AME

AME4620

1-Ohm Low Voltage SPDT Analog Switch

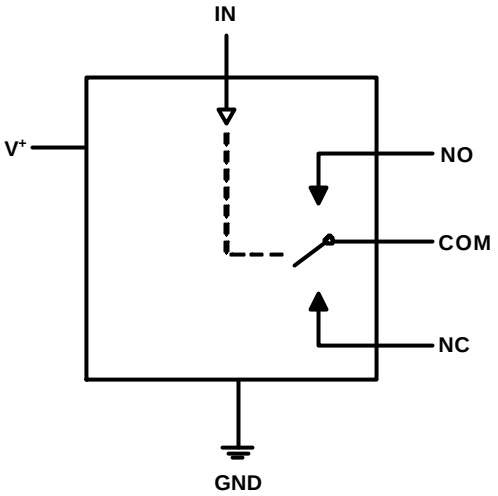
■ General Description

The AME4620 analog switches feature low ON resistance, single-pole, double-throw (SPDT) with wide operating single power supply voltage range, from 1.8V to 5.5V.

AME4620 has 1Ω max ON resistance when +5V power supply is used. These products also have fast switching speeds, t_{ON} = t_{OFF} = 50nS max.

AME4620 is available in SC-70-6.

■ Functional Block Diagram



■ Features

- Low R_{ON}
- Wide Operation Supply Voltage: 1.8V to 5.5V
- Fast Switching Time: t_{ON} = t_{OFF} = 50nS max.
- TTL-Logic Compatible
- Pin Compatible with FSA4157
- Over Thermal Protection
- Space saving in SC-70-6
- All AME's Lead Free Products Meet RoHS Standards

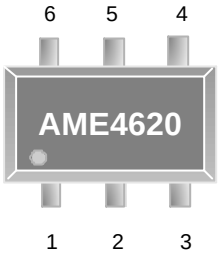
In Logic	NC	NO
0	ON	OFF
1	OFF	ON

■ Applications

- Power Routing
- Battery-Operated Equipment
- Audio and Video Signal Routing
- Low-Voltage Data-Acquisition Systems
- Communications Circuits
- PCMCIA Cards
- PC Peripherals

■ Pin Configuration

SC-70-6
Top view



AME4620AEIY

1. NO
2. GND
3. NC
4. COM
5. V+
6. IN

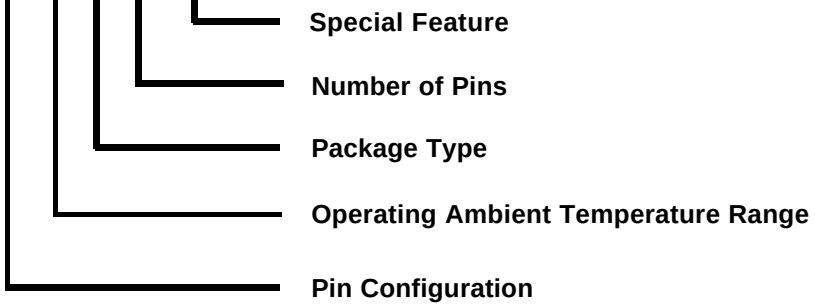
*** Die Attach:**
Conductive Epoxy

■ Pin Description

Pin Name	Pin Description
IN	Digital Control Input
V+	Positive Supply Voltage Input
GND	Ground
NC	Analog Switch-Normally Closed
COM	Analog Switch-Common
NO	Analog Switch-Normally Open

■ Ordering Information

AME4620 X X X X X



Pin Configuration	Operating Ambient Temperature Range	Package Type	Number of Pins	Special Feature
A: 1. NO (SC-70-6) 2. GND 3. NC 4. COM 5. V+ 6. IN	E: -40°C to +85°C	I: SC-70	Y: 6	Z: Lead free

■ Ordering Information

Part Number	Marking*	Activity Mode	Package	Operating Ambient Temperature Range
AME4620AEIYZ	BCYw	Break-Before-Make	SC-70-6	- 40°C to +85°C

Note: w represents the date code and pls refer to Date Code Rule before Package Dimension.
* A line on top of the first letter represents lead free plating such as BCY.
Pls consult AME sales office or authorized Rep./Distributor for the availability of package type.

■ Absolute Maximum Ratings

Parameter	Maximum	Unit
V+ , IN	6	V
COM , NC , NO	Note 1	V
Continuous Current COM , NC , NO	300	mA
ESD Classification	B*	

Note1: Signals on COM, NC and NO can not exceed V+
Caution: Stress above the listed absolute maximum rating may cause permanent damage to the device.
* HBM B:2000V~3999V

■ Recommended Operating Conditions

Parameter	Symbol	Rating	Unit
Ambient Temperature Range	T_A	- 40 to +85	^oC
Junction Temperature Range	T_J	- 40 to +125	^oC
Storage temperature Range	T_{STG}	- 65 to +150	^oC
IN	CMOS, TTL Logic		V
V+	1.8 to 5.5		V

■ Thermal Information

Parameter	Package	Die Attach	Symbol	Maximum	Unit
Thermal Resistance * (Junction to Case)	SC-70-6	Conductive Epoxy	θ_{JC}	224	^oC / W
Thermal Resistance (Junction to Ambient)			θ_{JA}	331	
Internal Power Dissiption			P_D	300	mW
Maximum Junstion Temperature				150	^oC
Solder Iron (10sec)**				350	^oC

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

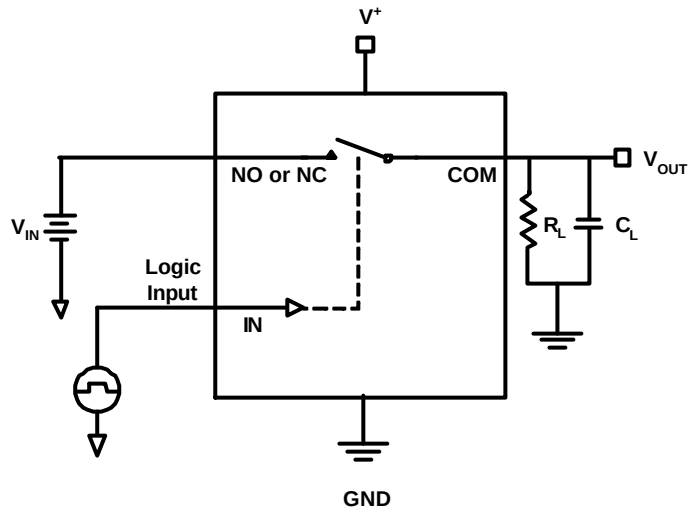
■ Electrical Specifications

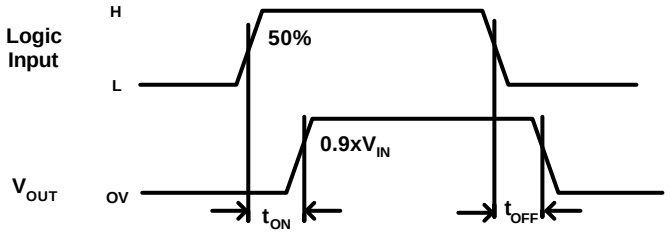
V^+ =+5V +/- 10%, GND = 0V, IN_H = 2.4V, IN_L = 0.8V, T_A = -40°C to +85°C, unless otherwise noted.
Typical values are at T_A = 25°C.

Parameter	Symbol	Test Condition		Min	Typ	Max	Units
ANALOG SWITCH							
On-Resistance	R_{ON}	V^+ = 4.5V, I_{COM} = 100mA	T_A = 25 °C			1.0	Ω
			T_A = -40 °C to +85°C			1.2	
On-Resistance Match between channels	ΔRon	V^+ = 4.5V, I_{COM} = 100mA, V_{NO} or V_{NC} = 3.5V	T_A = 25 °C			0.12	Ω
			T_A = -40 °C to +85°C			0.15	
On-Resistance Match Flatness	R_{FLATE}	V^+ = 4.5V, I_{COM} = 100mA, V_{NO} or V_{NC} = 0V, 1V, 2V	T_A = 25 °C		0.15	0.2	Ω
			T_A = -40 °C to +85°C			0.2	
Switch Off-Leakage Current	$I_{NO(OFF)}$ $I_{NC(OFF)}$	V^+ = 5.5V, V_{COM} = 1V, 4.5V, V_{NC} or V_{NO} = 4.5V or 1V	T_A = 25 °C	-0.1	0.05	0.1	µA
			T_A = -40 °C to +85°C	-1.0		1.0	
DIGITAL I/O							
Input Logic High	IN_H	V^+ = 5.5V		2.4			V
Input Logic Low	IN_L					0.8	
Input Current Logic High or Low	I_{IH} , I_{IL}	V_{IN} = V^+, 0V		-1.0		1.0	µA
SWITCH DYNAMIC CHARACTERISTICS							
Turn-On Time	t_{ON}	Figure 2	T_A = 25 °C			50	ns
			T_A = -40 °C to +85°C			60	
Turn-Off Time	t_{OFF}	Figure 2	T_A = 25 °C			50	ns
			T_A = -40 °C to +85°C			60	
Break-Before-Make Delay	t_{BBM}	Figure 2	T_A = 25 °C	1	20		ns
			T_A = -40 °C to +85°C	1			
Off-Isolation	OIRR	R_L = 50Ω, C_L = 5pF, f = 1MHz, Figure 3			-30		dB
Crosstalk		R_L = 50Ω, C_L = 5pF, f = 1MHz, Figure 4			-30		
NC or NO Off-Capacitance	C_{OFF}	f = 1MHz, Figure 5			38		pF
COM ON-Capacitance	$C_{COM(ON)}$	f = 1MHz, Figure 6			138		
-3dB Bandwidth	BW	R_L = 50Ω, Figure 7			400		MHz
POWER SUPPLY							
Power Supply Range	V^+		T_A = -40 °C to +85°C	1.8		5.5	V
V^+ Supply Current	I^+	V^+ = 5.5V, IN = 0V or V^+	T_A = -40 °C to +85°C			10	µA

■ Timing Diagrams

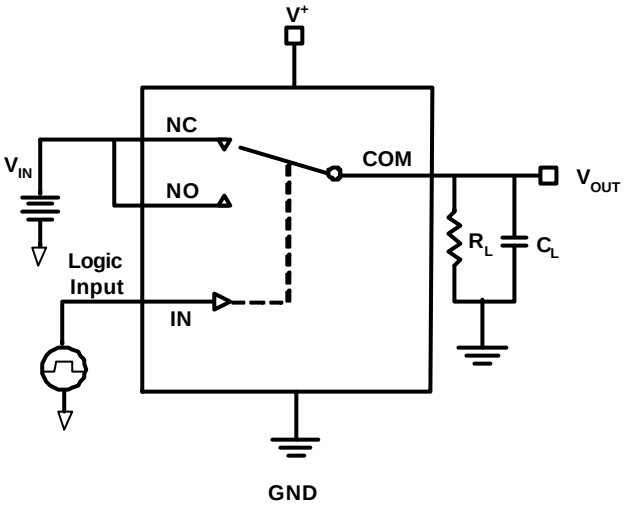
Figure 1
Switching Time

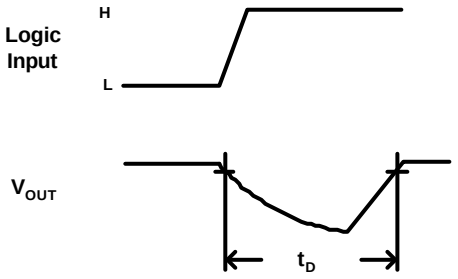




■ Timing Diagrams

Figure 2
Break-Before-Make Interval





■ Test Circuit

Figure 3
Off-Isolation / On Channel

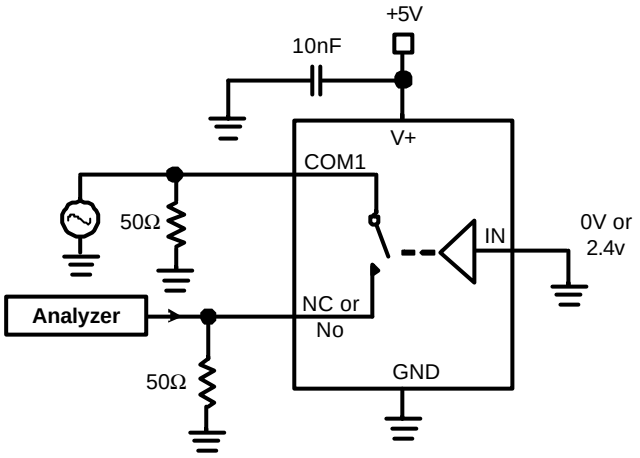
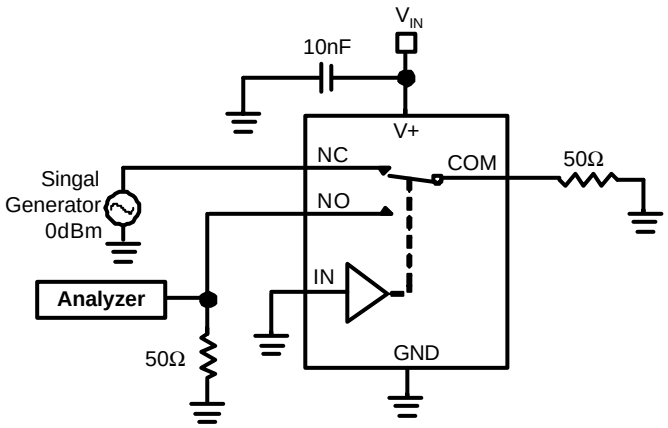


Figure 4
Crosstalk



■ Test Circuit

Figure 5
NC or NO Capacitance

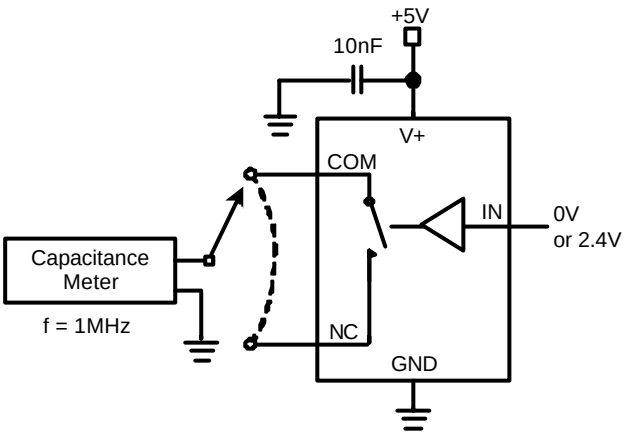
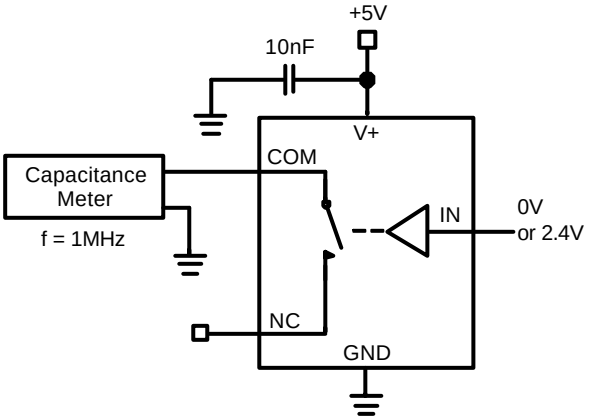
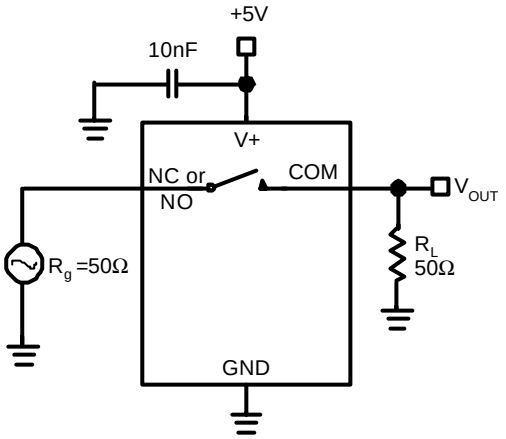


Figure 6
COM ON Capacitance

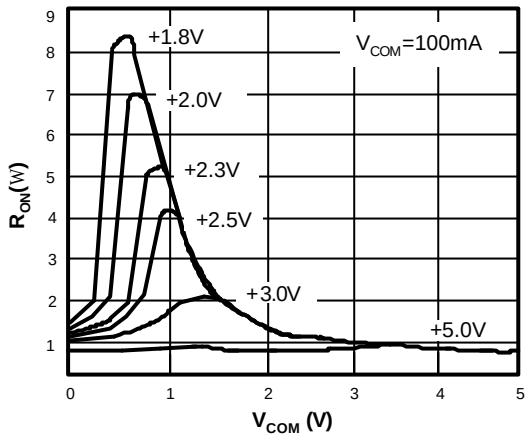


■ Test Circuit

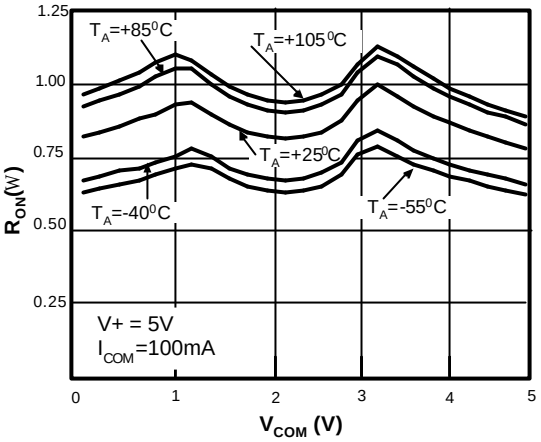
Figure 7
Bandwidth



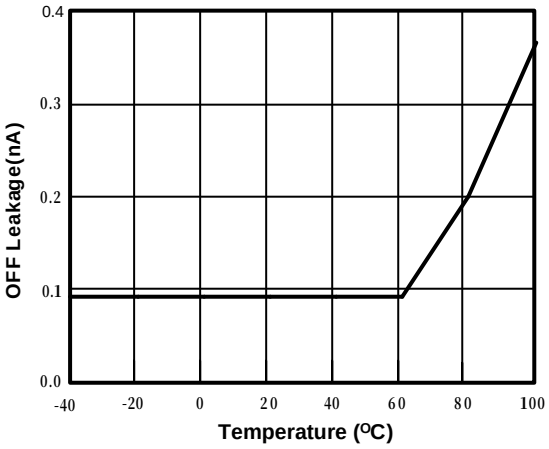
Ron vs. COM Voltage over Supply Voltage



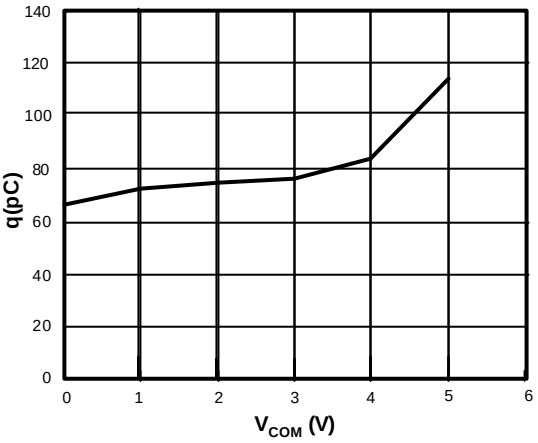
Ron vs. COM Voltage over Temperature



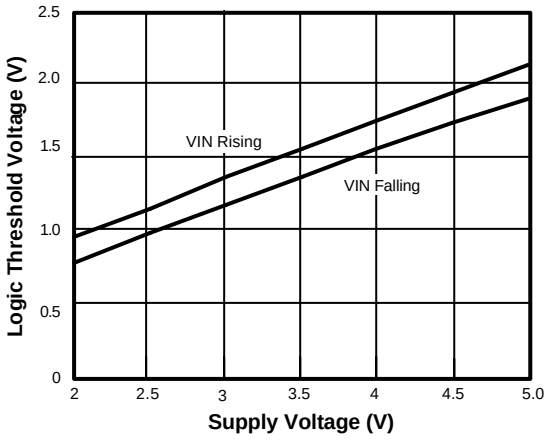
OFF Leakage vs. Temperature



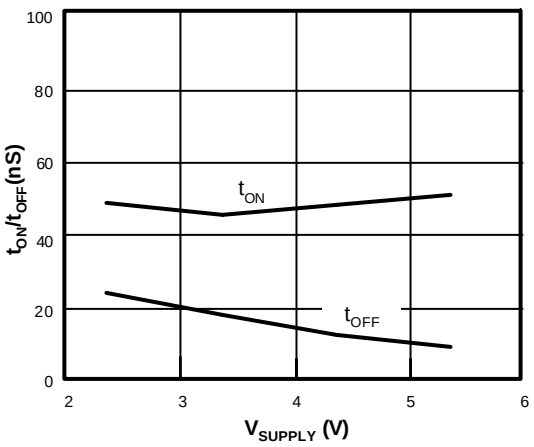
Charge Injection vs. COM Voltage



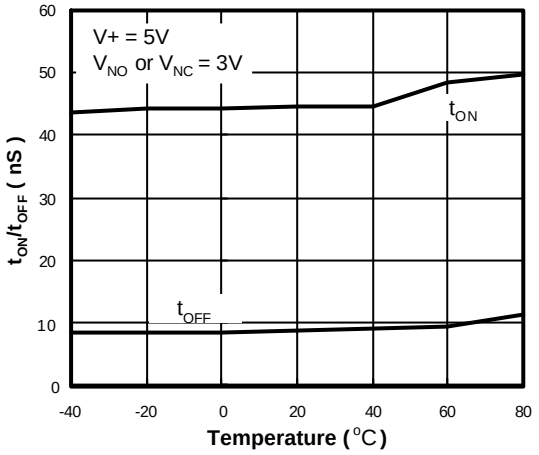
Logic Threshold Voltage vs. Supply Voltage



TURN-ON/OFF Times vs. Supply Voltage



TURN-ON/OFF Times vs. Temperature



■ Date Code Rule

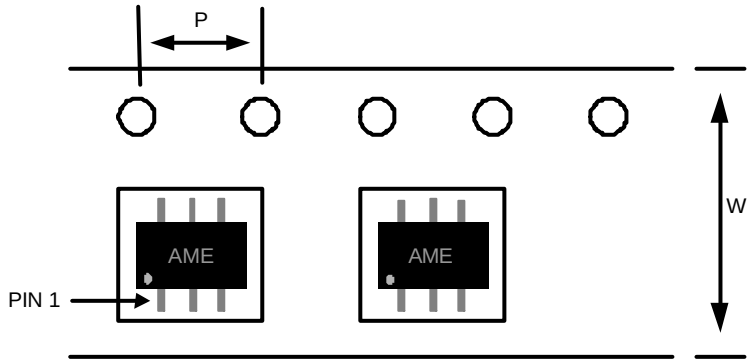
For SC-70 Package Only

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

SC-70-6



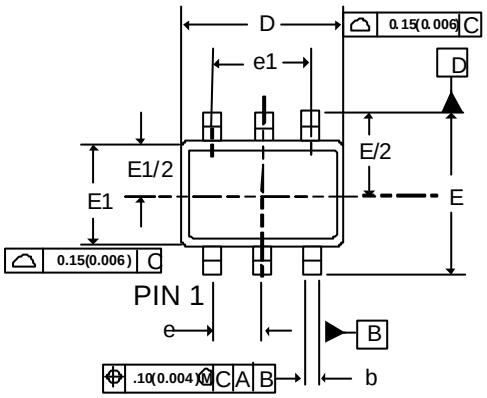
Carrier Tape, Number of Components Per Reel and Reel Size

Package	Carrier Width (W)	Pitch (P)	Part Per Full Reel	Reel Size
SC-70-6	8.0±0.1 mm	4.0±0.1 mm	3000pcs	180±1 mm

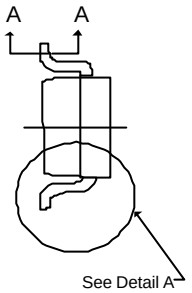
■ Package Dimension

SC-70-6

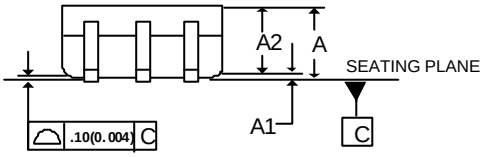
Top View



Side View

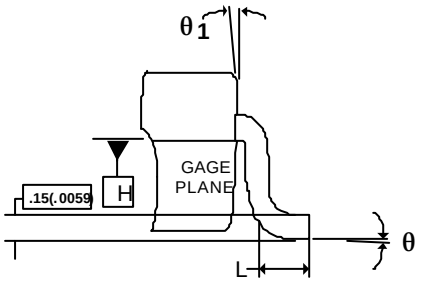


Front View

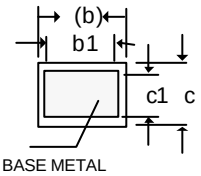


SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.80	1.10	0.031	0.043
A1	0.00	0.10	0.000	0.004
A2	0.80	1.00	0.031	0.039
b	0.15	0.35	0.006	0.014
b1	0.15	0.25	0.006	0.010
c	0.08	0.25	0.003	0.010
c1	0.08	0.20	0.003	0.008
D	1.90	2.20	0.075	0.087
E	2.00	2.45	0.079	0.096
E1	1.15	1.35	0.045	0.053
e	0.65BSC		0.0255BSC	
e1	1.30BSC		0.0512BSC	
L	0.26	0.46	0.010	0.018
q1	0^o	8^o	0^o	8^o
q2	4^o	10^o	4^o	10^o

Detail A



SECTION AA



www.ame.com.tw
E-Mail: sales@ame.com.tw

Document: 2105-DS4620-B.05

Corporate Headquarter
AME, Inc.
2F, 302 Rui-Guang Road, Nei-Hu District
Taipei 114, Taiwan .
Tel: 886 2 2627-8687
Fax: 886 2 2659-2989