■ 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

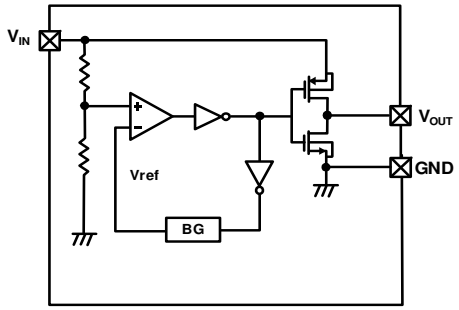
- Highly Accurate: ± 2%
- Low Power Consumption: TYP 0.8μA (V_{IN}=1.5V)
- Detect Voltage Range: 1.6V to 4.6V in 0.1V Increments
- Operating Voltage Range: 1.2V to 6.5V
- Detect Voltage Temperature Characteristice: TYP ± 100ppm/°C
- Output Configuration: N-channel Open Drain or CMOS
- Ultra Small Package:
  SOT-23 (150mW)
  SOT-25 (150mW)
  SOT-89 (500mW)
  SC-70 (100mW)
- Add an External Capacitor or Perform an μP Preset.
- Green Product Meet RoHS Standards

■ Applications

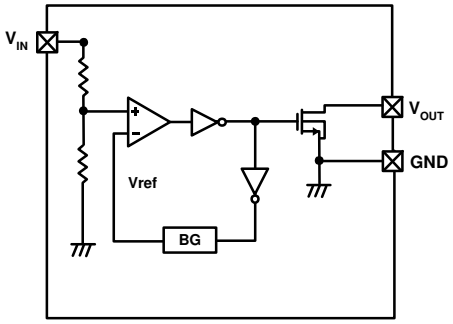
- Microprocessor Reset Circuitry
- Memory Battery Back-up Circuits
- Power-on Reset Circuits
- Power Failure Detection
- System Battery Life and Charge Voltage Monitors

■ Functional Block Diagram

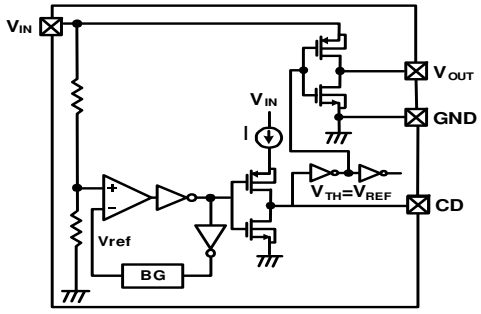
(1) CMOS Output without Delay



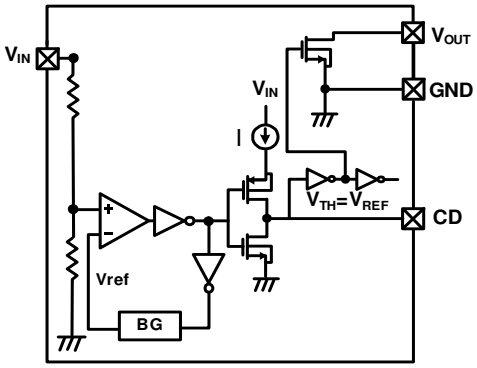
(2) Nch Open Drain Output without Delay



(3) CMOS Output with Delay



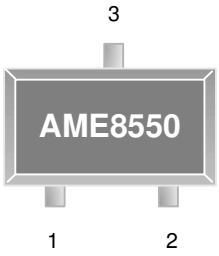
(4) Nch Open Drain Output with Delay



■ Pin Configuration

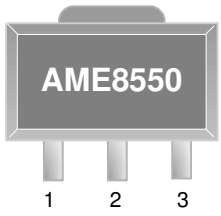
● Without Delay Time

SOT-23
Top View



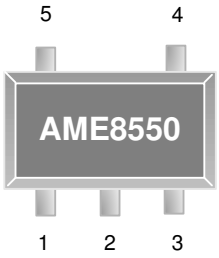
AME8550AEETXXXX
1. OUT
2. GND
3. IN
*** Die Attach:**
Non-Conductive Epoxy

SOT-89
Top View



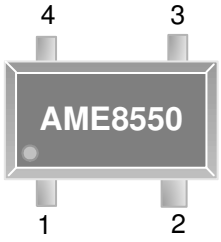
AME8550AEFTXXXX
1. OUT
2. IN(TAB)
3. GND
*** Die Attach:**
Non-Conductive Epoxy

SOT-25
Top View



AME8550CEEVXXXX
1. OUT
2. IN
3. GND
4. NC
5. NC
*** Die Attach:**
Non-Conductive Epoxy

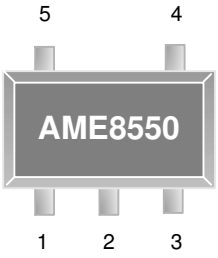
SC-70-4
Top View



AME8550AEIUXXXX
1. OUT
2. IN
3. NC
4. GND
*** Die Attach:**
Non-Conductive Epoxy

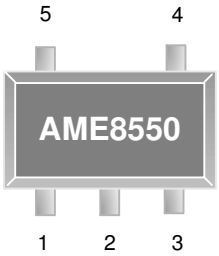
● With Delay Time

SOT-25
Top View



AME8550AEEVXXXX
1. OUT
2. IN
3. GND
4. CD
5. NC
*** Die Attach:**
Non-Conductive Epoxy

SOT-25
Top View

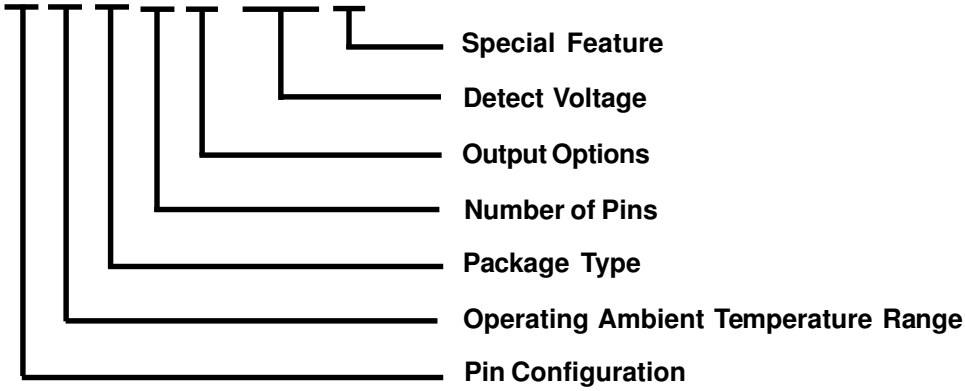


AME8550BEEVXXXX
1. OUT
2. IN
3. GND
4. NC
5. CD
*** Die Attach:**
Non-Conductive Epoxy

■ Ordering Information

● Without Delay Time

AME8550 x x x x x xxx x



Pin Configuration	Operating Ambient Temperature Range	Package Type	Number of Pins	Output Options	Detect Voltage	Special Feature
A (SOT-23) 1. OUT 2. GND 3. IN A (SOT-89) 1. OUT 2. IN 3. GND A (SC-70-4) 1.OUT 2.IN 3.NC 4GND C (SOT-25) 1. OUT 2. IN 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 without delay	180: V=1.8V 190: V=1.9V 200: V=2.0V 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	Z: Lead free

■ Ordering Information

● With Delay Time

AME8550 x x x x x xxx x

- Special Feature
- Detect Voltage
- Output Options
- Number of Pins
- Package Type
- Operating Ambient Temperature Range
- Pin Configuration

Pin Configuration	Operating Ambient Temperature Range	Package Type	Number of Pins	Output Options	Detect Voltage	Special Feature
A (SOT-25) 1. OUT 2. IN 3. GND 4. CD 5. NC B (SOT-25) 1. OUT 2. IN 3. GND 4. NC 5. CD	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	180: V=1.8V 190: V=1.9V 200: V=2.0V 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	Z: Lead free

■ 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
AME8550AEETA180Z	CMEww	1.8V	SOT-23	-40°C to +85°C
AME8550AEEVC190Z	AXOww	1.9V	SOT-25	-40°C to +85°C
AME8550AEEVD190Z	AZKww	1.9V	SOT-25	-40°C to +85°C
AME8550BEEVC190Z	AXPww	1.9V	SOT-25	-40°C to +85°C
AME8550BEEVD190Z	AZFww	1.9V	SOT-25	-40°C to +85°C
AME8550AEETB180Z	BZZww	1.8V	SOT-23	-40°C to +85°C
AME8550AEETB210Z	AXQww	2.1V	SOT-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
AME8550CEEVB210Z	AXRww	2.1V	SOT-25	-40°C to +85°C
AME8550AEETA220Z	AWHww	2.2V	SOT-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
AME8550AEFTB220Z	A8550A B220ww	2.2V	SOT-89	-40°C to +85°C
AME8550CEEVB220Z	AXSww	2.2V	SOT-25	-40°C to +85°C
AME8550AEEVD230Z	AYTww	2.3V	SOT-25	-40°C to +85°C
AME8550BEEVD230Z	AYUww	2.3V	SOT-25	-40°C to +85°C
AME8550AEETA240Z	AXTww	2.4V	SOT-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
AME8550AEETB240Z	AXVww	2.4V	SOT-23	-40°C to +85°C
AME8550AEFTB240Z	A8550A B240ww	2.4V	SOT-89	-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 Cole Rule on Package Dimension .

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

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
AME8550CEEVB240Z	AXWww	2.4V	SOT-25	-40°C to +85°C
AME8550AEEVD240Z	AXXww	2.4V	SOT-25	-40°C to +85°C
AME8550BEEVD240Z	AXYww	2.4V	SOT-25	-40°C to +85°C
AME8550AEETB250Z	AXZww	2.5V	SOT-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
AME8550AEEVD260Z	AYVww	2.6V	SOT-25	-40°C to +85°C
AME8550BEEVD260Z	AYWww	2.6V	SOT-25	-40°C to +85°C
AME8550AEETA270Z	AWIww	2.7V	SOT-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
AME8550AEFTB270Z	A8550A B270ww	2.7V	SOT-89	-40°C to +85°C
AME8550CEEVB270Z	AYSww	2.7V	SOT-25	-40°C to +85°C
AME8550AEEVD270Z	AYXww	2.7V	SOT-25	-40°C to +85°C
AME8550BEEVD270Z	AYYww	2.7V	SOT-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
AME8550AEFTB280Z	A8550A B280ww	2.8V	SOT-89	-40°C to +85°C
AME8550CEEVB280Z	AYCww	2.8V	SOT-25	-40°C to +85°C
AME8550AEEVC290Z	AYDww	2.9V	SOT-25	-40°C to +85°C
AME8550BEEVC290Z	AYEww	2.9V	SOT-25	-40°C to +85°C
AME8550AEETA300Z	AYFww	3.0V	SOT-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

■ Ordering Information (Contd.)

Part Number	Marking	Detect Voltage	Package	Operating Ambient Temperature Range
AME8550AEETB340Z	AYHww	3.4V	SOT-23	-40°C to +85°C
AME8550AEFTB340Z	A8550A B340ww	3.4V	SOT-89	-40°C to +85°C
AME8550CEEVB340Z	AYIww	3.4V	SOT-25	-40°C to +85°C
AME8550AEEVD360Z	AYJww	3.6V	SOT-25	-40°C to +85°C
AME8550BEEVD360Z	AYKww	3.6V	SOT-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
AME8550AEFTB440Z	A8550A B440ww	4.4V	SOT-89	-40°C to +85°C
AME8550AEETB440Z	AYLww	4.4V	SOT-23	-40°C to +85°C
AME8550CEEVB440Z	AYMww	4.4V	SOT-25	-40°C to +85°C
AME8550AEEVC460Z	AYNww	4.6V	SOT-25	-40°C to +85°C
AME8550BEEVC460Z	AYOww	4.6V	SOT-25	-40°C to +85°C
AME8550CEEVB300Z	BEAww	3.0V	SOT-25	-40°C to +85°C
AME8550AEETA390Z	BDKww	3.9V	SOT-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
AME8550CEEVB270Z	AYSww	2.7V	SOT-25	-40°C to +85°C
AME8550BEEVD280Z	BKOww	2.8V	SOT-25	-40°C to +85°C
AME8550CEEVA270Z	BKUww	2.7V	SOT-25	-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
AME8550BEEVD250Z	CCXww	2.5V	SOT-25	-40°C to +85°C
AME8550AEIUB200Z	CCYw	2.0V	SC-70-4	-40°C to +85°C
AME8550AEIUB260Z	CCZw	2.6V	SC-70-4	-40°C to +85°C

■ Ordering Information (Contd.)

Part Number	Marking	Detect Voltage	Package	Operating Ambient Temperature Range
AME8550AEIUB270Z	CDAw	2.7V	SC-70-4	-40°C to +85°C
AME8550AEIUB300Z	CHEw	3.0V	SC-70-4	-40°C to +85°C
AME8550AEFTA230Z	A8550A A230ww	2.3V	SOT-89	-40°C to +85°C
AME8550BEEVD210Z	CGRww	2.1V	SOT-25	-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		HBM	2	kV
		MM	200	V

■ 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*	Non-Conductive Epoxy	θ_{JC}	140	°C/W
	SOT-25*			140	
	SOT-89**			46	
Thermal Resistance (Junction to Ambient)	SOT-23		θ_{JA}	280	
	SOT-25			280	
	SOT-89			180	
Internal Power Dissipation	SOT-23		P_D	400	mW
	SOT-25			400	
	SOT-89			550	
Maximum Junction Temperature				150	°C
Solder Iron (10 Sec)***				350	°C

* Measure θ_{JC} on backside center of tab.
** Measure θ_{JC} on center of molding compound if IC has no tab.
*** MIL-STD-202G 210F

■ Electrical Specifications

T_A = 25°C, V_{DF}(T)=1.6 to 6.0V ± 2%

Parameter	Symbol	Test Condition		Min	Typ	Max	Units
Detect Voltage	V_{DF}			V_{DF} x0.98	V_{DF}	V_{DF} x1.02	V
Hysteresis Range	V_{HYS} / V_{DF}			2		8	%
Supply Current	I_{SS}	V_{IN}=V_{DF}+0.5V	1.5 < V_{IN} < 2.0		0.9	2.7	µA
			2.0 <= V_{IN} < 3.0		1.0	3.0	
			3.0 <= V_{IN} < 4.0		1.1	3.2	
			4.0 <= V_{IN} <= 5.0		1.2	3.6	
			5.0 < V_{IN} <= 6.0		2	4.0	
Operating Voltage	V_{IN}	V_{DF}(T)=1.6V to 6.0V		1.2		6.5	V
Output Current	I_{OUT}	Nch V_{IN}=V_{DF} x 0.95 V_{DS}=0.5V	1.0 < V_{IN} < 2.0	1.0	2.2		mA
			2.0 <= V_{IN} < 3.0	3.0	7.7		
			3.0 <= V_{IN} < 4.0	5.0	10.1		
			4.0 <= V_{IN} <= 5.0	6.0	11.5		
			5.0 < V_{IN} <= 6.0	7.0	13.0		
		Pch V_{DS}=2.1V V_{IN}=7V (with CMOS output)			-10.0	-2.0	
Temperature Characteristics	$\frac{\Delta V_{DF}}{\Delta T_A . V_{DF}}$	-40°C<= T_A <= +85°C			±100		ppm/°C
Propagation Time (V_{DR} --> 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, theground 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.

■ 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, theground 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.

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

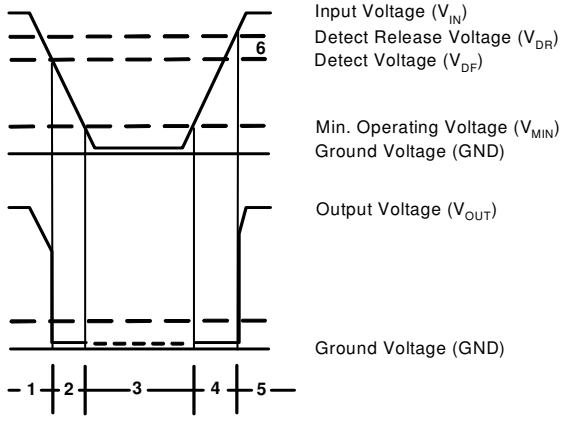
$$T = \frac{V \times C}{I} \quad (V = V_{REF})$$

For Example, $T_D = \frac{V_{REF} * 1nF}{75nA}$, where V_{REF}=1.2V (typ.)

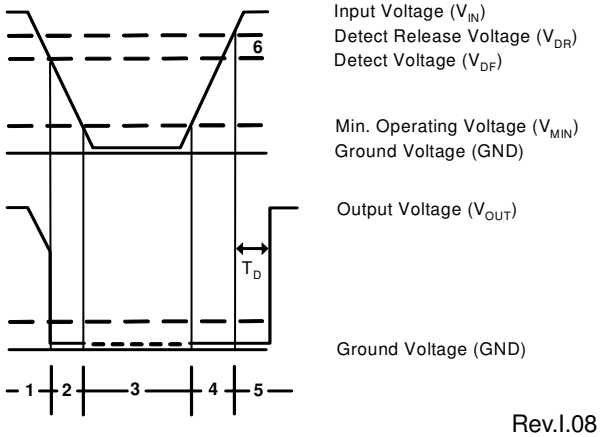
(A condition of high impedance exists with Nch open drain output configurations.)

6. The difference between V_{DR} and V_{DF} represents the hysteresis range.

■ Timing Chart



■ 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 μ 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} x 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.

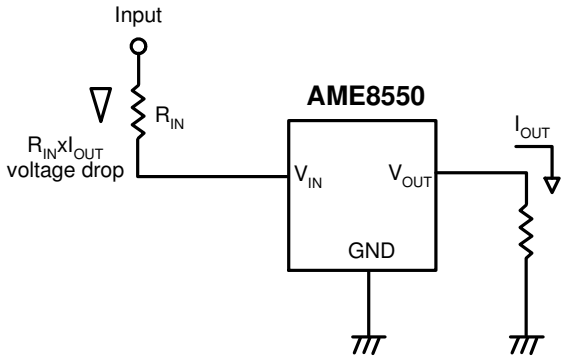


Diagram1

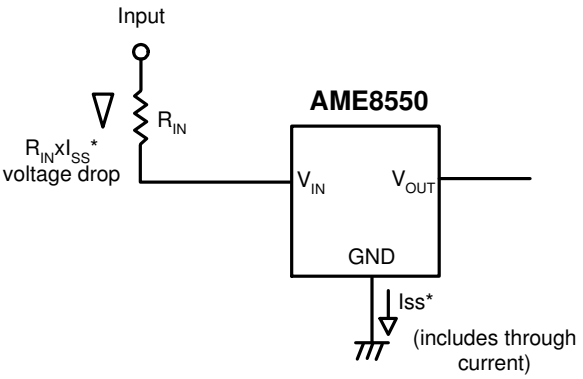
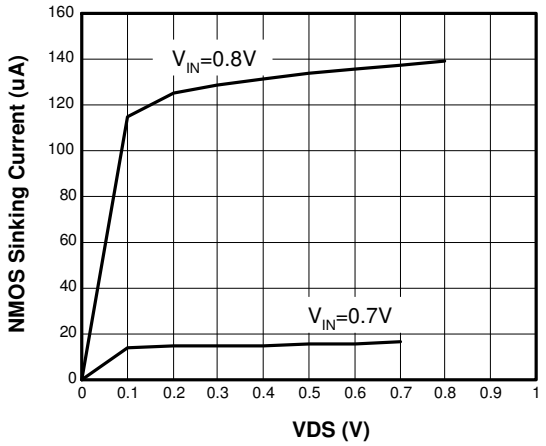


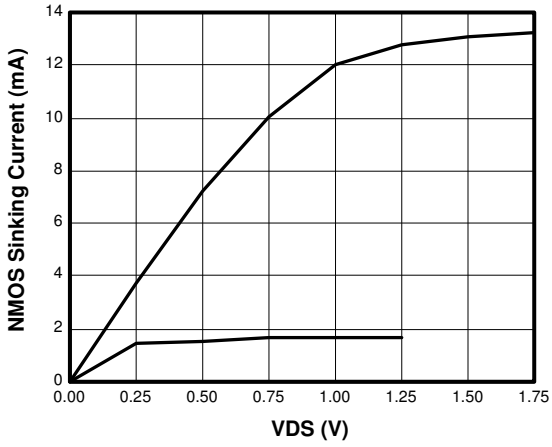
Diagram2

■ Characterization Curve

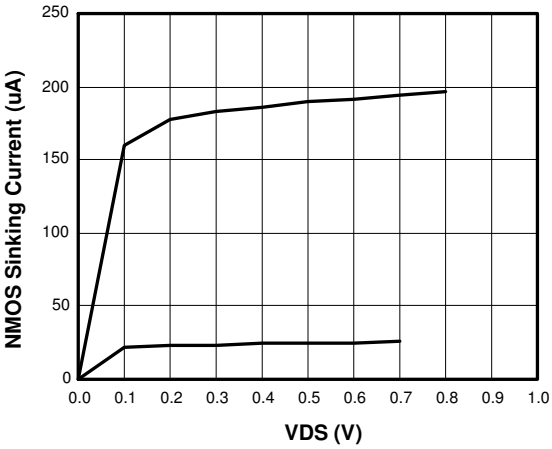
AME8550-1.9V



AME8550-1.9V



AME8550-2.7V



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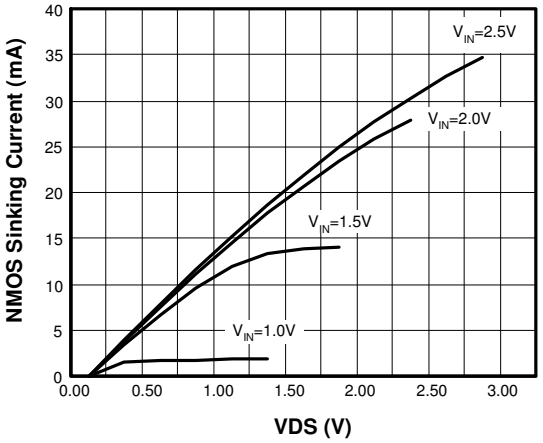
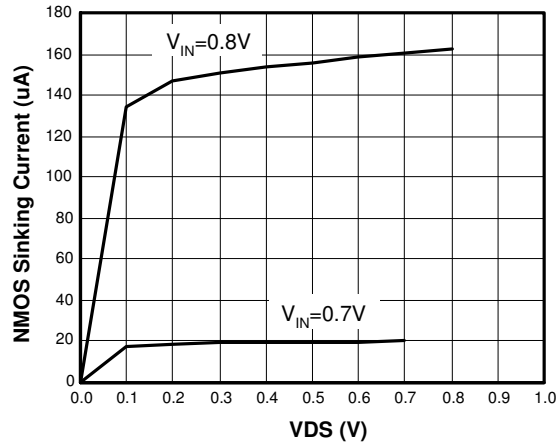
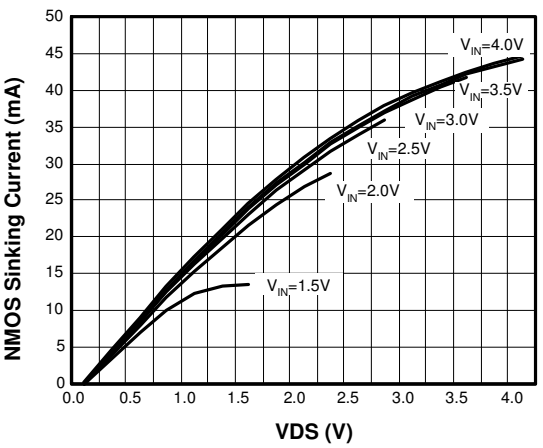


AME8550-4.6V

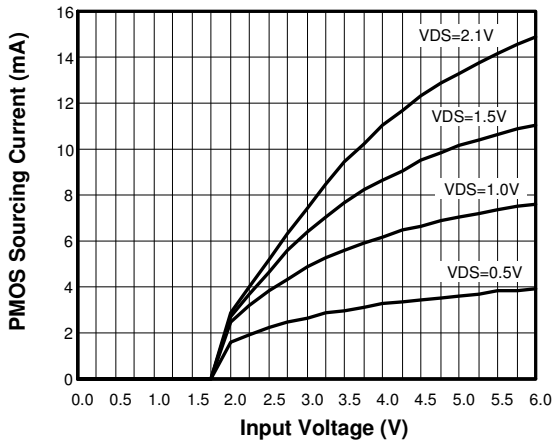


AME8550-4.6V

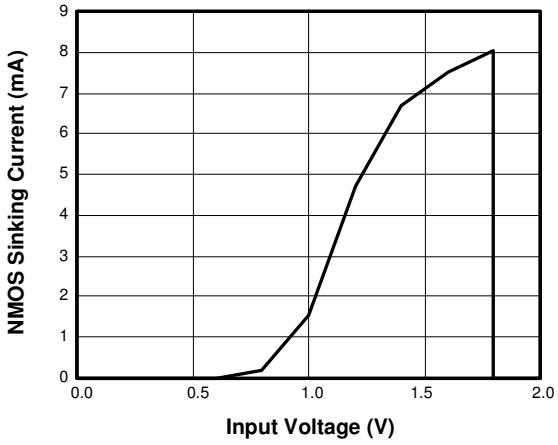


■ Characterization Curve (Contd.)

AME8550-1.9V



AME8550-1.9V



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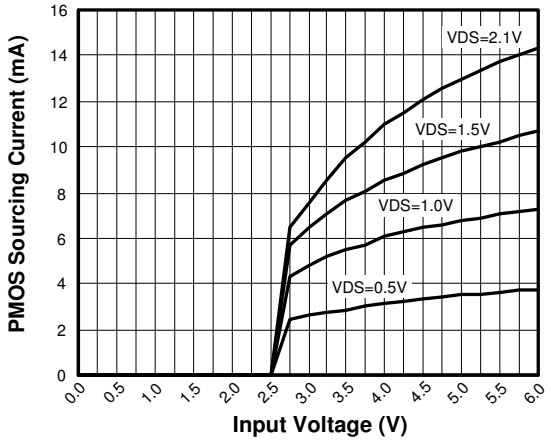
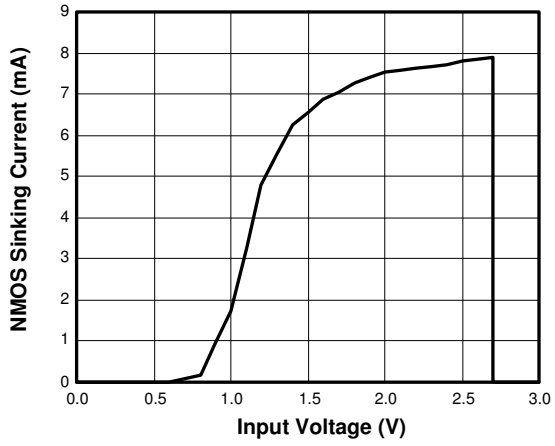
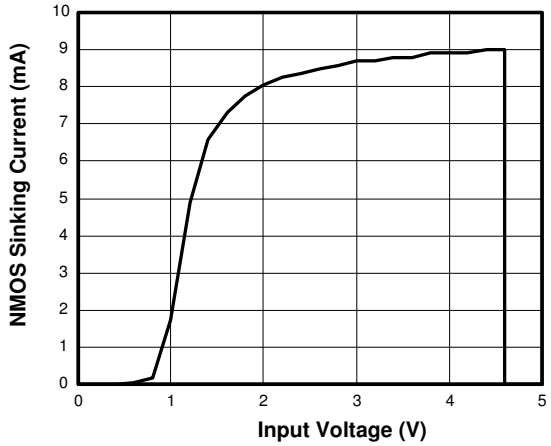


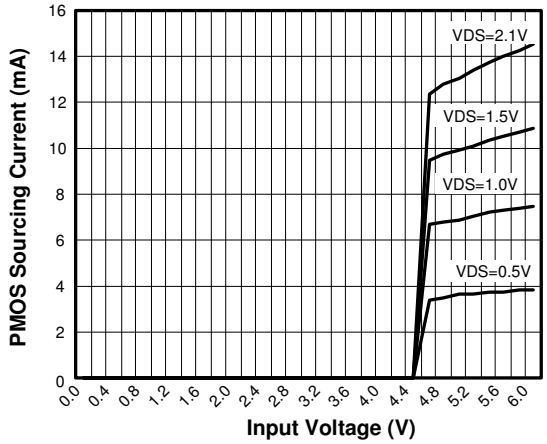
AME8550-2.7V



AME8550-4.6V

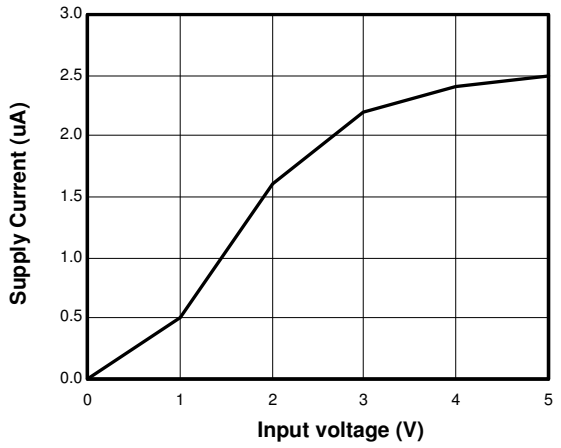


AME8550-4.6V

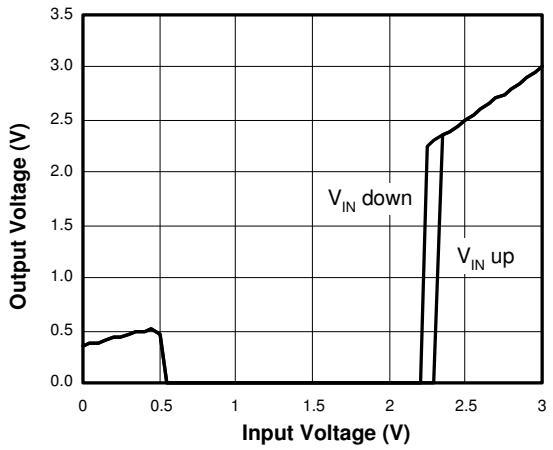


■ Characterization Curve (Contd.)

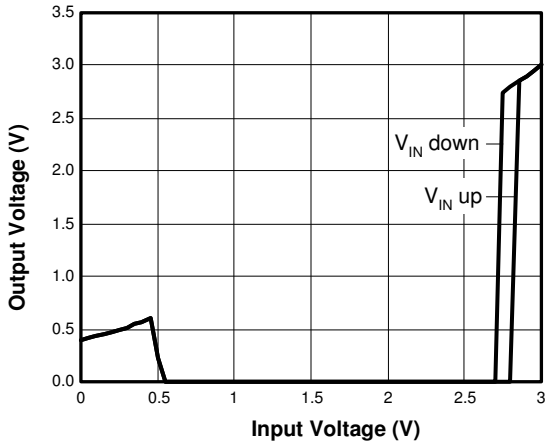
Supply Current vs. Input Voltage (2.7V)



Output Voltage vs. Input Voltage (2.2V)



Output Voltage vs. Input Voltage (2.7V)



■ Date Code Rule

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

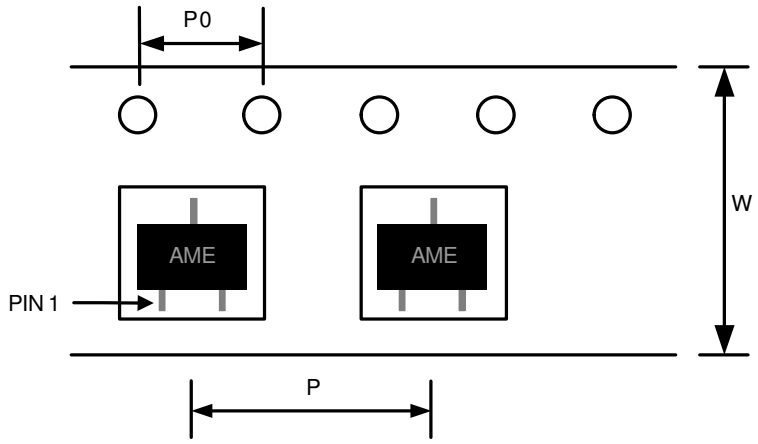
For SC-70 Package Only

Marking			Date Code	Year
A	A	A	W	xxx0
A	A	A	W	xxx1
A	A	A	W	xxx2
A	A	A	W	xxx3
A	A	A	W	xxx4
A	A	A	W	xxx5
A	A	A	W	xxx6
A	A	A	W	xxx7
A	A	A	W	xxx8
A	A	A	W	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

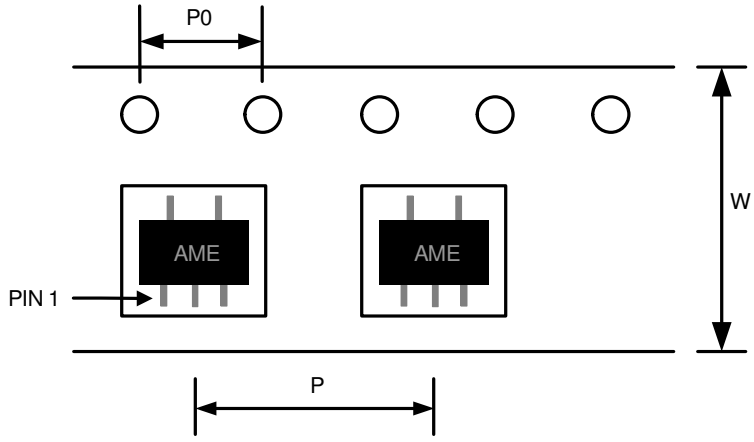
SOT-23



Carrier Tape, Number of Components Per Reel and Reel Size

Package	Carrier Width (W)	Pitch (P)	Pitch (P0)	Part Per Full Reel	Reel Size
SOT-23	8.0±0.1 mm	4.0±0.1 mm	4.0±0.1 mm	3000pcs	180±1 mm

SOT-25

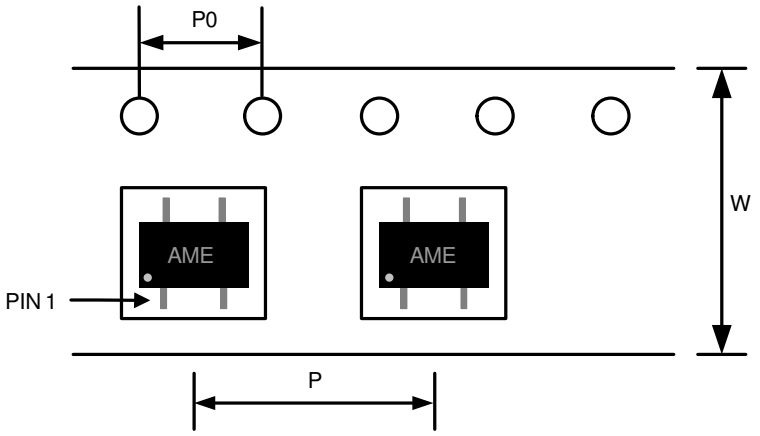


Carrier Tape, Number of Components Per Reel and Reel Size

Package	Carrier Width (W)	Pitch (P)	Pitch (P0)	Part Per Full Reel	Reel Size
SOT-25	8.0±0.1 mm	4.0±0.1 mm	4.0±0.1 mm	3000pcs	180±1 mm

■ Tape and Reel Dimension (Contd.)

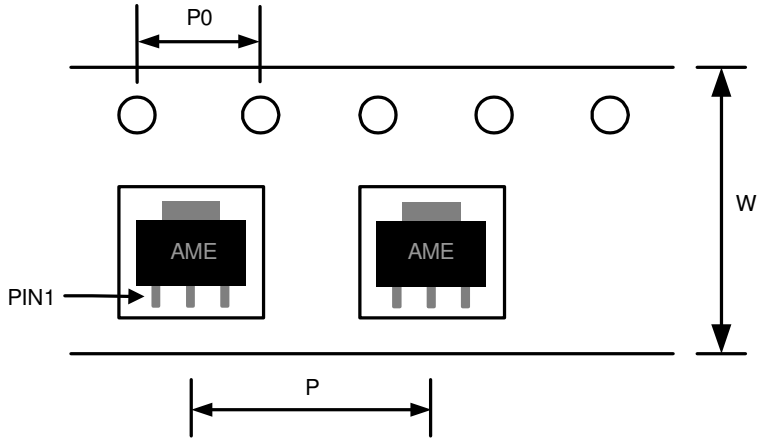
SC-70-4



Carrier Tape, Number of Components Per Reel and Reel Size

Package	Carrier Width (W)	Pitch (P)	Pitch (P0)	Part Per Full Reel	Reel Size
SC-70-4	8.0±0.1 mm	4.0±0.1 mm	4.0±0.1 mm	3000pcs	180±1 mm

SOT-89



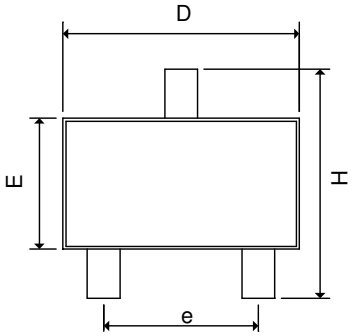
Carrier Tape, Number of Components Per Reel and Reel Size

Package	Carrier Width (W)	Pitch (P)	Pitch (P0)	Part Per Full Reel	Reel Size
SOT-89	12.0±0.1 mm	8.0±0.1 mm	4.0±0.1 mm	1000pcs	180±1 mm

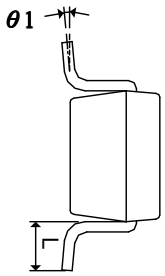
■ Package Dimension

SOT-23

Top View



Side View

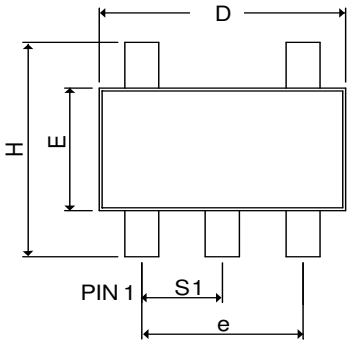


Front View

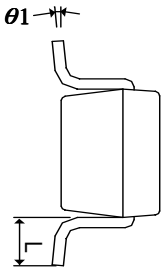
SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.90	1.40	0.0354	0.0551
A_1	0.00	0.15	0.0000	0.0059
b	0.30	0.50	0.0118	0.0197
D	2.70	3.10	0.1063	0.1220
E	1.40	1.80	0.0551	0.0709
e	1.90 BSC		0.0748 BSC	
H	2.40	3.00	0.0945	0.1181
L	0.35BSC		0.0138 BSC	
θ1	0°	10°	0°	10°

SOT-25

Top View



Side View

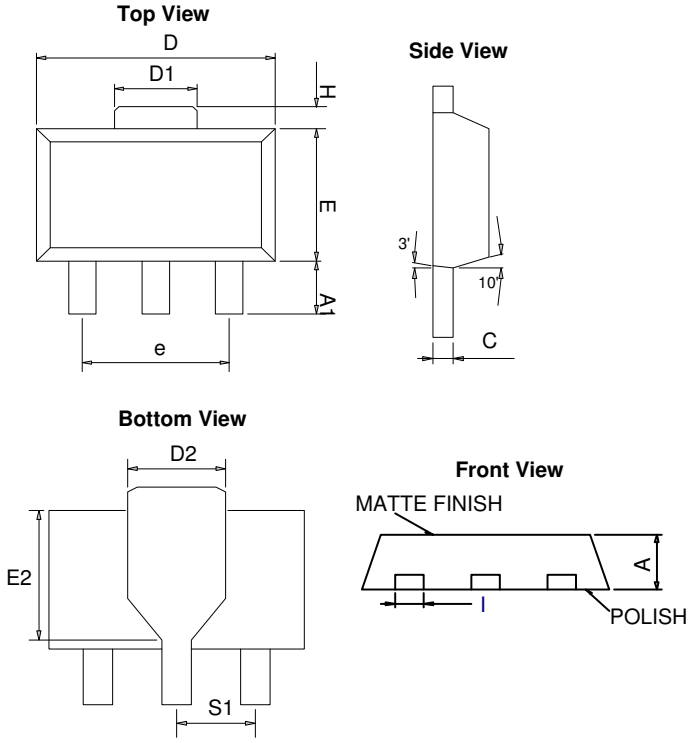


Front View

SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.90	1.30	0.0354	0.0512
A_1	0.00	0.15	0.0000	0.0059
b	0.30	0.55	0.0118	0.0217
D	2.70	3.10	0.1063	0.1220
E	1.40	1.80	0.0551	0.0709
e	1.90 BSC		0.0748 BSC	
H	2.60	3.00	0.1024	0.1181
L	0.37 BSC		0.0146 BSC	
θ1	0°	10°	0°	10°
S_1	0.95 BSC		0.0374 BSC	

■ Package Dimension (Contd.)

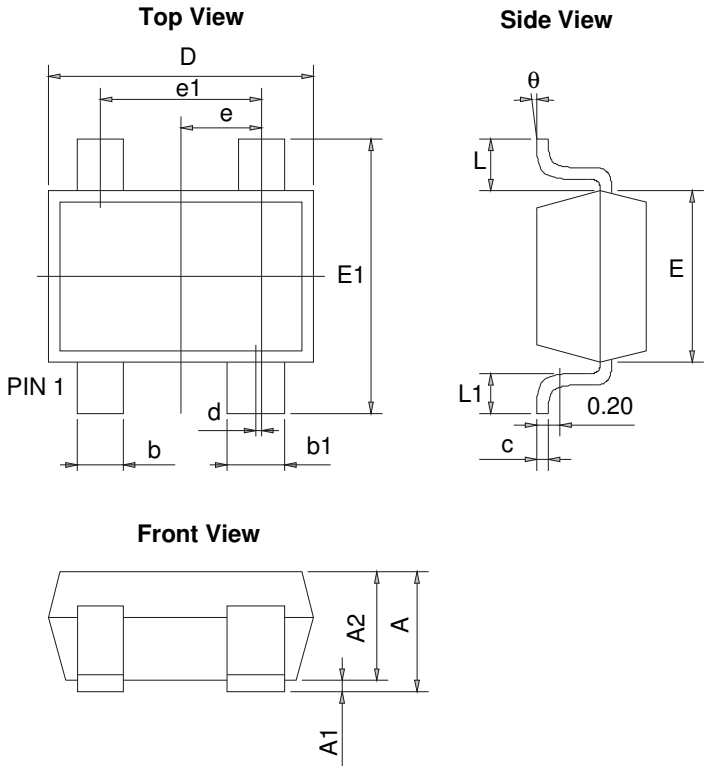
SOT-89



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.39	1.60	0.0547	0.0630
A_1	0.8 REF		0.0315 REF	
C	0.35	0.44	0.0138	0.0173
D	4.39	4.60	0.1728	0.1811
D_1	1.35	1.83	0.0531	0.0720
E	2.28	2.60	0.0898	0.1024
I	0.32	0.56	0.0126	0.0220
e	3.00 REF		0.1181 REF	
H	0.70 REF		0.0276 REF	
S1	1.50 REF		0.0591 REF	
E2	2.05	2.60	0.0807	0.1024
D2	1.50	1.85	0.0591	0.0728

■ Package Dimension (Contd.)

SC-70-4



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

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Document: 2051-DS8550-I.08

Corporate Headquarter
AME, Inc.
8F, 12, WenHu St., Nei Hu
Taipei, Taiwan. 114
Tel: 886 2 2627-8687
Fax: 886 2 2659-2989