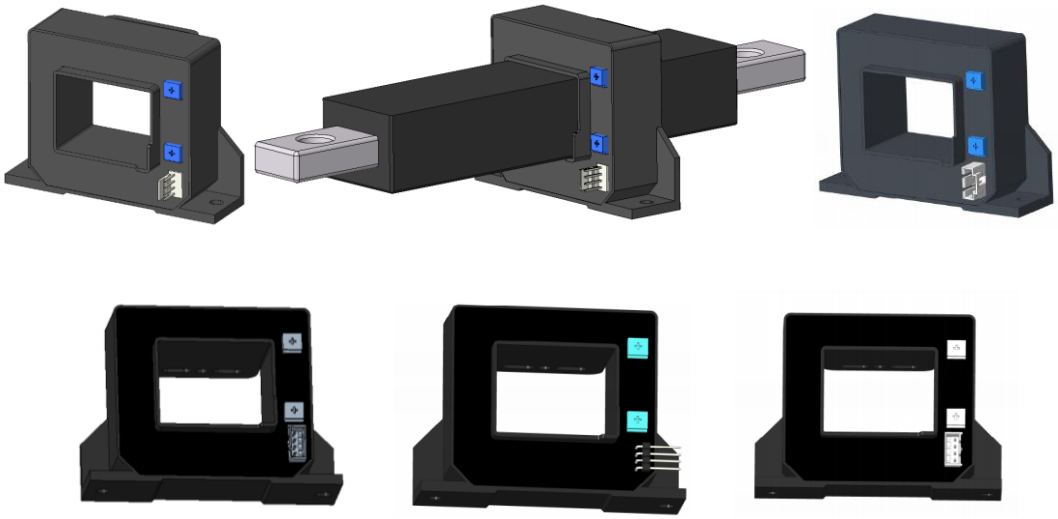
Current Sensor

Product Series: STK-BS/T

Part number: STK-xxxBS/T & STK-xxxBS/T5[1]
STK-xxxBS/T6 & STK-xxxBS/TM
STK-xxxBS/T7 & STK-xxxBS/TA

VERSION： Ver V1.6（宽温版）



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1. Introduction

STK-BS/T series current sensor is based on Hall, and it has an open-loop design. It is suitable for DC, AC pulsed and any kind of irregular current measurement under the isolated conditions.

Typical applications

- Battery supplied applications
- Electric welder power supply
- Motor driver
- UPS

General parameter

Parameter	Symbol	Unit	Value	Comment
Working temperature	T_A	℃	-40 ~ 105	ALL
Storage temperature	T_stg	℃	-40 ~ 105	ALL
Mass	m	g	300	STK-BS/T&&STK-xxxBS/T6&&STK-xxxBS/TM&&STK-xxxBS/T7&&STK-xxxBS/TA
			1140	STK-BS/T5

Absolute maximum rating

Parameter	Symbol	Unit	Value	Comment
Supply voltage（not-destructive）	V_{CC}	V	±18	ALL
ESD rating（HBM）	U_{ESD}	kV	4	ALL

Remark: the unrecoverable damage may occur when the product works on the conditions over the absolute maximum ratings. Long-time working on the absolute maximum ratings may cause the degradation on performance and reliability.

Isolation parameter

Parameter	Symbol	Unit	Value	Comment
RMS voltage for AC test 50Hz/1 min	Ud	kV	4.9	
Clearance distance (pri. -sec)	dCl	mm	7.9	Shortest distance through air
Creepage distance (pri. -sec)	dCp	mm	16	Shortest path along device body
Case material			V0 according to UL 94	
Comparative Tracking Index	CTI	V	600	
Insulation resistance	R_{IS}	MΩ	≥1000	at DC 500V

2. Electrical Data

Condition：T_A = 25℃，Vcc = ±12~ ± 15V[2]

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal current	I_{PN}	A		163		STK-163BS/T STK-163BS/T5
				200		STK-200BS/T STK-200BS/T6 STK-200BS/TM STK-200BS/T7 STK-200BS/TA
				233		STK-233BS/T STK-233BS/T5
				300		STK-300BS/T STK-300BS/T6 STK-300BS/TM STK-300BS/T7 STK-300BS/TA
				320		STK-320BS/T STK-320BS/T5
				400		STK-400BS/T STK-400BS/T6 STK-400BS/TM STK-400BS/T7 STK-400BS/TA
				481		STK-481BS/T STK-481BS/T5
				500		STK-500BS/T STK-500BS/T6 STK-500BS/TM STK-500BS/T7 STK-500BS/TA
				600		STK-600BS/T STK-600BS/T6 STK-600BS/TM STK-600BS/T7 STK-600BS/TA
				728		STK-728BS/T STK-728BS/T5
				750		STK-750BS/T STK-750BS/T6 STK-750BS/TM STK-750BS/T7

						STK-750BS/TA
				800		STK-800BS/T STK-800BS/T6 STK-800BS/TM STK-800BS/T7 STK-800BS/TA
				1000		STK-1000BS/T STK-1000BS/T6 STK-1000BS/TM STK-1000BS/T7 STK-1000BS/TA
				1092		STK-1092BS/T STK-1092BS/T5
				1200		STK-1200BS/T STK-1200BS/T6 STK-1200BS/TM STK-1200BS/T7 STK-1200BS/TA
				1456		STK-1456BS/T STK-1456BS/T5
				1500		STK-1500BS/T STK-1500BS/T6 STK-1500BS/TM STK-1500BS/T7 STK-1500BS/TA
				2097		STK-2097BS/T STK-2097BS/T5
				2184		STK-2097BS/T STK-2184BS/T5
Current range (refer remark)	I_{PM}	A	-489		489	STK-163BS/T STK-163BS/T5
			-600		600	STK-200BS/T STK-200BS/T6 STK-200BS/TM STK-200BS/T7 STK-200BS/TA
			-699		699	STK-233BS/T STK-233BS/T5
			-900		900	STK-300BS/T STK-300BS/T6 STK-300BS/TM STK-300BS/T7 STK-300BS/TA

			-960		960	STK-320BS/T STK-320BS/T5
			-1200		1200	STK-400BS/T STK-400BS/T6 STK-400BS/TM STK-400BS/T7 STK-400BS/TA
			-1443		1443	STK-481BS/T STK-481BS/T5
			-1500		1500	STK-500BS/T STK-500BS/T6 STK-500BS/TM STK-500BS/T7 STK-500BS/TA
			-1800		1800	STK-600BS/T STK-600BS/T6 STK-600BS/TM STK-600BS/T7 STK-600BS/TA
			-2184		2184	STK-728BS/T STK-728BS/T5
			-2250		2250	STK-750BS/T STK-750BS/T6 STK-750BS/TM STK-750BS/T7 STK-750BS/TA
			-2400		2400	STK-800BS/T STK-800BS/T6 STK-800BS/TM STK-800BS/T7 STK-800BS/TA
			-2500		2500	STK-1000BS/T STK-1000BS/T6 STK-1000BS/TM STK-1000BS/T7 STK-1000BS/TA
			-2500		2500	STK-1092BS/T STK-1092BS/T5
			-2500		2500	STK-1200BS/T STK-1200BS/T6 STK-1200BS/TM STK-1200BS/T7 STK-1200BS/TA
			-2500		2500	STK-1456BS/T

						STK-1456BS/T5
			-2500		2500	STK-1500BS/T STK-1500BS/T6 STK-1500BS/TM STK-1500BS/T7 STK-1500BS/TA
			-2500		2500	STK-2097BS/T STK-2097BS/T5
			-2500		2500	STK-2097BS/T STK-2184BS/T5
Supply voltage	Vcc	V		±12~±15		All
Current consumption	Icc	mA		±20		All
Quiescent voltage Vout @ 0 A	Voff	V	-0.04	0	0.04	All
Peak output voltage (Vout @ $\pm I_{PN}$) – Voff RL=10kΩ	V_FS	V		±4		All
Internal output resistance	R_out	Ω		100		Vout
Theoretical gain (Typ)	G_th	mV/A		24.54		STK-163BS/T STK-163BS/T5
				20		STK-200BS/T STK-200BS/T6 STK-200BS/TM STK-200BS/T7 STK-200BS/TA
				17.17		STK-233BS/T STK-233BS/T5
				13.33		STK-300BS/T STK-300BS/T6 STK-300BS/TM STK-300BS/T7 STK-300BS/TA
				12.5		STK-320BS/T STK-320BS/T5
				10		STK-400BS/T STK-400BS/T6 STK-400BS/TM STK-400BS/T7 STK-400BS/TA
				8.32		STK-481BS/T STK-481BS/T5
				8		STK-500BS/T

						STK-500BS/T6 STK-500BS/TM STK-500BS/T7 STK-500BS/TA
				6.66		STK-600BS/T STK-600BS/T6 STK-600BS/TM STK-600BS/T7 STK-600BS/TA
				5.49		STK-728BS/T STK-728BS/T5
				5.33		STK-750BS/T STK-750BS/T6 STK-750BS/TM STK-750BS/T7 STK-750BS/TA
				5		STK-800BS/T STK-800BS/T6 STK-800BS/TM STK-800BS/T7 STK-800BS/TA
				4		STK-1000BS/T STK-1000BS/T6 STK-1000BS/TM STK-1000BS/T7 STK-1000BS/TA
				3.66		STK-1092BS/T STK-1092BS/T5
				3.33		STK-1200BS/T STK-1200BS/T6 STK-1200BS/TM STK-1200BS/T7 STK-1200BS/TA
				2.75		STK-1456BS/T STK-1456BS/T5
				2.66		STK-1500BS/T STK-1500BS/T6 STK-1500BS/TM STK-1500BS/T7 STK-1500BS/TA
				1.91		STK-2097BS/T STK-2097BS/T5
				1.83		STK-2097BS/T STK-2184BS/T5

Rated linearity error	Non-L	% I_{PN}	-1		1	±I_{PN}
Step response time	t_res	μs			5	@90% of I_{PN}
Frequency bandwidth (-3dB)	BW	kHz		25		No RC circuit
Output voltage noise DC ~ 10 kHz DC ~ 100 kHz	Vnoise	mVpp		20 30		All
Accuracy @ 25℃	X	% of I_{PN}	-1		1	All
Temperature coefficient of V_{OE}	TCV_{OE}	mV/K	-1		1	@Working temperature
Temperature coefficient of V_{OUT}	TCV_{OUT}	%/K	-0.1		0.1	@Working temperature

Notes[1]:STK-xxxBS/T and STK-xxxBS/T5 are the same product. The only difference is that STK-xxxBS/T5 is equipped with primary current line. Among them, STK-xxxBS/T series is the normal delivery version of our company, and we recommend using the product of STK-xxxBS/T version. If you need the current line version, please contact the market to apply for STK-xxxBS/T5 model.

Notes:[2] Operating at ±12 V ≤ Vcc< ±15(±5%)V will reduce the measuring range.If the power supply voltage of the user side is ±12V.

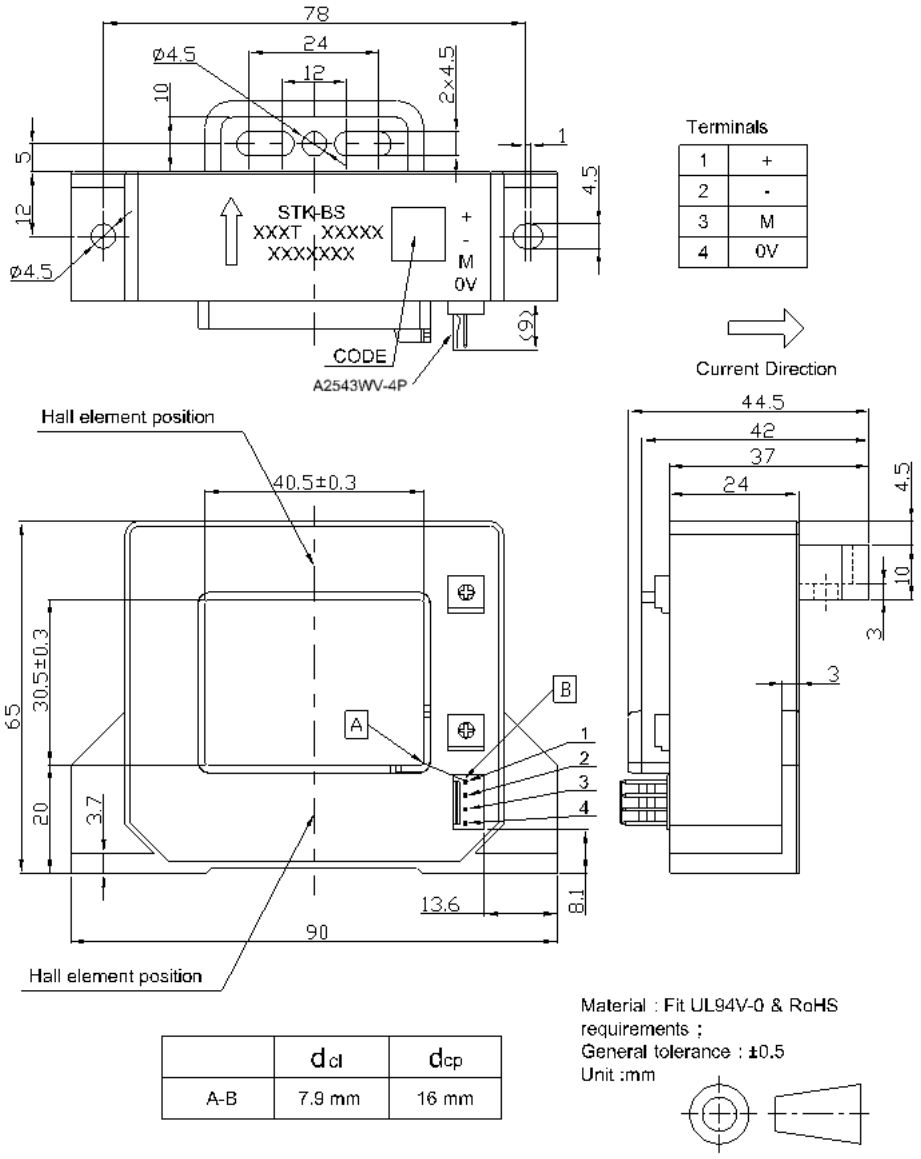
Table 1

Type of mark	Electrical interfaces	brand	current line
STK-BS/T	A2543VW-4P	CHANGJIANG	No
STK-BS/T5	A2543VW-4P	CHANGJIANG	12*25*250mm copper rod
STK-BS/T6	705430003	Molex	No
STK-BS/TM	353120460	Molex	No
STK-BS/T7	non-standard product	JINGSHA	No
STK-BS/TA	353120460	Molex	No

3. Dimension & Pin Definitions

Standard version:

Type of mark is STK-BS/T

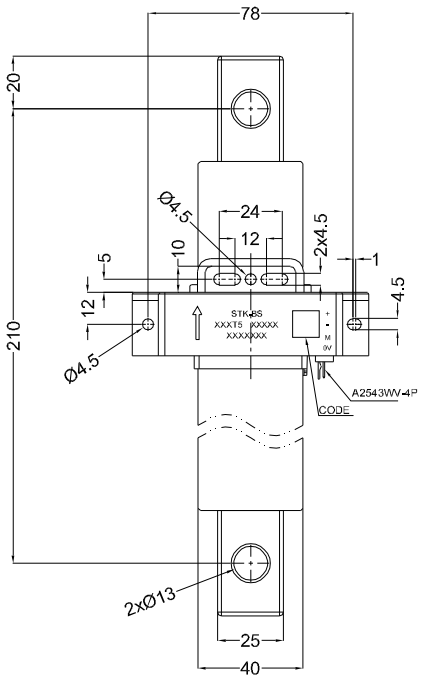


	d_{cl}	d_{cp}
A-B	7.9 mm	16 mm

Material : Fit UL94V-0 & RoHS requirements ;
General tolerance : ±0.5
Unit :mm

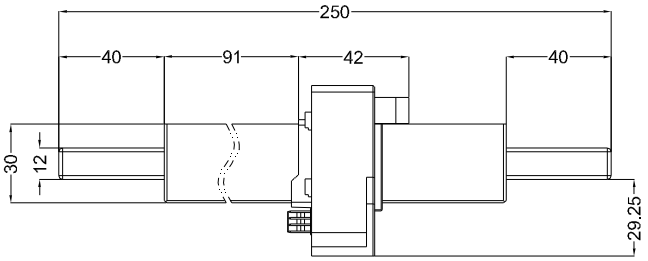
Sensor Primary current hollowing hole have conductor version：

Type of mark is STK-BS/T5

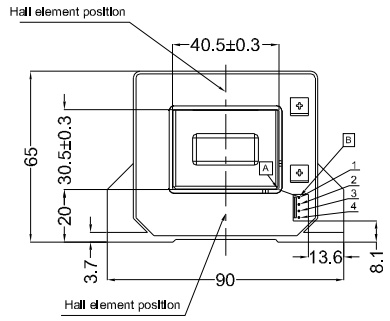


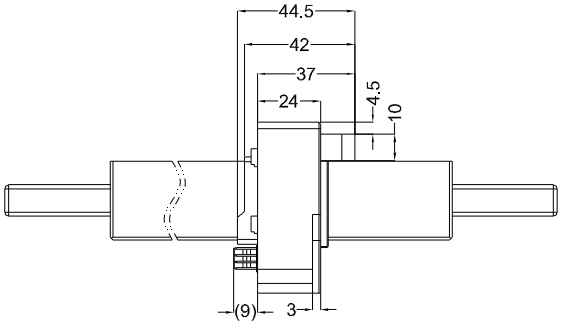
Terminals

1	+
2	-
3	M
4	0V



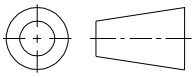
Current Direction



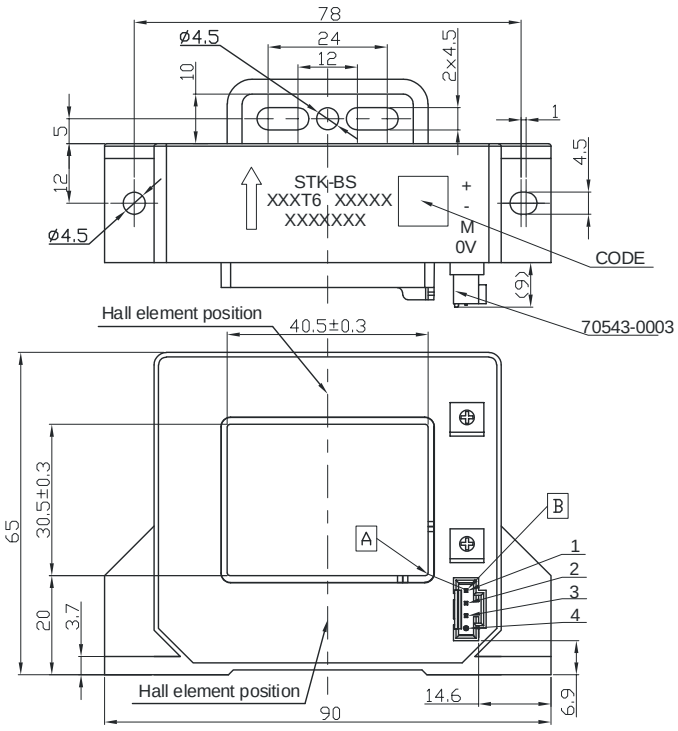


Material : Fit UL94V-0 & RoHS requirements ;
General tolerance : ±0.5
Unit :mm

	dcl	dcp
A-B	7.9mm	16mm

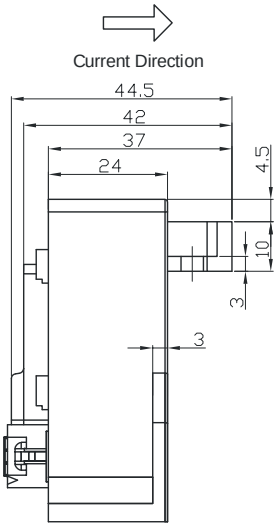


Molex 705430003 connector
Type of mark is STK-BS/T6



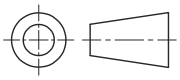
Terminals

1	+
2	-
3	M
4	0V

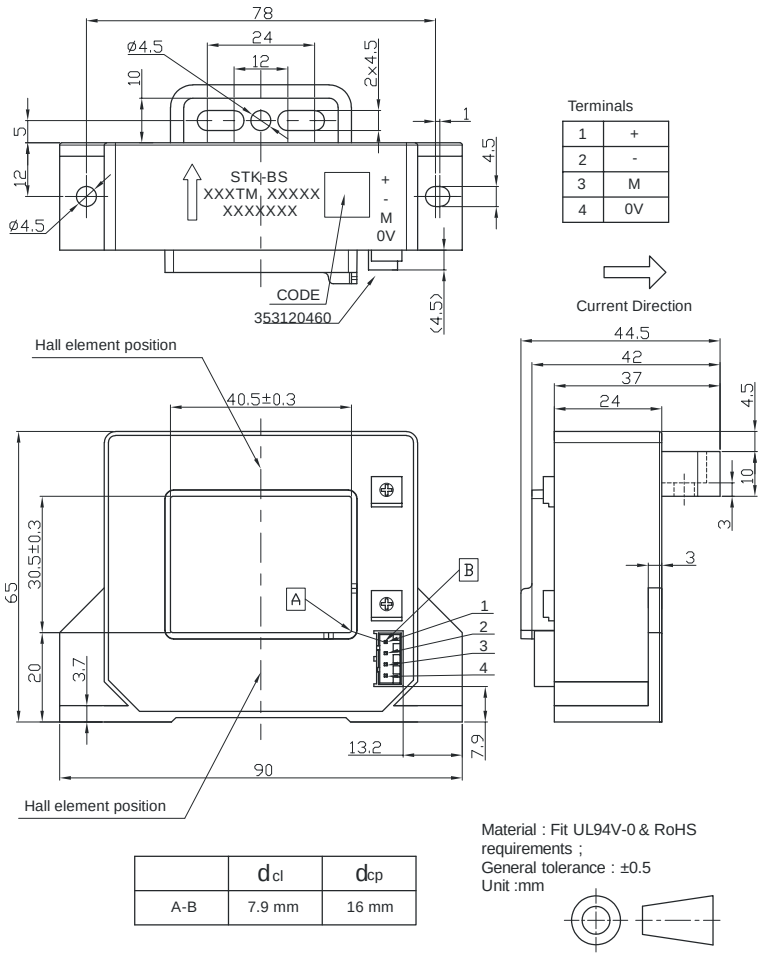


	d_{cl}	d_{cp}
A-B	7.9 mm	16 mm

Material : Fit UL94V-0 & RoHS requirements ;
General tolerance : ±0.5
Unit :mm



Molex 353120460 connector
Type of mark is STK-BS/TM

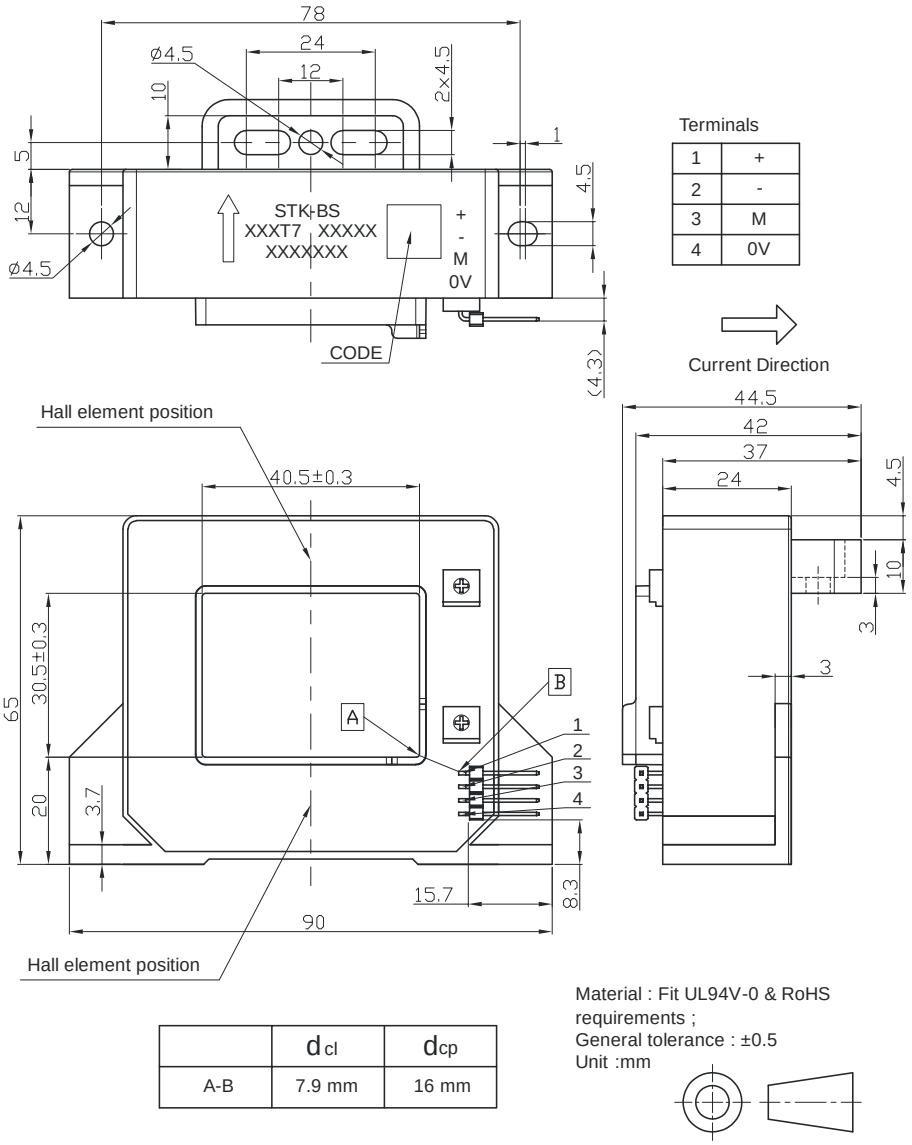


	d_{cl}	d_{cp}
A-B	7.9 mm	16 mm

Material : Fit UL94V-0 & RoHS requirements ;
General tolerance : ±0.5
Unit :mm

non-standard connector

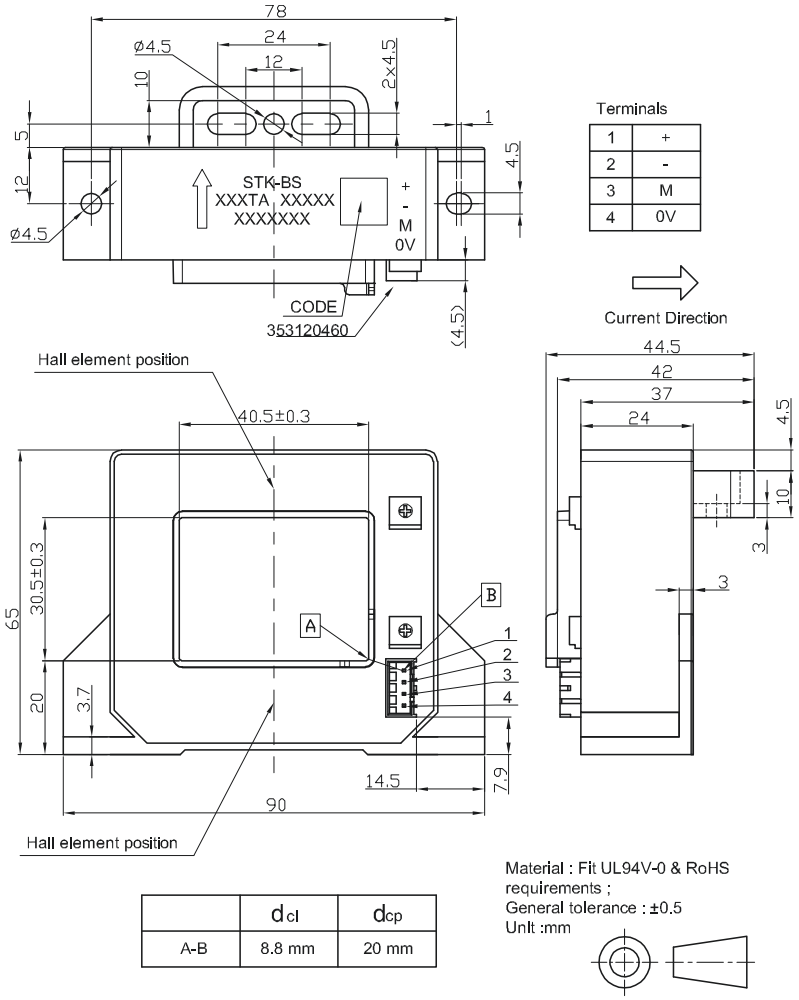
Type of mark is STK-BS/T7



	d_{cl}	d_{cp}
A-B	7.9 mm	16 mm

Material : Fit UL94V-0 & RoHS requirements ;
General tolerance : ±0.5
Unit :mm

Molex 353120460 connector
Type of mark is STK-BS/TA



	d_{cl}	d_{cp}
A-B	8.8 mm	20 mm

Material : Fit UL94V-0 & RoHS requirements ;
General tolerance : ±0.5
Unit :mm