

# CURRENT SENSOR

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PRODUCT SERIES: STB-CAS/F

STB-6CAS/F

STB-15CAS/F

STB-25CAS/F

STB-50CAS/F

STB-6CAS/R/F

STB-15CAS/R/F

PRODUCT PART NUMBER: STB-25CAS/R/F

STB-50CAS/R/F

STB-6CAS/K/F

STB-15CAS/K/F

STB-25CAS/K/F

STB-50CAS/K/F

STB-75CAS/K/F

REVISION: Ver 1.1



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## 1. Description

For the electronic measurement of current: DC, AC, pulsed..., with galvanic separation between the primary and the secondary circuit.

### Typical application

- Variable frequency converter
- Uninterruptible Power Supplies (UPS)
- Solar inverters.
- Direct-current dynamo
- Switched model power supplies (SMPS)

### General parameters

Parameter	Symbol	Unit	Value
Working temperature	T_A	°C	-40 ~ 105
Storage temperature	T_stg	°C	-40 ~ 105
Mass	m	g	15

### Absolute parameters

Parameters	Symbol	Unit	Value
Supply voltage	Vc	V	6
ESD rating (HBM)	U_ESD	kV	4

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 parameters

Parameter	Symbol	Unit	Value	Remark
RMS voltage for AC test 50Hz/1 min	Ud	kV	4	
Impulse withstand voltage 1.2/50µs	Ūw	kV	6	
Clearance distance (pri.-sec)	dCl	mm	9.5	Shortest distance through air
Creepage distance (pri.-sec)	dCp	mm	9.5	Shortest path along device body
Electrical clearance	dCe	mm	6.1	When mounted on PCB with recommended layout
Case material			V0 according to UL 94	
Comparative tracking index	CTI	V	600	

## 2. STB-6CAS/F parameters

Condition:  $V_{cc} = 5.0\text{ V}$ ,  $NP = 1$ ,  $R_L = 10\text{ K}\Omega$ ,  $T_A = 25^\circ\text{C}$ , unless specified.

Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Primary nominal RMS current	$I_{pn}$	A		6		
Primary current, measuring range	$I_{pm}$	A	-20		20	
Number of primary turns	NP	-		1,2,3		
Supply voltage	$V_c$	V	4.75	5	5.25	
Current consumption	$I_c$	mA		15 + $IP \cdot NP / NS \cdot 1000$		NS =1200
Reference voltage@ $I_p=0A$	$V_{off}$	V	2.48	2.5	2.52	
Output voltage @ $I_{pn}$	$V_{FS}$	V		$V_{off} \pm 0.625$		
Output voltage @ $I_{pm}$	$V_{FSM}$	V		$V_{off} \pm 2.084$		
Temperature coefficient of $V_{off}$	TCV <sub>off</sub>	ppm/K		$\pm 5$	$\pm 50$	Internal reference
Temperature coefficient of $V_{out}$ @ $I_P = 0\text{ A}$	TCV <sub>FS</sub>	ppm/K		$\pm 6$	$\pm 14$	ppm/K of 2.5V (-40 °C ... 105 °C)
Theoretical sensitivity	$G_{th}$	mV/A		104.2		0.625V @ $I_{pn}$
Sensitivity error	$\xi_G$	%	-0.7		0.7	100 % tested
Temperature coefficient of G	TCG	ppm/K			$\pm 40$	-40 °C ... 105 °C
Linearity error 0 ~ $I_{pn}$	$\xi_L$	% of $I_{pn}$		0.3		Tested @25°C
Reaction time @ 10 % of $I_{pn}$	$t_{ra}$	$\mu\text{s}$			0.3	
Response time @ 90 % of $I_{pn}$	$t_r$	$\mu\text{s}$			0.3	
-3 dB band width	BW	kHz		400		
Noise	$V_{noise}$	mVpp		5		
DC ~ 10 kHz				6		
DC ~ 100 kHz						
Accuracy @ RT	X	% of $I_{pn}$			0.8	@ 25°C
Accuracy @ $T_A = 85^\circ\text{C}$ (105 °C)	X <sub>TRange</sub>	% of $I_{pn}$			1.4(1.6)	-40°C ~ 105°C

### 3. STB-15CAS/F parameters

 Condition:  $V_{cc} = 5.0\text{ V}$ ,  $NP = 1$ ,  $R_L = 10\text{ K}\Omega$ ,  $T_A = 25^\circ\text{C}$ , unless specified.

Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Primary nominal RMS current	$I_{pn}$	A		15		
Primary current, measuring range	$I_{pm}$	A	-51		51	
Number of primary turns	NP	-		1,2,3		
Supply voltage	$V_c$	V	4.75	5	5.25	
Current consumption	$I_c$	mA		15 + $IP*NP/NS*1000$		NS =1200
Reference voltage@ $I_p=0A$	$V_{off}$	V	2.48	2.5	2.52	
Output voltage @ $I_{pn}$	$V_{FS}$	V		$V_{off} \pm 0.625$		
Output voltage @ $I_{pm}$	$V_{FSM}$	V		$V_{off} \pm 2.125$		
Temperature coefficient of $V_{off}$	TCV <sub>off</sub>	ppm/K		$\pm 5$	$\pm 50$	Internal reference
Temperature coefficient of $V_{out}$ @ $I_P = 0\text{ A}$	TCV <sub>FS</sub>	ppm/K		$\pm 2.3$	$\pm 6$	ppm/K of 2.5V (-40 °C ... 105 °C)
Theoretical sensitivity	$G_{th}$	mV/A		41.67		0.625V @ $I_{pn}$
Sensitivity error	$\xi_G$	%	-0.7		0.7	100 % tested
Temperature coefficient of G	TCG	ppm/K			$\pm 40$	-40 °C ... 105 °C
Linearity error 0 ~ $I_{pn}$	$\xi_L$	% of $I_{pn}$		0.3		Tested @25°C
Reaction time @ 10 % of $I_{pn}$	$t_{ra}$	$\mu\text{s}$			0.3	
Response time @ 90 % of $I_{pn}$	$t_r$	$\mu\text{s}$			0.3	
-3 dB band width	BW	kHz		400		
Noise	$V_{noise}$	mVpp		5		
DC ~ 10 kHz				6		
DC ~ 100 kHz						
Accuracy @ RT	X	% of $I_{pn}$			0.8	@ 25°C
Accuracy @ $T_A = 85^\circ\text{C}$ (105 °C)	X <sub>TRange</sub>	% of $I_{pn}$			1.2(1.3)	-40°C ~ 105°C

## 4. STB-25CAS/F parameters

Condition:  $V_{CC} = 5.0\text{ V}$ ,  $N_P = 1$ ,  $R_L = 10\text{ k}\Omega$ ,  $T_A = 25^\circ\text{C}$ , unless specified.

Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Primary nominal RMS current	$I_{pn}$	A		25		
Primary current, measuring range	$I_{pm}$	A	-85		85	
Number of primary turns	NP	-		1,2,3		
Supply voltage	$V_c$	V	4.75	5	5.25	
Current consumption	$I_c$	mA		15 + $IP \cdot NP / NS \cdot 1000$		NS =1200
Reference voltage @ $I_p=0\text{A}$	$V_{off}$	V	2.48	2.5	2.52	
Output voltage @ $I_{pn}$	$V_{FS}$	V		$V_{off} \pm 0.625$		
Output voltage @ $I_{pm}$	$V_{FSM}$	V		$V_{off} \pm 2.125$		
Temperature coefficient of $V_{off}$	TCV <sub>off</sub>	ppm/K		$\pm 5$	$\pm 50$	Internal reference
Temperature coefficient of $V_{out}$ @ $I_P = 0\text{A}$	TCV <sub>FS</sub>	ppm/K		$\pm 1.4$	$\pm 4$	ppm/K of 2.5V (-40 °C ... 105 °C)
Theoretical sensitivity	$G_{th}$	mV/A		25		0.625V @ $I_{pn}$
Sensitivity error	$\xi_G$	%	-0.7		0.7	100 % tested
Temperature coefficient of G	TCG	ppm/K			$\pm 40$	-40 °C ... 105 °C
Linearity error 0 ~ $I_{pn}$	$\xi_L$	% of $I_{pn}$		0.3		Tested @25°C
Reaction time @ 10 % of $I_{pn}$	$t_{ra}$	$\mu\text{s}$			0.3	
Response time @ 90 % of $I_{pn}$	$t_r$	$\mu\text{s}$			0.3	
-3 dB band width	BW	kHz		400		
Noise	$V_{noise}$	mVpp		5		
DC ~ 10 kHz				6		
DC ~ 100 kHz						
Accuracy @ RT	X	% of $I_{pn}$			0.8	@ 25°C
Accuracy @ $T_A = 85^\circ\text{C}$ (105 °C)	$X_{TRange}$	% of $I_{pn}$			1.15(1.25)	-40 °C ~ 105 °C

## 5. STB-50CAS/F parameters

Condition:  $V_{cc} = 5.0\text{ V}$ ,  $N_p = 1$ ,  $R_L = 10\text{ k}\Omega$ ,  $T_A = 25^\circ\text{C}$ , unless specified.

Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Primary nominal RMS current	$I_{pn}$	A		50		
Primary current, measuring range	$I_{pm}$	A	-150		150	
Number of primary turns	NP			1,2,3		
Supply voltage	$V_c$	V	4.75	5	5.25	
Current consumption	$I_c$	mA		15 + $IP \cdot NP / NS \cdot 1000$		NS =1200
Reference voltage@ $I_p=0A$	$V_{off}$	V	2.48	2.5	2.52	
Output voltage @ $I_{pn}$	$V_{FS}$	V		$V_{off} \pm 0.625$		
Output voltage @ $I_{pm}$	$V_{FSM}$	V		$V_{off} \pm 1.875$		
Temperature coefficient of $V_{off}$	TCV <sub>off</sub>	ppm/K		$\pm 5$	$\pm 50$	Internal reference
Temperature coefficient of $V_{out}$ @ $I_P = 0\text{ A}$	TCV <sub>FS</sub>	ppm/K		$\pm 0.7$	$\pm 3$	ppm/K of 2.5V (-40 °C ... 105 °C)
Theoretical sensitivity	$G_{th}$	mV/A		12.5		0.625V @ $I_{pn}$
Sensitivity error	$\xi_G$	%	-0.7		0.7	100 % tested
Temperature coefficient of G	TCG	ppm/K			$\pm 40$	-40 °C ... 105 °C
Linearity error 0 ~ $I_{pn}$	$\xi_L$	% of $I_{pn}$		0.3		Tested @25°C
Reaction time @ 10 % of $I_{pn}$	$t_{ra}$	$\mu\text{s}$			0.3	
Response time @ 90 % of $I_{pn}$	$t_r$	$\mu\text{s}$			0.3	
-3 dB band width	BW	kHz		400		
Noise	$V_{noise}$	mVpp		5		
DC ~ 10 kHz			6			
DC ~ 100 kHz						
Accuracy @ RT	X	% of $I_{pn}$			0.8	@ 25°C
Accuracy @ $T_A = 85^\circ\text{C}$ (105 °C)	$X_{TRange}$	% of $I_{pn}$			1.1(1.3)	-40°C ~ 105°C

## 6. STB-6CAS/R/F parameters

Condition:  $V_{CC} = 5.0\text{ V}$ ,  $N_P = 1$ ,  $R_L = 10\text{ k}\Omega$ ,  $T_A = 25^\circ\text{C}$ , unless specified.

Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Primary nominal RMS current	$I_{pn}$	A		6		
Primary current, measuring range	$I_{pm}$	A	-20		20	
Number of primary turns	NP	-		1,2,3		
Supply voltage	$V_c$	V	4.75	5	5.25	
Current consumption	$I_c$	mA		15 + $IP*NP/NS*1000$		NS =1200
Reference voltage@ $I_p=0A$	$V_{off}$	V	2.48	2.5	2.52	
Output voltage @ $I_{pn}$	$V_{FS}$	V		$V_{off} \pm 0.625$		
Output voltage @ $I_{pm}$	$V_{FSM}$	V		$V_{off} \pm 2.084$		
Temperature coefficient of $V_{off}$	TCV <sub>off</sub>	ppm/K		$\pm 5$	$\pm 50$	Internal reference
Temperature coefficient of $V_{out}$ @ $I_P = 0\text{ A}$	TCV <sub>FS</sub>	ppm/K		$\pm 6$	$\pm 14$	ppm/K of 2.5V (-40 °C ... 105 °C)
Theoretical sensitivity	$G_{th}$	mV/A		104.2		0.625V @ $I_{pn}$
Sensitivity error	$\xi_G$	%	-0.7		0.7	100 % tested
Temperature coefficient of G	TCG	ppm/K			$\pm 40$	-40 °C ... 105 °C
Linearity error 0 ~ $I_{pn}$	$\xi_L$	% of $I_{pn}$		0.3		Tested @25°C
Reaction time @ 10 % of $I_{pn}$	$t_{ra}$	$\mu\text{s}$			0.3	
Response time @ 90 % of $I_{pn}$	$t_r$	$\mu\text{s}$			0.3	
-3 dB band width	BW	kHz		400		
Noise	$V_{noise}$	mVpp		5		
DC ~ 10 kHz				6		
DC ~ 100 kHz						
Accuracy @ RT	X	% of $I_{pn}$			0.8	@ 25°C
Accuracy @ $T_A = 85^\circ\text{C}$ (105 °C)	X <sub>TRange</sub>	% of $I_{pn}$			1.4(1.6)	-40°C ~ 105°C

## 7. STB-15CAS/R/F parameters

Condition:  $V_{cc} = 5.0\text{ V}$ ,  $NP = 1$ ,  $R_L = 10\text{ k}\Omega$ ,  $T_A = 25^\circ\text{C}$ , unless specified.

Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Primary nominal RMS current	$I_{pn}$	A		15		
Primary current, measuring range	$I_{pm}$	A	-51		51	
Number of primary turns	NP	-		1,2,3		
Supply voltage	$V_c$	V	4.75	5	5.25	
Current consumption	$I_c$	mA		15 + $IP \cdot NP / NS \cdot 1000$		NS =1200
Reference voltage@ $I_p=0A$	$V_{off}$	V	2.48	2.5	2.52	
Output voltage @ $I_{pn}$	$V_{FS}$	V		$V_{off} \pm 0.625$		
Output voltage @ $I_{pm}$	$V_{FSM}$	V		$V_{off} \pm 2.125$		
Temperature coefficient of $V_{off}$	TCV <sub>off</sub>	ppm/K		$\pm 5$	$\pm 50$	Internal reference
Temperature coefficient of $V_{out}$ @ $I_P = 0\text{ A}$	TCV <sub>FS</sub>	ppm/K		$\pm 2.3$	$\pm 6$	ppm/K of 2.5V (-40 °C ... 105 °C)
Theoretical sensitivity	$G_{th}$	mV/A		41.67		0.625V @ $I_{pn}$
Sensitivity error	$\xi_G$	%	-0.7		0.7	100 % tested
Temperature coefficient of G	TCG	ppm/K			$\pm 40$	-40 °C ... 105 °C
Linearity error 0 ~ $I_{pn}$	$\xi_L$	% of $I_{pn}$		0.3		Tested @25°C
Reaction time @ 10 % of $I_{pn}$	$t_{ra}$	$\mu\text{s}$			0.3	
Response time @ 90 % of $I_{pn}$	$t_r$	$\mu\text{s}$			0.3	
-3 dB band width	BW	kHz		400		
Noise	$V_{noise}$	mVpp		5		
DC ~ 10 kHz				6		
DC ~ 100 kHz						
Accuracy @ RT	X	% of $I_{pn}$			0.8	@ 25°C
Accuracy @ $T_A = 85^\circ\text{C}$ (105 °C)	X <sub>TRange</sub>	% of $I_{pn}$			1.2(1.3)	-40°C ~ 105°C

## 8. STB-25CAS/R/F parameters

Condition:  $V_{CC} = 5.0\text{ V}$ ,  $N_P = 1$ ,  $R_L = 10\text{ k}\Omega$ ,  $T_A = 25^\circ\text{C}$ , unless specified.

Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Primary nominal RMS current	$I_{pn}$	A		25		
Primary current, measuring range	$I_{pm}$	A	-85		85	
Number of primary turns	NP	-		1,2,3		
Supply voltage	$V_c$	V	4.75	5	5.25	
Current consumption	$I_c$	mA		15 + $IP \cdot NP / NS \cdot 1000$		NS =1200
Reference voltage@ $I_p=0A$	$V_{off}$	V	2.48	2.5	2.52	
Output voltage @ $I_{pn}$	$V_{FS}$	V		$V_{off} \pm 0.625$		
Output voltage @ $I_{pm}$	$V_{FSM}$	V		$V_{off} \pm 2.125$		
Temperature coefficient of $V_{off}$	TCV <sub>off</sub>	ppm/K		$\pm 5$	$\pm 50$	Internal reference
Temperature coefficient of $V_{out}$ @ $I_P = 0\text{ A}$	TCV <sub>FS</sub>	ppm/K		$\pm 1.4$	$\pm 4$	ppm/K of 2.5V (-40 °C ... 105 °C)
Theoretical sensitivity	$G_{th}$	mV/A		25		0.625V @ $I_{pn}$
Sensitivity error	$\xi_G$	%	-0.7		0.7	100 % tested
Temperature coefficient of G	TCG	ppm/K			$\pm 40$	-40 °C ... 105 °C
Linearity error 0 ~ $I_{pn}$	$\xi_L$	% of $I_{pn}$		0.3		Tested @25°C
Reaction time @ 10 % of $I_{pn}$	$t_{ra}$	$\mu\text{s}$			0.3	
Response time @ 90 % of $I_{pn}$	$t_r$	$\mu\text{s}$			0.3	
-3 dB band width	BW	kHz		400		
Noise	$V_{noise}$	mVpp		5		
DC ~ 10 kHz				6		
DC ~ 100 kHz						
Accuracy @ RT	X	% of $I_{pn}$			0.8	@ 25°C
Accuracy @ $T_A = 85^\circ\text{C}$ (105 °C)	X <sub>TRange</sub>	% of $I_{pn}$			1.15(1.25)	-40°C ~ 105°C

## 9. STB-50CAS/R/F parameters

Condition:  $V_{CC} = 5.0\text{ V}$ ,  $N_P = 1$ ,  $R_L = 10\text{ k}\Omega$ ,  $T_A = 25^\circ\text{C}$ , unless specified.

Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Primary nominal RMS current	$I_{pn}$	A		50		
Primary current, measuring range	$I_{pm}$	A	-150		150	
Number of primary turns	NP	-		1,2,3		
Supply voltage	$V_c$	V	4.75	5	5.25	
Current consumption	$I_c$	mA		15 + $IP*NP/NS*1000$		NS =1200
Reference voltage@ $I_p=0A$	$V_{off}$	V	2.48	2.5	2.52	
Output voltage @ $I_{pn}$	$V_{FS}$	V		$V_{off} \pm 0.625$		
Output voltage @ $I_{pm}$	$V_{FSM}$	V		$V_{off} \pm 1.875$		
Temperature coefficient of $V_{off}$	TCV <sub>off</sub>	ppm/K		$\pm 5$	$\pm 50$	Internal reference
Temperature coefficient of $V_{out}$ @ $I_P = 0\text{ A}$	TCV <sub>FS</sub>	ppm/K		$\pm 0.7$	$\pm 3$	ppm/K of 2.5V (-40 °C ... 105 °C)
Theoretical sensitivity	$G_{th}$	mV/A		12.5		0.625V @ $I_{pn}$
Sensitivity error	$\xi_G$	%	-0.7		0.7	100 % tested
Temperature coefficient of G	TCG	ppm/K			$\pm 40$	-40 °C ... 105 °C
Linearity error 0 ~ $I_{pn}$	$\xi_L$	% of $I_{pn}$		0.3		Tested @25°C
Reaction time @ 10 % of $I_{pn}$	$t_{ra}$	$\mu\text{s}$			0.3	
Response time @ 90 % of $I_{pn}$	$t_r$	$\mu\text{s}$			0.3	
-3 dB band width	BW	kHz		400		
Noise DC ~ 10 kHz DC ~ 100 kHz	$V_{noise}$	mVpp		5 6		
Accuracy @ RT	X	% of $I_{pn}$			0.8	@ 25°C
Accuracy @ $T_A = 85^\circ\text{C}$ (105 °C)	X <sub>TRange</sub>	% of $I_{pn}$			1.1(1.3)	-40°C ~ 105°C

## 10. STB-6CAS/K/F parameters

Condition:  $V_{cc} = 5.0\text{ V}$ ,  $NP = 1$ ,  $R_L = 10\text{ k}\Omega$ ,  $T_A = 25^\circ\text{C}$ , unless specified.

Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Primary nominal RMS current	$I_{pn}$	A		6		
Primary current, measuring range	$I_{pm}$	A	-20		20	
Number of primary turns	NP	-		1,2,4		
Supply voltage	$V_c$	V	4.75	5	5.25	
Current consumption	$I_c$	mA		15 + $IP \cdot NP / NS \cdot 1000$		NS =1200
Reference voltage@ $I_p=0A$	$V_{off}$	V	2.48	2.5	2.52	
Output voltage @ $I_{pn}$	$V_{FS}$	V		$V_{off} \pm 0.625$		
Output voltage @ $I_{pm}$	$V_{FSM}$	V		$V_{off} \pm 2.084$		
Temperature coefficient of $V_{off}$	TCV <sub>off</sub>	ppm/K		$\pm 5$	$\pm 50$	Internal reference
Temperature coefficient of $V_{out}$ @ $I_P = 0\text{ A}$	TCV <sub>FS</sub>	ppm/K		$\pm 6$	$\pm 14$	ppm/K of 2.5V (-40 °C ... 105 °C)
Theoretical sensitivity	$G_{th}$	mV/A		104.2		0.625V @ $I_{pn}$
Sensitivity error	$\xi_G$	%	-0.7		0.7	100 % tested
Temperature coefficient of G	TCG	ppm/K			$\pm 40$	-40 °C ... 105 °C
Linearity error 0 ~ $I_{pn}$	$\xi_L$	% of $I_{pn}$		0.3		Tested @25°C
Reaction time @ 10 % of $I_{pn}$	$t_{ra}$	$\mu\text{s}$			0.3	
Response time @ 90 % of $I_{pn}$	$t_r$	$\mu\text{s}$			0.3	
-3 dB band width	BW	kHz		400		
Noise	$V_{noise}$	mVpp		5		
DC ~ 10 kHz				6		
DC ~ 100 kHz						
Accuracy @ RT	X	% of $I_{pn}$			0.8	@ 25°C
Accuracy @ $T_A = 85^\circ\text{C}$ (105 °C)	X <sub>TRange</sub>	% of $I_{pn}$			1.4(1.6)	-40°C ~ 105°C

## 11. STB-15CAS/K/F parameters

Condition:  $V_{cc} = 5.0\text{ V}$ ,  $NP = 1$ ,  $R_L = 10\text{ k}\Omega$ ,  $T_A = 25^\circ\text{C}$ , unless specified.

Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Primary nominal RMS current	$I_{pn}$	A		15		
Primary current, measuring range	$I_{pm}$	A	-51		51	
Number of primary turns	NP	-		1,2,4		
Supply voltage	$V_c$	V	4.75	5	5.25	
Current consumption	$I_c$	mA		15 + $IP*NP/NS*1000$		NS =1200
Reference voltage@ $I_p=0A$	$V_{off}$	V	2.48	2.5	2.52	
Output voltage @ $I_{pn}$	$V_{FS}$	V		$V_{off} \pm 0.625$		
Output voltage @ $I_{pm}$	$V_{FSM}$	V		$V_{off} \pm 2.125$		
Temperature coefficient of $V_{off}$	TCV <sub>off</sub>	ppm/K		$\pm 5$	$\pm 50$	Internal reference
Temperature coefficient of $V_{out}$ @ $I_P = 0\text{ A}$	TCV <sub>FS</sub>	ppm/K		$\pm 2.3$	$\pm 6$	ppm/K of 2.5V ( $-40^\circ\text{C} \dots 105^\circ\text{C}$ )
Theoretical sensitivity	$G_{th}$	mV/A		41.67		0.625V @ $I_{pn}$
Sensitivity error	$\xi_G$	%	-0.7		0.7	100 % tested
Temperature coefficient of G	TCG	ppm/K			$\pm 40$	$-40^\circ\text{C} \dots 105^\circ\text{C}$
Linearity error 0 ~ $I_{pn}$	$\xi_L$	% of $I_{pn}$		0.3		Tested @ $25^\circ\text{C}$
Reaction time @ 10 % of $I_{pn}$	$t_{ra}$	$\mu\text{s}$			0.3	
Response time @ 90 % of $I_{pn}$	$t_r$	$\mu\text{s}$			0.3	
-3 dB band width	BW	kHz		400		
Noise	$V_{noise}$	mVpp		5		
DC ~ 10 kHz						
DC ~ 100 kHz		6				
Accuracy @ RT	X	% of $I_{pn}$			0.8	@ $25^\circ\text{C}$
Accuracy @ $T_A = 85^\circ\text{C}$ ( $105^\circ\text{C}$ )	X <sub>TRange</sub>	% of $I_{pn}$			1.2(1.3)	$-40^\circ\text{C} \sim 105^\circ\text{C}$

## 12. STB-25CAS/K/F parameters

Condition:  $V_{cc} = 5.0\text{ V}$ ,  $NP = 1$ ,  $R_L = 10\text{ k}\Omega$ ,  $T_A = 25^\circ\text{C}$ , unless specified.

Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Primary nominal RMS current	$I_{pn}$	A		25		
Primary current, measuring range	$I_{pm}$	A	-85		85	
Number of primary turns	NP	-		1,2,4		
Supply voltage	$V_c$	V	4.75	5	5.25	
Current consumption	$I_c$	mA		15 + $IP \cdot NP / NS \cdot 1000$		NS =1200
Reference voltage @ $I_p=0\text{A}$	$V_{off}$	V	2.48	2.5	2.52	
Output voltage @ $I_{pn}$	$V_{FS}$	V		$V_{off} \pm 0.625$		
Output voltage @ $I_{pm}$	$V_{FSM}$	V		$V_{off} \pm 2.125$		
Temperature coefficient of $V_{off}$	TCV <sub>off</sub>	ppm/K		$\pm 5$	$\pm 50$	Internal reference
Temperature coefficient of $V_{out}$ @ $I_P = 0\text{ A}$	TCV <sub>FS</sub>	ppm/K		$\pm 1.4$	$\pm 4$	ppm/K of 2.5V (-40 °C ... 105 °C)
Theoretical sensitivity	$G_{th}$	mV/A		25		0.625V @ $I_{pn}$
Sensitivity error	$\xi_G$	%	-0.7		0.7	100 % tested
Temperature coefficient of G	TCG	ppm/K			$\pm 40$	-40 °C ... 105 °C
Linearity error 0 ~ $I_{pn}$	$\xi_L$	% of $I_{pn}$		0.3		Tested @25°C
Reaction time @ 10 % of $I_{pn}$	$t_{ra}$	$\mu\text{s}$			0.3	
Response time @ 90 % of $I_{pn}$	$t_r$	$\mu\text{s}$			0.3	
-3 dB band width	BW	kHz		400		
Noise	$V_{noise}$	mVpp		5		
DC ~ 10 kHz				6		
DC ~ 100 kHz						
Accuracy @ RT	X	% of $I_{pn}$			0.8	@ 25°C
Accuracy @ $T_A = 85^\circ\text{C}$ (105 °C)	X <sub>TRange</sub>	% of $I_{pn}$			1.15(1.25)	-40°C ~ 105°C

### 13. STB-50CAS/K/F parameters

Condition:  $V_{cc} = 5.0\text{ V}$ ,  $NP = 1$ ,  $R_L = 10\text{ k}\Omega$ ,  $T_A = 25^\circ\text{C}$ , unless specified.

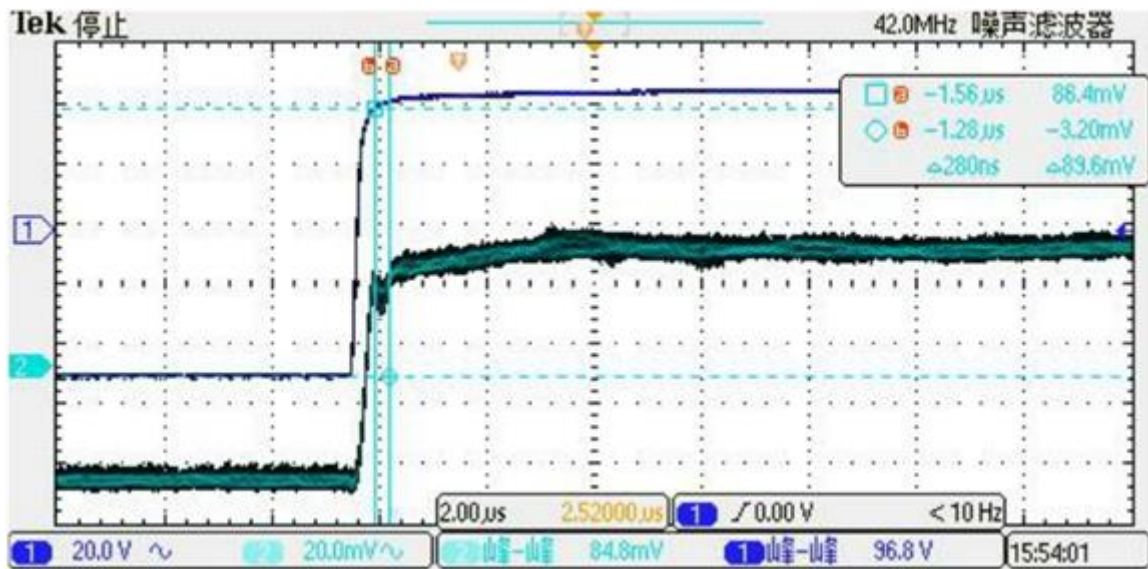
Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Primary nominal RMS current	$I_{pn}$	A		50		
Primary current, measuring range	$I_{pm}$	A	-150		150	
Number of primary turns	NP	-		1,2,4		
Supply voltage	$V_c$	V	4.75	5	5.25	
Current consumption	$I_c$	mA		15 + $IP \cdot NP / NS \cdot 1000$		NS =1200
Reference voltage@ $I_p=0A$	$V_{off}$	V	2.48	2.5	2.52	
Output voltage @ $I_{pn}$	$V_{FS}$	V		$V_{off} \pm 0.625$		
Output voltage @ $I_{pm}$	$V_{FSM}$	V		$V_{off} \pm 1.875$		
Temperature coefficient of $V_{off}$	TCV <sub>off</sub>	ppm/K		$\pm 5$	$\pm 50$	Internal reference
Temperature coefficient of $V_{out}$ @ $I_P = 0\text{ A}$	TCV <sub>FS</sub>	ppm/K		$\pm 0.7$	$\pm 3$	ppm/K of 2.5V (-40 °C ... 105 °C)
Theoretical sensitivity	$G_{th}$	mV/A		12.5		0.625V @ $I_{pn}$
Sensitivity error	$\xi_G$	%	-0.7		0.7	100 % tested
Temperature coefficient of G	TCG	ppm/K			$\pm 40$	-40 °C ... 105 °C
Linearity error 0 ~ $I_{pn}$	$\xi_L$	% of $I_{pn}$		0.3		Tested @25°C
Reaction time @ 10 % of $I_{pn}$	$t_{ra}$	$\mu\text{s}$			0.3	
Response time @ 90 % of $I_{pn}$	$t_r$	$\mu\text{s}$			0.3	
-3 dB band width	BW	kHz		400		
Noise	$V_{noise}$	mVpp		5		
DC ~ 10 kHz				6		
DC ~ 100 kHz						
Accuracy @ RT	X	% of $I_{pn}$			0.8	@ 25°C
Accuracy @ $T_A = 85^\circ\text{C}$ (105 °C)	X <sub>TRange</sub>	% of $I_{pn}$			1.1(1.3)	-40°C ~ 105°C

## 14. STB-75CAS/K/F parameters

Condition:  $V_{CC} = 5.0\text{ V}$ ,  $N_P = 1$ ,  $R_L = 10\text{ k}\Omega$ ,  $T_A = 25^\circ\text{C}$ , unless specified.

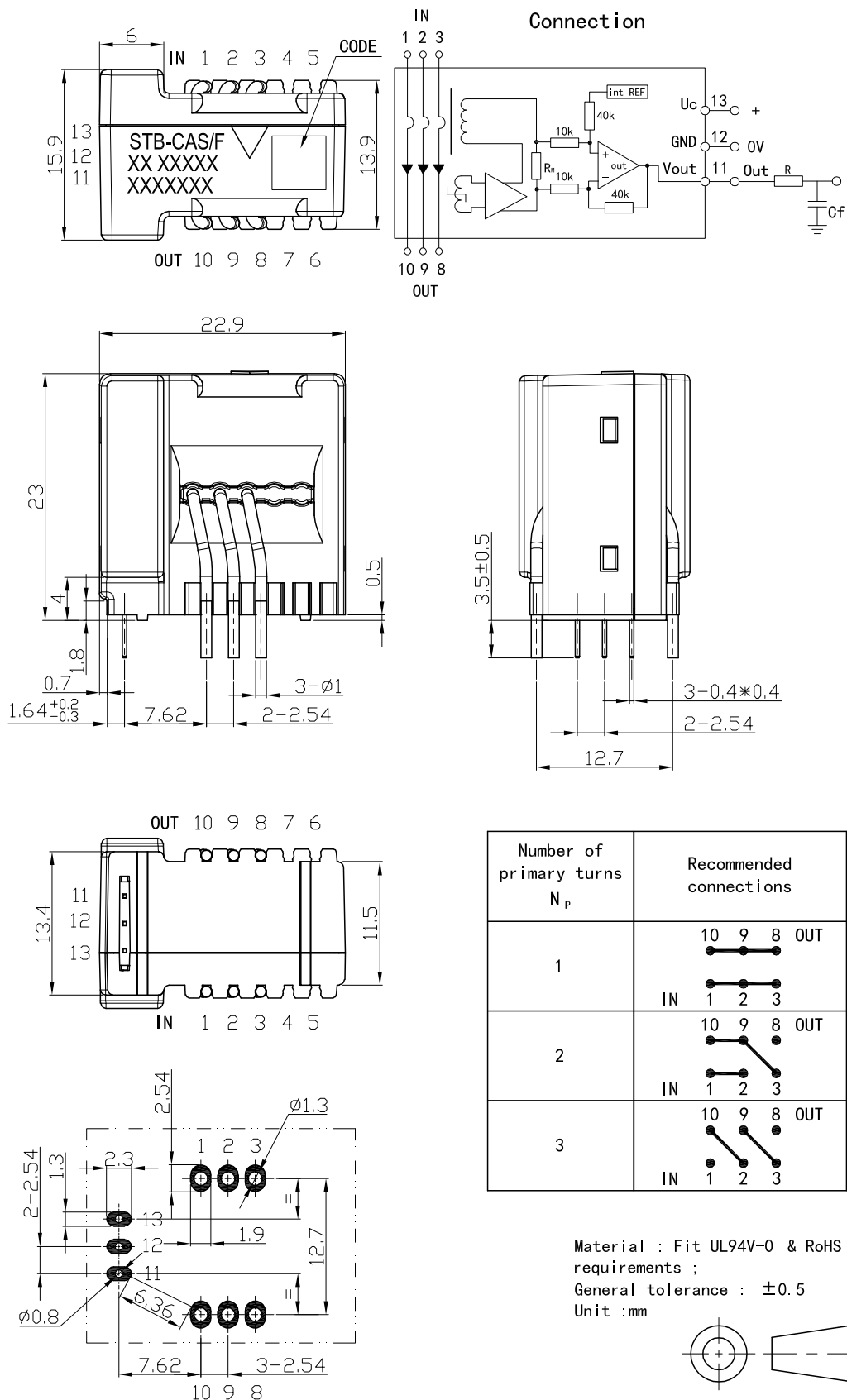
Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Primary nominal RMS current	$I_{pn}$	A		75		
Primary current, measuring range	$I_{pm}$	A	-220		220	With $V_C = 5\text{ V}$ , $T_A = 25^\circ\text{C}$ , $R_L = 10\text{ k}\Omega$ .
Primary current, measuring range	$I_{pm}$	A	-180		180	With $V_C = 4.75\text{ V}$ , $T_A = 85^\circ\text{C}$ , $R_L = 10\text{ k}\Omega$ .
Number of primary turns	$N_P$	-		1,4,5		
Supply voltage	$V_C$	V	4.75	5	5.25	
Current consumption	$I_C$	mA		$15 + \frac{I_P \cdot N_P}{N_S \cdot 1000}$		$N_S = 1200$
Reference voltage @ $I_P = 0\text{ A}$	$V_{off}$	V	2.48	2.5	2.52	
Output voltage @ $I_{pn}$	$V_{FS}$	V		$V_{off} \pm 0.4685$		
Output voltage @ $I_{pm}$	$V_{FSM}$	V		$V_{off} \pm 1.125$		
Temperature coefficient of $V_{off}$	$TCV_{off}$	ppm/K		$\pm 5$	$\pm 50$	Internal reference
Temperature coefficient of $V_{out}$ @ $I_P = 0\text{ A}$	$TCV_{FS}$	ppm/K		$\pm 0.7$	$\pm 3$	ppm/K of 2.5V ( $-40^\circ\text{C} \dots 105^\circ\text{C}$ )
Theoretical sensitivity	$G_{th}$	mV/A		6.25		$0.4685\text{ V} @ I_{pn}$
Sensitivity error	$\xi_G$	%	-0.7		0.7	100 % tested
Temperature coefficient of G	$TCG$	ppm/K			$\pm 40$	$-40^\circ\text{C} \dots 105^\circ\text{C}$
Linearity error 0 ~ $I_{pn}$	$\xi_L$	% of $I_{pn}$		0.3		Tested @ $25^\circ\text{C}$
Reaction time @ 10 % of $I_{pn}$	$t_{ra}$	$\mu\text{s}$			0.3	
Response time @ 90 % of $I_{pn}$	$t_r$	$\mu\text{s}$			0.3	
-3 dB band width	$BW$	kHz		400		
Noise	$V_{noise}$	mVpp		5		
DC ~ 10 kHz				6		
DC ~ 100 kHz						
Accuracy @ RT	X	% of $I_{pn}$			0.8	@ $25^\circ\text{C}$
Accuracy @ $T_A = 85^\circ\text{C}$ ( $105^\circ\text{C}$ )	$X_{TRange}$	% of $I_{pn}$			1.1(1.3)	$-40^\circ\text{C} \sim 105^\circ\text{C}$

## 15. Step response time

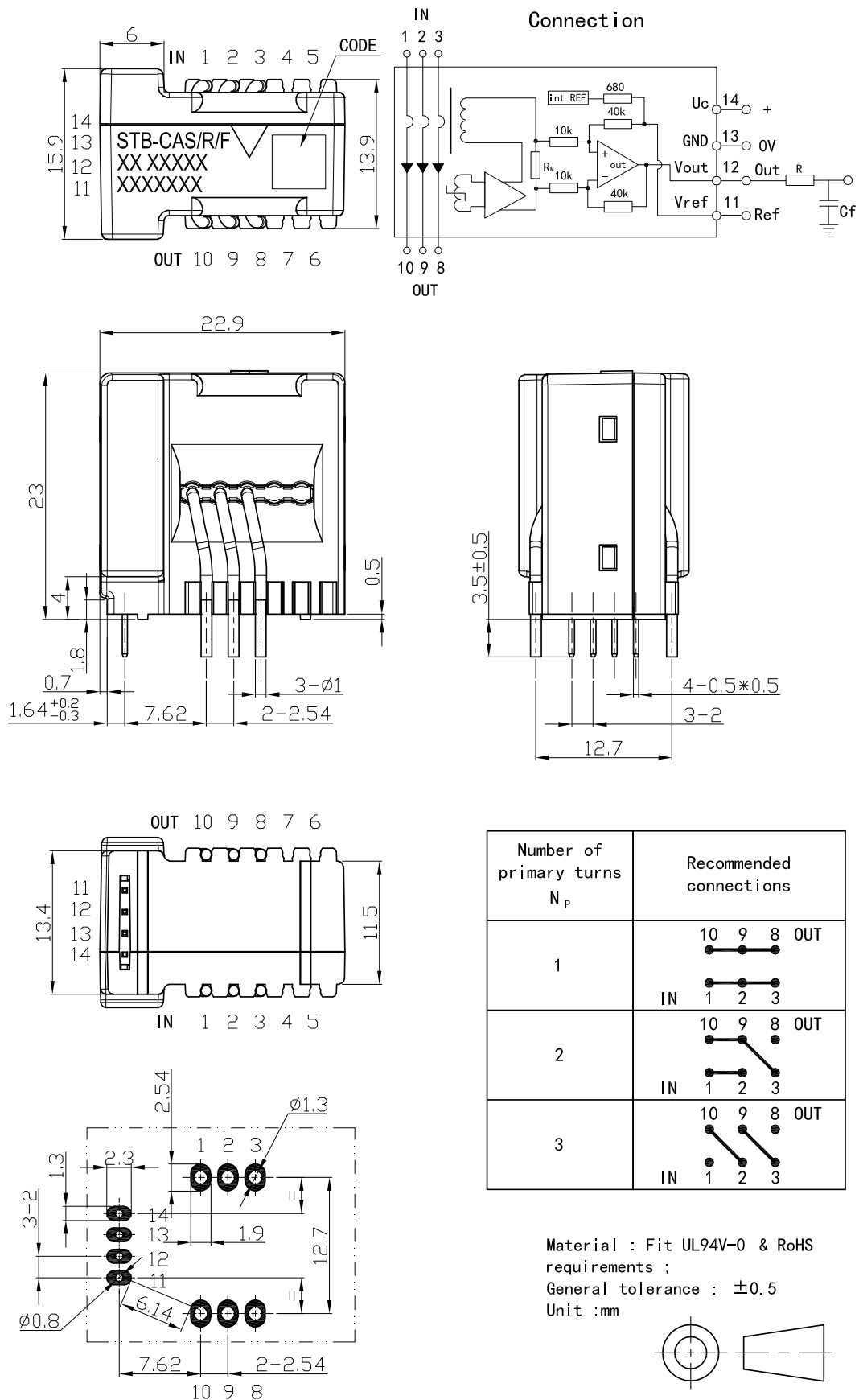


The step response time of STB-xxCAS/F current sensors. The blue is primary current, while the green is output signal of current sensor. The step response time is less than 0.3 μs.

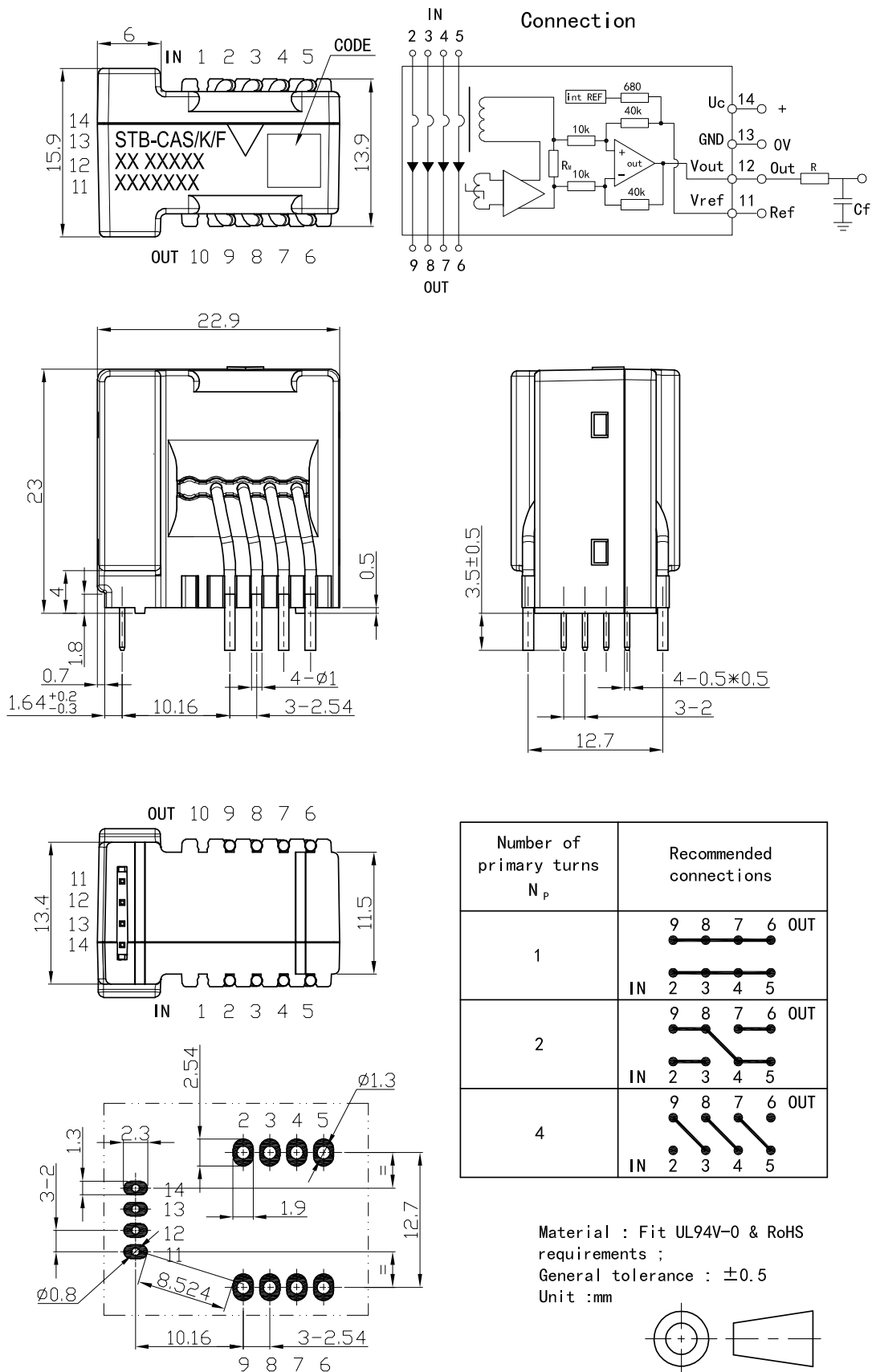
## 16. Dimensions: STB-CAS/F



### 17. Dimensions: STB-CAS/R/F



### 18. Dimensions: STB-6..50CAS/K/F



### 19. Dimensions: STB-75CAS/K/F

