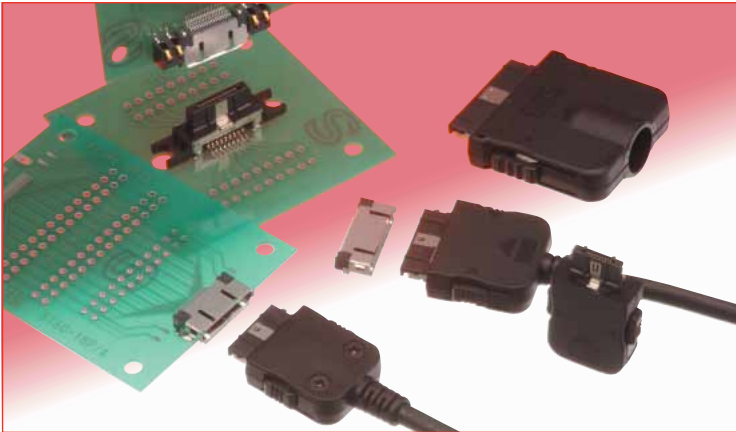


# Interface Connectors for Miniature, Portable Terminal Devices

## ST Series



### Overview

Developed as external input/output connectors for the portable and mobile devices used in consumer markets. As such, the connectors incorporate features required to assure reliable electrical and mechanical performance under extreme and unpredictable conditions.

### Features

#### 1. Strong locking mechanism

To assure continuous reliability of the connection in an unpredictable consumer environment, mated connectors will withstand pull force of 49N max. applied in any direction.

#### 2. Prevention against reversed or angle insertion

Multiple polarization keys will not allow incorrect insertion of the mating plug.

In addition, contacts will not be damaged when the user attempts to insert only the corner of the mating plug.

#### 3. Small size and low profile

Contact pitch of 0.5 mm and utilization of state-of-the-art manufacturing technologies has produced receptacle height of 3 mm above the board and maximum thickness of the plug of only 7 mm.

#### 4. EMI protection

Built-in ground continuity features and EMI shielding assure interference free performance.

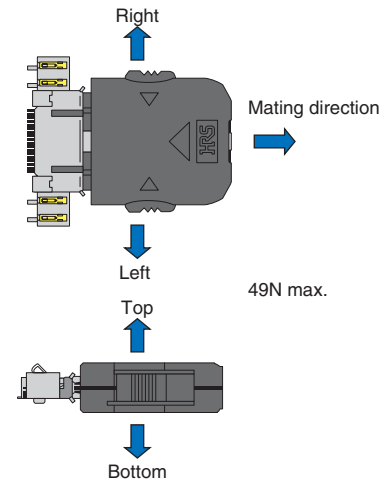
#### 5. Wide variety of contact positions and mounting styles

Standard, reverse, vertical and cradle mountings, as well as utilization of variety of cables and conductors assure application of this connector in diversified applications.

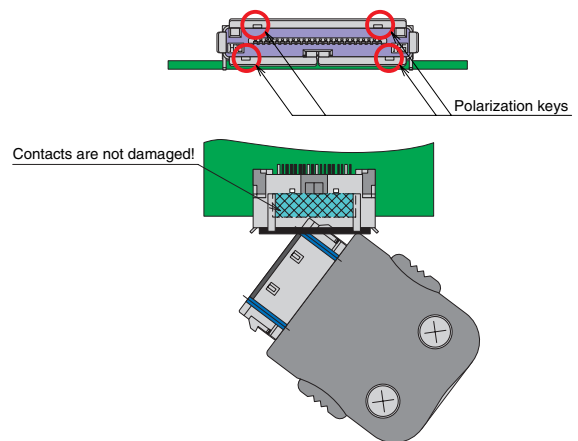
### Applications

Digital Still Cameras, Personal Digital Assistance, Notebook computers, Cellular phones, Portable readers, Mobile recorders and any mobile or portable device requiring high reliability small size input/output connection.

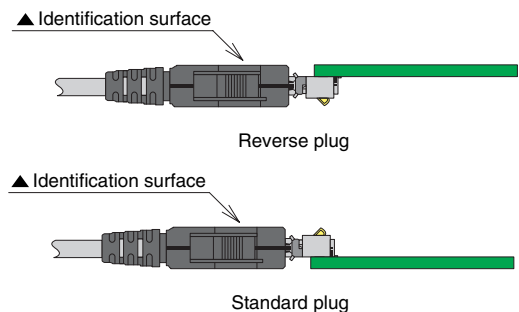
### Strong locking mechanism



### Prevention against reversed or angle insertion



### Plug variations



## ST Series Interface Connectors for Miniature, Portable Terminal Devices

### Specifications

Rating	Current rating	0.5A (1 A max. can be carried via 4 random contacts)	Operating temperature range	: -30°C to +80°C
	Voltage rating	100V AC	Storage temperature range	: -40°C to +85°C (Note)

Characteristic	Specification	Conditions
1. Contact resistance	60m Ω max.	100mA DC
2. Insulation resistance	100M Ω min.	250V DC
3. Dielectric withstanding voltage	No flashover or insulation breakdown.	350V AC/ one minute
4. Mating/un-mating forces	Mating: 29.4N max.	With corresponding connector.
5. Durability (mating/un-mating)	Contact resistance: 50 m Ω max.	10000 cycles
6. Shock	No electrical discontinuity of 10 μ sec. max. Contact resistance: 100m Ω max.	Acceleration of 490 m/s <sup>2</sup> , 11 ms duration, sine half-wave waveform, 3 cycles in each of the 3 axis.
7. Temperature cycle	Contact resistance: 100m Ω max. Insulation resistance: 1000M Ω min.	Temperature : -55°C → +5°C to +35°C → +85°C → +5°C to +35°C Time (Minutes): 30 → 5 → 30 → 5 5 cycles
8. Salt spray	No corrosions	5±1% salt water solution at 35±3°C for 48 hours, after washing without salt, leave for 24 hours at room temperature
9. Lock strength	Fully inserted and locked corresponding connector. No physical damage or electrical failure.	Pull force: 49N max. applied in each of the 3 axis.
10. Shock	No electrical discontinuity of 10 μ sec. max. Contact resistance: 100m Ω max.	Frequency: 10 to 55 Hz, single amplitude of 0.75mm, 2 hours, 3 axis.

Note: Includes temperature rise caused by current flow.

### Materials

#### ● Receptacles and cradles

Component	Material	Finish	Remarks
Insulator	Thermoplastic compound, glass reinforced	Color: Black	UL94V-0
Contacts	Copper alloy	Contact area: Gold plated	—————
Shield	Stainless steel	Tin alloy plating	—————

#### ● Plugs

Component	Material	Finish	Remarks
Insulator	Thermoplastic compound, glass reinforced	Color: Black	UL94V-0
Contacts	Copper alloy	Contact area: Gold plated	—————
Shield	Stainless steel	—————	—————
Cover	Thermoplastic compound, glass reinforced	—————	UL94-HB

### Ordering information

#### ● Receptacles

**ST 60 - 18 P /4 (50)**

① ② ④ ⑤ ⑥ ⑧

#### ● Plugs

**ST 40 X - 18 S - CVR (80)**

① ② ③ ④ ⑤ ⑦ ⑧

#### ● Plug - Cradle type

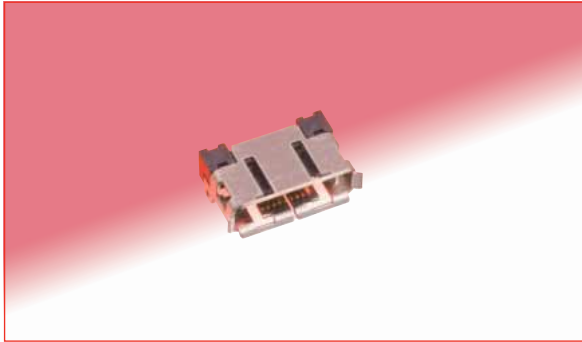
**ST 80 X - 18 S (50)**

① ② ③ ④ ⑤ ⑧

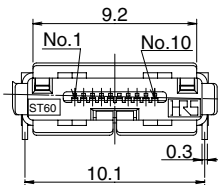
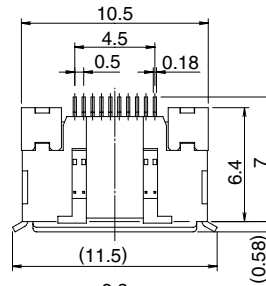
① Series name	: ST
② Termination type	60 : Right angle SMT 40 : Solder type 80 : Cradle, vertical, SMT
③ Shield	X : With shield Blank : Without shield
④ Number of positions	
⑤ Contact type	P : Male contact (Receptacle) S : Female contact (Plug)
⑥ Contact arrangement /4	: Combination, with 4 power contacts
⑦ Plug type	CV : Standard type, for top PCB mount CVR : Reverse type, for bottom PCB mount CV1 : For larger diameter cables
⑧ RoHS compliant	: (50), (80)

## ■ Receptacle

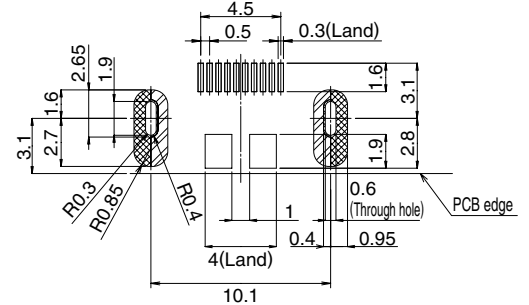
● 10 pos.



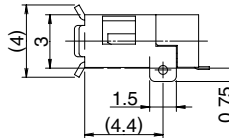
Part Number	CL No.	Packaging	RoHS
ST60-10P	CL241-0022-5	Reel packaging (1500 pieces/reel)	YES



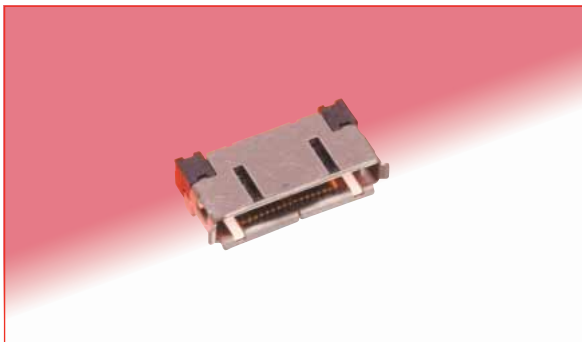
## ◆ Recommended PCB mounting pattern



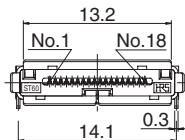
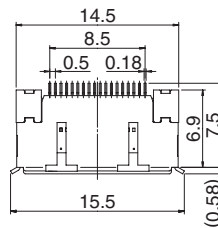
▨: Copper foil + plating resist  
 ▩: Land



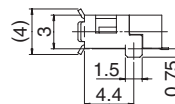
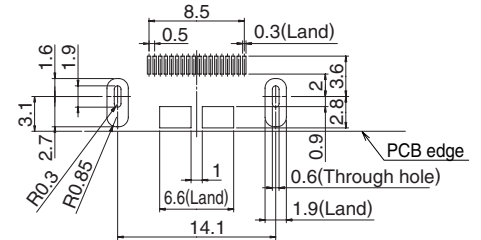
● 18 pos.



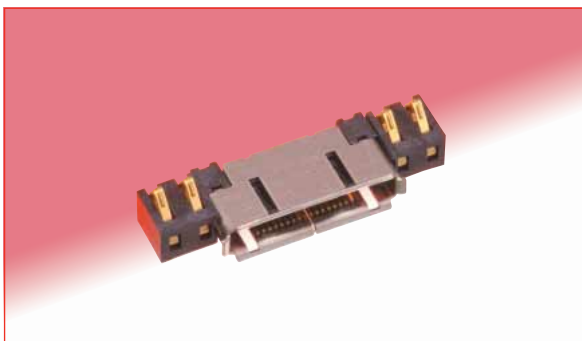
Part Number	CL No.	Packaging	RoHS
ST60-18P(50)	CL241-0011-9-50	Reel packaging (1500 pieces/reel)	YES



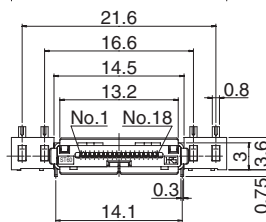
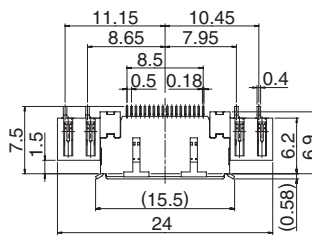
## ◆ Recommended PCB mounting pattern



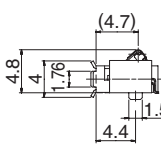
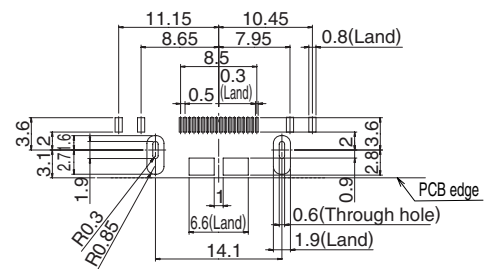
● 18 pos. with 4 power contacts



Part Number	CL No.	Packaging	RoHS
ST60-18P/4(50)	CL241-0005-6-50	Reel packaging (1000 pieces/reel)	YES

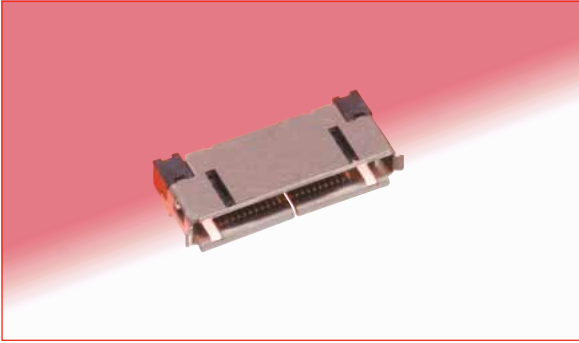


## ◆ Recommended PCB mounting pattern

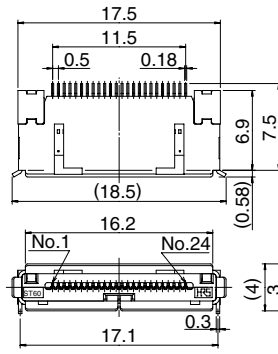


ST Series Interface Connectors for Miniature, Portable Terminal Devices

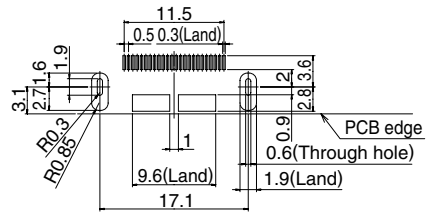
● 24 pos.



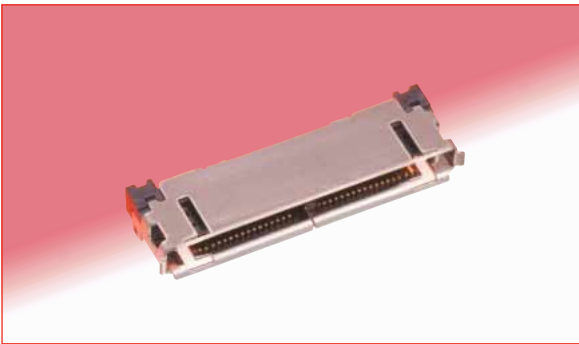
Part Number	CL No.	Packaging	RoHS
ST60-24P(50)	CL241-0003-0-50	Reel packaging (1500 pieces/reel)	YES



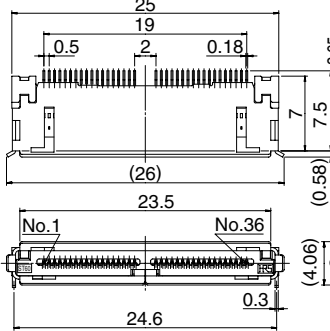
◆ Recommended PCB mounting pattern



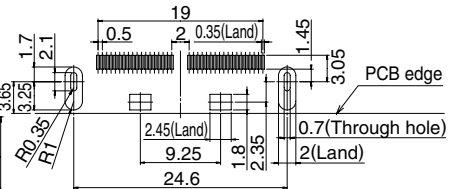
● 36 pos.



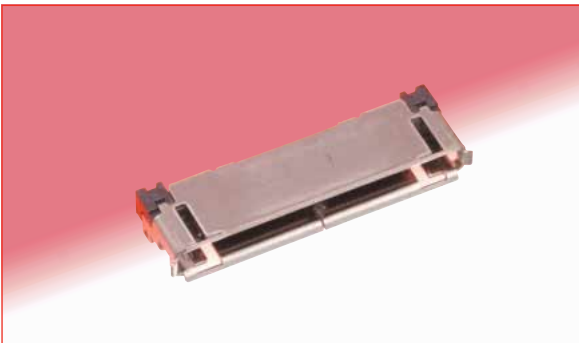
Part Number	CL No.	Packaging	RoHS
ST60-36P	CL241-0033-1	Reel packaging (1500 pieces/reel)	YES



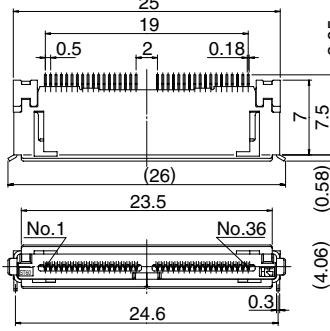
◆ Recommended PCB mounting pattern



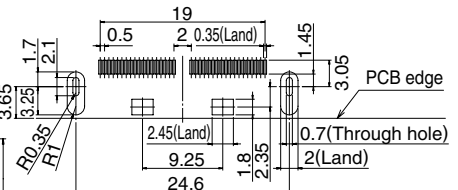
● 36 pos. reverse type



Part Number	CL No.	Packaging	RoHS
ST60-36PR	CL241-0036-0	Reel packaging (1500 pieces/reel)	YES

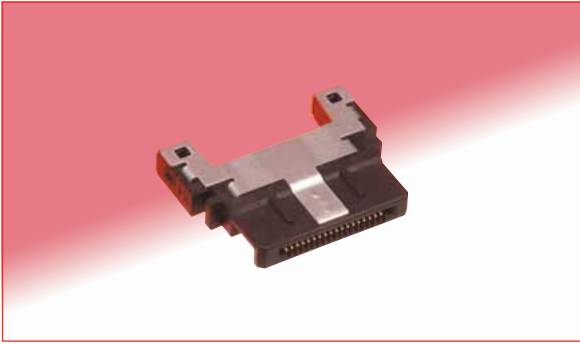


◆ Recommended PCB mounting pattern

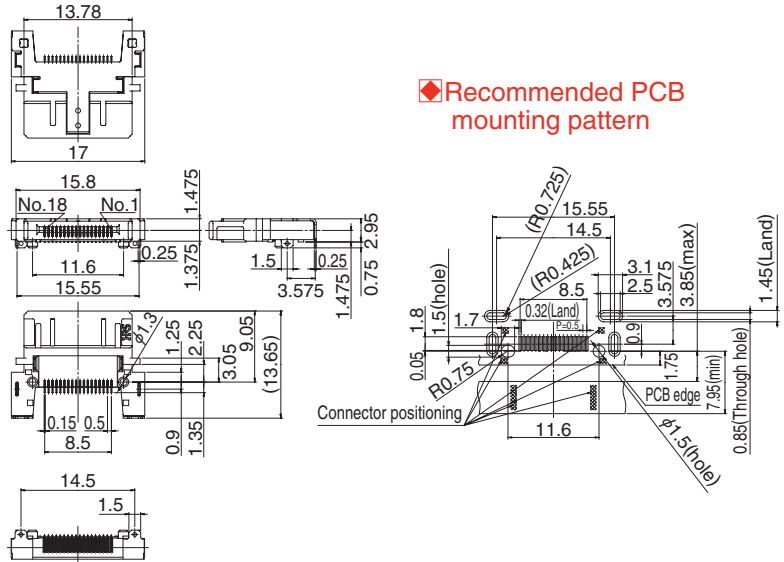


## ■ Plug – cradle type(Horizontal)

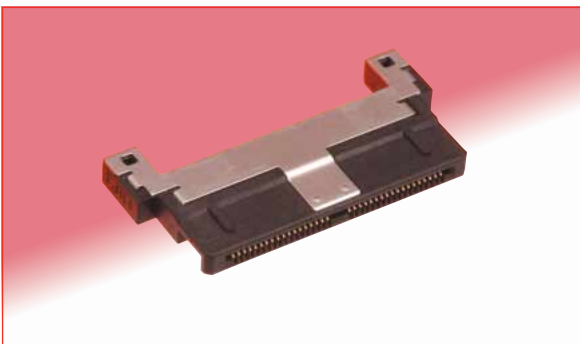
● 18 pos.



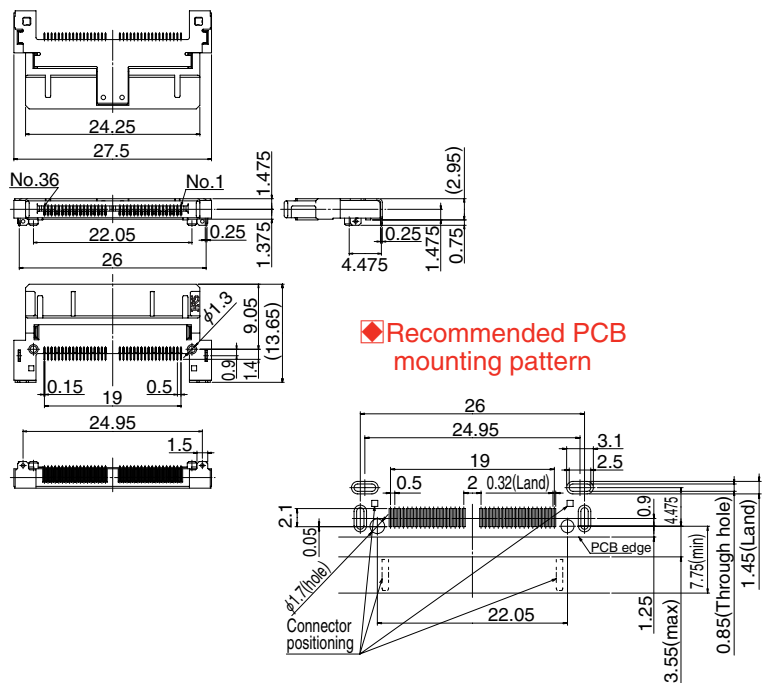
Part Number	CL No.	Packaging	RoHS
ST60X-18S	CL241-0028-1	Reel packaging (900 pieces/reel)	YES



● 36 pos.



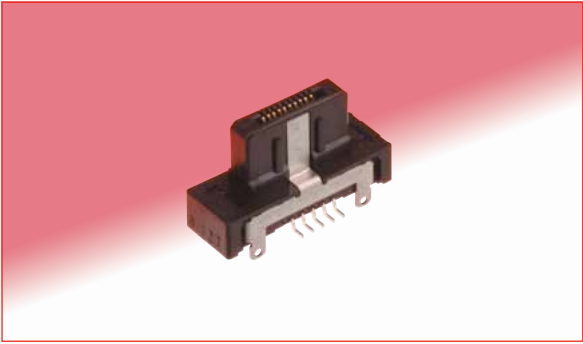
Part Number	CL No.	Packaging	RoHS
ST60X-36S	CL241-0035-7	Reel packaging (900 pieces/reel)	YES



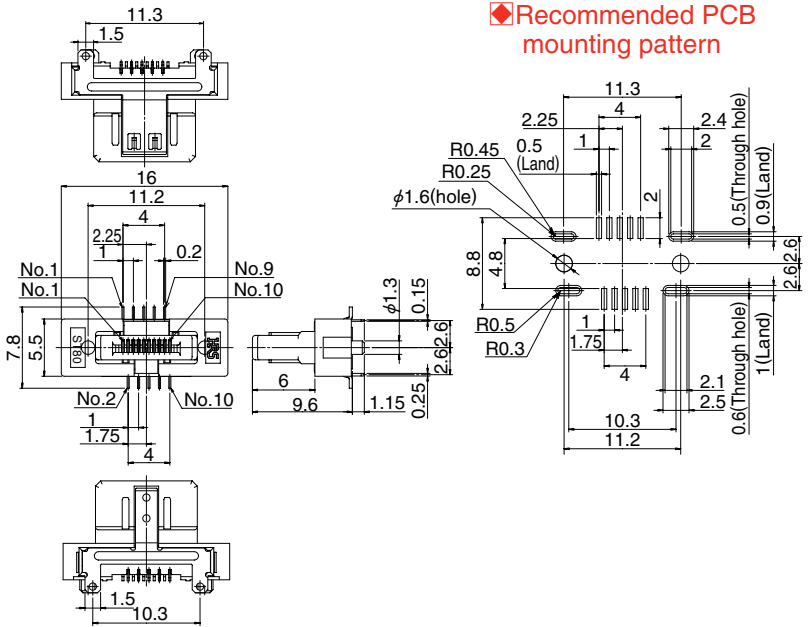
ST Series Interface Connectors for Miniature, Portable Terminal Devices

■ Plug – cradle type(Vertical)

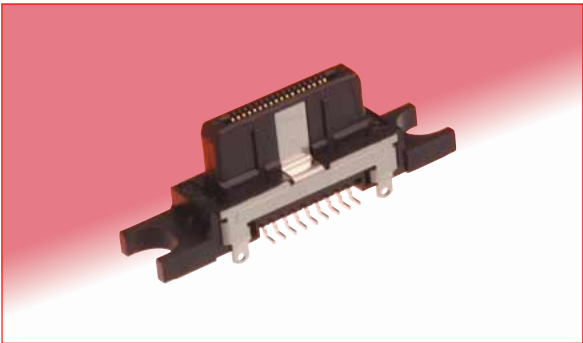
● 10 pos.



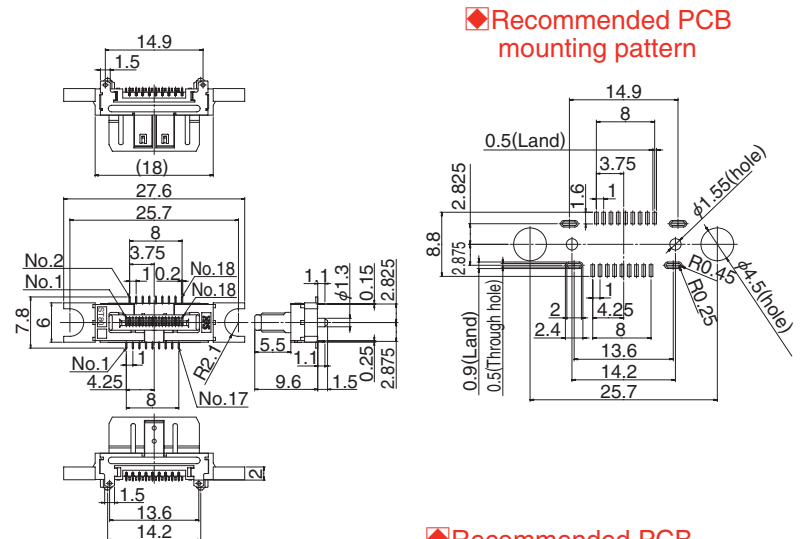
Part Number	CL No.	Packaging	RoHS
ST80X-10S	CL241-0030-3	Reel packaging (400 pieces/reel)	YES



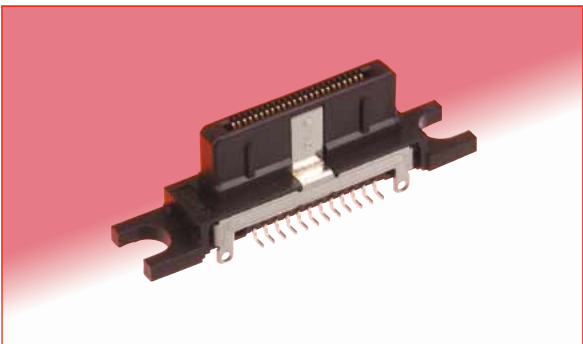
● 18 pos.



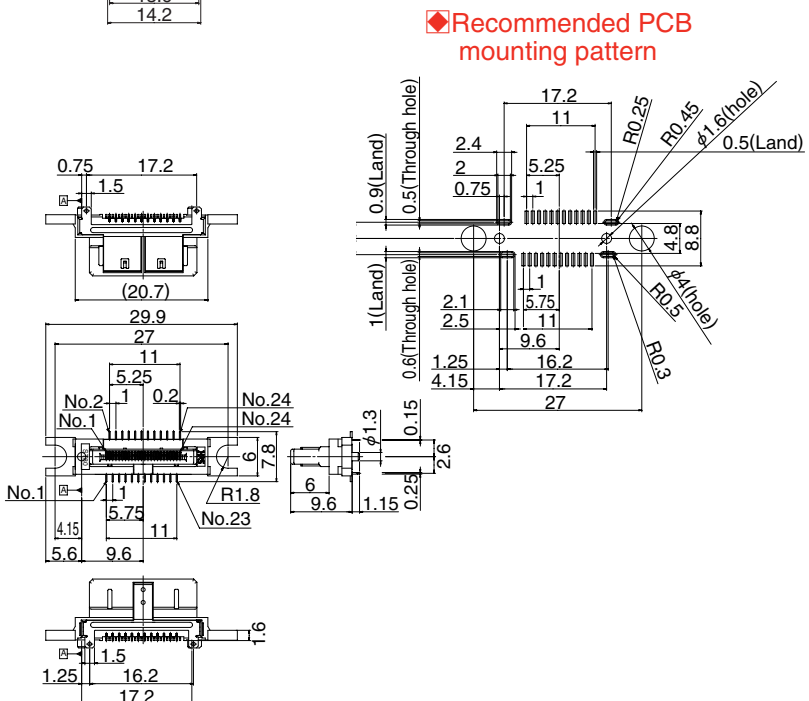
Part Number	CL No.	Packaging	RoHS
ST80X-18S(50)	CL241-0020-0-50	Reel packaging (400 pieces/reel)	YES



● 24 pos.

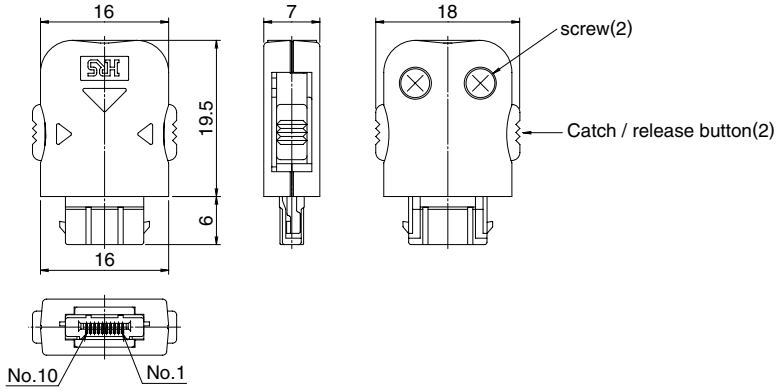


Part Number	CL No.	Packaging	RoHS
ST80X-24S(50)	CL241-0037-2-50	Reel packaging (400 pieces/reel)	YES



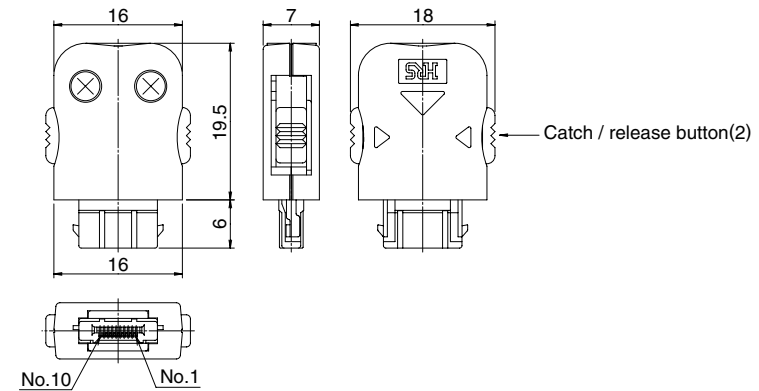
## ■ Plug

- 10 pos. (Non-shielded type, for 4mm max. cable diameter)



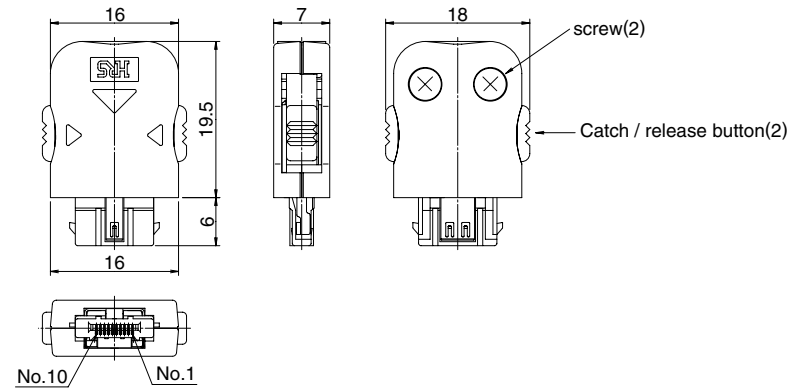
Part Number	CL No.	RoHS
ST40-10S-CV(80)	CL241-0021-2-80	YES

- 10 pos. (Reverse, non-shielded type, for 4mm max. cable diameter)



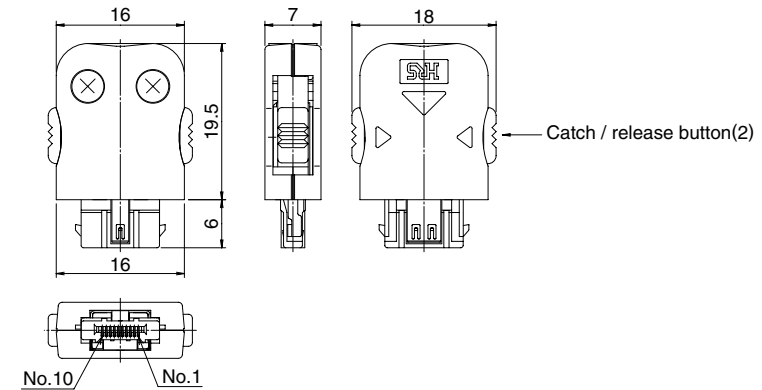
Part Number	CL No.	RoHS
ST40-10S-CVR(80)	CL241-0040-7-80	YES

- 10 pos. (Shielded type, for 4mm max. cable diameter)



Part Number	CL No.	RoHS
ST40X-10S-CV(80)	CL241-0041-0-80	YES

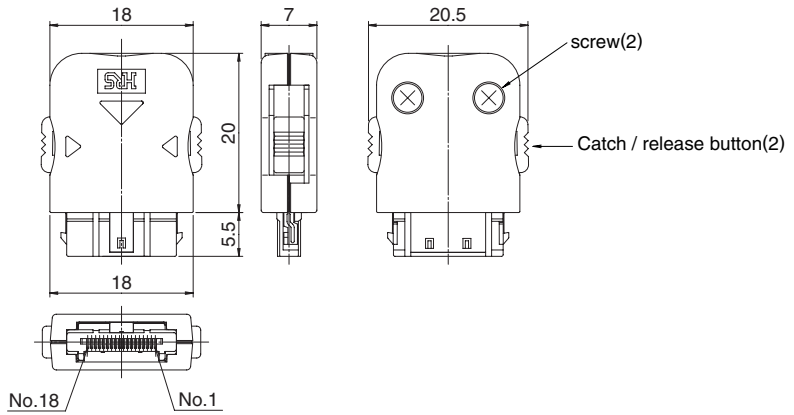
- 10 pos. (Reverse, shielded type, for 4mm max. cable diameter)



Part Number	CL No.	RoHS
ST40X-10S-CVR(80)	CL241-0029-4-80	YES

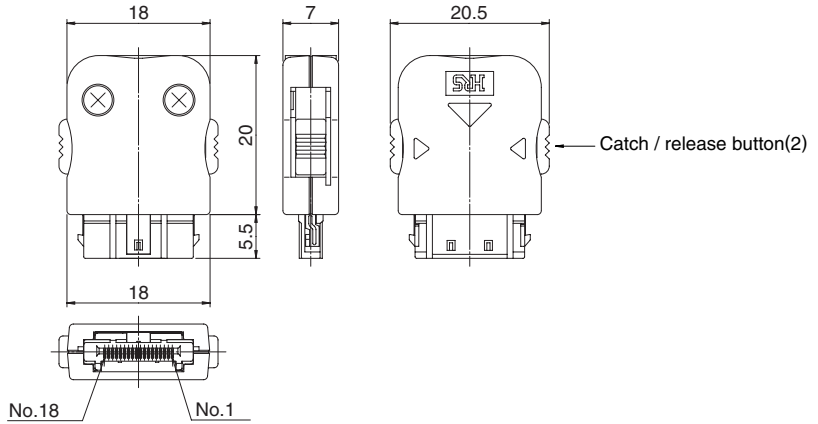
ST Series Interface Connectors for Miniature, Portable Terminal Devices

● 18 pos. (Shielded type, for 4mm max. cable diameter)



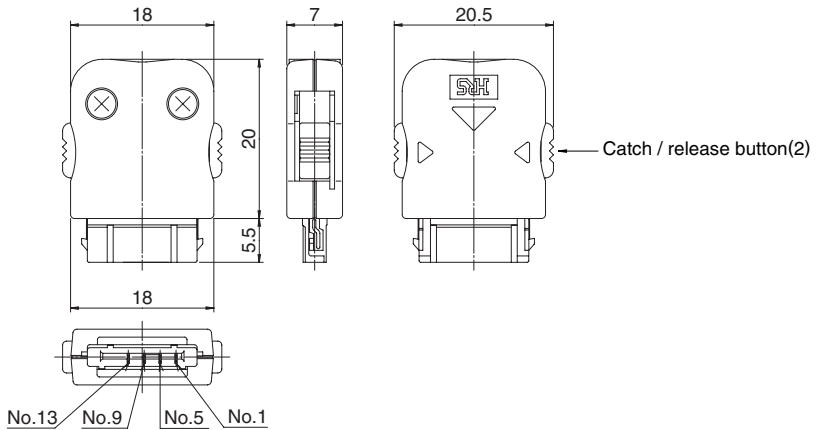
Part Number	CL No.	RoHS
ST40X-18S-CV(80)	CL241-0012-1-80	YES

● 18 pos. (Reverse, shielded type, for 4mm max. cable diameter)



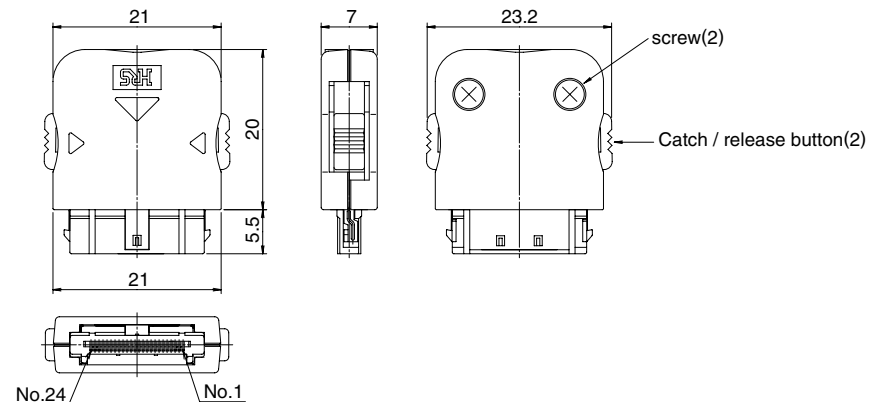
Part Number	CL No.	RoHS
ST40X-18S-CVR(80)	CL241-0016-2-80	YES

● 4 pos. (For opening size as 18 pos., reverse, non-shielded, for 4mm max. cable diameter)



Part Number	CL No.	RoHS
ST40-18(4)S-CVR(80)	CL241-0032-9-80	YES

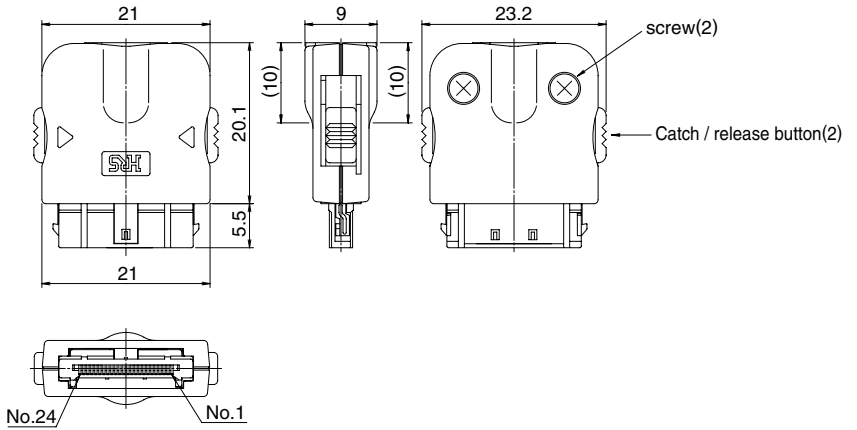
● 24 pos. (Shielded type, for 4mm max. cable diameter)



Part Number	CL No.	RoHS
ST40X-24S-CV(80)	CL241-0004-3-80	YES

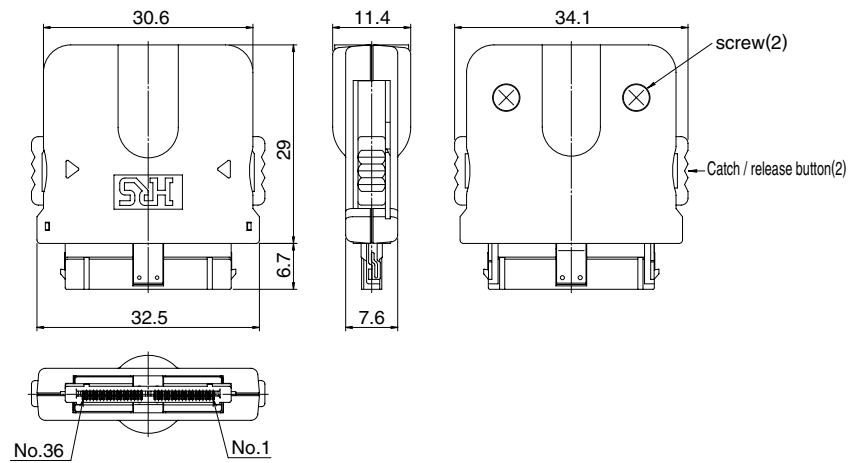


● 24 pos. (Shielded type, for 5.8mm max. cable diameter)



Part Number	CL No.	RoHS
ST40X-24S-CV1(80)	CL241-0023-8-80	YES

● 36 pos. (Shielded type, for 7mm max. cable diameter)

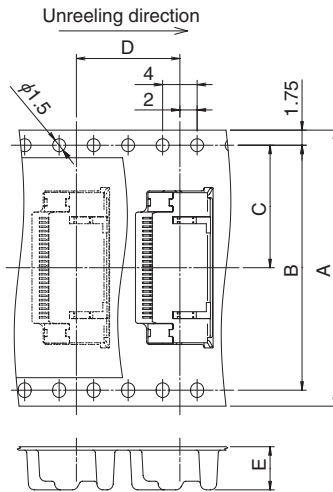


Part Number	CL No.	RoHS
ST40X-36S-CV(80)	CL241-0034-4-80	YES

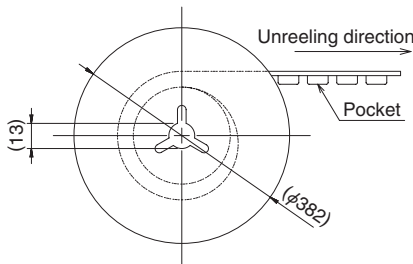
Note: Plug assemblies will require additional components. Contact Hirose Electric representative for detailed descriptions and installation instructions.

## ◆ Packaging Specification

### ● Embossed Carrier Tape Dimensions



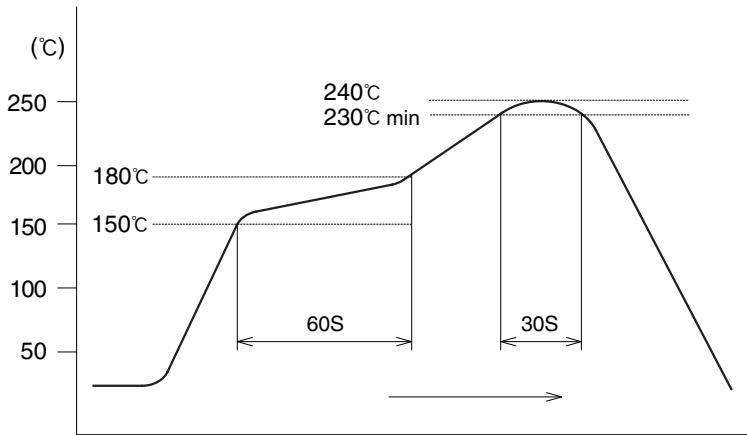
### ● Reel Dimensions



### ● Reel Dimensions

Part Number	A	B	C	D	E	pcs. / reel
ST60-10P	24	—	11.5	12	5	1500
ST60-18P(50)	24	—	11.5	12	5	1500
ST60-24P(50)	32	28.4	14.2	12	5	1500
ST60-36P	44	40.4	20.2	12	5	1500
ST60-18P/4(50)	44	40.4	20.2	12	6.2	1000
ST60-36PR	44	40.4	20.2	12	5	1500
ST80X-10S	24	—	11.5	16	12.2	400
ST80X-18S(50)	44	40.4	20.2	16	12.7	400
ST80X-24S(50)	44	40.4	20.2	16	12.7	400
ST60X-18S	32	28.4	14.2	20	4.95	900
ST60X-36S	44	40.4	20.2	20	4.85	900

## ◆ Recommended Temperature Profile (Lead-free soldering compound)



HRS test conditions

Solder composition: Paste, 96.5%Sn/3.0%Ag/0.5%Cu

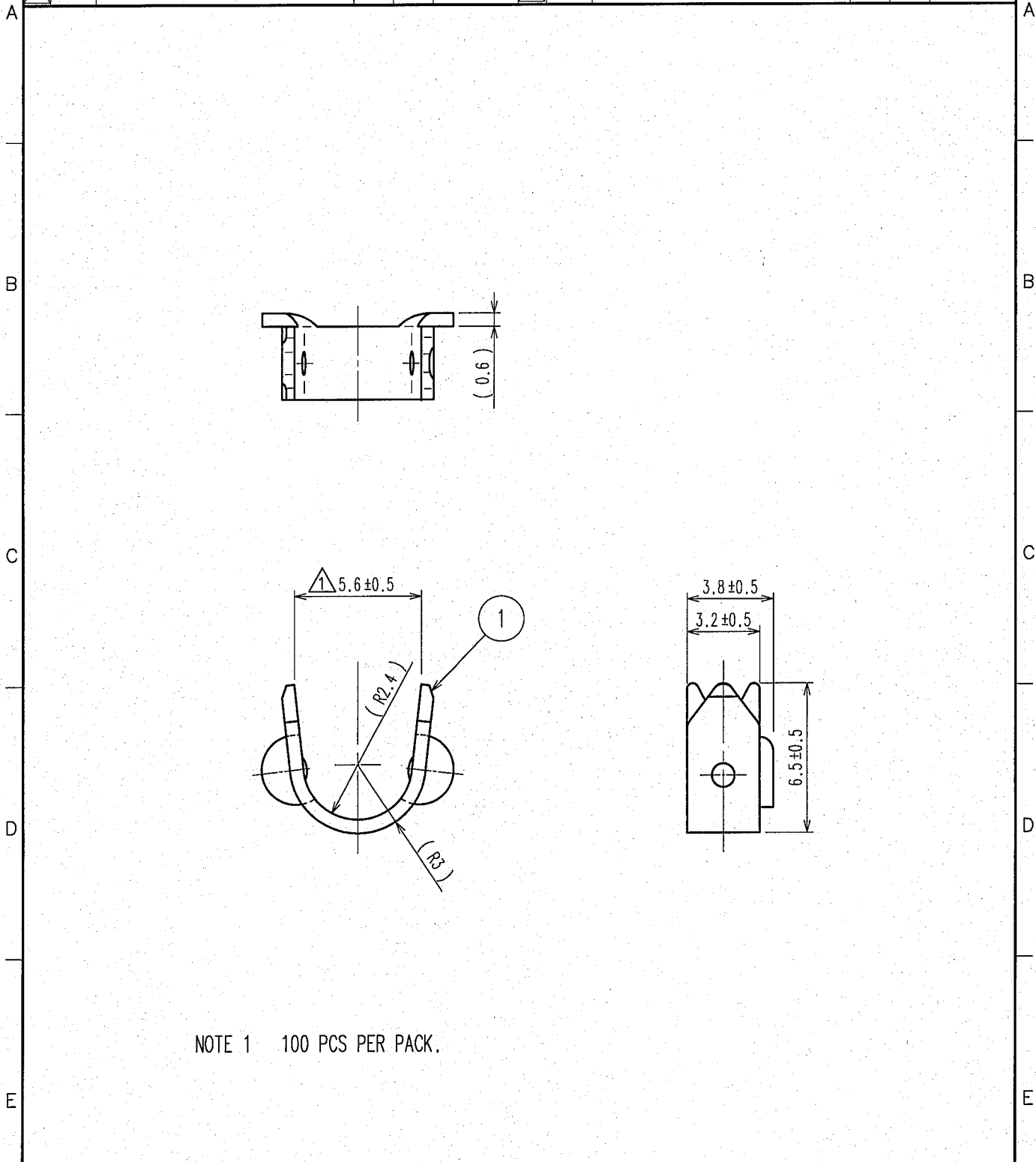
Test board: Glass epoxy 35mm×35mm×0.8mm thick

The temperature profiles are based on the above conditions. In individual applications the actual temperature may vary, depending on solder paste type, volume/thickness and board size/thickness. Consult your solder paste and equipment manufacturer for specific recommendations.

2009/04/23 17:08:44 SROper

参考図：ご確認用。正式には別途納入仕様書をご請求願います。

1	2			3			4							
COUNT	DESCRIPTION OF REVISIONS			BY	CHKD	DATE	COUNT	DESCRIPTION OF REVISIONS			BY	CHKD	DATE	
△	1	DIS-E-001244			T.M	N.M	07.01.30	△						..
△							..	△						..
△							..	△						..



NOTE 1 100 PCS PER PACK.

1	BRASS							
NO.	MATERIAL	FINISH, REMARKS		NO.	MATERIAL	FINISH, REMARKS		
CODE NO. (OLD) CL				DRAWN	DESIGNED	CHECKED	APPROVED	RELEASED
				T.MIURA '06.04.14	T.MIURA '06.04.14	N.MIYAZAKI '06.04.14	A.SUZUKI '06.04.14	
DRAWING NO. EDC4-125706		PART NO. ST40X-CM(4.0-5.0)						
SCALE 4 : 1		CODE NO. CL241-0055-4				1 1		
UNITS mm		<b>HRS</b> HIROSE ELECTRIC CO.,LTD.						

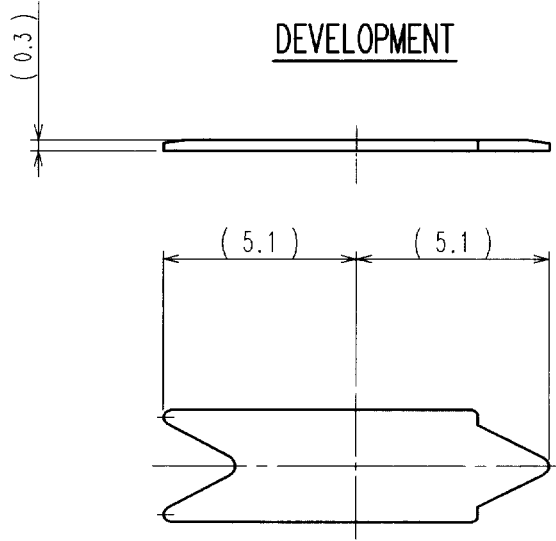
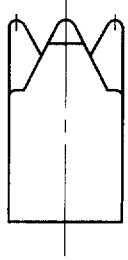
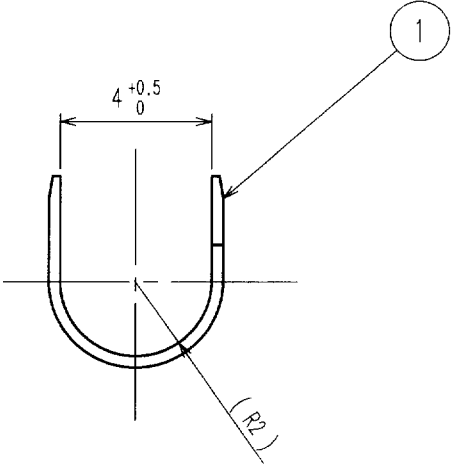
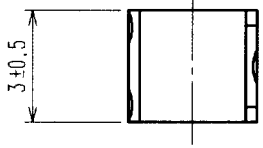
TO



2009/04/23 17:08:44 SROper

参考図：ご確認用。正式には別途納入仕様書をご請求願います。

1	2	3	4						
COUNT	DESCRIPTION OF REVISIONS	BY	CHKD	DATE	COUNT	DESCRIPTION OF REVISIONS	BY	CHKD	DATE
△				..	△				..
△					△				..
△					△				..



NOTE THIS METAL COMPONENT IS TO CRAMP  $\phi$  4 CABLE AND CONNECT SHIELDING PLATE OF ST40X SERIES.

1	BRASS				
NO.	MATERIAL	FINISH, REMARKS	NO.	MATERIAL	FINISH, REMARKS

CODE NO. (OLD)	DRAWN	DESIGNED	CHECKED	APPROVED	RELEASED
	<i>F. Taniguchi</i>	<i>F. Taniguchi</i>	<i>Y. Enami</i>	<i>M. Matsuyuki</i>	
	02.06.03	02.06.03	02.6.3	02.6.3	

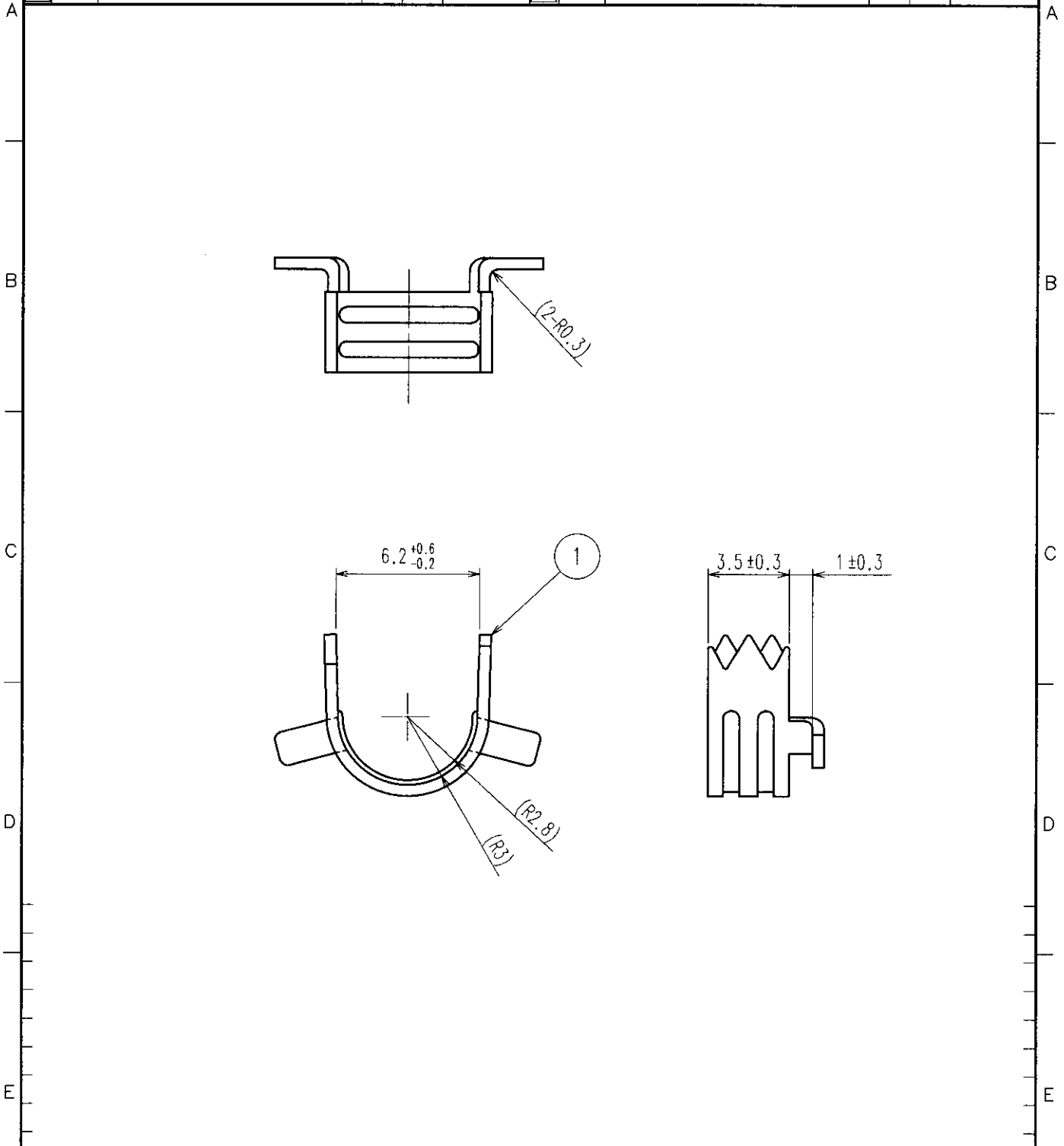
 SCALE 5 : 1 UNITS mm	DRAWING NO.	PART NO.
	EDC4-123745	ST40X-CM(4.0)
 HRS HIROSE ELECTRIC CO., LTD.	CODE NO.	
	CL241-0014-7	1/1

TO
Q1

2009/04/23 17:08:44 SROper

参考図：ご確認用。正式には別途納入仕様書をご請求願います。

1	2			3			4		
COUNT	DESCRIPTION OF REVISIONS	BY	CHKD	DATE	COUNT	DESCRIPTION OF REVISIONS	BY	CHKD	DATE
△				..	△				..
△					△				..
△					△				..



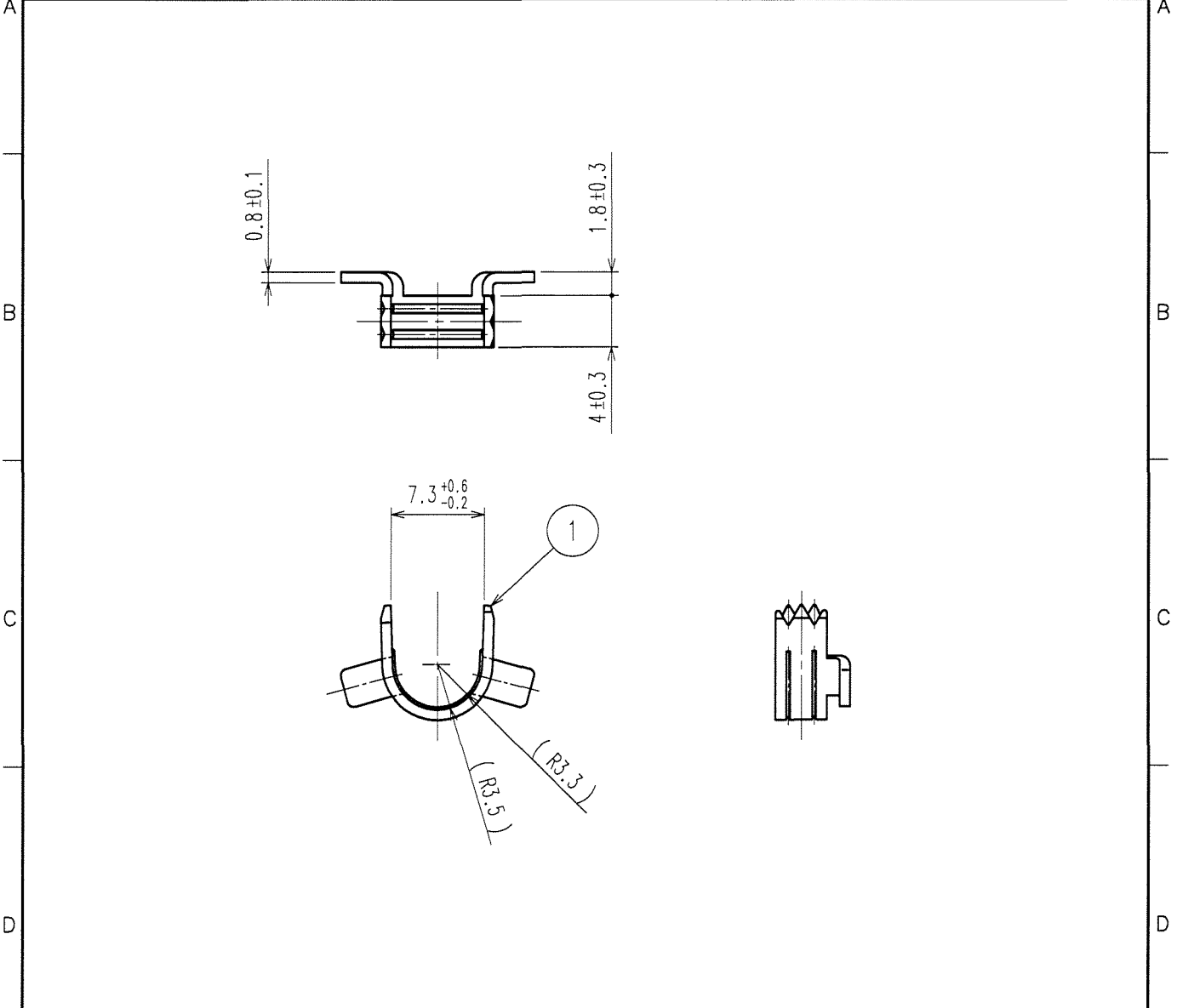
1	COPPER ALLOY						
NO.	MATERIAL	FINISH, REMARKS	NO.	MATERIAL	FINISH, REMARKS		
CODE NO. (OLD) CL?			DRAWN	DESIGNED	CHECKED	APPROVED	RELEASED
			<i>H. Yamaoka</i>	<i>H. Yamaoka</i>	<i>M. Nakamura</i>	<i>[Signature]</i>	
			03.7.14	03.7.14	03.7.14	03.7.14	
DRAWING NO. EDC4-124188		PART NO. ST40X-CM(5.8)		CODE NO. CL241-0024-0		1/1	
SCALE 2 : 1		UNITS mm		HRS HIROSE ELECTRIC CO., LTD.			

TO
Q1

2009/04/23 17:08:45 SRoper

参考図：ご確認用。正式には別途納入仕様書をご請求願います。

1		2				3				4				
COUNT	DESCRIPTION OF REVISIONS	BY	CHKD	DATE	COUNT	DESCRIPTION OF REVISIONS	BY	CHKD	DATE	COUNT	DESCRIPTION OF REVISIONS	BY	CHKD	DATE
△					△					△				
△					△					△				
△					△					△				



NOTE 1. THIS IS THE CLAMP METAL FOR FOLLOWING PRODUCT.

ST40X-36S-CV(80) CL241-0034-4-80

2. APPLICABLE WIRE OUTSIDE DIAMETER : φ 6.8

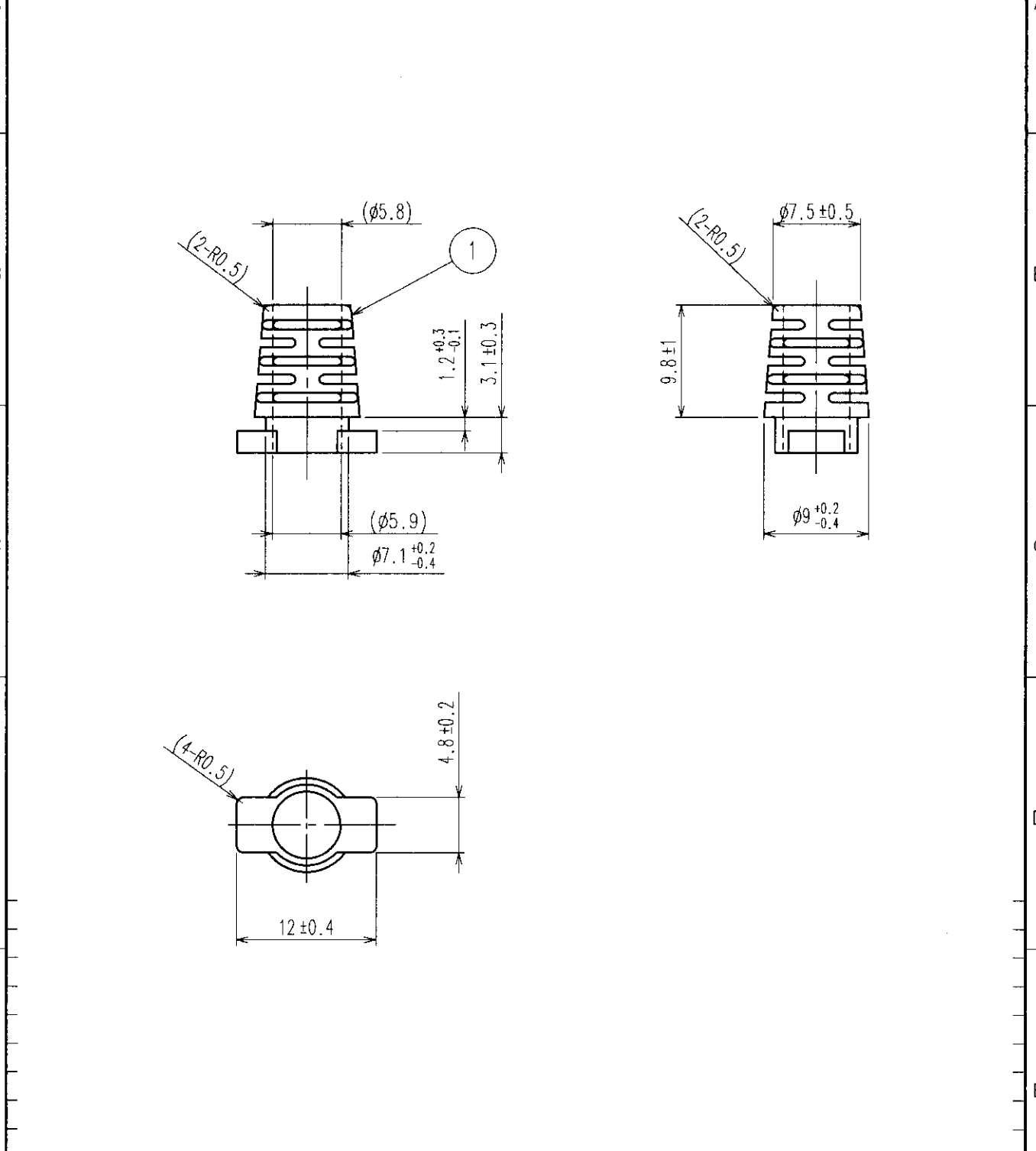
1	COPPER ALLOY								
NO.	MATERIAL	FINISH, REMARKS			NO.	MATERIAL	FINISH, REMARKS		
CODE NO. (OLD)				DRAWN	DESIGNED	CHECKED	APPROVED	RELEASED	
				<i>K. Nagamura</i> '07.01.24	<i>K. Nagamura</i> '07.01.24	<i>M. Mizutani</i> '07.01.25	<i>[Signature]</i> '07.1.25		
DRAWING NO. EDC4-126206		PART NO. ST40X-CM1(6.8)							
SCALE 2 : 1		UNITS mm			CODE NO. CL241-0063-2		1/1		
<b>HRS</b>		HIROSE ELECTRIC CO., LTD.							

TO

2009/04/23 17:10:11 SROper

参考図：ご確認用。正式には別途納入仕様書をご請求願います。

1	2	3	4						
COUNT	DESCRIPTION OF REVISIONS	BY	CHKD	DATE	COUNT	DESCRIPTION OF REVISIONS	BY	CHKD	DATE
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△					△				
△					△				



1	ELASTOMER	UL94HB BLACK					
NO.	MATERIAL	FINISH, REMARKS	NO.	MATERIAL	FINISH, REMARKS		
CODE NO. (OLD)			DRAWN	DESIGNED	CHECKED	APPROVED	RELEASED
			<i>N. Yamada</i>	<i>N. Yamada</i>	<i>M. Nohmura</i>	<i>[Signature]</i>	
			03.7.14	03.7.14	03.7.14	03.7.14	
DRAWING NO. EDC4-124189		PART NO. ST40X-BS(5.8)		CODE NO. CL241-0025-3		1/1	
SCALE 2 : 1		UNITS mm		HRS HIROSE ELECTRIC CO., LTD.			

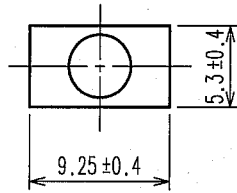
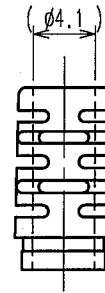
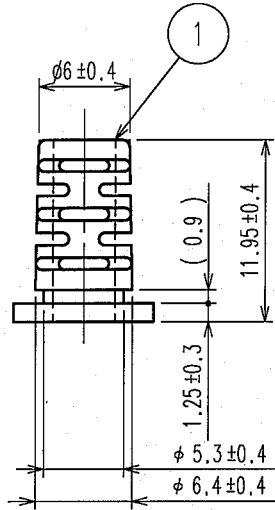
TO
Q1



2009/04/23 17:10:11 SRoper

参考図：ご確認用。正式には別途納入仕様書をご請求願います。

1		2			3			4		
COUNT	DESCRIPTION OF REVISIONS	BY	CHKD	DATE	COUNT	DESCRIPTION OF REVISIONS	BY	CHKD	DATE	
△				. .	△				. .	
△				. .	△				. .	
△				. .	△				. .	



NOTE 1 100 PCS PER PACK.

1	PE	COLOR: BLACK							
NO.	MATERIAL	FINISH, REMARKS		NO.	MATERIAL	FINISH, REMARKS			
CODE NO. (OLD) CL				DRAWN	DESIGNED	CHECKED	APPROVED	RELEASED	
				J. Miura 06.05.24	J. Miura 06.05.24	N. Miyazaki 06.05.24	<i>[Signature]</i> 06.05.24		
DRAWING NO. EDC4-125705		PART NO. ST40X-BS(4.0)							
SCALE 4 : 1		CODE NO. CL241-0054-1			1/1				
UNITS mm		HRS HIROSE ELECTRIC CO., LTD.							

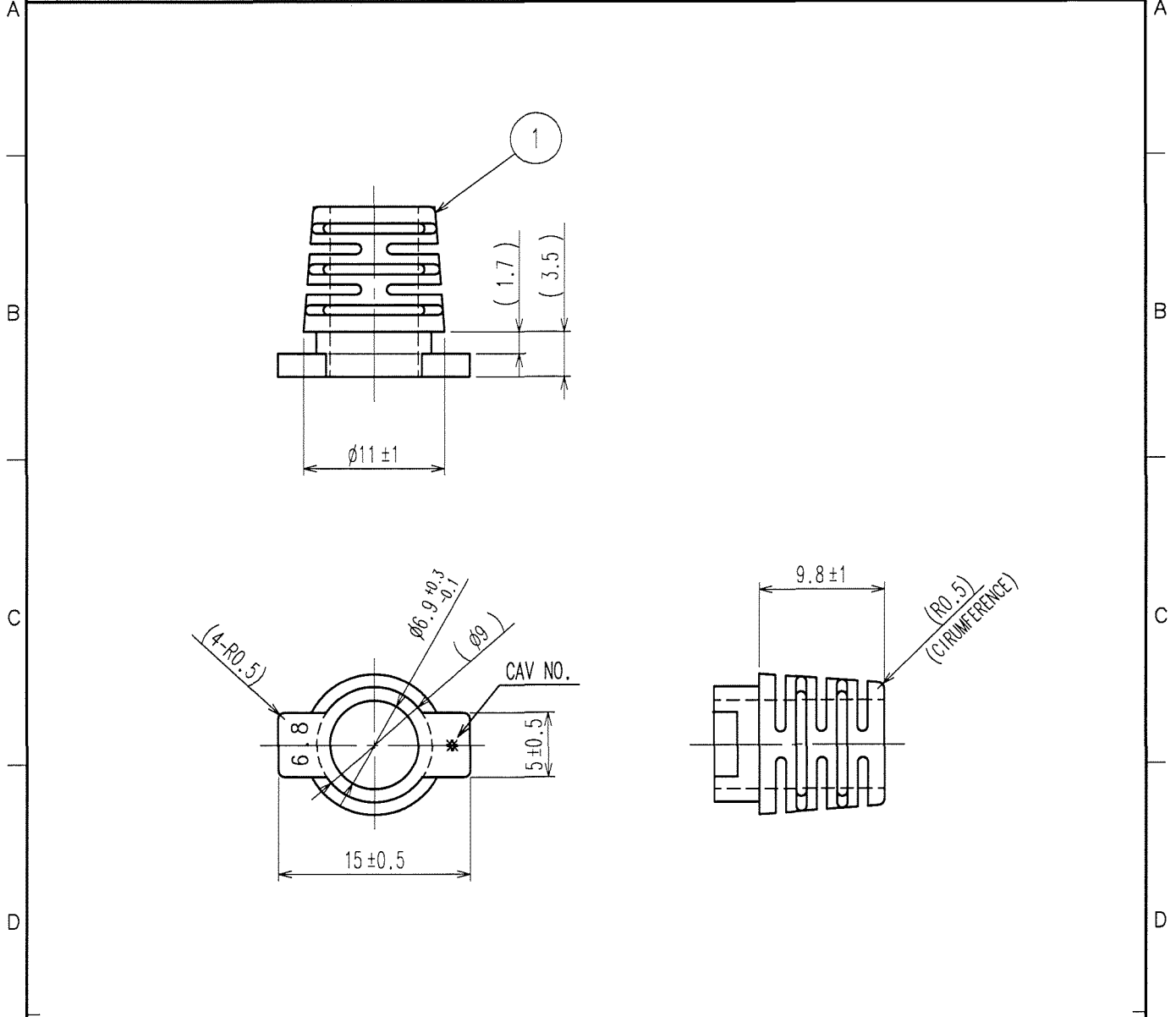
TO



2009/04/23 17:10:11 SRoper

参考図：ご確認用。正式には別途納入仕様書をご請求願います。

1		2			3			4		
COUNT	DESCRIPTION OF REVISIONS	BY	CHKD	DATE	COUNT	DESCRIPTION OF REVISIONS	BY	CHKD	DATE	
△				..	△				..	
△					△				..	
△					△				..	



NOTE 1. THIS IS THE BUSHING FOR FOLLOWING PRODUCT.

ST40X-36S-CV(80) CL241-0034-4-80

2. APPLICABLE WIRE OUTSIDE DIAMETER :  $\phi 6.8$

1	ELASTOMER	UL94HB COLOR:BLACK					
NO.	MATERIAL	FINISH, REMARKS	NO.	MATERIAL	FINISH, REMARKS		
CODE NO.(OLD)			DRAWN	DESIGNED	CHECKED	APPROVED	RELEASED
			<i>K. Naganuma</i> '07.01.24	<i>K. Naganuma</i> '07.01.24	<i>M. Mizoguchi</i> '07.01.25	<i>[Signature]</i> '07.1.25	
DRAWING NO. EDC4-126207			PART NO. ST40X-BS1(6.8)				
UNITS mm			CODE NO. CL241-0064-5			1/1	

TO