

## ■ General Description

The AME8550 series are highly precise, low power consumption voltage detectors, manufactured using CMOS and fuse trimming technologies. Detect voltage is extremely accurate with minimal temperature drift.

Both CMOS and N channel open drain output configurations are available.

## ■ Features

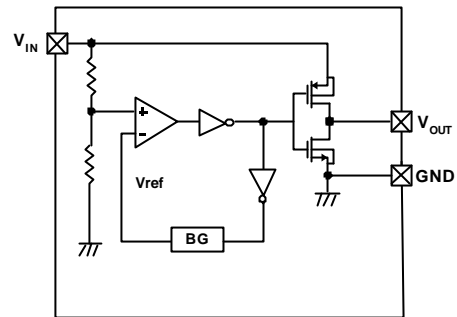
- Highly Accurate:  $\pm 2\%$
- Low Power Consumption: TYP 0.8 $\mu$ A ( $V_{IN}=1.5V$ )
- Detect Voltage Range: 1.6V to 6.0V in 0.1V Increments
- Operating Voltage Range: 1.2V to 6.5V
- Detect Voltage Temperature Characteristics: TYP  $\pm 100\text{ppm}/^\circ\text{C}$
- Output Configuration: N-channel Open Drain or CMOS
- Ultra Small Package :  
SOT-23/TSOT-23 (150mW)  
SOT-25/TSOT-25 (150mW)  
SOT-89 (500mW)  
SC-70 (100mW)
- Add an External Capacitor to Perform an  $\mu$ P Reset.
- All AME' s Lead Free Products Meet RoHS Standards

## ■ Applications

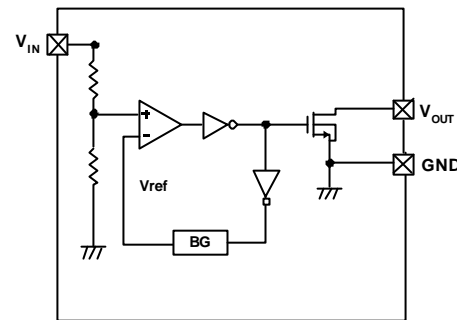
- Microprocessor Reset Circuitry
- Memory Battery Back-up Circuits
- Power-on Reset Circuits
- Power Failure Detection
- System Battery Life and Charge Voltage Monitors

## ■ Functional Block Diagram

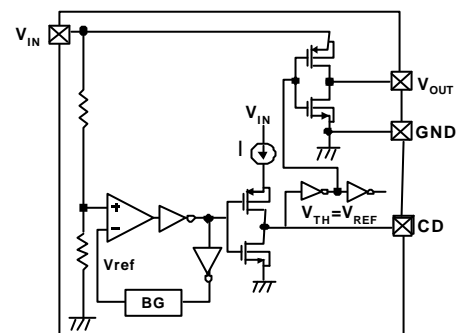
(1) CMOS Output without Delay



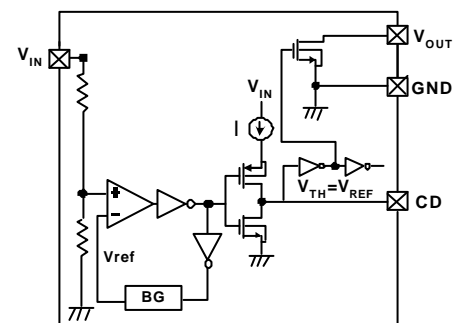
(2) Nch Open Drain Output without Delay



(3) CMOS Output with Delay



(4) Nch Open Drain Output with Delay

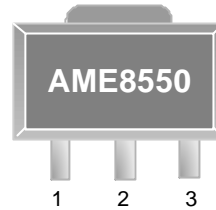


**Pin Configuration**
**Without Delay Time**
**SOT-23/TSOT-23  
Top View**

**AME8550AEETXXXX**

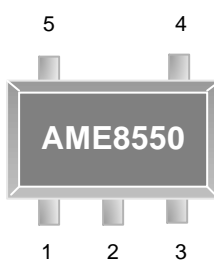
1. OUT
2. GND
3. IN

\* Die Attach:  
Non-Conductive Epoxy

**SOT-89  
Top View**

**AME8550AEFTXXXX**

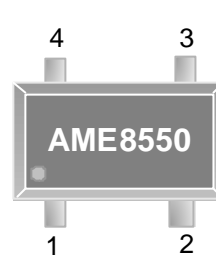
1. OUT
2. IN(TAB)
3. GND

\* Die Attach:  
Non-Conductive Epoxy

**SOT-25/TSOT-25  
Top View**

**AME8550CEEVXXXX**

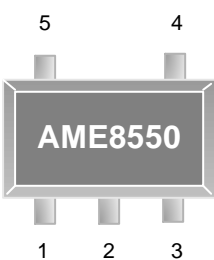
1. OUT
2. IN
3. GND
4. NC
5. NC

\* Die Attach:  
Non-Conductive Epoxy

**SC-70-4  
Top View**

**AME8550AEIUXXXX**

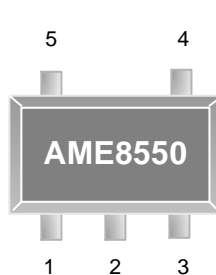
1. OUT
2. IN
3. NC
4. GND

\* Die Attach:  
Non-Conductive Epoxy

**With Delay Time**
**SOT-25/TSOT-25  
Top View**

**AME8550AEEVXXXX**

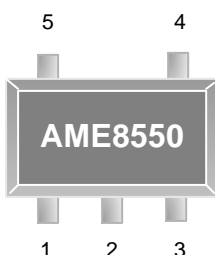
1. OUT
2. IN
3. GND
4. CD
5. NC

\* Die Attach:  
Non-Conductive Epoxy

**SOT-25/TSOT-25  
Top View**

**AME8550BEEVXXXX**

1. OUT
2. IN
3. GND
4. NC
5. CD

\* Die Attach:  
Non-Conductive Epoxy

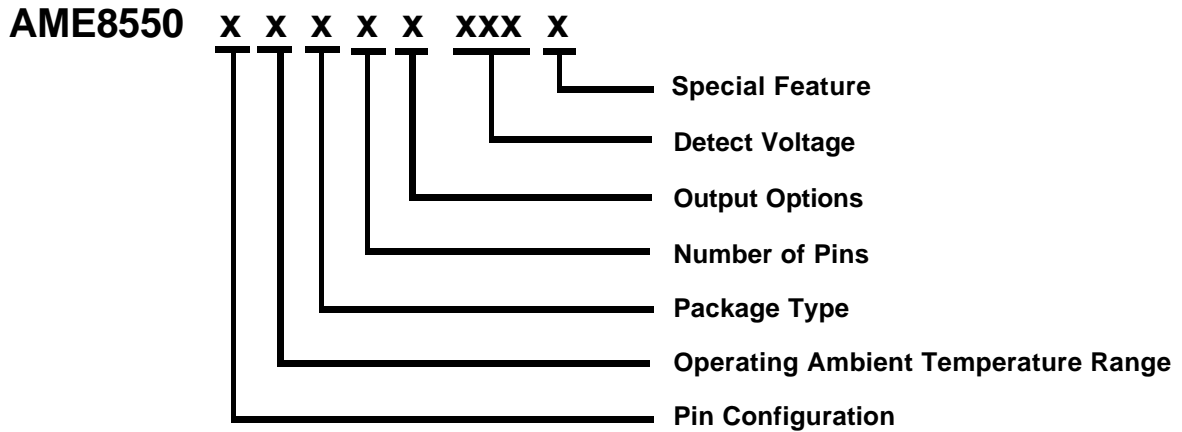
**SC-70-5  
Top View**

**AME8550AEIVXXXX**

1. OUT
2. IN
3. CD
4. NC
5. GND

\* Die Attach:  
Non-Conductive Epoxy

**■ Ordering Information**

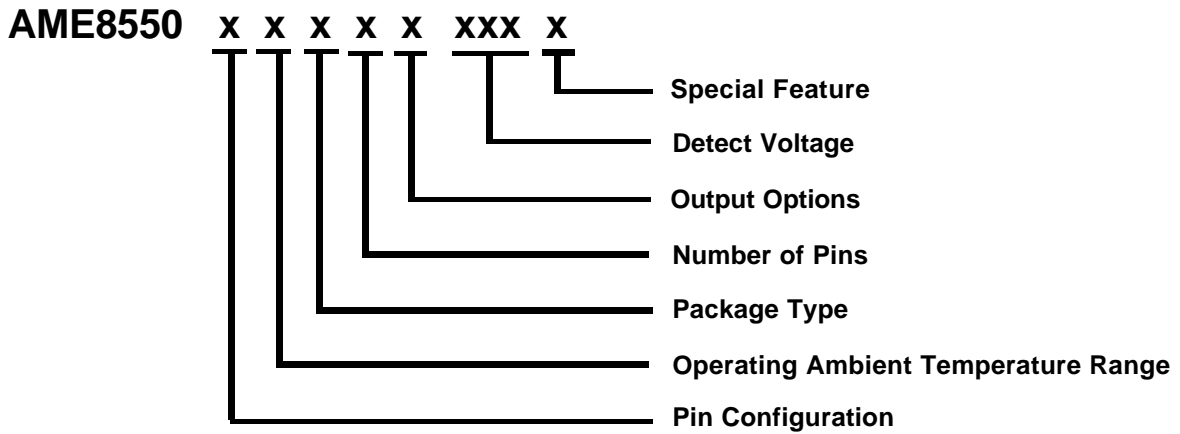
- Without Delay Time



Pin Configuration	Operating Ambient Temperature Range	Package Type	Number of Pins	Output Options	Detect Voltage	Special Feature
A 1. OUT (SOT-23) 2. GND (TSOT-23) 3. IN  A 1. OUT (SOT-89) 2. IN 3. GND  A 1. OUT (SC-70-4) 2. IN 3. NC 4. GND  C 1. OUT (SOT-25) 2. IN (TSOT-25) 3. GND 4. NC 5. NC	E: -40°C to +85°C	E: SOT-2X F: SOT-89 I: SC-70	T: 3 V: 5 U: 4	A: CMOS output without delay  B: Open-Drain output without delay	190: V=1.9V 210: V=2.1V 220: V=2.2V 230: V=2.3V 240: V=2.4V 250: V=2.5V 260: V=2.6V 270: V=2.7V 280: V=2.8V 290: V=2.9V 300: V=3.0V 330: V=3.3V 340: V=3.4V 360: V=3.6V 390: V=3.9V 420: V=4.2V 440: V=4.4V 460: V=4.6V 500: V=5.0V	Y: Lead free & Low profile Z: Lead free

**■ Ordering Information**

- With Delay Time



Pin Configuration	Operating Ambient Temperature Range	Package Type	Number of Pins	Output Options	Detect Voltage	Special Feature
<b>A</b> 1. OUT <small>(SOT-25)</small> 2. IN <small>(TSOT-25)</small> 3. GND 4. CD 5. NC  <b>B</b> 1. OUT <small>(SOT-25)</small> 2. IN <small>(TSOT-25)</small> 3. GND 4. NC 5. CD  <b>A</b> 1. OUT <small>(SC-70-5)</small> 2. IN 3. CD 4. NC 5. GND	E: -40°C to +85°C	E: SOT-2X I: SC-70	V: 5	C: CMOS output with delay  D: Open-Drain output with delay	190: V=1.9V 210: V=2.1V 220: V=2.2V 230: V=2.3V 240: V=2.4V 250: V=2.5V 260: V=2.6V 270: V=2.7V 280: V=2.8V 290: V=2.9V 300: V=3.0V 340: V=3.4V 360: V=3.6V 370: V=3.7V 420: V=4.2V 440: V=4.4V 460: V=4.6V 500: V=5.0V	Y: Lead free & Low profile Z: Lead free



## AME8550

## Voltage Detector

### ■ Pin Description

Pin Name	Pin Description
IN	Supply Voltage Input
GND	Ground
OUT	Output
NC	No Connection
CD	Connect an external capacitor when delay function is needed

### ■ Ordering Information

Part Number	Marking*	Detect Voltage	Package	Operating Ambient Temperature Range
AME8550AEEVC190Z	AXOww	1.9V	SOT-25	-40°C to +85°C
AME8550AEEVC190Y	AXOww	1.9V	TSOT-25	-40°C to +85°C
AME8550AEEVD190Z	AZKww	1.9V	SOT-25	-40°C to +85°C
AME8550AEEVD190Y	AZKww	1.9V	TSOT-25	-40°C to +85°C
AME8550BEEVC190Z	AXPww	1.9V	SOT-25	-40°C to +85°C
AME8550BEEVC190Y	AXPww	1.9V	TSOT-25	-40°C to +85°C
AME8550BEEVD190Z	AZFww	1.9V	SOT-25	-40°C to +85°C
AME8550BEEVD190Y	AZFww	1.9V	TSOT-25	-40°C to +85°C
AME8550AEETB210Z	AXQww	2.1V	SOT-23	-40°C to +85°C
AME8550AEETB210Y	AXQww	2.1V	TSOT-23	-40°C to +85°C
AME8550AEFTB210Z	A8550A B210ww	2.1V	SOT-89	-40°C to +85°C
AME8550BEEVC210Z	BCNww	2.1V	SOT-25	-40°C to +85°C
AME8550BEEVC210Y	BCNww	2.1V	TSOT-25	-40°C to +85°C
AME8550CEEVB210Z	AXRww	2.1V	SOT-25	-40°C to +85°C
AME8550CEEVB210Y	AXRww	2.1V	TSOT-25	-40°C to +85°C

Note: ww represents the date code / w represents date code ( A thru Z ) : 2 work weeks per character and please refer to Date Code Rule on Package Dimension .

\* A line on top of the first letter represents lead free plating such as  $\overline{\text{A}}\text{XOww}$ .

Please consult AME sales office or authorized Rep./Distributor for the availability of output voltage and package type

**■ Ordering Information (contd.)**

Part Number	Marking*	Detect Voltage	Package	Operating Ambient Temperature Range
AME8550AEETA220Z	AWHww	2.2V	SOT-23	-40°C to +85°C
AME8550AEETA220Y	AWHww	2.2V	TSOT-23	-40°C to +85°C
AME8550AEFTA220Z	A8550A A220ww	2.2V	SOT-89	-40°C to +85°C
AME8550AEETB220Z	AWUww	2.2V	SOT-23	-40°C to +85°C
AME8550AEETB220Y	AWUww	2.2V	TSOT-23	-40°C to +85°C
AME8550AEFTB220Z	A8550A B220ww	2.2V	SOT-89	-40°C to +85°C
AME8550CEEVB220Z	AXSww	2.2V	SOT-25	-40°C to +85°C
AME8550CEEVB220Y	AXSww	2.2V	TSOT-25	-40°C to +85°C
AME8550AEEVD230Z	AYTww	2.3V	SOT-25	-40°C to +85°C
AME8550AEEVD230Y	AYTww	2.3V	TSOT-25	-40°C to +85°C
AME8550BEEVD230Z	AYUww	2.3V	SOT-25	-40°C to +85°C
AME8550BEEVD230Y	AYUww	2.3V	TSOT-25	-40°C to +85°C
AME8550AEETA240Z	AXTww	2.4V	SOT-23	-40°C to +85°C
AME8550AEETA240Y	AXTww	2.4V	TSOT-23	-40°C to +85°C
AME8550AEFTA240Z	A8550A A240ww	2.4V	SOT-89	-40°C to +85°C
AME8550CEEVA240Z	AXUww	2.4V	SOT-25	-40°C to +85°C
AME8550CEEVA240Y	AXUww	2.4V	TSOT-25	-40°C to +85°C
AME8550AEETB240Z	AXVww	2.4V	SOT-23	-40°C to +85°C
AME8550AEETB240Y	AXVww	2.4V	TSOT-23	-40°C to +85°C
AME8550AEFTB240Z	A8550A B240ww	2.4V	SOT-89	-40°C to +85°C
AME8550CEEVB240Z	AXWww	2.4V	SOT-25	-40°C to +85°C
AME8550CEEVB240Y	AXWww	2.4V	TSOT-25	-40°C to +85°C
AME8550AEEVD240Z	AXXww	2.4V	SOT-25	-40°C to +85°C
AME8550AEEVD240Y	AXXww	2.4V	TSOT-25	-40°C to +85°C
AME8550BEEVD240Z	AXYww	2.4V	SOT-25	-40°C to +85°C
AME8550BEEVD240Y	AXYww	2.4V	TSOT-25	-40°C to +85°C

**■ Ordering Information (contd.)**

Part Number	Marking*	Detect Voltage	Package	Operating Ambient Temperature Range
AME8550AEETB250Z	AXZww	2.5V	SOT-23	-40°C to +85°C
AME8550AEETB250Y	AXZww	2.5V	TSOT-23	-40°C to +85°C
AME8550AEFTB250Z	A8550A B250ww	2.5V	SOT-89	-40°C to +85°C
AME8550CEEVB250Z	AYAww	2.5V	SOT-25	-40°C to +85°C
AME8550CEEVB250Y	AYAww	2.5V	TSOT-25	-40°C to +85°C
AME8550AEEVD260Z	AYVww	2.6V	SOT-25	-40°C to +85°C
AME8550AEEVD260Y	AYVww	2.6V	TSOT-25	-40°C to +85°C
AME8550BEEVD260Z	AYWww	2.6V	SOT-25	-40°C to +85°C
AME8550BEEVD260Y	AYWww	2.6V	TSOT-25	-40°C to +85°C
AME8550AEETA270Z	AWIww	2.7V	SOT-23	-40°C to +85°C
AME8550AEETA270Y	AWIww	2.7V	TSOT-23	-40°C to +85°C
AME8550AEFTA270Z	A8550A A270ww	2.7V	SOT-89	-40°C to +85°C
AME8550AEETB270Z	AWVww	2.7V	SOT-23	-40°C to +85°C
AME8550AEETB270Y	AWVww	2.7V	TSOT-23	-40°C to +85°C
AME8550AEFTB270Z	A8550A B270ww	2.7V	SOT-89	-40°C to +85°C
AME8550CEEVB270Z	AYSww	2.7V	SOT-25	-40°C to +85°C
AME8550CEEVB270Y	AYSww	2.7V	TSOT-25	-40°C to +85°C
AME8550AEEVD270Z	AYXww	2.7V	SOT-25	-40°C to +85°C
AME8550AEEVD270Y	AYXww	2.7V	TSOT-25	-40°C to +85°C
AME8550BEEVD270Z	AYYww	2.7V	SOT-25	-40°C to +85°C
AME8550BEEVD270Y	AYYww	2.7V	TSOT-25	-40°C to +85°C
AME8550BEEVC270Z	BLRww	2.7V	SOT-25	-40°C to +85°C
AME8550AEETB280Z	AYBww	2.8V	SOT-23	-40°C to +85°C
AME8550AEETB280Y	AYBww	2.8V	TSOT-23	-40°C to +85°C
AME8550AEFTB280Z	A8550A B280ww	2.8V	SOT-89	-40°C to +85°C
AME8550CEEVB280Z	AYCww	2.8V	SOT-25	-40°C to +85°C

**■ Ordering Information (contd.)**

Part Number	Marking*	Detect Voltage	Package	Operating Ambient Temperature Range
AME8550CEEVB280Y	AYCww	2.8V	TSOT-25	-40°C to +85°C
AME8550AEEVC290Z	AYDww	2.9V	SOT-25	-40°C to +85°C
AME8550AEEVC290Y	AYDww	2.9V	TSOT-25	-40°C to +85°C
AME8550BEEVC290Z	AYEww	2.9V	SOT-25	-40°C to +85°C
AME8550BEEVC290Y	AYEww	2.9V	TSOT-25	-40°C to +85°C
AME8550AEETA300Z	AYFww	3.0V	SOT-23	-40°C to +85°C
AME8550AEETA300Y	AYFww	3.0V	TSOT-23	-40°C to +85°C
AME8550AEFTA300Z	A8550A A300ww	3.0V	SOT-89	-40°C to +85°C
AME8550CEEVA300Z	AYGww	3.0V	SOT-25	-40°C to +85°C
AME8550CEEVA300Y	AYGww	3.0V	TSOT-25	-40°C to +85°C
AME8550AEETB340Z	AYHww	3.4V	SOT-23	-40°C to +85°C
AME8550AEETB340Y	AYHww	3.4V	TSOT-23	-40°C to +85°C
AME8550AEFTB340Z	A8550A B340ww	3.4V	SOT-89	-40°C to +85°C
AME8550CEEVB340Z	AYlww	3.4V	SOT-25	-40°C to +85°C
AME8550CEEVB340Y	AYlww	3.4V	TSOT-25	-40°C to +85°C
AME8550AEEVD360Z	AYJww	3.6V	SOT-25	-40°C to +85°C
AME8550AEEVD360Y	AYJww	3.6V	TSOT-25	-40°C to +85°C
AME8550BEEVD360Z	AYKww	3.6V	SOT-25	-40°C to +85°C
AME8550BEEVD360Y	AYKww	3.6V	TSOT-25	-40°C to +85°C
AME8550AEIUA390Z	BLMw	3.9V	SC-70-4	-40°C to +85°C
AME8550BEEVD420Z	AZXww	4.2V	SOT-25	-40°C to +85°C
AME8550BEEVD420Y	AZXww	4.2V	TSOT-25	-40°C to +85°C
AME8550AEFTB440Z	A8550A B440ww	4.4V	SOT-89	-40°C to +85°C
AME8550AEETB440Z	AYLww	4.4V	SOT-23	-40°C to +85°C
AME8550AEETB440Y	AYLww	4.4V	TSOT-23	-40°C to +85°C
AME8550CEEVB440Z	AYMww	4.4V	SOT-25	-40°C to +85°C
AME8550CEEVB440Y	AYMww	4.4V	TSOT-25	-40°C to +85°C

**■ Ordering Information (contd.)**

Part Number	Marking*	Detect Voltage	Package	Operating Ambient Temperature Range
AME8550AEEVC460Z	AYNww	4.6V	SOT-25	-40°C to +85°C
AME8550AEEVC460Y	AYNww	4.6V	TSOT-25	-40°C to +85°C
AME8550BEEVC460Z	AYOww	4.6V	SOT-25	-40°C to +85°C
AME8550BEEVC460Y	AYOww	4.6V	TSOT-25	-40°C to +85°C
AME8550AEFTA500Z	A8550A A500ww	5.0V	SOT-89	-40°C to +85°C
AME8550AEIVD280Z	BDGw	2.8V	SC-70-5	-40°C to +85°C
AME8550CEEVB300Z	BEAww	3.0V	SOT-25	-40°C to +85°C
AME8550CEEVB300Y	BEAww	3.0V	TSOT-25	-40°C to +85°C
AME8550AEETA390Z	BDKww	3.9V	SOT-23	-40°C to +85°C
AME8550AEETA390Y	BDKww	3.9V	TSOT-23	-40°C to +85°C
AME8550AEETA340Z	BIZww	3.4V	SOT-23	-40°C to +85°C
AME8550BEEVC240Z	BDHww	2.4V	SOT-25	-40°C to +85°C
AME8550BEEVC240Y	BDHww	2.4V	TSOT-25	-40°C to +85°C
AME8550CEEVB270Z	AYSww	2.7V	SOT-25	-40°C to +85°C
AME8550CEEVB270Y	AYSww	2.7V	TSOT-25	-40°C to +85°C
AME8550BEEVD280Z	BKOww	2.8V	SOT-25	-40°C to +85°C
AME8550BEEVD280Y	BKOww	2.8V	TSOT-25	-40°C to +85°C
AME8550CEEVA270Z	BKUww	2.7V	SOT-25	-40°C to +85°C
AME8550AEIVD300Z	BRVw	3.0V	SC-70-5	-40°C to +85°C
AME8550AEIVD340Z	BRWw	3.4V	SC-70-5	-40°C to +85°C
AME8550AEIVD360Z	BTRw	3.6V	SC-70-5	-40°C to +85°C
AME8550BEEVD370Z	BTTww	3.7V	SOT-25	-40°C to +85°C
AME8550AEIUA270Z	BVMw	2.7V	SC-70-4	-40°C to +85°C
AME8550AEETB330Z	BDMww	3.3V	SOT-23	-40°C to +85°C
AME8550AEETA330Z	CAAww	3.3V	SOT-23	-40°C to +85°C
AME8550AEETB500Z	BZYww	5.0V	SOT-23	-40°C to +85°C

**■ Absolute Maximum Ratings**

Parameter		Symbol	Maximum	Unit
Input Voltage		$V_{IN}$	7	V
Output Current		$I_{OUT}$	50	mA
Output Voltage	CMOS	$V_{OUT}$	GND -0.3 to $V_{IN} + 0.3$	V
	Nch open drain		GND -0.3 to 7	
ESD Classification		C*		

Caution: Stress above the listed absolute rating may cause permanent damage to the device.

\*HBM C:4000V+

**■ Recommed Operating Condition**

Parameter	Symbol	Maximum	Unit
Ambient Temperature Range	$T_A$	-40 to +85	°C
Junction Temperature Range	$T_J$	- 40 to +125	
Storage Temperature Range	$T_{STG}$	- 65 to +150	

**■ Thermal Information**

Parameter	Package	Die Attach	Symbol	Maximum	Unit
Thermal Resistance (Junction to Case)	SOT-23* TSOT-23*	Non-Conductive Epoxy	$\theta_{JC}$	140	$^{\circ}\text{C}/\text{W}$
	SOT-25* TSOT-25*			140	
	SOT-89**			46	
Thermal Resistance (Junction to Ambient)	SOT-23 TSOT-23		$\theta_{JA}$	280	
	SOT-25 TSOT-25			280	
	SOT-89			180	
Internal Power Dissipation	SOT-23 TSOT-23		$P_D$	400	mW
	SOT-25 TSOT-25			400	
	SOT-89			550	
Maximum Junction Temperature				150	$^{\circ}\text{C}$
Solder Iron (10 Sec)***				350	$^{\circ}\text{C}$

\* Measure  $\theta_{JC}$  on backside center of tab.

\*\* Measure  $\theta_{JC}$  on center of molding compound if IC has no tab.

\*\*\* MIL-STD-202G 210F

**■ Electrical Specifications**
 $T_A = 25^\circ\text{C}, V_{DF}(T)=1.6 \text{ to } 6.0\text{V} \pm 2\%$ 

Parameter	Symbol	Test Condition	Min	Typ	Max	Units	
Detect Voltage	$V_{DF}$		$V_{DF}$ $\times 0.98$	$V_{DF}$	$V_{DF}$ $\times 1.02$	V	
Hysteresis Range	$V_{HYS} / V_{DF}$		2		8	%	
Supply Current	$I_{SS}$	$V_{IN}=V_{DF}+0.5\text{V}$	$1.5 < V_{IN} < 2.0$		0.9	2.7	$\mu\text{A}$
			$2.0 \leq V_{IN} < 3.0$		1.0	3.0	
			$3.0 \leq V_{IN} < 4.0$		1.1	3.2	
			$4.0 \leq V_{IN} \leq 5.0$		1.2	3.6	
			$5.0 < V_{IN} \leq 6.0$		2	4.0	
Operating Voltage	$V_{IN}$	$V_{DF}(T)=1.6\text{V to } 6.0\text{V}$	1.2		6.5	V	
Output Current	$I_{OUT}$	Nch $V_{IN}=V_{DF} \times 0.95$ $V_{DS}=0.5\text{V}$	$1.0 < V_{IN} < 2.0$	1.0	2.2		mA
			$2.0 \leq V_{IN} < 3.0$	3.0	7.7		
			$3.0 \leq V_{IN} < 4.0$	5.0	10.1		
			$4.0 \leq V_{IN} \leq 5.0$	6.0	11.5		
			$5.0 < V_{IN} \leq 6.0$	7.0	13.0		
		Pch $V_{DS}=2.1\text{V}$ $V_{IN}=7\text{V}$ (with CMOS output)		-10.0	-2.0		
Temperature Characteristics	$\frac{\Delta V_{DF}}{\Delta T_A \cdot V_{DF}}$	$-40^\circ\text{C} \leq T_A \leq +85^\circ\text{C}$		$\pm 100$		ppm/ $^\circ\text{C}$	
Propagation Time ( $V_{DR} \rightarrow V_{OUT}$ inversion)	tDLY				0.2	mS	

Note:

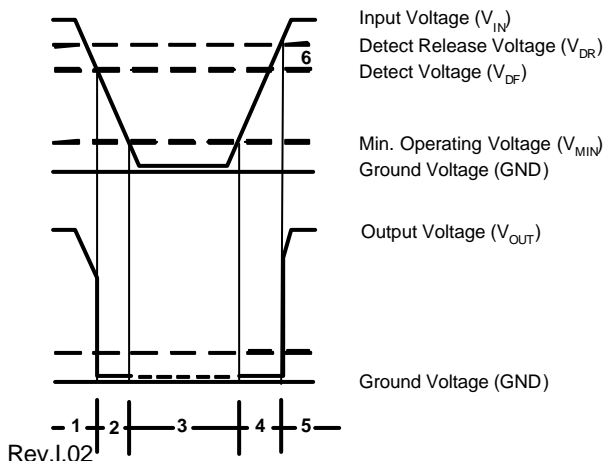
 $V_{DF}(T)$  : Established Detect Voltage Value

 Release Voltage :  $V_{DR} = V_{DF} + V_{HYS}$

### ■ Functional Description (CMOS output without delay)

1. When input voltage ( $V_{IN}$ ) rises above detect voltage ( $V_{DF}$ ), output voltage ( $V_{OUT}$ ) will be equal to  $V_{IN}$ .  
( A condition of high impedance exists with Nch open drain output configurations. )
2. When input voltage ( $V_{IN}$ ) falls below detect voltage ( $V_{DF}$ ), output voltage ( $V_{OUT}$ ) will be equal to the ground voltage (GND) level.
3. When input voltage ( $V_{IN}$ ) falls to a level below that of the minimum operating voltage ( $V_{MIN}$ ), output will become unstable. In this condition,  $V_{IN}$  will equal the pulled-up output ( should output be pulled-up.)
4. When input voltage ( $V_{IN}$ ) rises above the ground voltage (GND) level, output will be unstable at levels below the minimum operating voltage ( $V_{MIN}$ ). Between the  $V_{MIN}$  and detect release voltage ( $V_{DR}$ ) levels, the ground voltage (GND) level will be maintained.
5. When input voltage ( $V_{IN}$ ) rises above detect release voltage ( $V_{DR}$ ), output voltage ( $V_{OUT}$ ) will be equal to  $V_{IN}$ .  
( A condition of high impedance exists with Nch open drain output configurations. )
6. The difference between  $V_{DR}$  and  $V_{DF}$  represents the hysteresis range.

### ■ Timing Chart



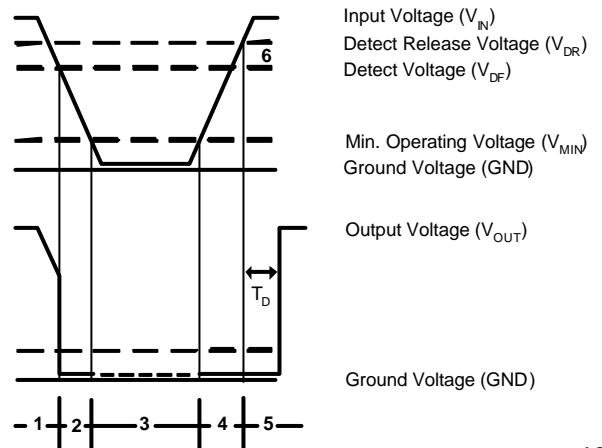
### ■ Functional Description (CMOS output with delay)

1. When input voltage ( $V_{IN}$ ) rises above detect voltage ( $V_{DF}$ ), output voltage ( $V_{OUT}$ ) will be equal to  $V_{IN}$ .  
( A condition of high impedance exists with Nch open drain output configurations. )
2. When input voltage ( $V_{IN}$ ) falls below detect voltage ( $V_{DF}$ ), output voltage ( $V_{OUT}$ ) will be equal to the ground voltage (GND) level.
3. When input voltage ( $V_{IN}$ ) falls to a level below that of the minimum operating voltage ( $V_{MIN}$ ), output will become unstable. In this condition,  $V_{IN}$  will equal the pulled-up output ( should output be pulled-up.)
4. When input voltage ( $V_{IN}$ ) rises above the ground voltage (GND) level, output will be unstable at levels below the minimum operating voltage ( $V_{MIN}$ ). Between the  $V_{MIN}$  and detect release voltage ( $V_{DR}$ ) levels, the ground voltage (GND) level will be maintained.
5. When input voltage ( $V_{IN}$ ) rises above detect release voltage ( $V_{DR}$ ), output voltage ( $V_{OUT}$ ) will be equal to  $V_{IN}$  after  $T_D$  delay time.  

$$Q = V \times C = I \times T_D$$

$$T = \frac{V \times C}{I} \quad (V = V_{REF})$$
 For Example,  $T_D = \frac{V_{REF} \times 1nF}{75nA}$ , where  $V_{REF} = 1.2V$  (typ.)  
 ( A condition of high impedance exists with Nch open drain output configurations. )
6. The difference between  $V_{DR}$  and  $V_{DF}$  represents the hysteresis range.

### ■ Timing Chart



### ■ Notes on Use

1. When a resistor is connected between the  $V_{IN}$  pin and the input with CMOS output configurations, oscillation may occur as a result of voltage drops at  $R_{IN}$  if load current ( $I_{OUT}$ ) exists. ( refer to 5 - (1) below )

2. When a resistor is connected between the  $V_{IN}$  pin and the input with CMOS output configurations, irrespective of Nch output configurations, oscillation may occur as a result of through current at the time of voltage release even if load current ( $I_{OUT}$ ) does not exist. ( refer to 5 - (1)(2) below )

3. With a resistor connected between the  $V_{IN}$  pin and the input, detect and release voltage will rise as a result of the IC' s supply current flowing through the  $V_{IN}$  pin.

4. In order to stabilise the IC' s operations, please ensure that  $V_{IN}$  pin' s input frequency' s rise and fall times are more than several  $\mu$  sec / V.

#### 5. Oscillation

##### (1) Output current oscillation with the CMOS output configuration

When the voltage applied at IN rises, release operations commence and the detector' s output voltage increases. Load current ( $I_{OUT}$ ) will flow at  $R_L$ . Because a voltage drop ( $R_{IN} \times I_{OUT}$ ) is produced at the  $R_{IN}$  resistor, located between the input (IN) and the  $V_{IN}$  pin, the load current will flow via the IC' s  $V_{IN}$  pin. The voltage drop will also lead to a fall in the voltage level at the  $V_{IN}$  pin. When the  $V_{IN}$  pin voltage level falls below the detect voltage level, detect operations will commence. Following detect operations, load current flow will cease and since voltage drop at  $R_{IN}$  will disappear, the voltage level at the  $V_{IN}$  pin will rise and release operations will begin over again.

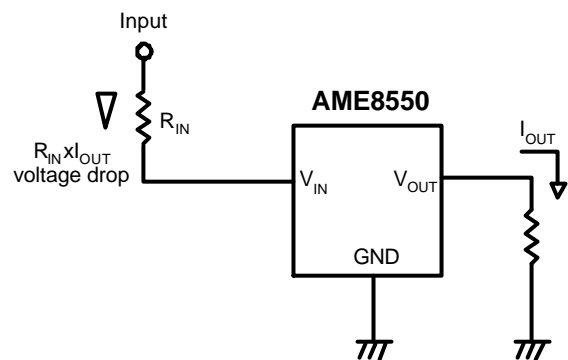
Oscillation may occur with this " release - detect - release" repetition.

Further, this condition will also appear via means of a similar mechanism during detect operations.

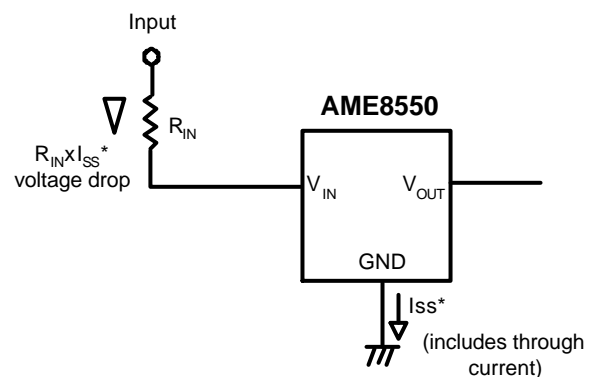
##### (2) Oscillation as a result of through current

Since the AME8550 series are CMOS IC' s, through current will flow when the IC' s internal circuit switching operates(during release and detect operations ).Consequently, oscillation is liable to occur as a result of drops in voltage at the through current' s resistor ( $R_{IN}$ ) during release voltage operations. ( refer to diagram 2 )

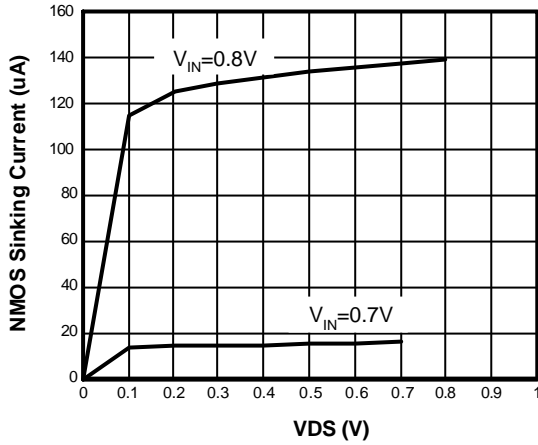
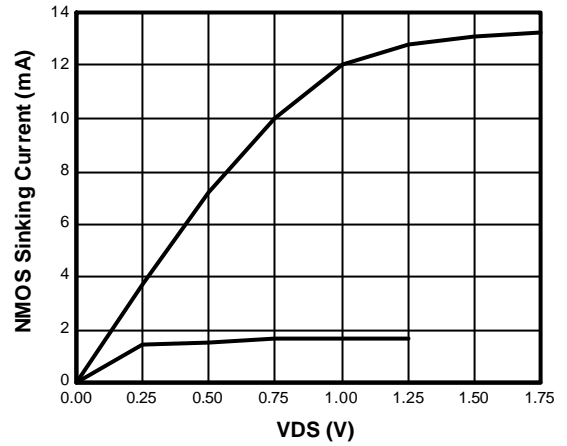
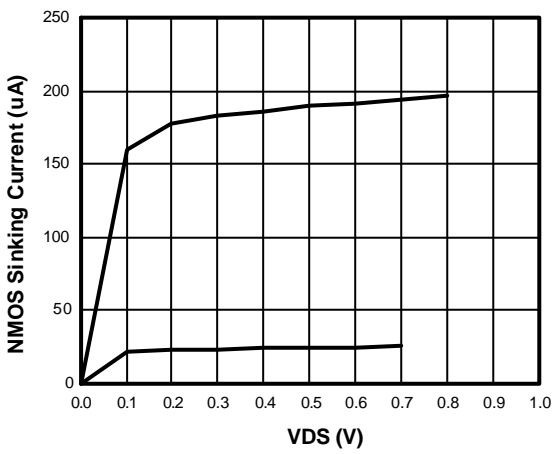
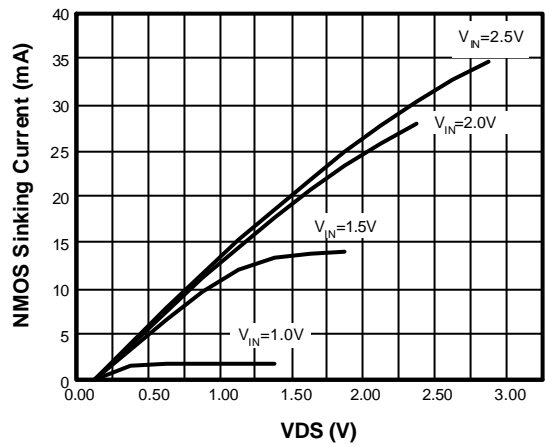
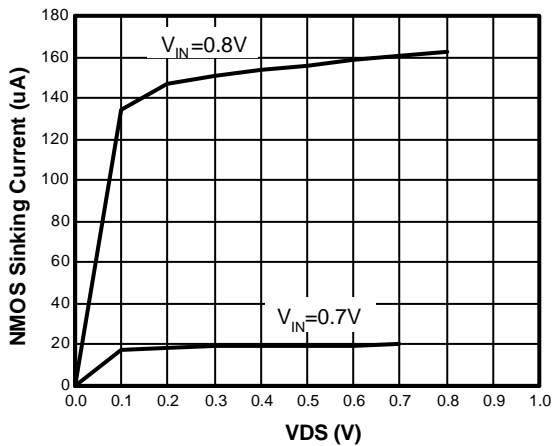
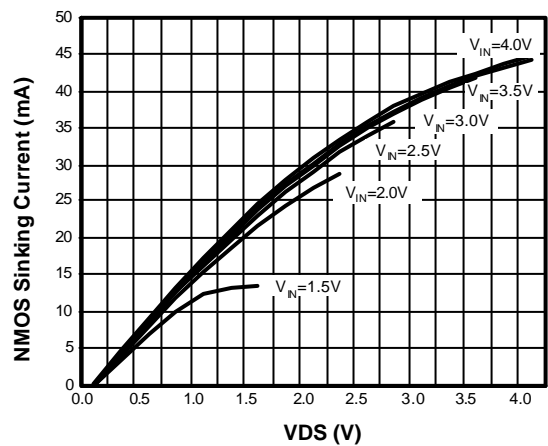
Since hysteresis exists during detect operations, oscillation is unlikely to occur.

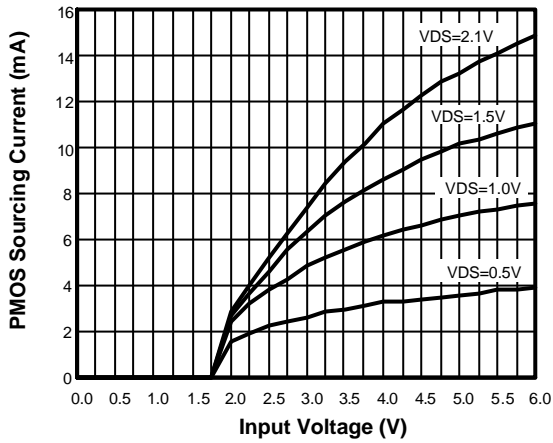
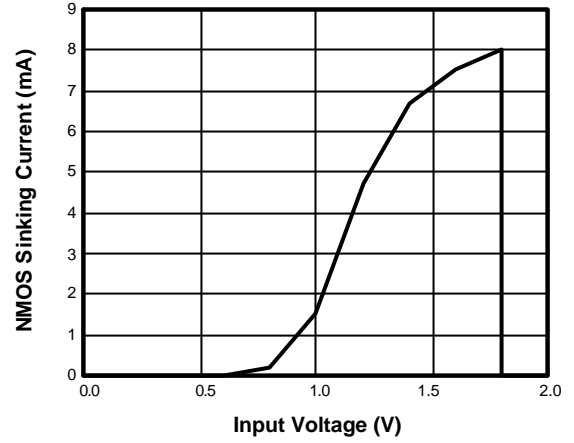
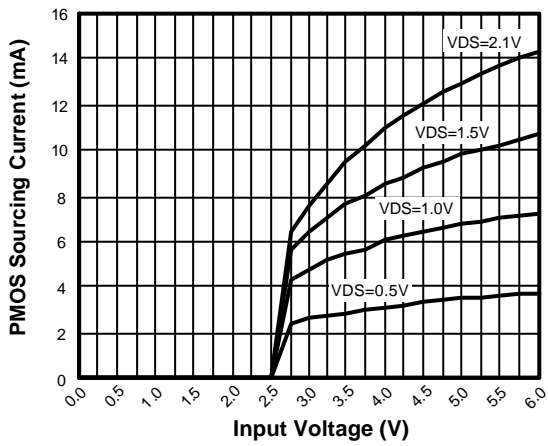
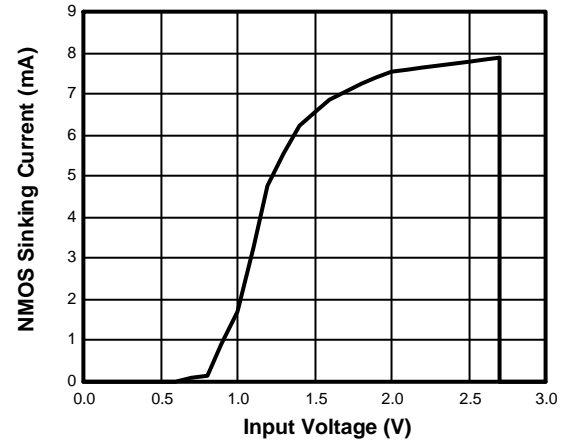
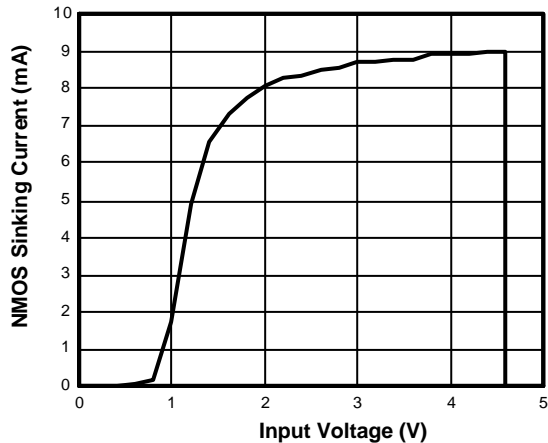
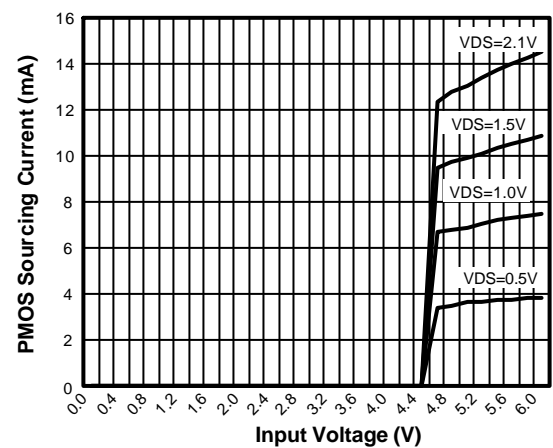


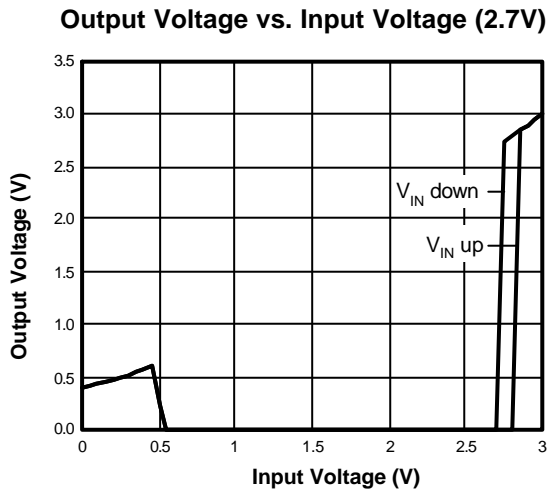
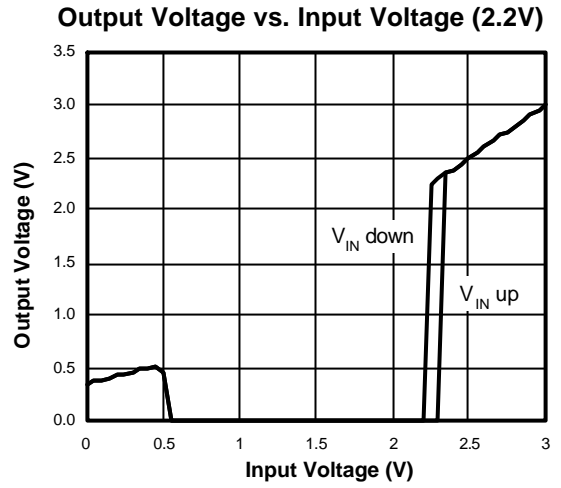
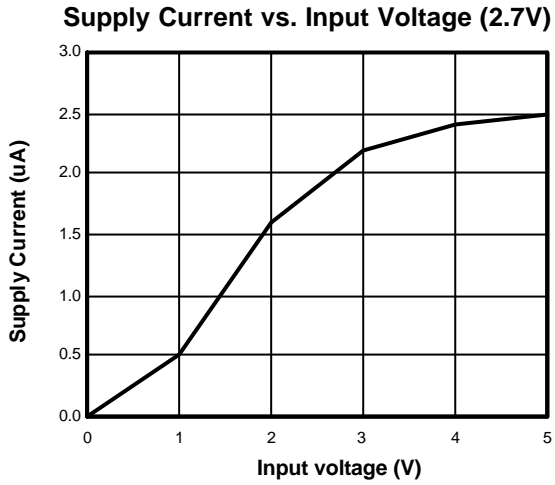
**Diagram1**



**Diagram2**

**■ Characterization Curve**
**AME8550-1.9V**

**AME8550-1.9V**

**AME8550-2.7V**

**AME8550AEETA270**

**AME8550-4.6V**

**AME8550-4.6V**


**■ Characterization Curve**
**AME8550-1.9V**

**AME8550-1.9V**

**AME8550AEETA270**

**AME8550-2.7V**

**AME8550-4.6V**

**AME8550-4.6V**


**■ Characterization Curve**


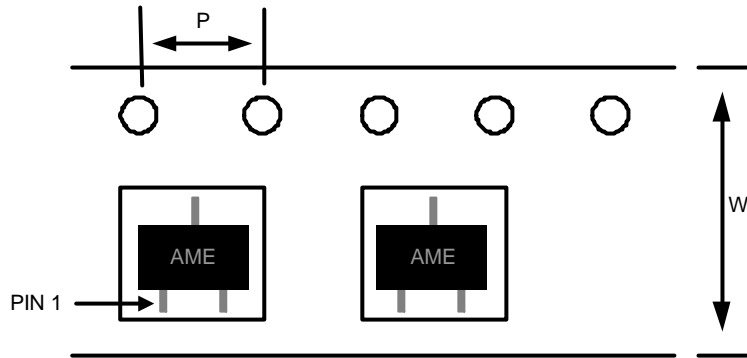
**■ Date Code Rule**

Marking			Date Code		Year
A	A	A	W	W	xxx0
A	A	A	W	<u>W</u>	xxx1
A	A	A	<u>W</u>	W	xxx2
A	A	A	<u>W</u>	<u>W</u>	xxx3
A	A	<u>A</u>	W	W	xxx4
A	A	<u>A</u>	W	<u>W</u>	xxx5
A	A	<u>A</u>	<u>W</u>	W	xxx6
A	A	<u>A</u>	<u>W</u>	<u>W</u>	xxx7
A	<u>A</u>	A	W	W	xxx8
A	<u>A</u>	A	W	<u>W</u>	xxx9

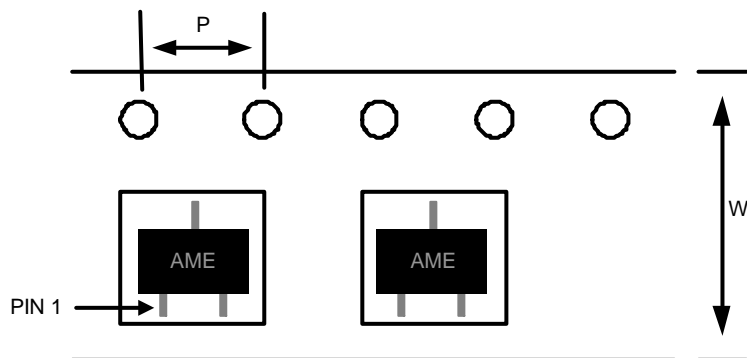
**For SC-70 Package Only**

Marking			Date Code	Year
A	A	A	W	xxx0
A	A	A	<u>W</u>	xxx1
A	A	<u>A</u>	W	xxx2
A	A	<u>A</u>	<u>W</u>	xxx3
A	<u>A</u>	A	W	xxx4
A	<u>A</u>	A	<u>W</u>	xxx5
A	<u>A</u>	<u>A</u>	W	xxx6
A	<u>A</u>	<u>A</u>	<u>W</u>	xxx7
<u>A</u>	A	A	W	xxx8
<u>A</u>	A	A	<u>W</u>	xxx9

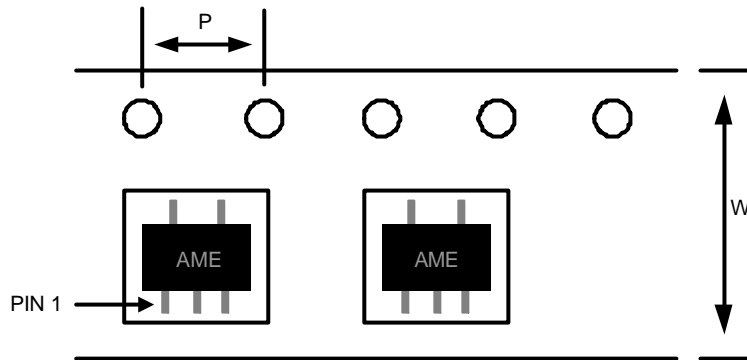
w: Work Week Code		
A: 01&02	K: 21&22	U: 41&42
B: 03&04	L: 23&24	V: 43&44
C: 05&06	M: 25&26	W: 45&46
D: 07&08	N: 27&28	X: 47&48
E: 09&10	O: 29&30	Y: 49&50
F: 11&12	P: 31&32	Z: 51&52
G: 13&14	Q: 33&34	
H: 15&16	R: 35&36	
I: 17&18	S: 37&38	
J: 19&20	T: 39&40	

**■ Tape and Reel Dimension**
**SOT-23**

**Carrier Tape, Number of Components Per Reel and Reel Size**

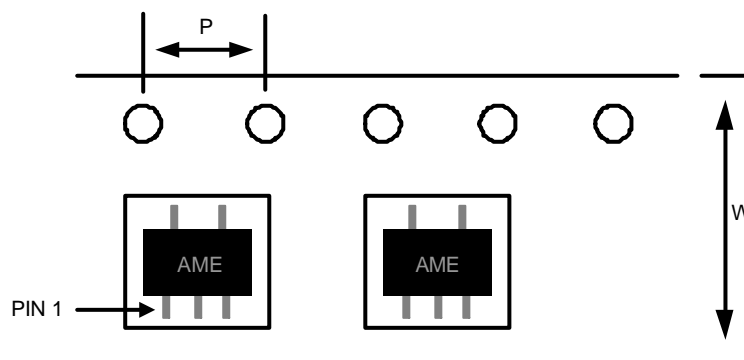
Package	Carrier Width (W)	Pitch (P)	Part Per Full Reel	Reel Size
SOT-23	8.0±0.1 mm	4.0±0.1 mm	3000pcs	180±1 mm

**TSOT-23**

**Carrier Tape, Number of Components Per Reel and Reel Size**

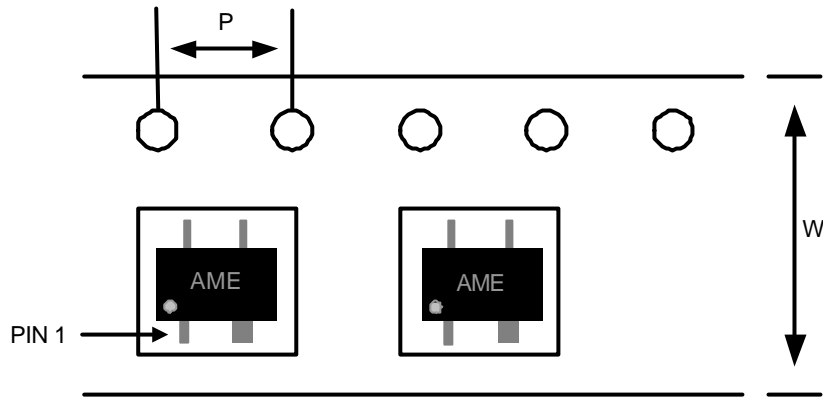
Package	Carrier Width (W)	Pitch (P)	Part Per Full Reel	Reel Size
TSOT-23	8.0±0.1 mm	4.0±0.1 mm	3000pcs	180±1 mm

**■ Tape and Reel Dimension**
**SOT-25**

**Carrier Tape, Number of Components Per Reel and Reel Size**

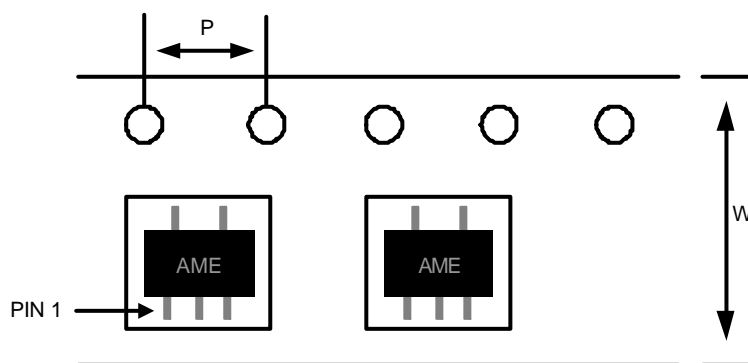
Package	Carrier Width (W)	Pitch (P)	Part Per Full Reel	Reel Size
SOT-25	8.0±0.1 mm	4.0±0.1 mm	3000pcs	180±1 mm

**TSOT-25**

**Carrier Tape, Number of Components Per Reel and Reel Size**

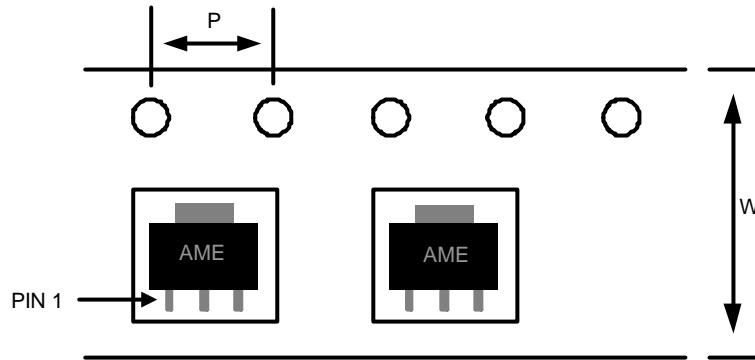
Package	Carrier Width (W)	Pitch (P)	Part Per Full Reel	Reel Size
TSOT-25	8.0±0.1 mm	4.0±0.1 mm	3000pcs	180±1 mm

**■ Tape and Reel Dimension**
**SC-70-4**

**Carrier Tape, Number of Components Per Reel and Reel Size**

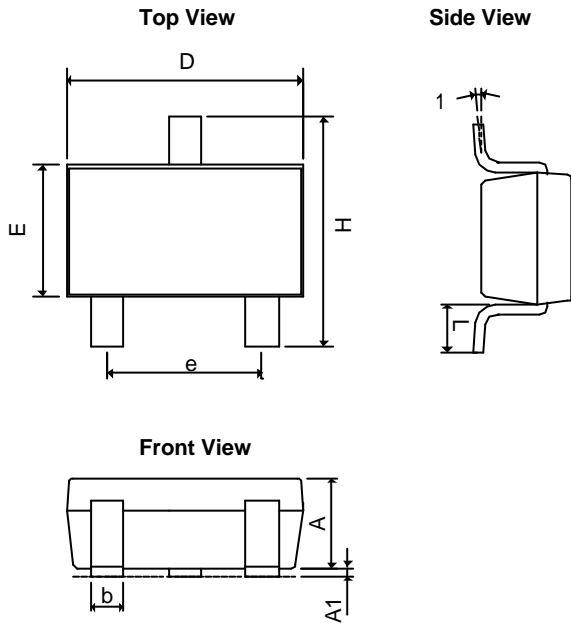
Package	Carrier Width (W)	Pitch (P)	Part Per Full Reel	Reel Size
SC-70-4	8.0±0.1 mm	4.0±0.1 mm	3000pcs	180±1 mm

**SC-70-5**

**Carrier Tape, Number of Components Per Reel and Reel Size**

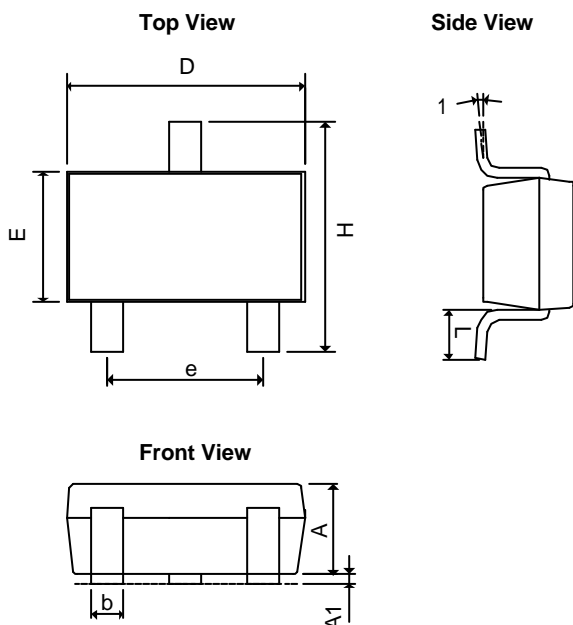
Package	Carrier Width (W)	Pitch (P)	Part Per Full Reel	Reel Size
SC-70-5	8.0±0.1 mm	4.0±0.1 mm	3000pcs	180±1 mm

**■ Tape and Reel Dimension**
**SOT-89**

**Carrier Tape, Number of Components Per Reel and Reel Size**

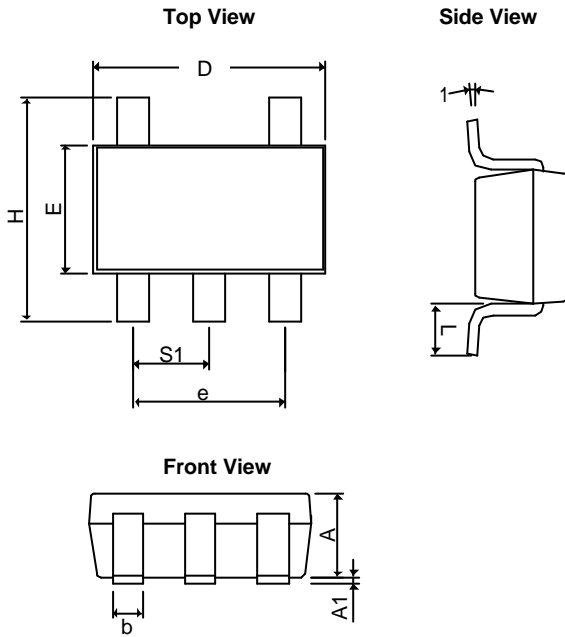
Package	Carrier Width (W)	Pitch (P)	Part Per Full Reel	Reel Size
SOT-89	12.0±0.1 mm	4.0±0.1 mm	1000pcs	180±1 mm

**■ Package Dimension**
**SOT-23**


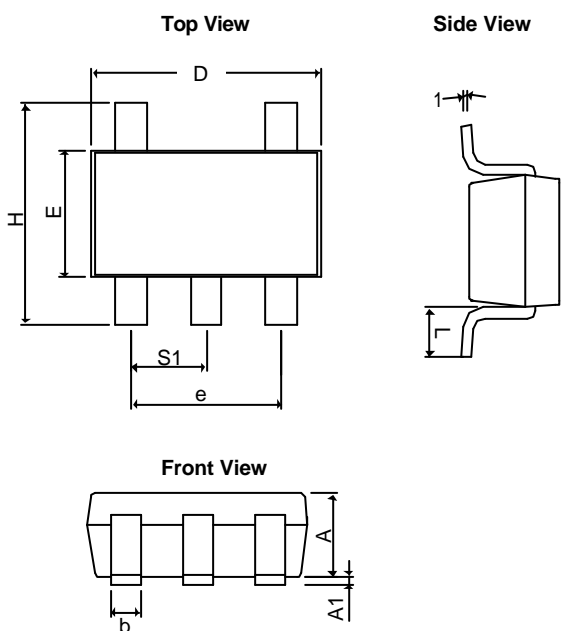
SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
<b>A</b>	1.00	1.40	0.0394	0.0551
<b>A<sub>1</sub></b>	0.00	0.15	0.0000	0.0059
<b>b</b>	0.35	0.50	0.0138	0.0197
<b>D</b>	2.70	3.10	0.1063	0.1220
<b>E</b>	1.40	1.80	0.0551	0.0709
<b>e</b>	1.90 BSC		0.0748 BSC	
<b>H</b>	2.40	3.00	0.09449	0.11811
<b>L</b>	0.35BSC		0.0138BSC	
<b>q1</b>	0°	10°	0°	10°

**TSOT-23**


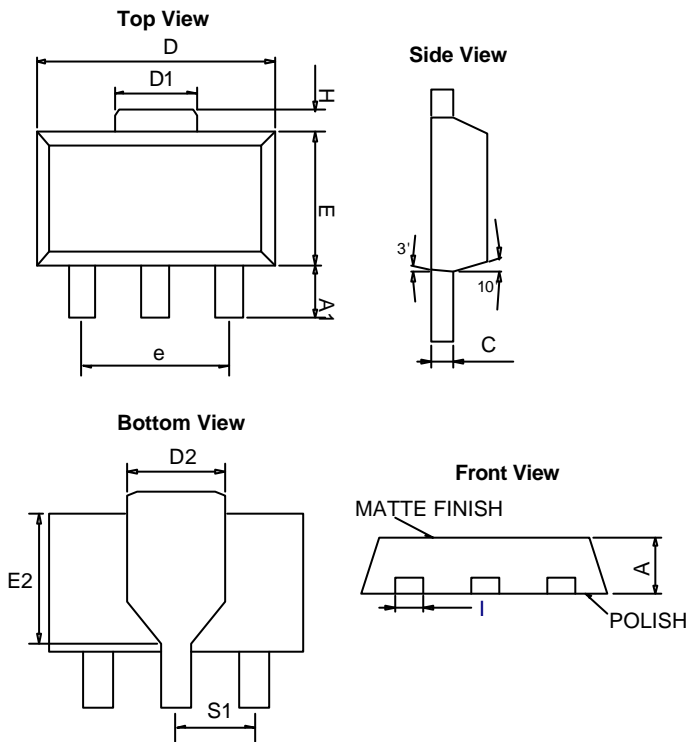
SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
<b>A+A<sub>1</sub></b>	0.80	1.30	0.0315	0.0512
<b>b</b>	0.35	0.50	0.0138	0.0197
<b>D</b>	2.70	3.10	0.1063	0.1220
<b>E</b>	1.20	1.80	0.0472	0.0709
<b>e</b>	1.90 BSC		0.0748 BSC	
<b>H</b>	2.40	3.00	0.09449	0.11811
<b>L</b>	0.35BSC		0.0138BSC	
<b>q1</b>	0°	10°	0°	10°

**■ Package Dimension**
**SOT-25**


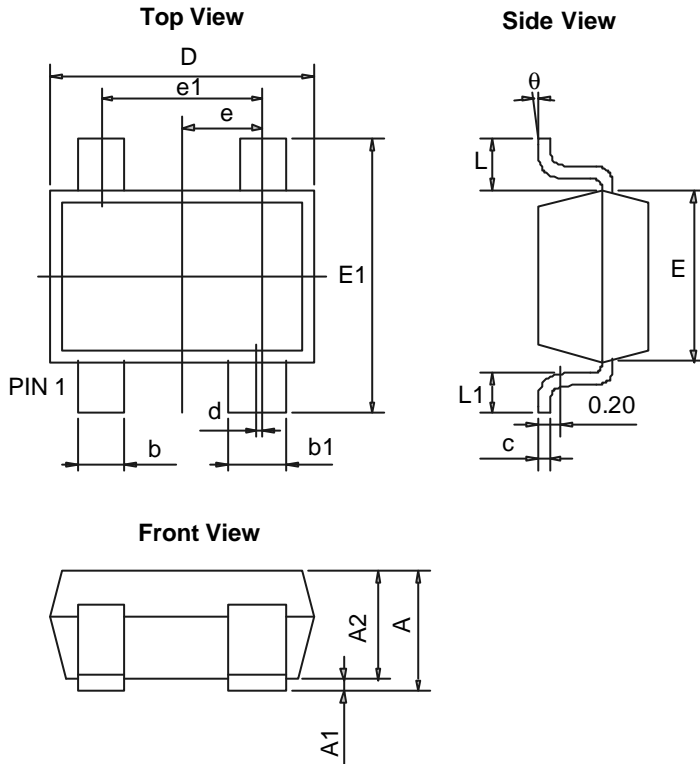
SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
<b>A</b>	1.20REF		0.0472REF	
<b>A<sub>1</sub></b>	0.00	0.15	0.0000	0.0059
<b>b</b>	0.30	0.55	0.0118	0.0217
<b>D</b>	2.70	3.10	0.1063	0.1220
<b>E</b>	1.40	1.80	0.0551	0.0709
<b>e</b>	1.90 BSC		0.07480 BSC	
<b>H</b>	2.60	3.00	0.10236	0.11811
<b>L</b>	0.37BSC		0.0146BSC	
<b>q1</b>	0°	10°	0°	10°
<b>S<sub>1</sub></b>	0.95BSC		0.0374BSC	

**TSOT-25**


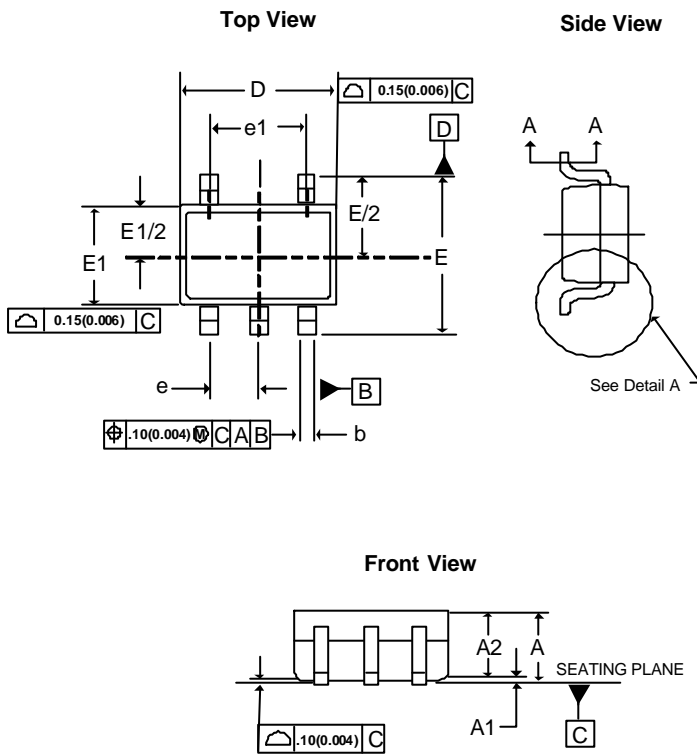
SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
<b>A+A<sub>1</sub></b>	0.90	1.25	0.0354	0.0492
<b>b</b>	0.30	0.50	0.0118	0.0197
<b>D</b>	2.70	3.10	0.1063	0.1220
<b>E</b>	1.40	1.80	0.0551	0.0709
<b>e</b>	1.90 BSC		0.07480 BSC	
<b>H</b>	2.40	3.00	0.09449	0.11811
<b>L</b>	0.35BSC		0.0138BSC	
<b>q1</b>	0°	10°	0°	10°
<b>S<sub>1</sub></b>	0.95BSC		0.0374BSC	

**■ Package Dimension**
**SOT-89**


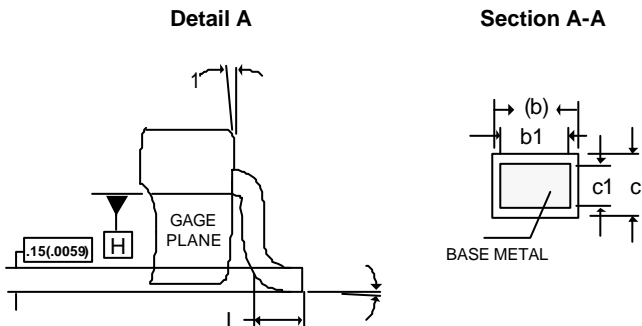
SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
<b>A</b>	1.39	1.60	0.05472	0.06299
<b>A<sub>1</sub></b>	0.8 REF		0.03150 REF	
<b>C</b>	0.35	0.44	0.01378	0.01732
<b>D</b>	4.39	4.60	0.17283	0.18110
<b>D<sub>1</sub></b>	1.35	1.83	0.05315	0.07205
<b>E</b>	2.28	2.60	0.08976	0.10236
<b>I</b>	0.36	0.56	0.01417	0.02204
<b>e</b>	3.00 REF		0.11811 REF	
<b>H</b>	0.70 REF		0.02756 REF	
<b>S<sub>1</sub></b>	1.50 REF		0.05906 REF	
<b>E<sub>2</sub></b>	2.05	2.60	0.08071	0.10236
<b>D<sub>2</sub></b>	1.50	1.85	0.05905	0.07283

**SC-70-4**


SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
<b>A</b>	0.900	1.100	0.035	0.043
<b>A1</b>	0.000	0.100	0.000	0.004
<b>A2</b>	0.900	1.000	0.035	0.039
<b>b</b>	0.250	0.400	0.010	0.016
<b>b1</b>	0.350	0.500	0.014	0.020
<b>c</b>	0.080	0.150	0.003	0.006
<b>d</b>	0.050 TYP		0.002 TYP	
<b>D</b>	2.000	2.200	0.079	0.087
<b>E</b>	1.150	1.350	0.045	0.053
<b>E1</b>	2.150	2.450	0.085	0.096
<b>e</b>	0.650 TYP		0.026 TYP	
<b>e1</b>	1.200	1.400	0.047	0.055
<b>L</b>	0.525 REF		0.021 REF	
<b>L1</b>	0.260	0.460	0.010	0.018
<b>q</b>	0°	8°	0°	8°

**■ Package Dimension**
**SC-70-5**


SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.80	1.10	0.031	0.043
A1	0.00	0.10	0.000	0.004
A2	0.80	1.00	0.031	0.040
b	0.15	0.30	0.006	0.012
b1	0.15	0.25	0.006	0.010
c	0.08	0.25	0.003	0.010
c1	0.08	0.20	0.003	0.008
D	1.90	2.15	0.074	0.084
E	2.00	2.20	0.078	0.086
E1	1.15	1.35	0.045	0.055
e	0.65BSC		0.0255BSC	
e1	1.30BSC		0.0512BSC	
L	0.26	0.46	0.010	0.018
q1	0°	8°	0°	8°
q2	4°	10°	4°	10°





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Life Support Policy:

These products of AME, Inc. are not authorized for use as critical components in life-support devices or systems, without the express written approval of the president of AME, Inc.

AME, Inc. reserves the right to make changes in the circuitry and specifications of its devices and advises its customers to obtain the latest version of relevant information.

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