AH175

HALL EFFECT LATCH FOR HIGH TEMPERATURE

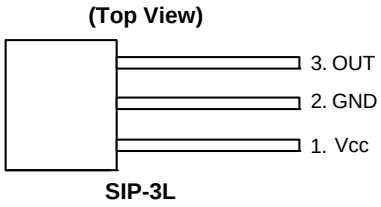
Description

AH175 is a single-digital-output Hall-Effect latch sensor for high temperature operation. The device includes an on-chip Hall voltage generator for magnetic sensing, an amplifier to amplify Hall voltage, and a comparator to provide switching hysteresis for noise rejection, an open-collector output pre-driver. An internal band-gap regulator provides a temperature compensated supply voltage for internal circuits and allows a wide operating supply range.

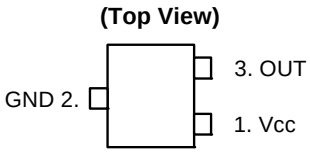
When the magnetic flux density (**B**) is larger than operate point (**Bop**), output is switched on (OUT pin is pulled low). The output state is held on until a magnetic flux density reversal falls below Brp. When **B** is less than Brp, the output is switched off.

The AH175 is available in SIP-3L and SC59 packages.

Pin Assignments



SIP-3L



SC59

Features

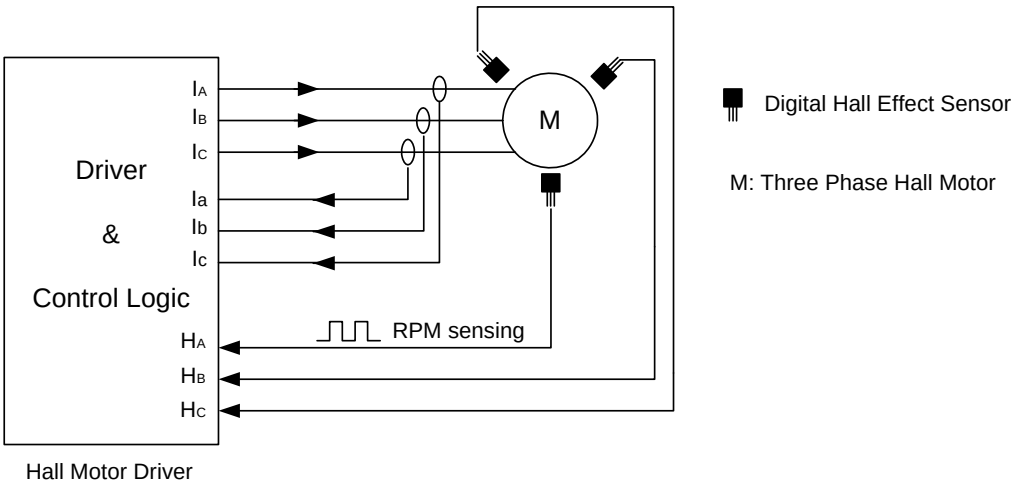
- Bipolar Hall-Effect latch sensor
- 3.5V to 20V DC operating voltage
- Open collector pre-driver
- 25mA output sink current
- Built-in power reverse protection
- Operating Temperature: -40ºC~+150ºC
- SIP-3L and SC59 packages
  (SC59 is commonly known as SOT23 in Asia)
- Green Molding Compound (No Br, Sb) (Note 1)

Applications

- Rotor Position Sensing
- Current Switch
- Encoder
- RPM Detection

Notes: 1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied. Please visit our website at http://www.diodes.com/products/lead_free.html.

Typical Application Circuit

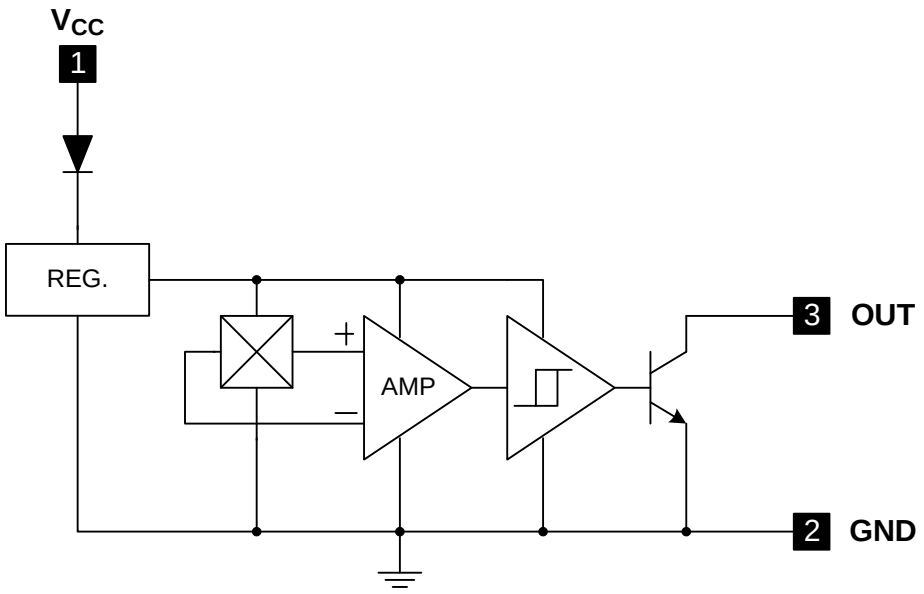


3 Phase Hall Motor

Pin Descriptions

Pin Name	Pin #	Description
Vcc	1	Positive Power Supply
GND	2	Ground
OUT	3	Output Stage

Functional Block Diagram



Absolute Maximum Ratings (T_A = 25°C)

Symbol	Characteristics		Values	Unit
V_{CC}	Supply Voltage		20	V
V_{OUT} (off)	Output “Off” Voltage		20	V
I_O (sink)	Output “On” Current		25	mA
Ts	Storage Temperature Range		-65~+150	°C
T_J	Maximum Junction Temperature		+150	°C
P_D	Power Dissipation	SIP-3L	550	mW
		SC59	230	mW

Recommended Operating Conditions

Symbol	Characteristic	Conditions	Min	Max	Unit
V_{CC}	Supply Voltage	Operating	3.5	20	V
T_A	Operating Ambient Temperature (Note 2)	Operating	-40	150	°C

Notes: 2. The device P_D and Safety Operation Area should not be exceeded.

Electrical Characteristics (T_A = 25°C)

Symbol	Characteristics	Conditions	Min	Typ.	Max	Unit
$V_{OUT\ (SAT)}$	Output Saturation Voltage	V_{CC} = 12V, OUT "ON" I_O = 10mA	-	300	400	mV
I_{CC}	Supply Current	V_{CC} = 12V, OUT "OFF"	-	3.5	6	mA

Magnetic Characteristics (T_A = 25°C, Vcc = 12V, unless otherwise specified, Note 3)

(1mT = 10 Gauss)

A grade

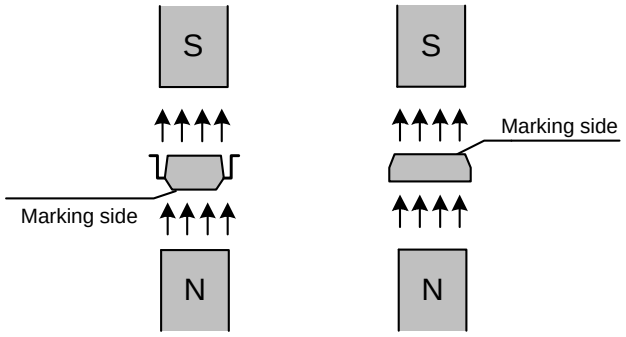
Symbol	Parameter	Min	Typ.	Max	Unit
Bops(south pole to brand side)	Operation Point	15	-	60	Gauss
Brps(south pole to brand side)	Release Point	-60	-	-15	Gauss
Bhy(|Bopx|-|Brpx|)	Hysteresis	30	80	120	Gauss

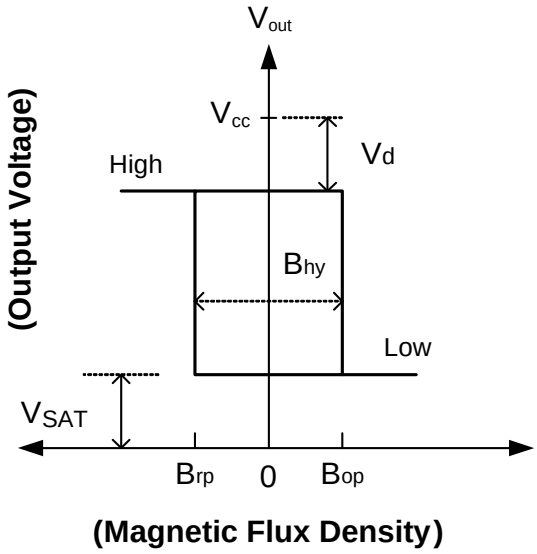
B grade

Symbol	Parameter	Min	Typ.	Max	Unit
Bops(south pole to brand side)	Operation Point	5	-	80	Gauss
Brps(south pole to brand side)	Release Point	-80	-	-5	Gauss
Bhy(|Bopx|-|Brpx|)	Hysteresis	10	80	160	Gauss

Notes: 3. Magnetic characteristics may vary with supply voltage, operating temperature and after soldering.

Operating Characteristics

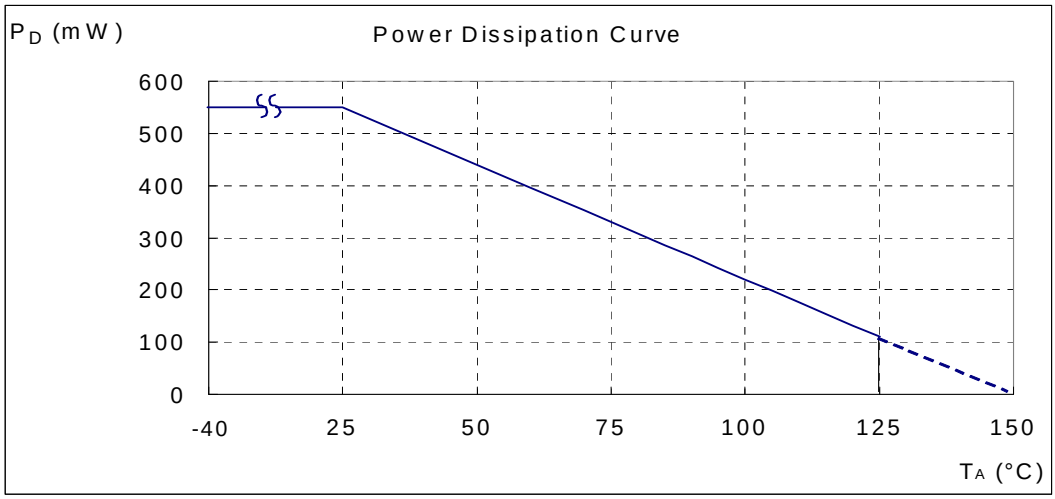




Performance Characteristics

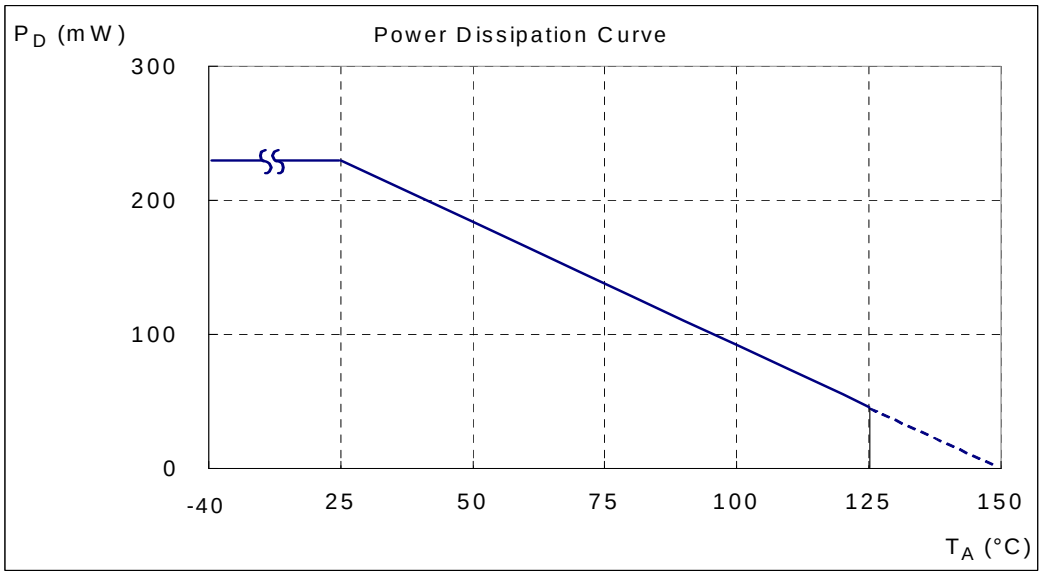
(1) SIP-3L

T_A (°C)	25	50	60	70	80	85	90	95	100
P_D (mW)	550	440	396	352	308	286	264	242	220
T_A (°C)	**105**	**110**	**115**	**120**	**125**	**130**	**135**	**140**	**150**
P_D(mW)	198	176	154	132	110	88	66	44	0

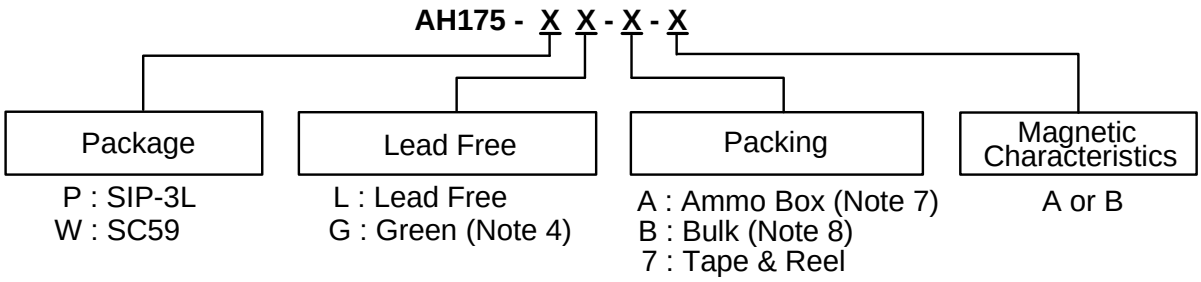


(2) SC59 (commonly known as SOT23 in Asia)

T_A (°C)	25	50	60	70	80	85	90	100	110	120	130	140	150
P_D (mW)	230	184	166	147	129	120	110	92	74	55	37	18	0



Ordering Information

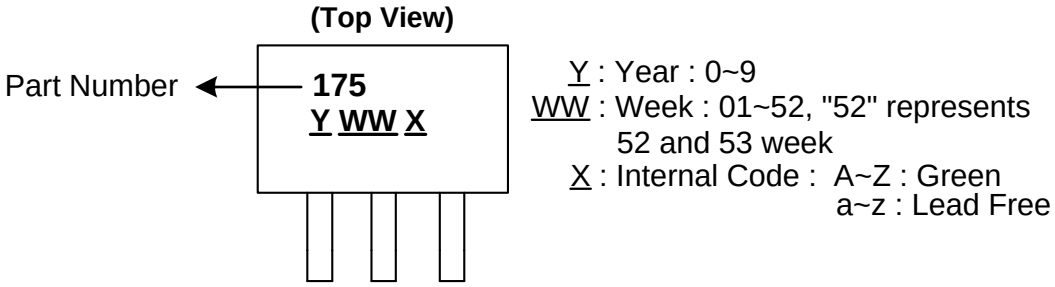


Device	Package Code	Packaging (Note 5, 6)	Tube/Bulk		7" Tape and Reel		Ammo Box		Magnetic Characteristics
			Quantity	Part Number Suffix	Quantity	Part Number Suffix	Quantity	Part Number Suffix	
AH175-PL-A-A	P	SIP-3L	NA	NA	NA	NA	4000/Box	-A	A
AH175-PL-A-B	P	SIP-3L	NA	NA	NA	NA	4000/Box	-A	B
AH175-PG-A-A	P	SIP-3L	NA	NA	NA	NA	4000/Box	-A	A
AH175-PG-A-B	P	SIP-3L	NA	NA	NA	NA	4000/Box	-A	B
AH175-PL-B-A	P	SIP-3L	1000	-B	NA	NA	NA	NA	A
AH175-PL-B-B	P	SIP-3L	1000	-B	NA	NA	NA	NA	B
AH175-PG-B-A	P	SIP-3L	1000	-B	NA	NA	NA	NA	A
AH175-PG-B-B	P	SIP-3L	1000	-B	NA	NA	NA	NA	B
AH175-WL-7-A	W	SC59	NA	NA	3000/Tape & Reel	-7	NA	NA	A
AH175-WL-7-B	W	SC59	NA	NA	3000/Tape & Reel	-7	NA	NA	B
AH175-WG-7-A	W	SC59	NA	NA	3000/Tape & Reel	-7	NA	NA	A
AH175-WG-7-B	W	SC59	NA	NA	3000/Tape & Reel	-7	NA	NA	B

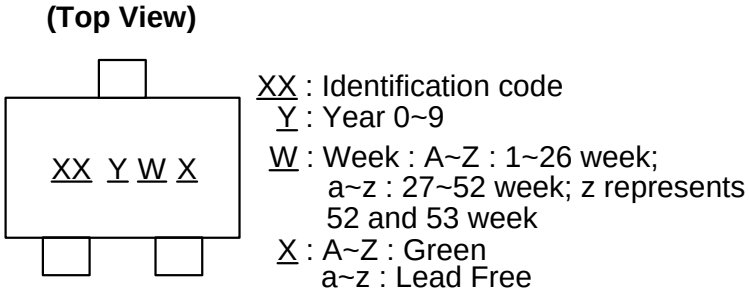
Notes:
4. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied. Please visit our website at http://www.diodes.com/products/lead_free.html.
5. Pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.
6. Reverse taping as shown on Diodes Inc. Surface Mount (SMD) Packaging document AP02007, which can be found on our website http://www.diodes.com/datasheets/ap02007.pdf.
7. Ammo Box is for SIP-3L Spread Lead.
8. Bulk is for SIP-3L Straight Lead.

Marking Information

(1) SIP-3L



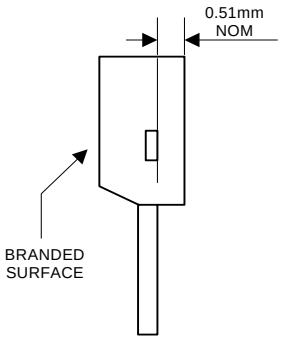
(2) SC59 (Commonly known as SOT23 in Asia)



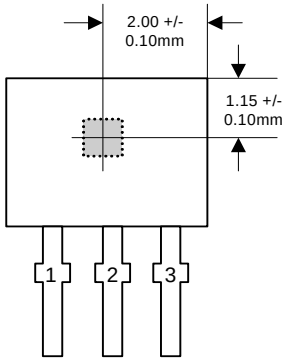
Part Number	Package	Identification Code
AH175	SC59	J5

Package Outline Dimensions (All Dimensions in mm)

(1) Package Type: SIP-3L for Bulk pack

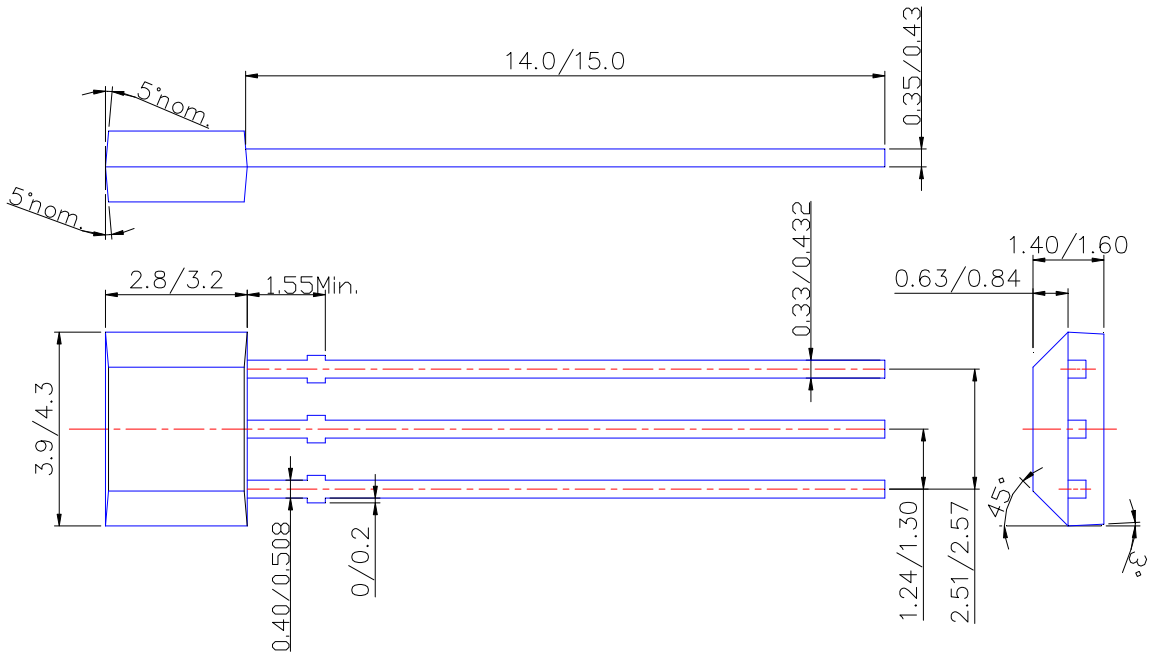


Active Area Depth



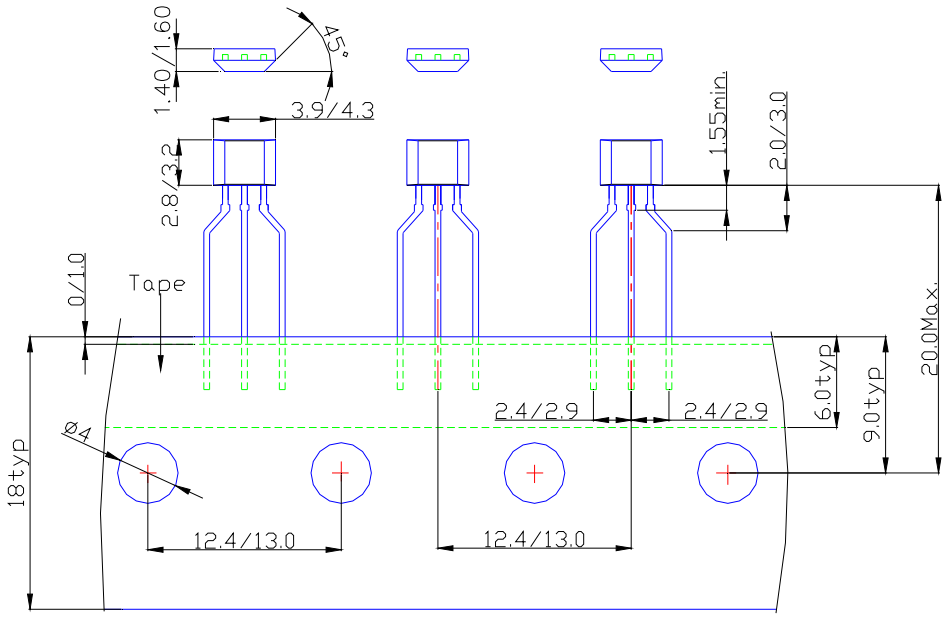
Sensor Location

Package Dimension

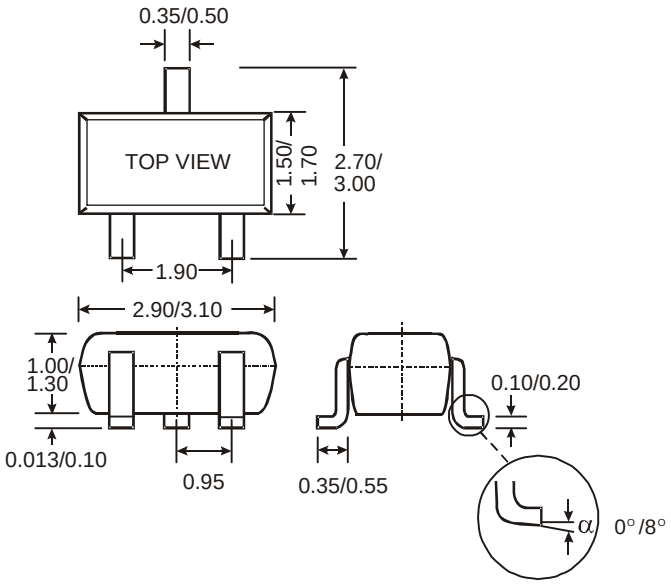


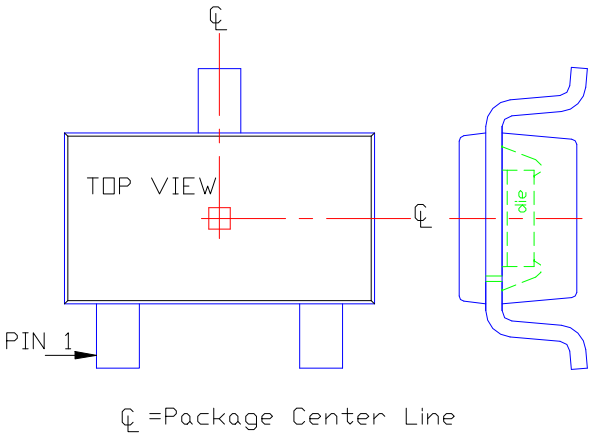
Package Outline Dimensions (Continued)

(2) Package Type: SIP-3L for Ammo pack



(3) SC59 (Commonly known as SOT23 in Asia)





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- Консультации по применению компонента;
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- Техническая поддержка проекта;
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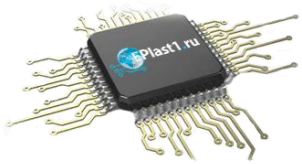

Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)
Факс: 8 (812) 320-02-42
Электронная почта: org@eplast1.ru
Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.