



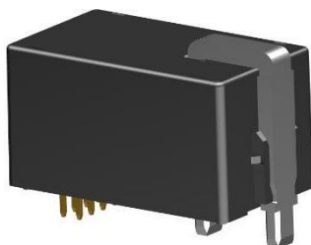
CURRENT SENSOR

Product series: STK-CTS/CE

Product part number: STK-32CTS/CE

STK-50CTS/CE

Version: V1.4



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1. Description

STK-CTS/CE series products are built with two sets of independent current detection functions, the first is the conventional current detection function, the second is the arc current detection function.

2. Conventional current detection function

2.1 General Parameter

Parameter	Symbol	Unit	Value
Working temperature	T_A	°C	-40~105
Storage temperature	T_stg	°C	-40~105
Mass	m	g	12
Remark1: The product will not be damaged at 105°C			

2.2 Absolute Parameter

Parameter	Symbol	Unit	Value
Supply voltage	VC	V	5
ESD rating (HBM)	Uesd	KV	4
Remark2: 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.			

2.3 Isolation parameters

Parameter	Symbol	Unit	Value	Remark
Comparative tracking index	CTI	V	600	
Isolation voltage, 50Hz,1 min	Ud	kV	4	
Impact voltage 1.2/ 50s	Üw	kV	6	
Clearance	dCl	mm	>10.6	Shortest distance through air
Creepage distance	dCp	mm	>10.6	Shortest distance along device body
Case material			V0 according to UL 94	

2.4 STK-32CTS/CE Parameters

Condition: $V_{cc} = 5.0\text{ V}$, $T_A = 25^\circ\text{C}$, unless specified

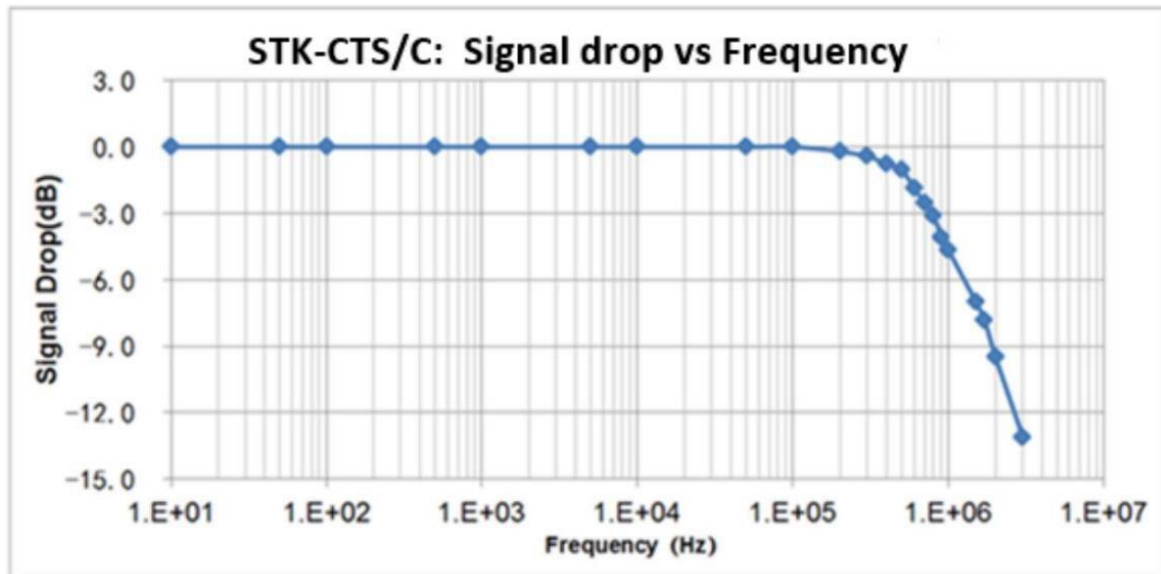
Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Maximum current	I_{pn}	A	-32		32	
Supply voltage	V_{cc}	V	4.75	5	5.25	
Consumption current	I_{cc}	mA		5	10	
Full-scale output	V_{FS}	V		± 2		$(V_{out} @ \pm I_{pm}) - V_{off}$
Output resistance	R_{out}	Ω		1		@ V_{out}
Offset voltage	V_{off}	V	2.48	2.5	2.52	$V_{out} @ 0\text{ A}$
Theoretical gain	G_{th}	mV/A		62.5		2 V @ I_{pn}
Non-linearity	Non-L	% I_{pm}		0.5		$\pm I_{pm}$
reaction time	t_{ra}	μs		0.5		@10% of I_{pm}
Step response time	t_{res}	μs		1		@90% of I_{pm}
Delay time	t_{delay}	μs		1		@400 kHz
-3dB band width	BW	kHz		400		Back-end non-RC circuit
Noise DC ~ 10 kHz DC ~ 100 kHz	V_{noise}	mVpp		15 25		
Accuracy @ RT	X	% of I_{pn}	-1		1	@ 25°C
Accuracy@ $-40^\circ\text{C} \sim 105^\circ\text{C}$	X_{TRange}	% of I_{pn}	-3		3	@ $-40^\circ\text{C} \sim 105^\circ\text{C}$

2.5 STK-50CTS/CE Parameters

Condition: $V_{cc} = 5.0\text{ V}$, $T_A = 25^\circ\text{C}$, unless specified

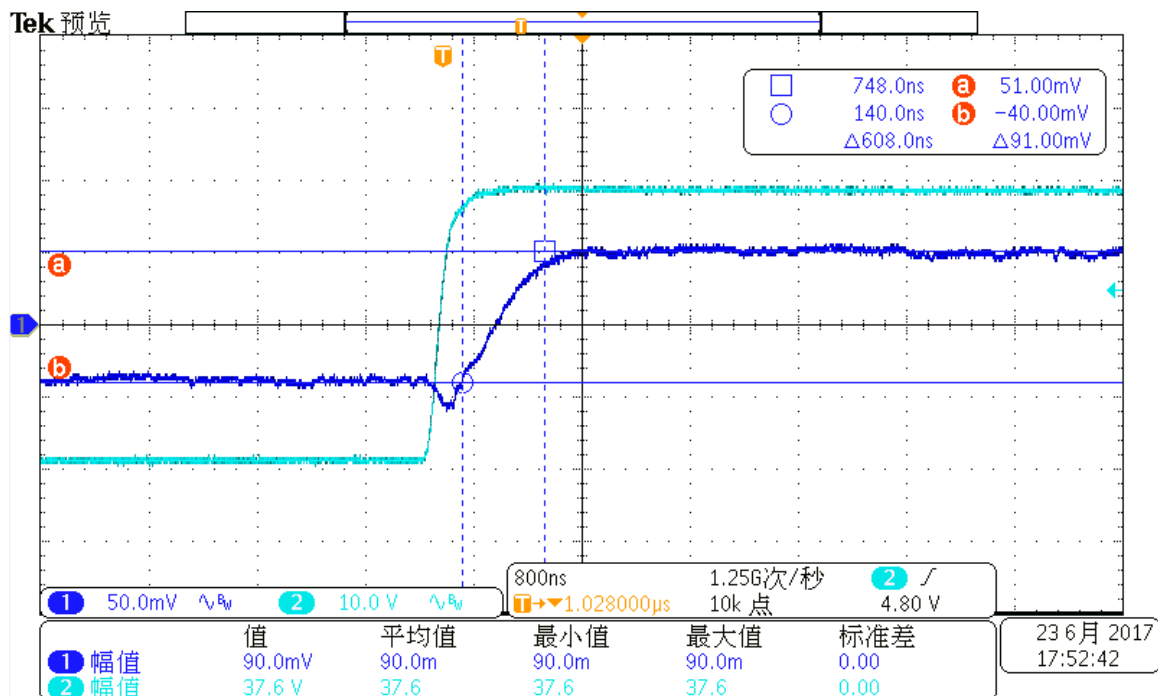
Parameters	Symbol	Unit	Min.	Typ.	Max.	Remark
Maximum current	I_{pn}	A	-50		50	
Supply voltage	V_{cc}	V	4.75	5	5.25	
Consumption current	I_{cc}	mA		5	10	
Full-scale output	V_{FS}	V		± 2		$(V_{out} @ \pm I_{pm}) - V_{off}$
Output resistance	R_{out}	Ω		1		@ V_{out}
Offset voltage	V_{off}	V	2.48	2.5	2.52	$V_{out} @ 0\text{ A}$
Theoretical gain	G_{th}	mV/A		40		$2\text{ V} @ I_{pm}$
Non-linearity	Non-L	% I_{pm}		0.5		$\pm I_{pm}$
reaction time	t_{ra}	μs		0.5		@10% of I_{pm}
Step response time	t_{res}	μs		1		@90% of I_{pm}
Delay time	t_{delay}	μs		1		@400 kHz
-3dB band width	BW	kHz		400		Back-end non-RC circuit
Noise DC ~ 10 kHz DC ~ 100 kHz	V_{noise}	mVpp		15 25		
Accuracy @ RT	X	% of I_{pn}	-1		1	@ 25°C
Accuracy@ $-40^\circ\text{C} \sim 105^\circ\text{C}$	X_{TRange}	% of I_{pn}	-3		3	@ $-40^\circ\text{C} \sim 105^\circ\text{C}$

2.6 Frequency band width



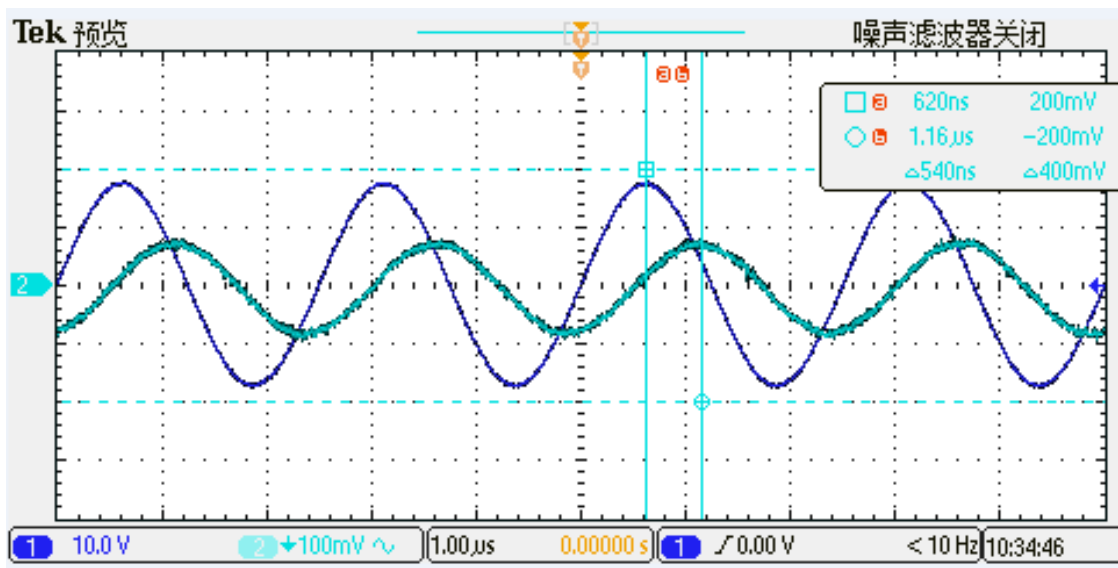
Remark: STK-CTS /CE series current sensor bandwidth. The bandwidth of the sensor is in the range of DC ~ 400 KHZ (- 3db).

2.7 Step response time



Remark: Step response time of STK-CTS/CE current sensor. The delay from 90% of the original current signal to 90% of the sensor output is less than 1 us. .

2.8 Frequency delay performance



Remark: Primary current was detected at a frequency of 400 kHz. Typical results of stK-CTS /CE current sensor output main current delay characteristics .

2.9 Sensor specifications

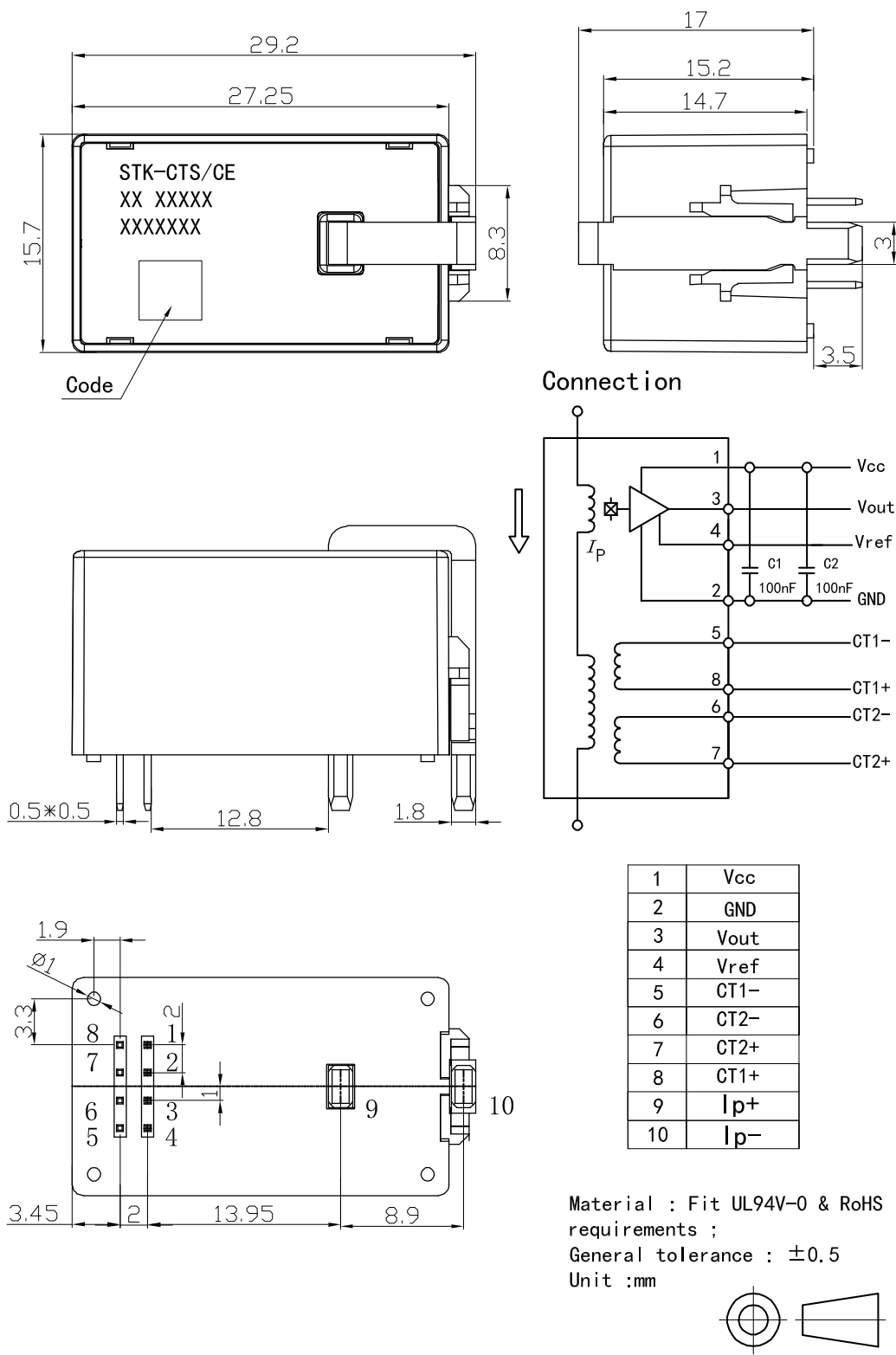
Parameter	Measure	Min	Typ	Max	Unit
inductance	L (5-6)	5	7	9	mH
Q	Q (5-6)	/	/	/	/
resistance	R (5-6)	5	6.5	8	Ω
Turns ratio test	N (6-7)	/	300	/	TS
	N (5-8)	/	20	/	TS
Insulation voltage 50Hz, 1 min	(5-6)	/	4	/	KV
High frequency cut-off frequency (-3db)	fH	400	/	/	kHz
Low frequency cut-off frequency (-3db)	fL	/	/	3	kHz
Saturation current	Bs		50		A
The clearance	The primary side faces the secondary side	/	>8	/	/
Creepage distance	The primary side faces the secondary side	/	>8	/	mm
Wire level	F 级				

Test conditions:

1. Inductance test frequency 100 HZ, voltage 1 V.
2. Subtract the internal resistance of the multimeter for resistance test.。
- 3.Low frequency cut-off frequency sampling resistor: 100 Ω
- 4.The sampling resistance threshold of the amplification circuit should be < 300Ω (magnification 50x)

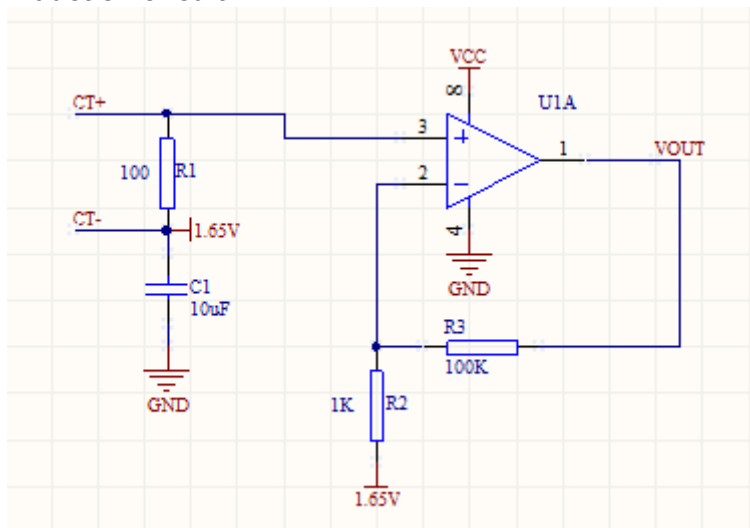
3. Size

3.1 Size

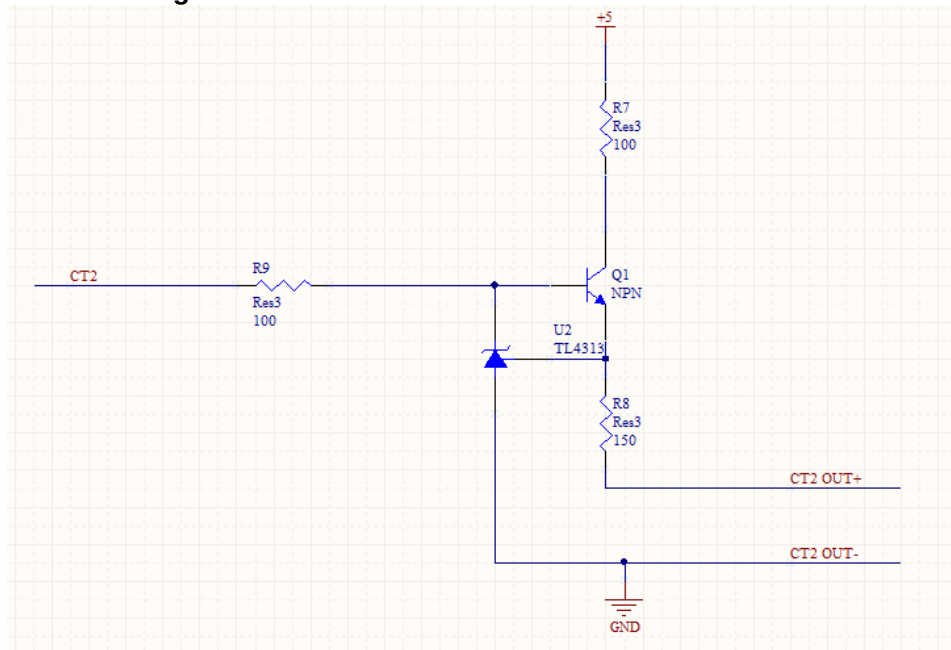


3.2 Application circuit recommendation

Induction circuit



Self-checking circuit



4. Welding features

4.1 Wave soldering method

