



# MIC79050

## Simple Lithium-Ion Battery Charger

### General Description

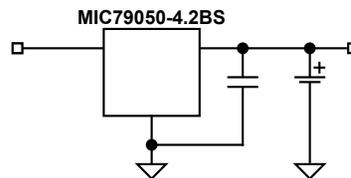
### Features

-

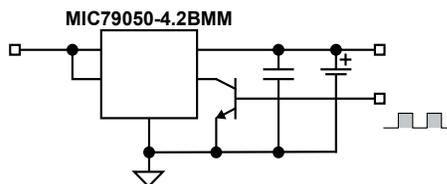
### Applications

### Ordering Information


### Typical Applications

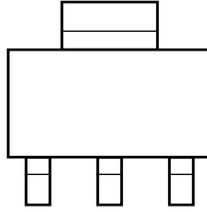


Simplest Battery Charging Solution

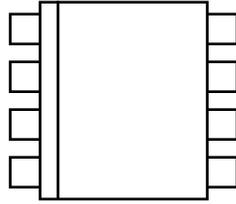


Pulse-Charging Application

# Pin Configuration



**MIC79050-x.xBS/YS**  
**SOT-223**



**MIC79050-x.xBM/YM**  
**SOIC-8 and MSOP-8**

## Pin Description

Pin No. SOT-223	Pin No. SOIC-8 MSOP-8	Pin Name	Pin Function

**Absolute Maximum Ratings (Note 1)**

**Operating Ratings (Note 2)**

**Note 3**

θ  
θ  
θ

**Electrical Characteristics**

**bold**

Symbol	Parameter	Conditions	Min	Typical	Max	Units
$V_{BAT}$						
		Note 4		40		
					0.1	
		Note 5			0.7	%
	Note 6				600	mV
	Notes 7, 8				170	μA
					25	mA
	Note 8				3	μA
					8	μA
PSRR	Ripple Rejection	$f = 120\text{Hz}$		75		dB
$I_{LIMIT}$	Current Limit	$V_{BAT} = 0\text{V}$		750	1000	
		Note 9				
<b>ENABLE Input</b>						
					0.18	V
			2.0			V
				0.01	-2	
					25	

Note 1.

Note 2.

Note 3.

÷ θ

Note 4.

Note 5.

Note 6.

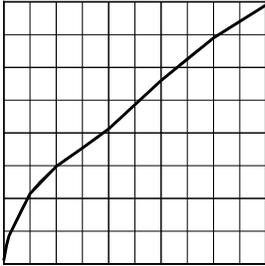
Note 7:

Note 8:

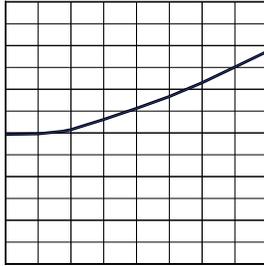
Note 9:

# Typical Characteristics

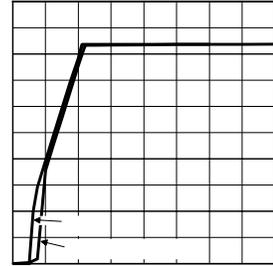
Dropout Voltage vs. Output Current



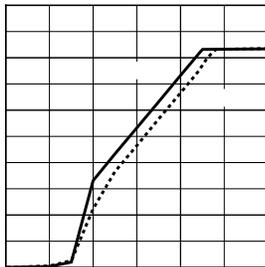
Dropout Voltage vs. Temperature



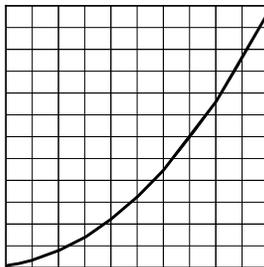
Dropout Characteristics



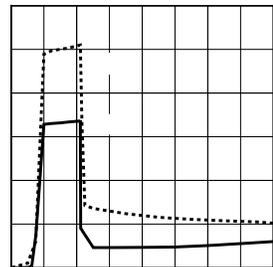
Dropout Characteristics



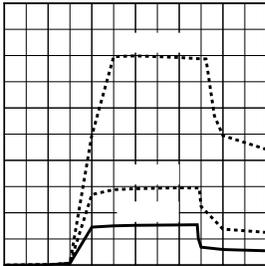
Output Current vs. Ground



Ground Current vs. Supply Voltage



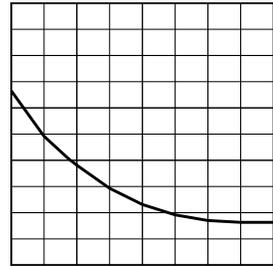
Ground Current vs. Supply Voltage



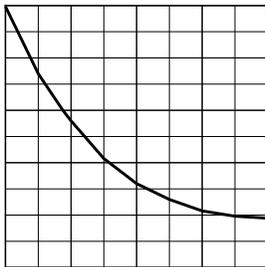
Ground Current vs. Temperature



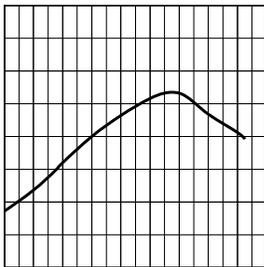
Ground Current vs. Temperature



Ground Current vs. Temperature



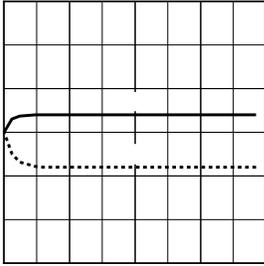
Battery Voltage vs. Temperature



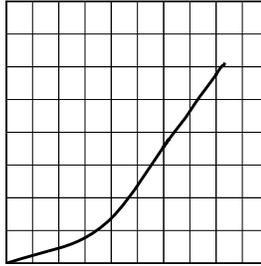
Short Circuit Current vs. Temperature



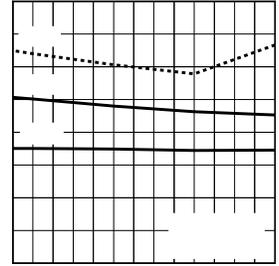
**Typical Voltage Drift Limits  
vs. Time**



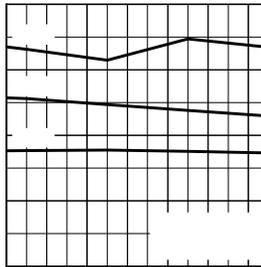
**Reverse Leakage Current  
vs. Output Voltage**



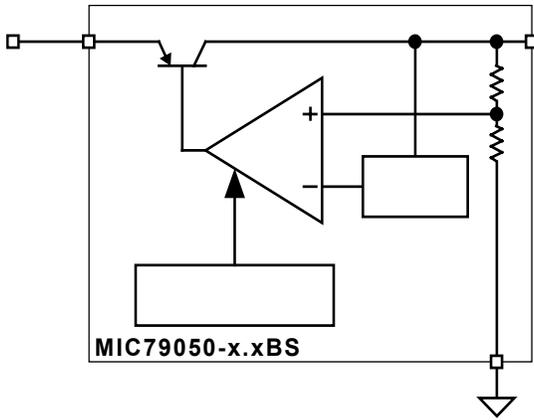
**Reverse Leakage Current  
vs. Output Voltage**



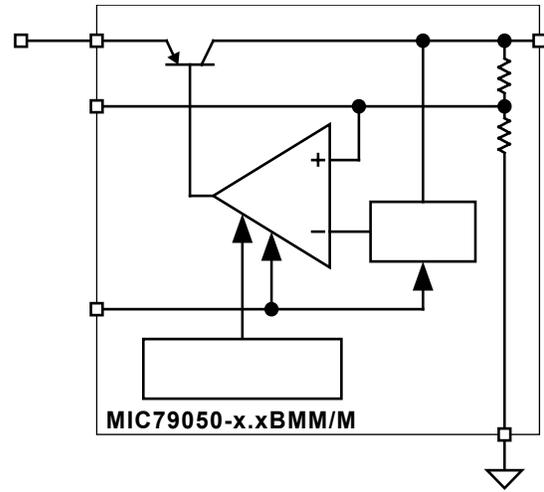
**Reverse Leakage Current  
vs. Temperature**



### Block Diagrams



3-Pin Version



5-Pin Version

### Functional Description

Feedback

Input Voltage

Battery Output

Enable

—

# Applications Information

## Simple Lithium-Ion Battery Charger.

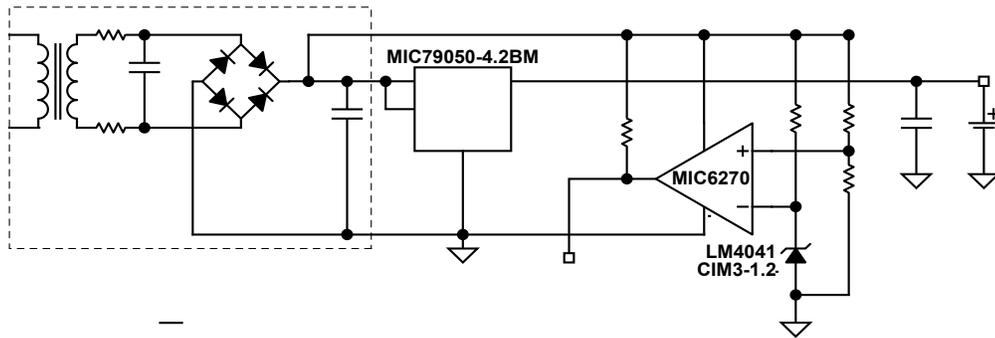


Figure 1A. Load-Line Charger With End-Of-Charge Termination Circuit.

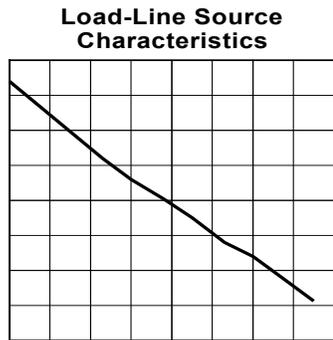


Figure 1B. Load-Line Characteristics of AC Wall Adapter

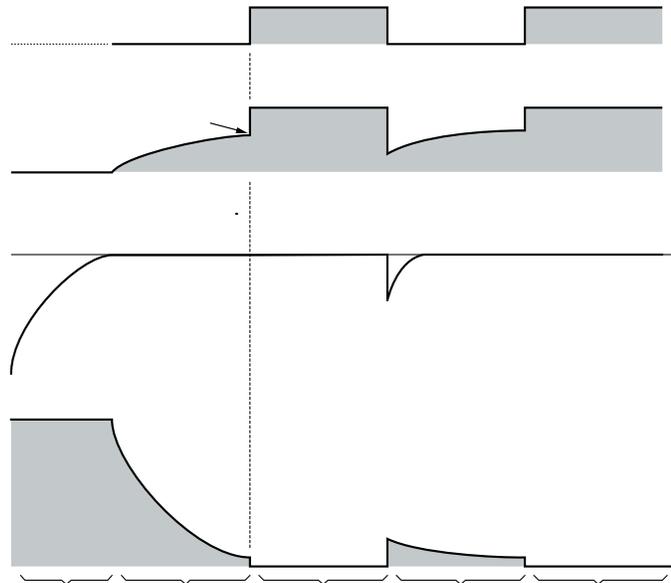


Figure 1C. Charging Cycles

The Charging Cycle (See Figure 1C.)

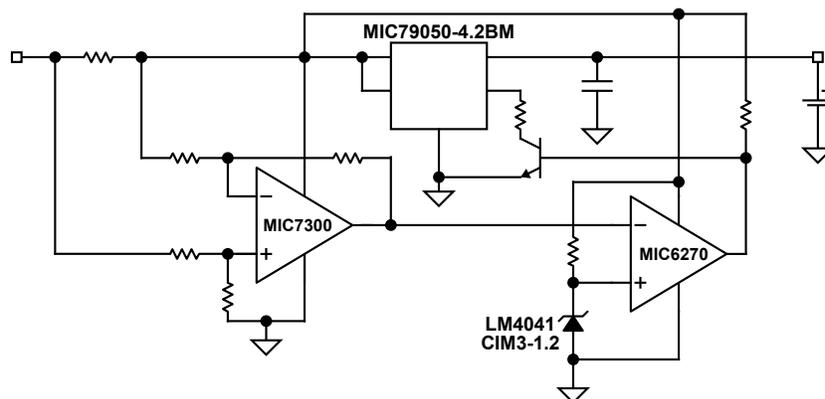


Figure 2. Protected Constant-Current Charger

Time Out

Zero-Output Impedance Source Charging

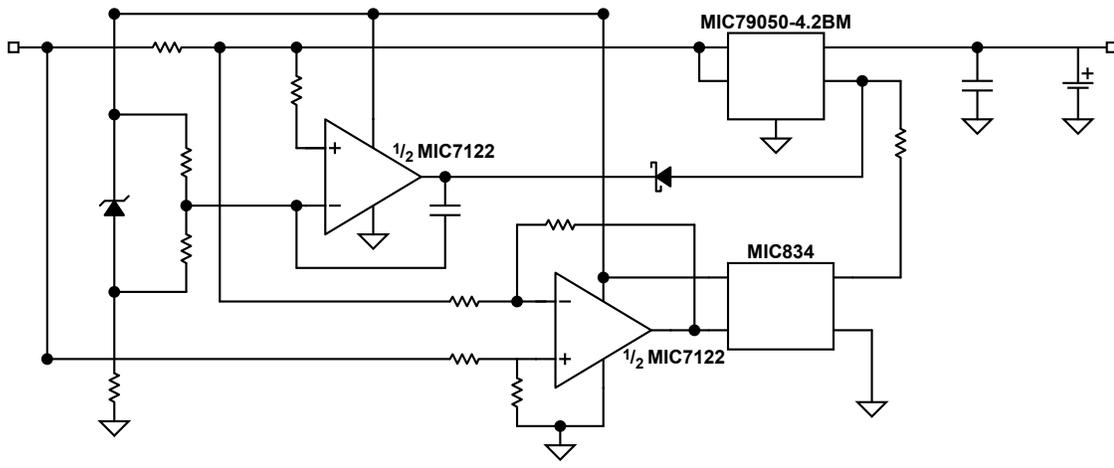


Figure 3.

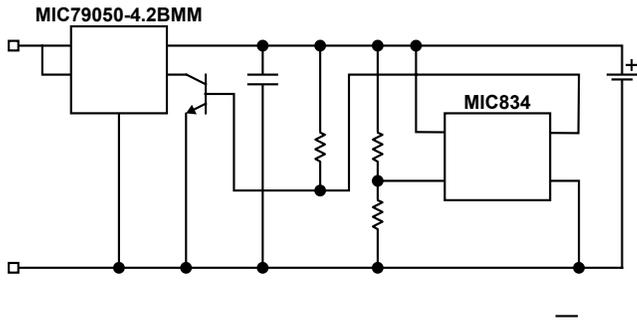


Figure 4. Pulse Charging For Top-off Voltage

Charging Rate

× ×

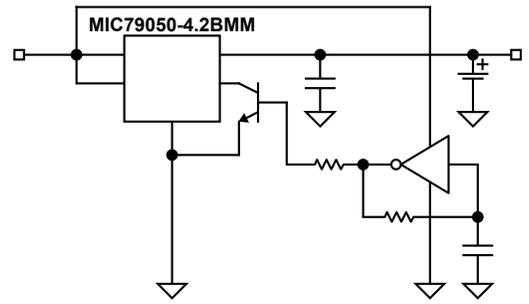


Figure 5B. PWM Based Pulse-charging Applications

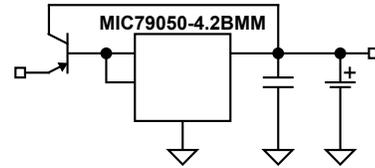


Figure 6. High Current Charging Regulated Input Source Charging

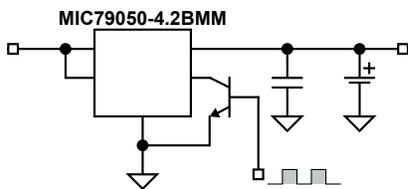


Figure 5A.

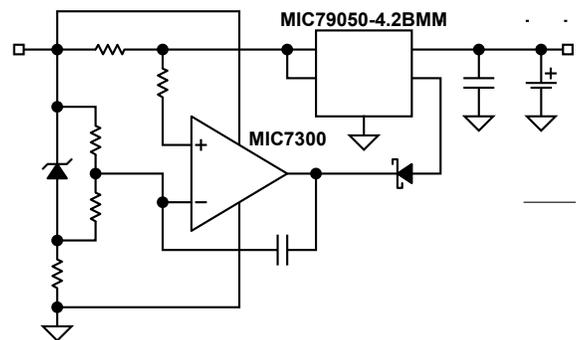


Figure 7. Constant Current, Constant Voltage Charger

### Simple Charging

### Thermal Considerations

#### Power SOIC-8 Thermal Characteristics

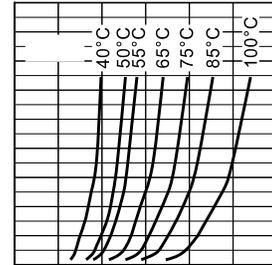
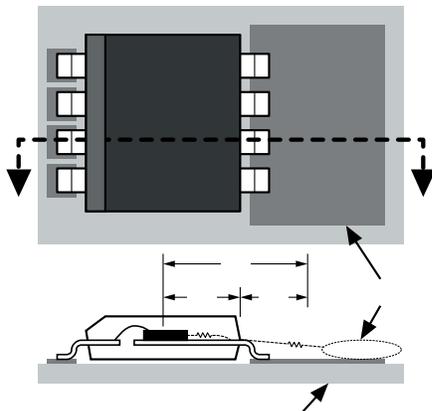
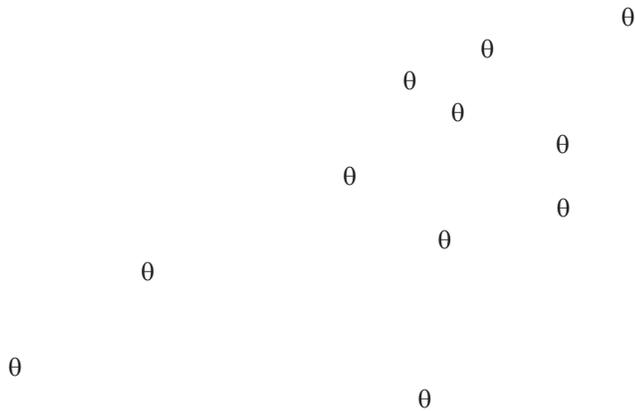


Figure 9. Copper Area vs. Power-SOIC Power Dissipation ( $\Delta T_{JA}$ )



Quick Method

Figure 8. Thermal Resistance

Power MSOP-8 Thermal Characteristics

θ

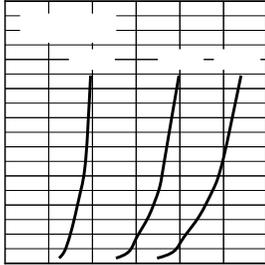


Figure 10. Copper Area vs. Power-SOIC Power Dissipation ( $T_A$ )

Quick Method

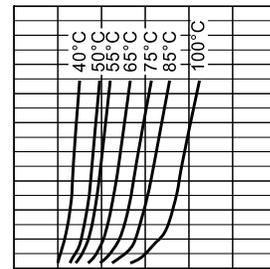


Figure 11. Copper Area vs. Power-MSOP Power Dissipation ( $\Delta T_{JA}$ )

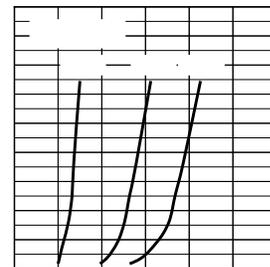
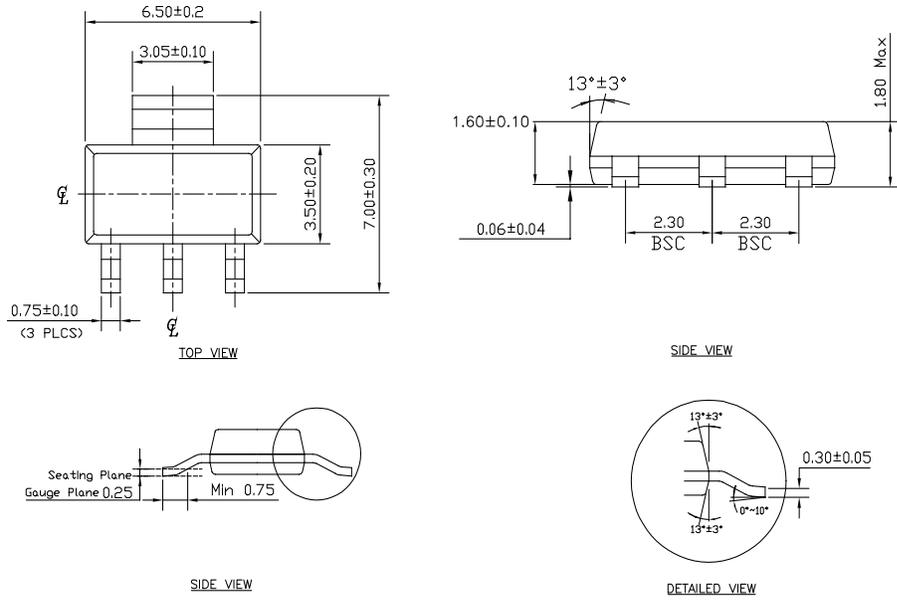


Figure 12. Copper Area vs. Power-MSOP Power Dissipation ( $T_A$ )

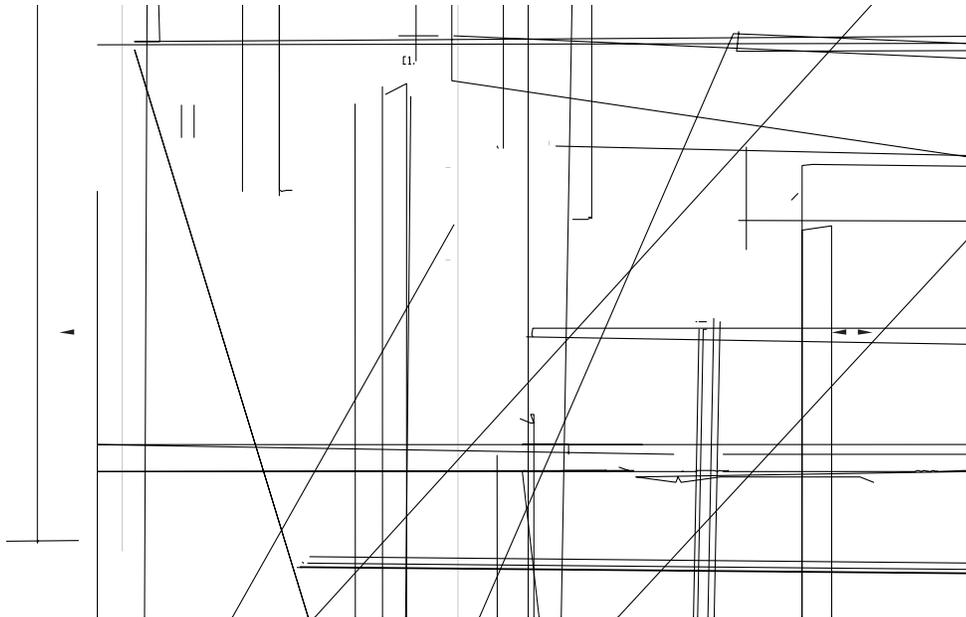
Package Information

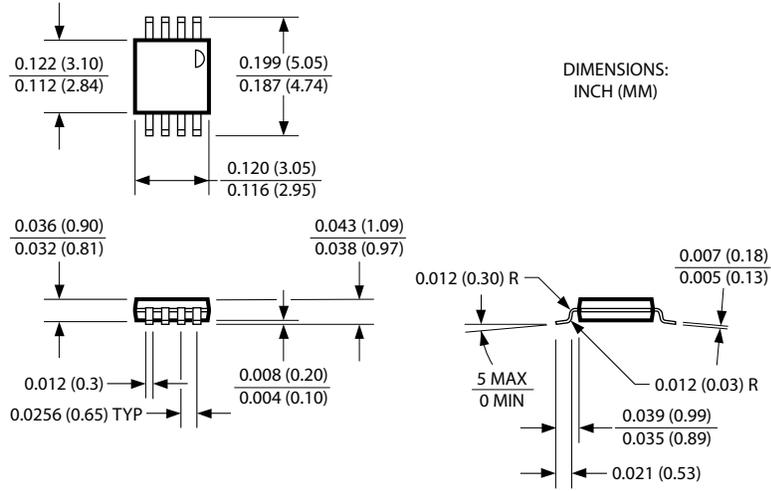


NOTE:

1. Dimensions and tolerances are as per ANSI Y14.6M, 1982.
2. Controlling dimension: Millimeters.
3. Dimensions are exclusive of mold flash and gate burr.
4. All specification comply to Jedec spec TO261 Issue C.

SOT-223 (S)





8-Pin MSOP (MM)