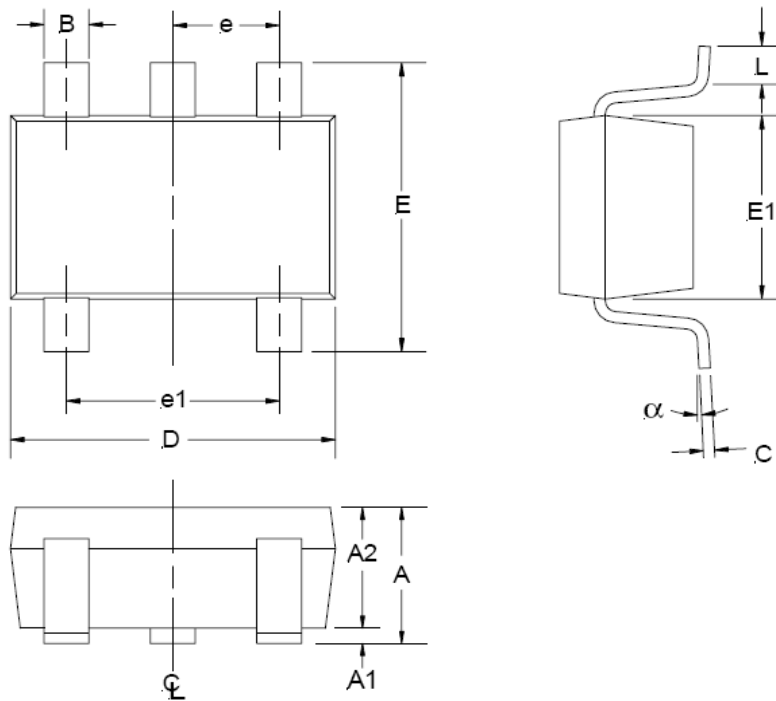
## Application Information and Additional Details



**Figure 1: Input/output Timing Diagram**



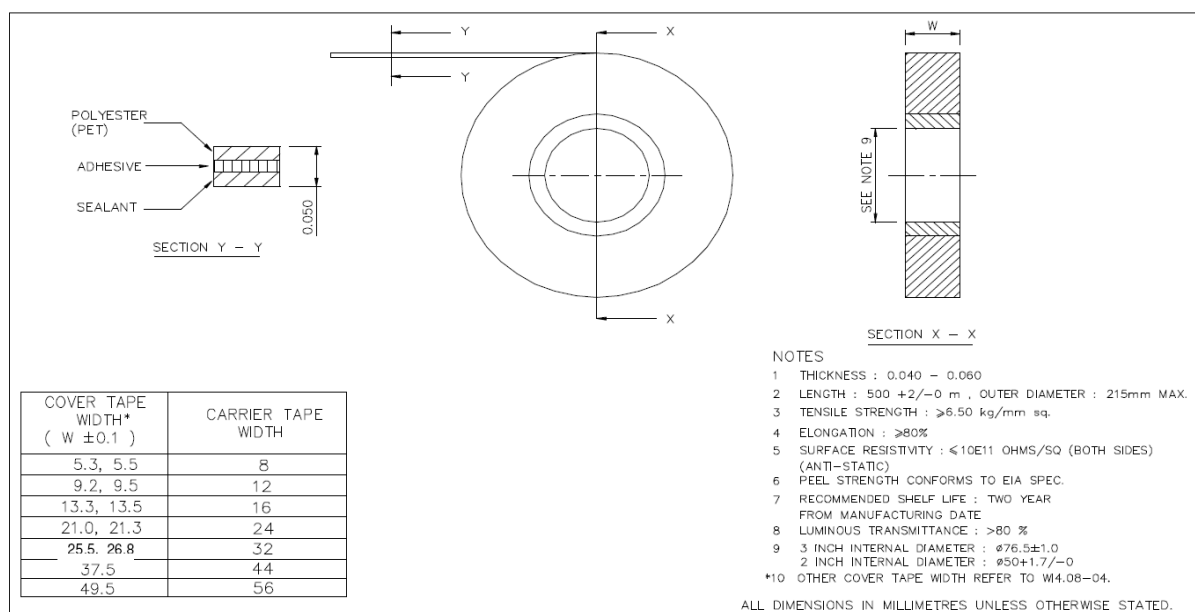
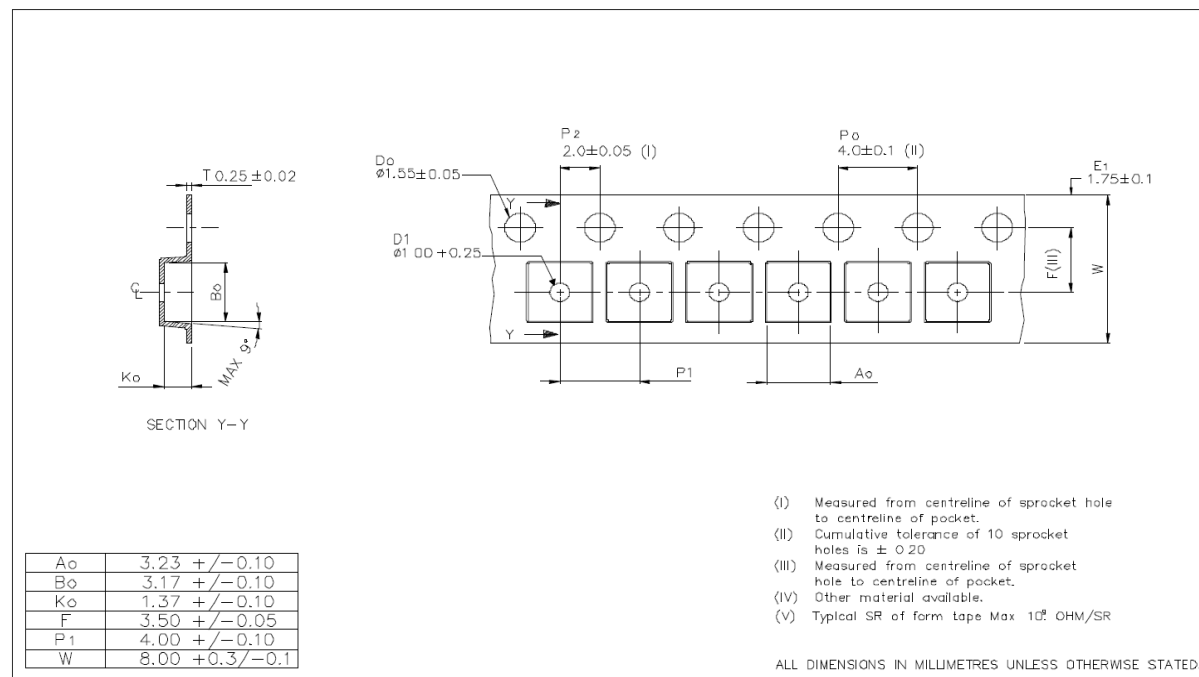
**Figure 2: Switching Time Waveform Definitions**

**Package Details, SOT23-5**


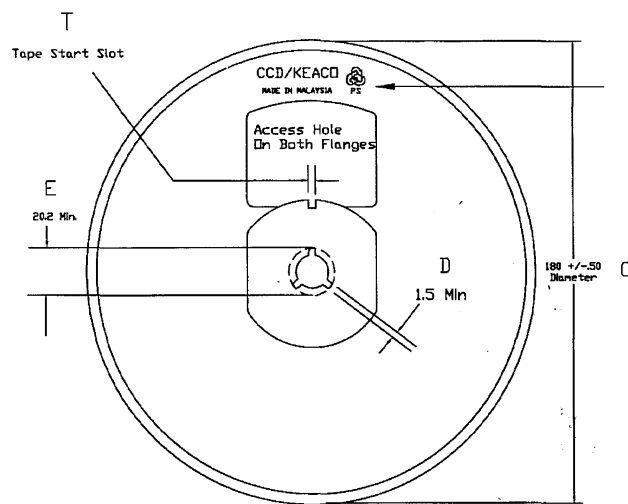
| SYMBOL   | MIN      | MAX  |
|----------|----------|------|
| A        | 0.90     | 1.45 |
| A1       | 0.00     | 0.15 |
| A2       | 0.90     | 1.30 |
| B        | 0.25     | 0.50 |
| C        | 0.09     | 0.20 |
| D        | 2.80     | 3.00 |
| E        | 2.60     | 3.00 |
| E1       | 1.50    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

NOTE: ALL MEASUREMENTS  
ARE IN MILLIMETERS.

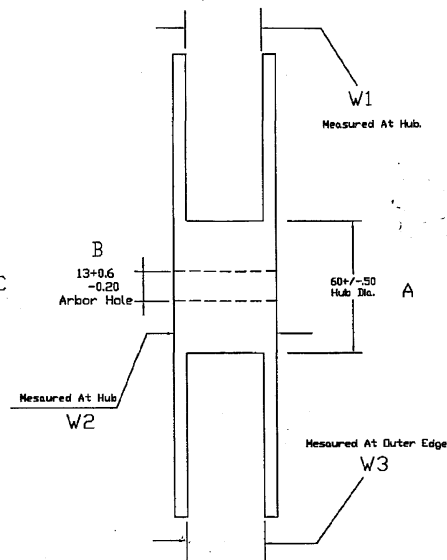
# Package details: SOT23-5, Tape and Reel



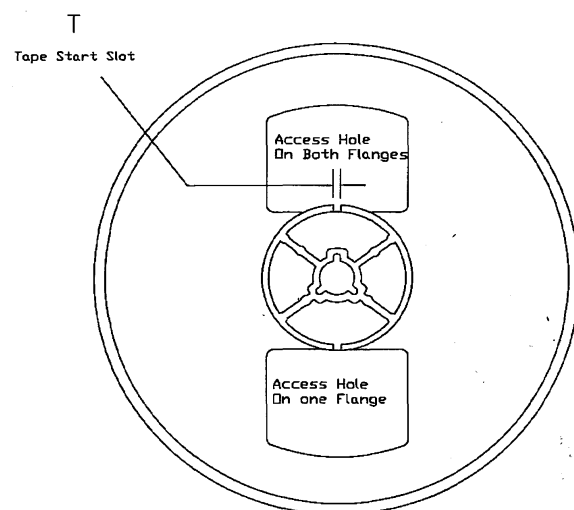
# Package details: SOT23-5, Tape and Reel



FRONT VIEW



SIDE VIEW

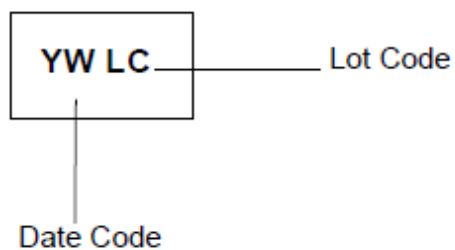


BACK VIEW

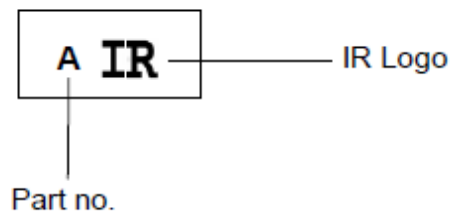
- NOTE:
1. MATERIAL : POLYSTRENE
  2. SURFACE RESISTIVITY :  $\leq 10^{11}$  OHMS/SQ (EXTERNAL OR DIPPED)
  3. STATIC DECAY :  $< 2$  SEC. AT 50%RH

## Part Marking information

### Top Marking



### BOTTOM MARKING



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