

**μHVIC™**

**SOT-23 Single Low-Side Driver IC**

**Features**

- CMOS Schmitt-triggered inputs
- Under voltage lockout
- Wide VCC range (5 to 20V)
- 3.3V logic compatible
- Output in phase with inputs
- Lead free, RoHS compliant

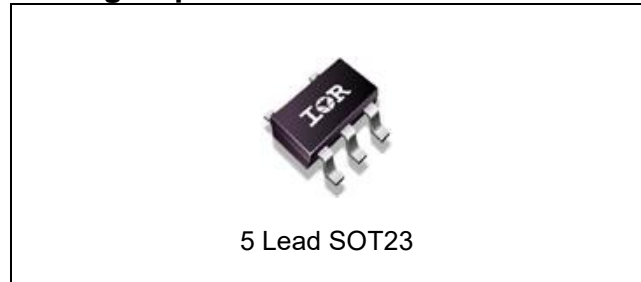
**Applications**

- General purpose gate driver
- Complimentary to IRS25752L single high side driver

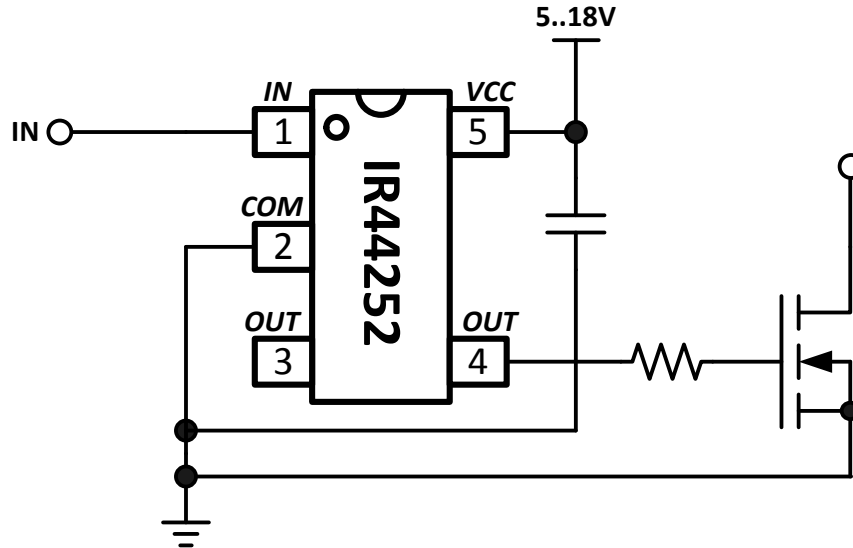
**Product Summary**

Topology	General Driver
IO+/- (typical)	300mA / 550mA

**Package Options**



**Typical Connection Diagram**



**Ordering Information**

Base Part Number	Package Type	Standard Pack		Orderable Part Number
		Form	Quantity	
IR44252LPBF	SOT-23-5L	Tape and Reel	3000	IR44252LTRPBF

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## **Description**

The IR44252L 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 wide VCC range, under-voltage lockout with hysteresis, and output current buffer stage. Also, the IR44252L is complimentary to the popular IRS25752 SOT-23 single high-side driver IC.

**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 (per IPC/JEDEC J-STD-020)
<b>ESD</b>	Machine Model	Class B (per JEDEC standard JESD22-A115)
	Human Body Model	Class 2 (per EIA/JEDEC standard EIA/JESD22-A114)
<b>IC Latch-Up Test</b>		Class 1 Level A (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	20	V
$V_O$	Output voltage	-0.3	$V_{CC} + 0.3$	
$V_{IN}$	Logic input voltage	-0.3	$V_{CC} + 0.3$	
$R_{thJA}$	Thermal resistance, junction to ambient	—	151	°C/W
$T_J$	Junction temperature	—	150	°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  $V_{CC} = 15V$ .

Symbol	Definition	Min	Max	Units
$V_{CC}$	Fixed supply voltage	5	18	V
$V_O$	Output voltage	0	$V_{CC}$	
$V_{IN}$	Logic input voltage	0	$V_{CC}$	
$T_A$	Ambient temperature	-40	125	°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.

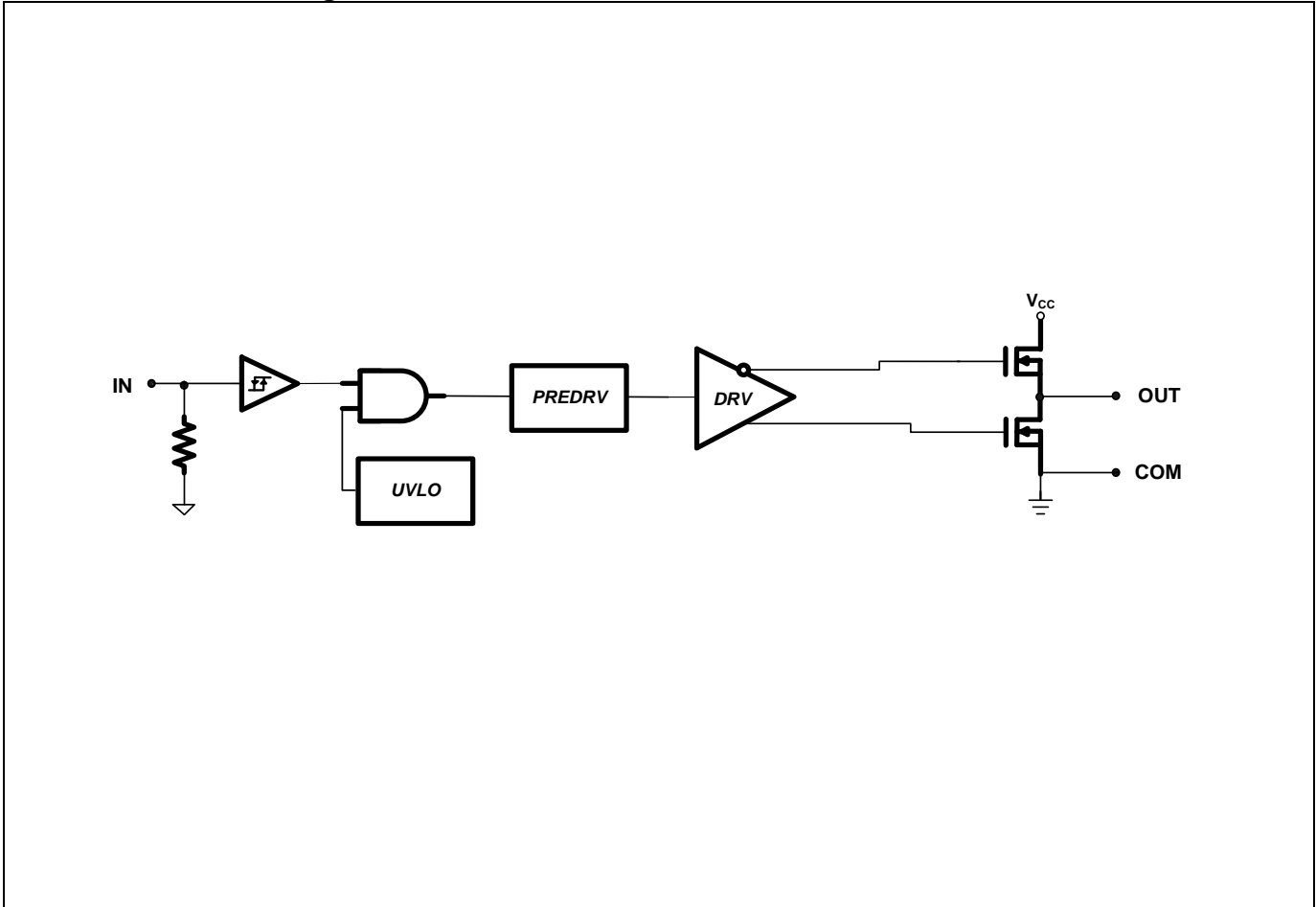
Symbol	Definition	Min	Typ	Max	Units	Test Conditions
$V_{CCUV+}$	Vcc supply UVLO positive going threshold	—	—	5.0	V	
$V_{CCUV-}$	Vcc supply UVLO negative going threshold	4.15	—	—		
$V_{CCUVH}$	Vcc supply UVLO hysteresis	—	0.3	—		
$V_{IL}$	Logic "0" input voltage (OUT = LO)	—	—	0.6		
$V_{IH}$	Logic "1" input voltage (OUT = HI)	2.7	—	—		
$V_{OH}$	High level output voltage, $V_{BIAS} - V_{OH}$	—	—	2.0		
$V_{OL}$	Low level output voltage, $V_O$	—	—	0.35		$I_O = 20 \text{ mA}$
$I_{IN+}$	Logic "1" input bias current	—	5	15	$\mu A$	$V_{IN} = 5V$
$I_{IN-}$	Logic "0" input bias current	-30	-10	—		$V_{IN} = 0V$
$I_{QCC}$	Quiescent $V_{CC}$ supply current	—	—	400		$V_{IN} = 0V \text{ or } 5V$
$I_{O+}$	Output high short circuit pulsed current	—	0.30	—	A	$V_O = 0V, V_{IN} = 5V$
$I_{O-}$	Output low short circuit pulsed current	—	0.55	—		$V_O = 15V, V_{IN} = 0V$

### Dynamic Electrical Characteristics

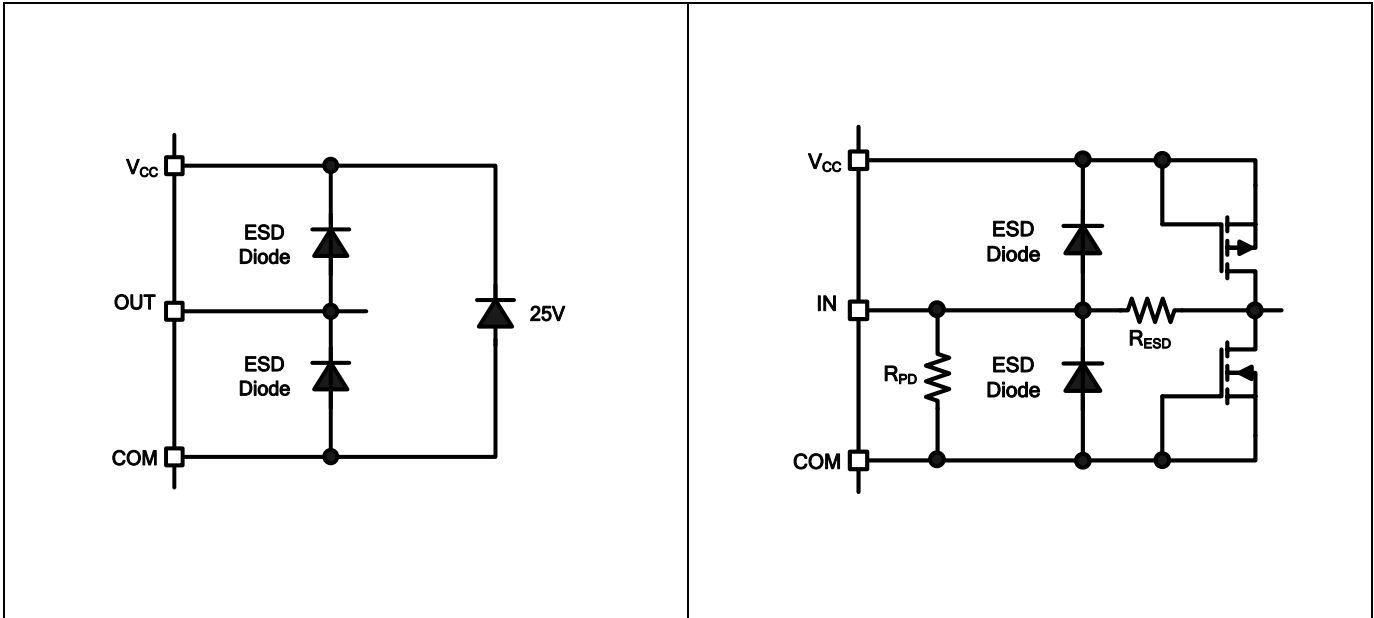
$V_{CC} = 15V$ ,  $T_A = 25^\circ C$ , and  $C_L = 1000pF$  unless otherwise specified.

Symbol	Definition	Min	Typ	Max	Units	Test Conditions
$t_{on}$	Turn-on propagation delay	—	50	—	ns	Figure 2
$t_{off}$	Turn-off propagation delay	—	50	—		
$t_r$	Turn-on rise time	—	85	—		
$t_f$	Turn-off fall time	—	40	—		

### Functional Block Diagram



### Input/Output Pin Equivalent Circuit Diagrams

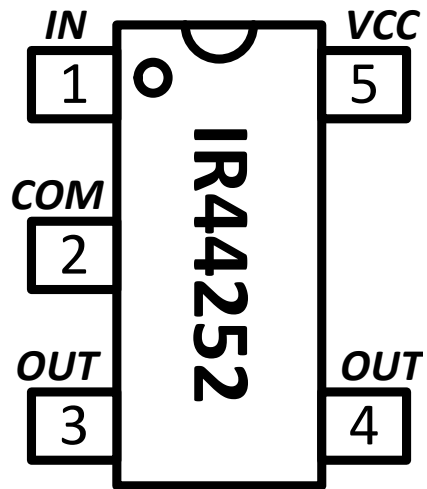




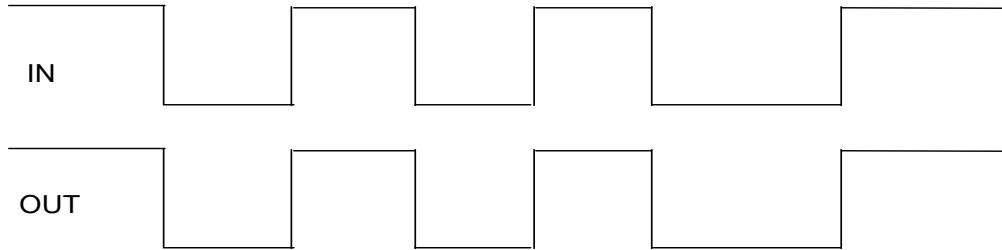
**Pin Definitions**

Pin	Symbol	Description
1	IN	Logic input for gate driver output (OUT), in phase
2	COM	Ground
3	OUT	Gate drive output
4	OUT	Gate drive output
5	VCC	Supply Voltage

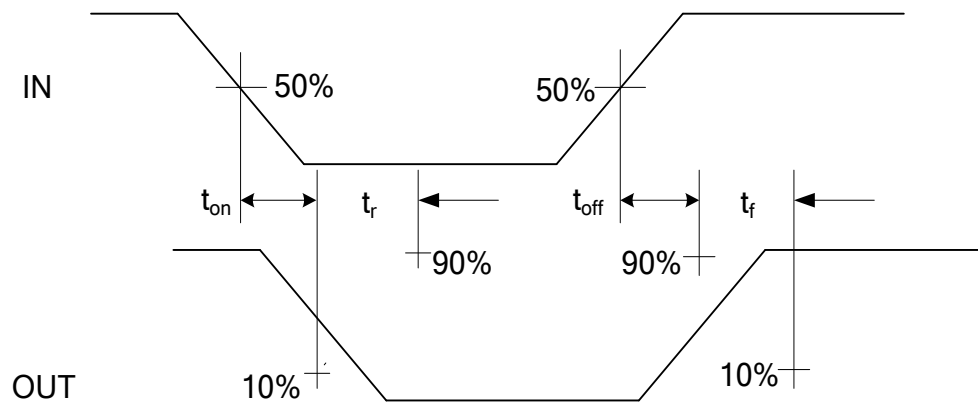
**Pin Assignments**



## Timing Diagrams

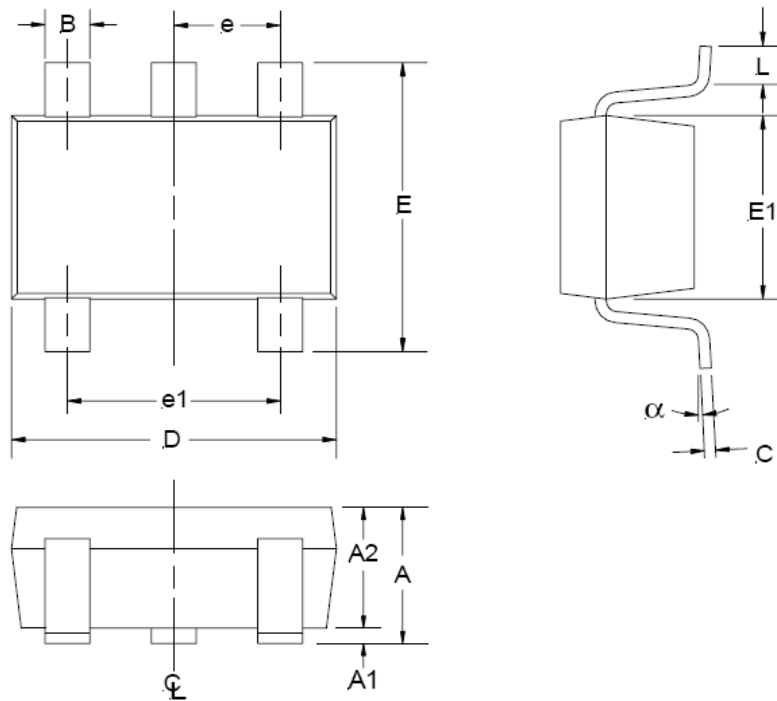


**Figure 1: Input/output Timing Diagram**



**Figure 2: Switching Time Waveform Definitions**

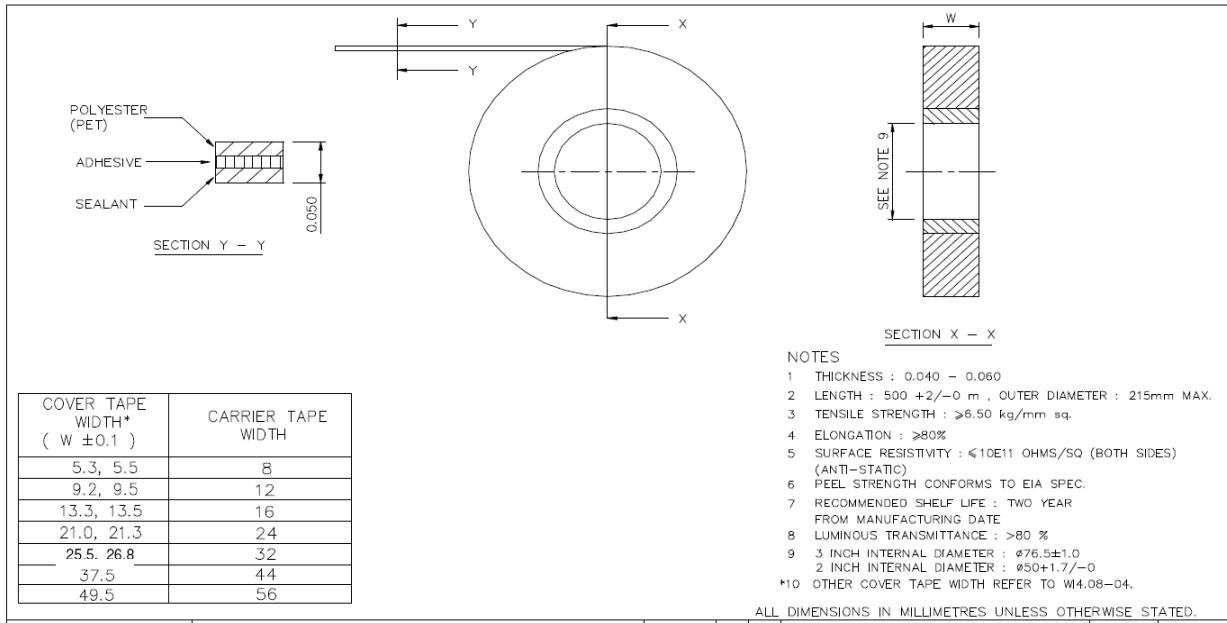
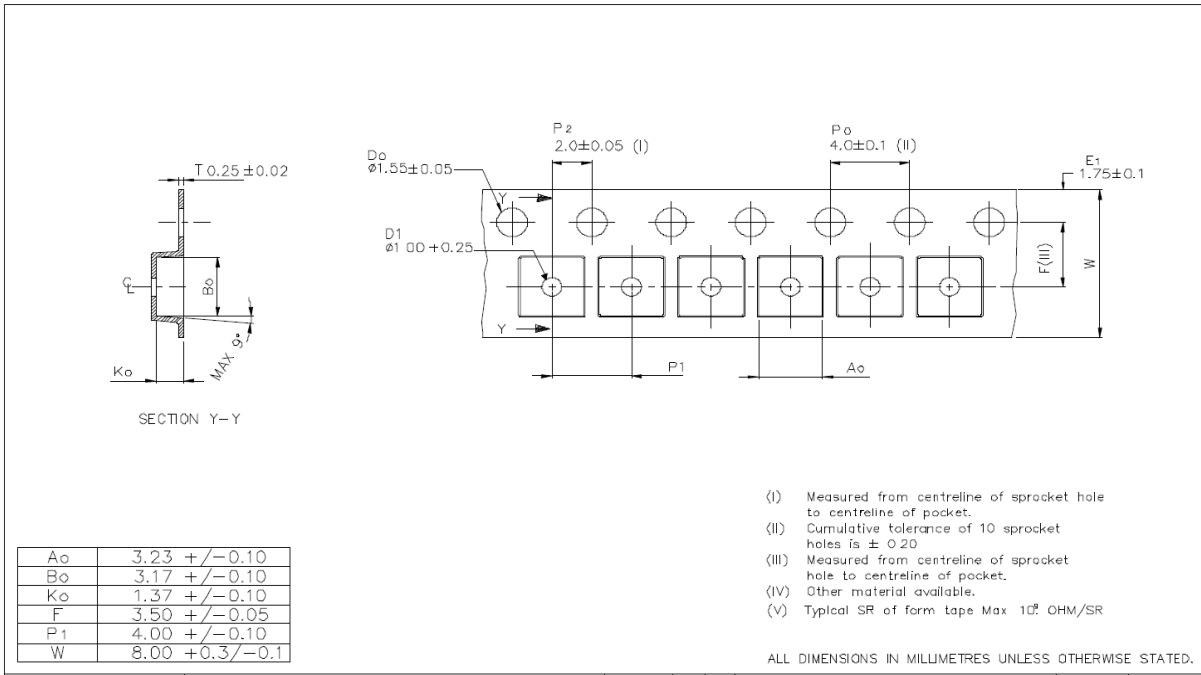
**Package Details: 5-Lead SOT23**



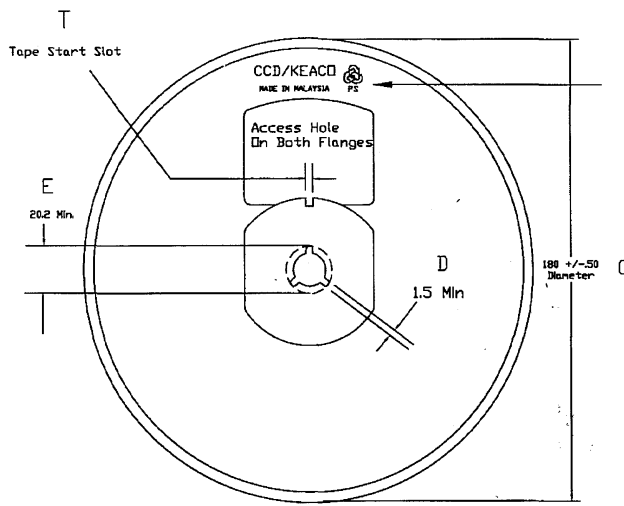
SYMBOL	MIN	MAX
A	0.90	1.45
A1	0.00	0.15
A2	0.90	1.30
B	0.25	0.50
C	0.09	0.20
D	2.80	3.00
E	2.60	3.00
E1	1.50	1.75
e	0.95 REF	
e1	1.90 REF	
L	0.35	0.55
α	0°	10°

NOTE: ALL MEASUREMENTS ARE IN MILLIMETERS.

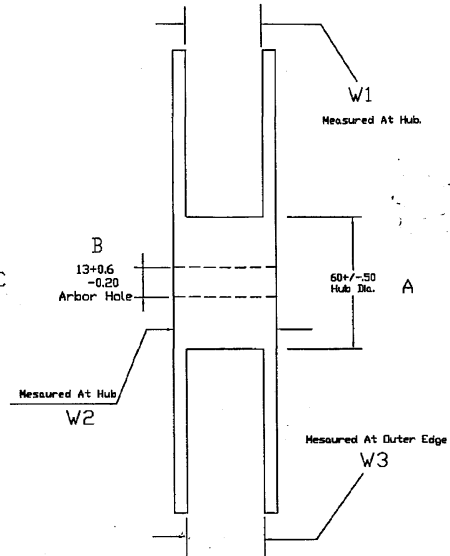
**Tape and Reel Details: 5-Lead SOT23**



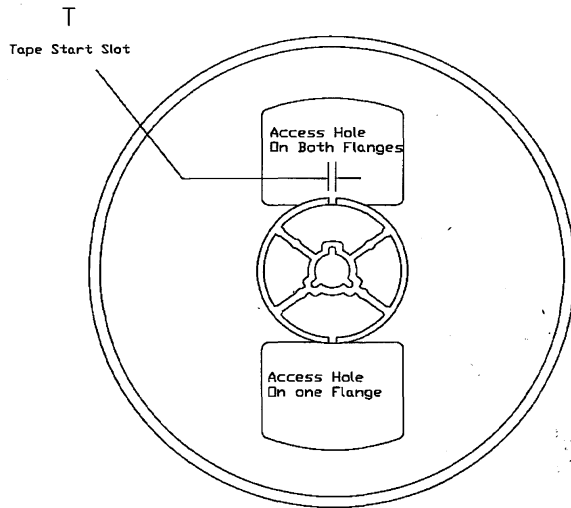
**Tape and Reel Details: 5-Lead SOT23**



FRONT VIEW



SIDE VIEW

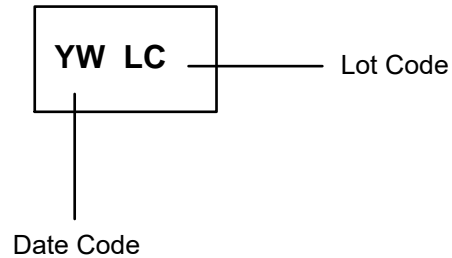


BACK VIEW

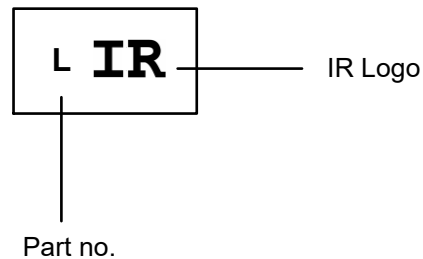
- NOTE:
1. MATERIAL : POLYSTRENE
  2. SURFACE RESISTIVITY :  $\leq 10E11$  OHMS/SQ (EXTERNAL OR DIPPED)
  3. STATIC DECAY :  $< 2$ SEC. AT 50%RH

## Part Marking Information

### Top Marking



### Bottom Marking



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