

# manual

## DESCRIPTION

PT4450 is a high performance ASK/OOK transmitter for the Remote Keyless Entry (RKE) systems. It consists of a SAW oscillator, power amplifier, and one-shot circuit which control the SAW oscillator and power amplifier.

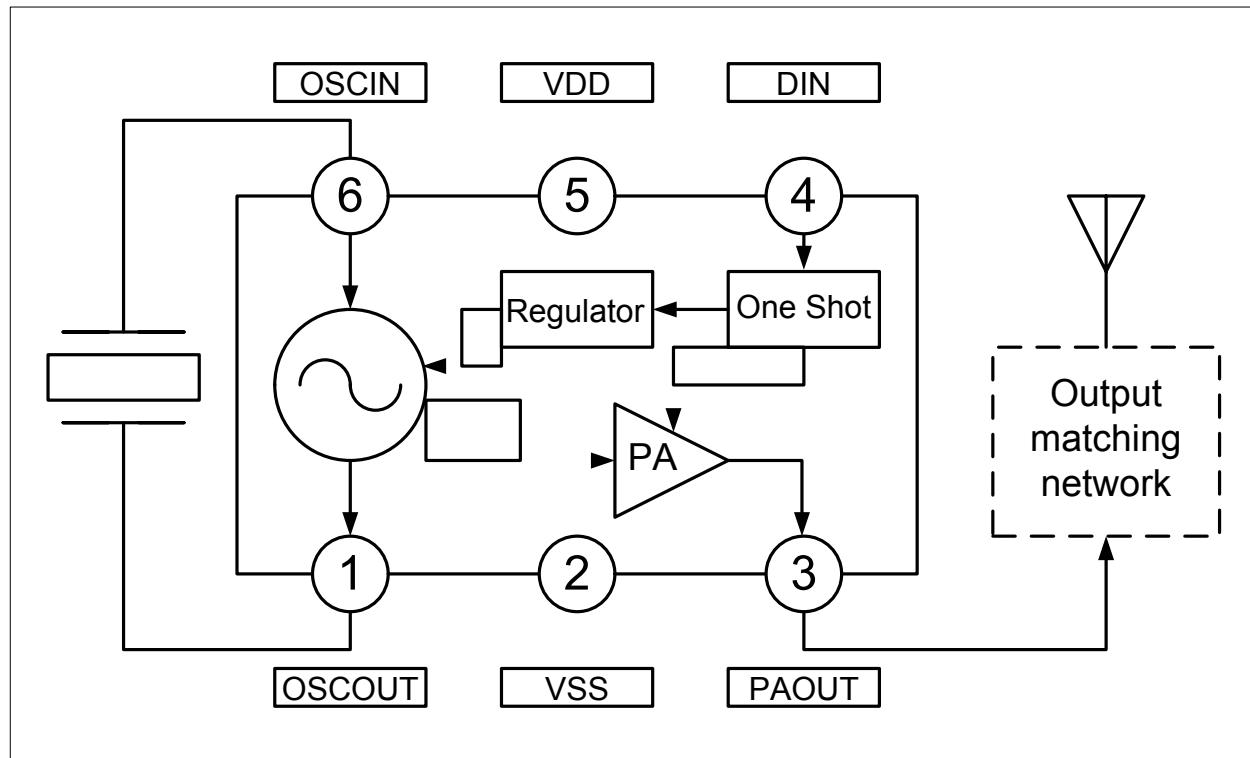
## FEATURES

- Highly integrated ASK/OOK transmitter
- High output power, 3V/+10dBm/18mA
- Low supply voltage (2.2V to 3.6V operation range)
- Low external component cost.
- SAW-based oscillator, frequency range from 250MHz to 500MHz
- On-chip one-shot circuit
- 50dB RF on/off ratio
- Available in 6 pins, SOT-23 package

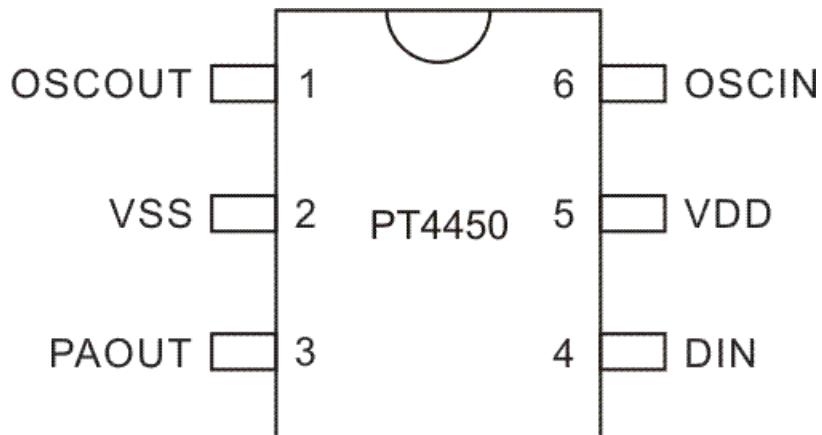
## APPLICATIONS

- Keyless entry systems
- Remote control systems
- Garage door openers
- Alarm systems
- Security systems
- Wireless sensors

## BLOCK DIAGRAM



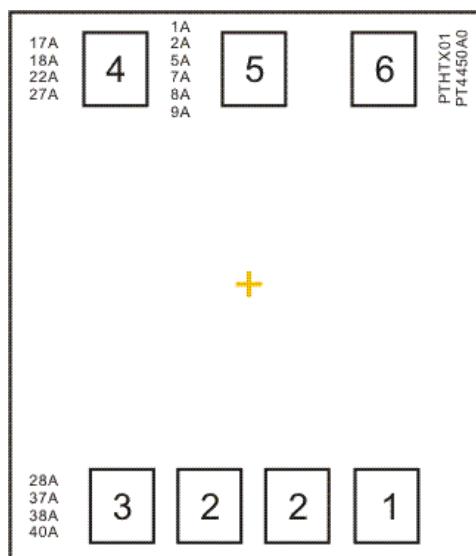
## PIN CONFIGURATION



## PIN DESCRIPTION

Pin Name	I/O	Description	Pin No.
OSCOUT	O	Oscillator output	1
VSS	G	Ground connection	2
PAOUT	O	Power amplifier output	3
DIN	I	Data input, it will also be used to enable the chip	4
VDD	P	Power supply	5
OSCIN	I	Oscillator input	6

## DIE PAD DIAGRAM



## **ABSOLUTE MAXIMUM RATINGS**

(V<sub>SS</sub>=0V)

Parameter	Symbol	Rating	Unit
Supply voltage	V <sub>DD</sub>	V <sub>SS</sub> -0.3 to V <sub>SS</sub> +6.0	V
Operating temperature	T <sub>opr</sub>	-40 to +85	°C
Storage temperature	T <sub>stg</sub>	-65 to +150	°C
Soldering temperature	T <sub>SLD</sub>	255	°C
Soldering time	t <sub>SLD</sub>	10	Sec.

## **RECOMMEND OPERATING CONDITIONS**

(V<sub>SS</sub>=0V)

Parameter	Symbol	Rating			Unit
		Min.	Typ.	Max.	
Supply voltage range	V <sub>DD</sub>	2.2	3.0	3.6	V
Operating temperature	T <sub>A</sub>	-40	25	85	°C

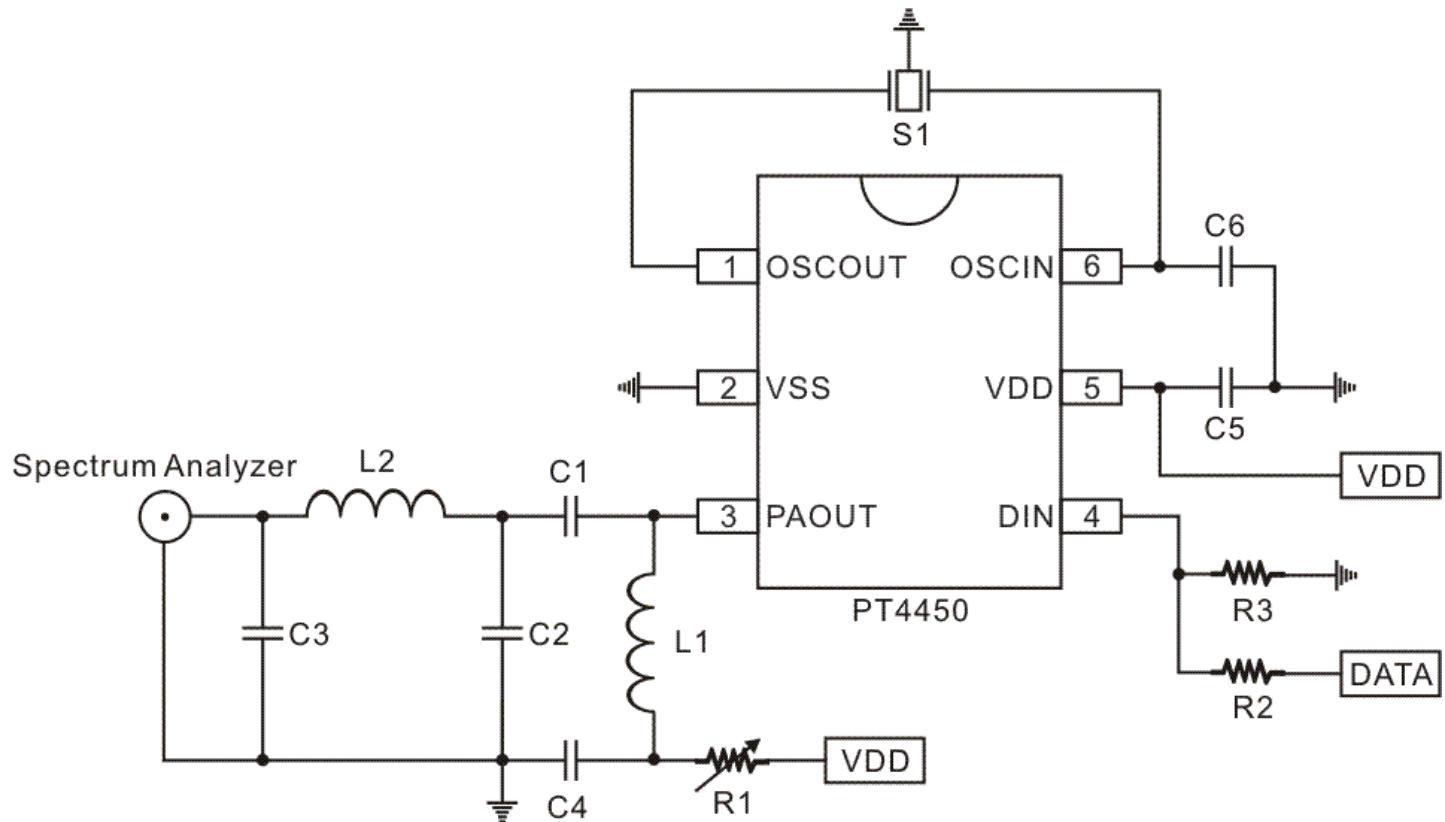
## ELECTRICAL CHARACTERISTICS

(Unless otherwise specified,  $V_{DD}=3.0V$ ,  $V_{SS}=0V$ ,  $DIN=3.0V$ . Temp=27°C,  $f_{RF}=434MHz$ )

Parameter	Symbol	Condition	Rating			Unit
			Min.	Typ.	Max.	
<b>DC</b>						
Supply voltage	$V_{DD}$		2.2	3.0	3.6	V
Operating current <sup>(Note)</sup>	$I_{DD}$	DIN=High(CW mode); $P_{OUT}=10dBm$	16	-	18	mA
Standby current	$I_{standby}$	DIN=Low; $T_{DELAY}>50ms$	-	-	1	$\mu A$
<b>RF</b>						
Frequency range	$f_{RF}$		250	-	500	MHz
Power amplifier output power <sup>(Note)</sup>	$P_{out}$		-	+10	-	dBm
RF power on/off ratio	$P_{EXT}$		-	50	-	dB
Phase noise	$P_{NOISE}$	10KHz offset	-	-100	-	dBc/Hz
Harmonics (see Note)	$P_{HARM}$	2x/3x $f_{RF}$	-	-40	-	dBc
<b>Data Input and One Shot</b>						
Data rate	$D_{RATE}$		0.5	2	50	Kbps
Start up time	$T_{ON}$		-	-	200	$\mu s$
One shot delay time	$T_{DELAY}$		50	-	-	ms

Note: Depend on power amplifier output matching.

## TESTING CIRCUIT



Component	Values		Unit
	315MHz Band	434MHz Band	
S1 (see Note)	315	434	MHz
R1	0	0	$\Omega$
R2	10K	10K	$\Omega$
R3	470K	470K	$\Omega$
L1	180n	180n	H
L2	27n	27n	H
C1	220p	220p	F
C2	12p	4.7p	F
C3	22p	12p	F
C4, C5	100n	100n	F

Note: S1 is a SAW resonator.

## ORDER INFORMATION

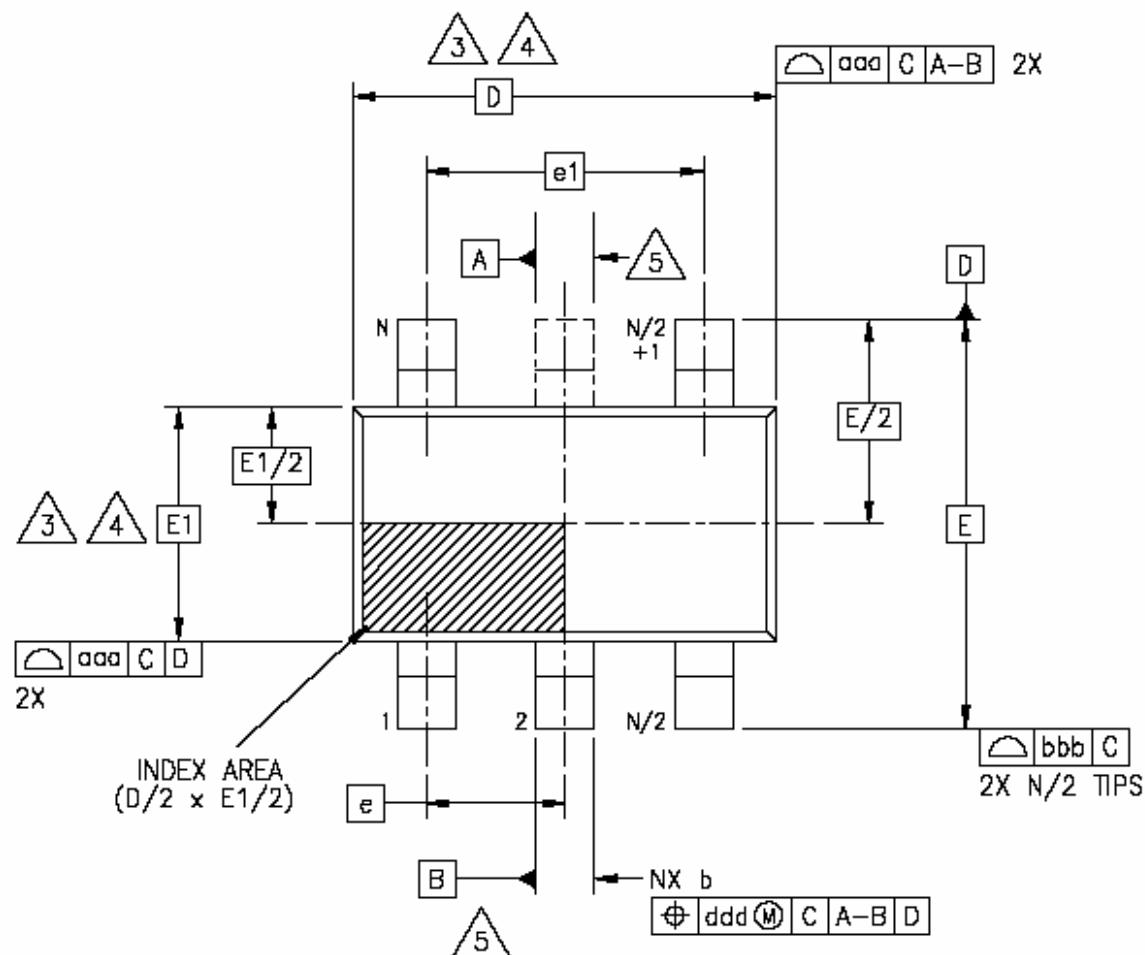
Valid Part Number	Package Type	Top Code
PT4450 (L)	6 Pins, SOT-23	PT4450

Notes:

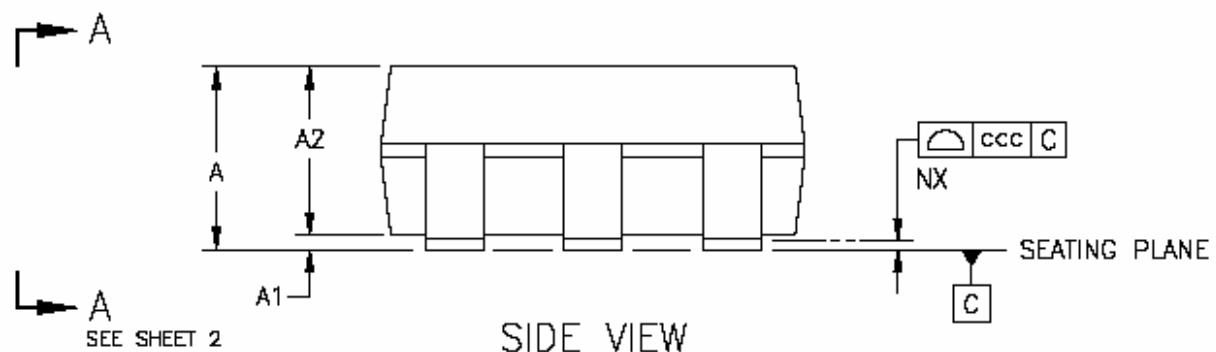
1. (L), (C) or (S) = Lead Free
2. The Lead Free mark is put in front of the date code

# PACKAGE INFORMATION

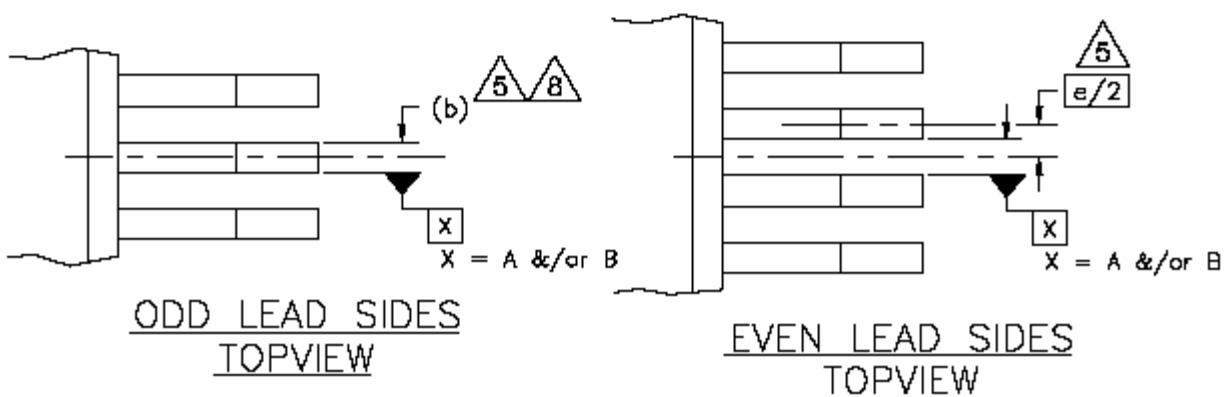
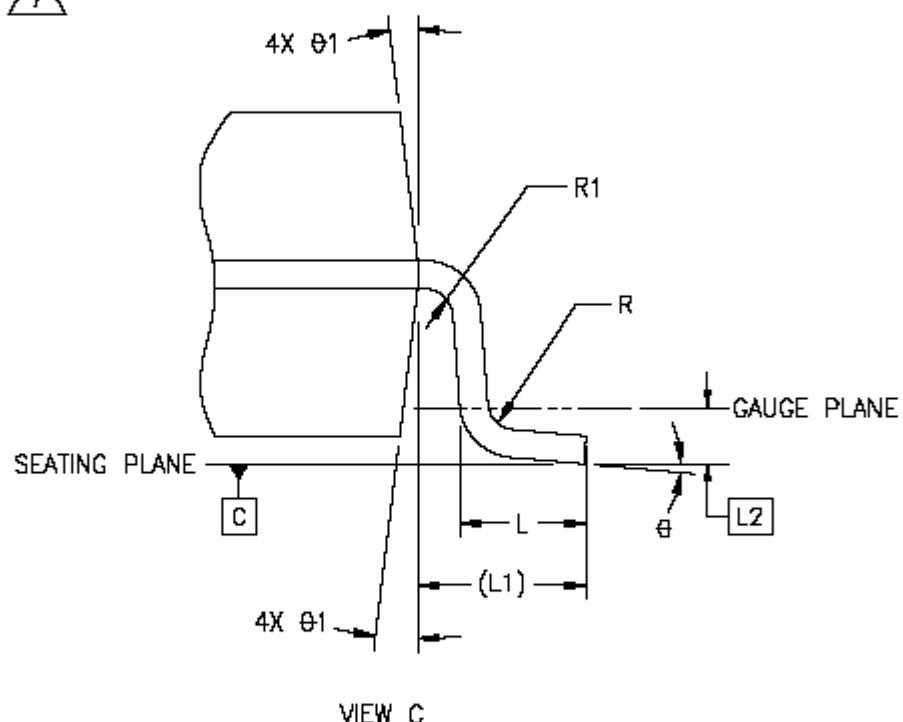
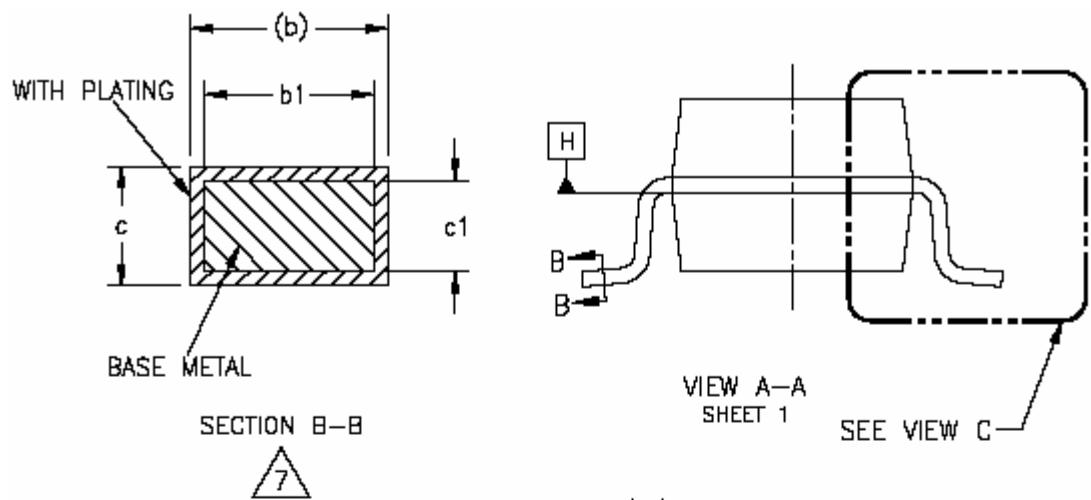
## 6 PINS, SOT-23



TOP VIEW



SIDE VIEW



<b>Symbol</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>
A	-	-	1.45
A1	0	-	0.15
A2	0.90	1.15	1.30
b	0.30	-	0.50
b1	0.30	0.40	0.45
c	0.08	-	0.22
c1	0.08	0.13	0.20
D	2.90 BSC.		
E	2.80 BSC.		
E1	1.60 BSC.		
e	0.95 BSC.		
e1	1.90 BSC.		
L	0.30	0.45	0.60
L1	0.60 REF.		
L2	0.25 BSC.		
R	0.10	-	-
R1	0.10	-	0.25
$\theta$	$0^\circ$	$4^\circ$	$8^\circ$
$\theta 1$	$5^\circ$	$10^\circ$	$15^\circ$
aaa	0.15		
bbb	0.20		
ccc	0.10		
ddd	0.20		

Notes:

1. Dimension and tolerancing per ASME Y14.5M-1994.
2. Dimension in Millimeters.
3. Dimension D does not include mold flash, protrusion or gate burrs. Mold flash, protrusions or gate burrs shall not exceed 0.25mm per end. Dimension E1 does not include interlead flash or protrusion. Interlead flash or protrusion shall not exceed 0.25mm per side. D and E1 dimensions are determined at datum H.
4. The package top may be smaller than the package bottom. Dimensions D and E1 are determined at the outermost extremes of the plastic body exclusive of mold flash, tie bar burrs, gate burrs and interlead flash, but including any mismatch between the top and bottom of the plastic body. D and E1 dimensions are determined at datum H.
5. Datums A & B to be determined at datum H.
6. These dimensions apply to the flat section of the lead between 0.08mm and 0.15mm from the lead tip.
7. Dimension "b" does not include dambar protrusion. Allowable dambar protrusion shall be 0.08mm total in exceed of the "b" dimension at maximum material condition. The dambar cannot be located on the lower radius of the foot. Minimum space between protrusion and an adjacent lead shall not be less than 0.07mm.
8. Details of the pin 1 identifier are optional, but must be located within the zone indicated.
9. Refer to JEDEC MO-178 Variation AB

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FCC NOTE : THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:1. This device may not cause harmful interference, and 2. This device must accept any interference received, including interference that may cause undesired operation