

MCB-CASR Series Current sensor are based on close loop principle technology. The sensor can detect the current with DC, AC, pulse and irregular wave shape.

Current transducer MCB-CAS/CASR/CKSR

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

REF: MCB-15CAS, MCB-25CAS, MCB-50CAS,  
MCB-15CASR, MCB-25CASR, MCB-50CASR  
MCB-15CKSR, MCB-25CKSR, MCB-50CKSR,

### ***Features and Benefits***

- Close-loop (compensated) multi-range current transducer
- Voltage output
- Single supply
- Compact design for PCB mounting

### ***Special feature***

- Dedicated 5 primary conductors configuration

### ***Advantages***

- Very low temperature coefficient of offset
- very good dv/tdimmunity
- Reduced height
- Reference pin with two modes :Ref IN and Ref OUT
- Extended measuring range for unipolar measurement

### ***Application***

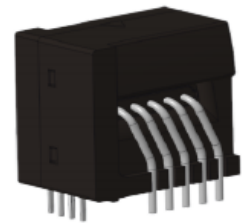
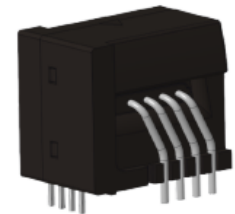
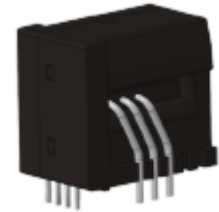
- AC variable speed and servo motor drives
- Static converters for DC motor drives
- Battery supplied applications
- Uninterruptible Power Supplies(UPS)
- Switches Mode Power Supplies(SMPS)
- Power supplies for welding applications
- Solar inverters

### ***Standards***

- IEC 60950-1:2006
- IEC 61010-1:2010
- IEC 61326-1:2012
- UL 508:2010

### ***Application Domain***

- Industrial



**Typical application**

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

**General parameters**

Parameter	Symbol	Value	Unit
Working temperature	T_A	-40~105	°C
Storage temperature	T_stg	-40~125	°C
Mass	m	13	g

**Absolute parameters**

Parameter	Symbol	Value	Unit
Supply voltage	Vc	6	V
ESD rating(HBM)	U_ESD	4	KV
High temperature and humidity	T_HAST	85°C & 85%RH(1000h)	-

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

**Isolation Parameters**

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

### MCB-15CAS Parameters

condition:  $V_{CC}=5.0V, NP=1, RL=10K \Omega, T_A=25^\circ C$ , unless specified.

Parameters	Symbol	Min.	Typ.	Max.	Unit	Remark
Primary nominal rms current	$I_{pn}$		15		A	
Primary current measuring range	$I_{pm}$	-51		51	A	
Supply voltage	$V_C$	4.75	5	5.25	V	
Consumption current	$I_C$		$15+I_P*NP/NS*1000$			NS=1200
current turns	NP		1,2,3			
Offset voltage	$V_{off}$	2.48	2.5	2.52	V	Output@0A
Offset voltage @ $I_{pn}$	$V_{FS}$		$V_{off}\pm 0.625$		V	
Offset voltage @ $I_{pm}$	$V_{FSM}$		$V_{off}\pm 2.125$		V	
Theoretical sensitivity	$G_{th}$		41.67		mV/A	0.625@ $I_{pn}$
Linearity error@ $I_{pn}$	$\xi_L$		0.3		% of $I_{pn}$	Tested@25 $^\circ C$
Reaction time @10 % of $I_{PN}$	$t_{ra}$		1		us	
Setp response time @90 % of $I_{PN}$	$t_r$		1		us	
-3dB bond width	BW		400		kHz	
Noise DC~10kHz	$V_{noise}$		5		mVpp	
DC~100kHz			6			
Accuracy @RT	X	-0.8		0.8	% of $I_{pn}$	@25 $^\circ C$
Accuracy @TA=85 $^\circ C$ (105 $^\circ C$ )	$X_{TRange}$	-2.5(-3)		2.5(3)	% of $I_{pn}$	-40 $^\circ C$ ~105 $^\circ C$

**MCB-25CAS Parameters**

condition:  $V_{CC}=5.0V, NP=1, RL=10K \Omega, T_A=25^\circ C$ , unless specified.

Parameters	Symbol	Min.	Typ.	Max.	Unit	Remark
Primary nominal rms current	$I_{pn}$		25		A	
Primary current measuring range	$I_{pm}$	-85		85	A	
Supply voltage	$V_C$	4.75	5	5.25	V	
Consumption current	$I_C$		$15+I_P*NP/NS*1000$			NS=1200
current turns	NP		1,2,3			
Offset voltage	$V_{off}$	2.48	2.5	2.52	V	Output@0A
Offset voltage @ $I_{pn}$	$V_{FS}$		$V_{off}\pm 0.625$		V	
Offset voltage @ $I_{pm}$	$V_{FSM}$		$V_{off}\pm 2.125$		V	
Theoretical sensitivity	$G_{th}$		25		mV/A	$0.625@I_{pn}$
Linearity error@ $I_{pn}$	$\xi_L$		0.3		% of $I_{pn}$	Tested@25°C
Reaction time @10 % of $I_{PN}$	$t_{ra}$		1		us	
Setp response time @90 % of $I_{PN}$	$t_r$		1		us	
-3dB bond width	BW		400		kHz	
Noise DC~10kHz	$V_{noise}$		5		mVpp	
DC~100kHz			6			
Accuracy @RT	X	-0.8		0.8	% of $I_{pn}$	@25°C
Accuracy @ $T_A=85^\circ C$ (105°C)	$X_{TRange}$	-2.5(-3)		2.5(3)	% of $I_{pn}$	-40°C~105°C

### MCB-50CAS Parameters

condition:  $V_{CC}=5.0V, NP=1, RL=10K \Omega, T_A=25^\circ C$ , unless specified.

Parameters	Symbol	Min.	Typ.	Max.	Unit	Remark
Primary nominal rms current	$I_{pn}$		50		A	
Primary current measuring range	$I_{pm}$	-150		150	A	
Supply voltage	$V_C$	4.75	5	5.25	V	
Consumption current	$I_C$		$15+I_P*NP/NS*1000$			NS=1200
current turns	NP		1,2,3			
Offset voltage	$V_{off}$	2.48	2.5	2.52	V	Output@0A
Offset voltage @ $I_{pn}$	$V_{FS}$		$V_{off}\pm 0.625$		V	
Offset voltage @ $I_{pm}$	$V_{FSM}$		$V_{off}\pm 1.875$		V	
Theoretical sensitivity	$G_{th}$		12.5		mV/A	$0.625@I_{pn}$
Linearity error@ $I_{pn}$	$\xi_L$		0.3		% of $I_{pn}$	Tested@25°C
Reaction time @10 % of $I_{PN}$	$t_{ra}$		1		us	
Setp response time @90 % of $I_{PN}$	$t_r$		1		us	
-3dB bond width	BW		400		kHz	
Noise DC~10kHz	$V_{noise}$		5		mVpp	
DC~100kHz			6			
Accuracy @RT	X	-0.8		0.8	% of $I_{pn}$	@25°C
Accuracy @ $T_A=85^\circ C$ (105°C)	$X_{TRange}$	-2.5(-3)		2.5(3)	% of $I_{pn}$	-40°C~105°C

### MCB-15CASR Parameters

condition:  $V_{CC}=5.0V, NP=1, RL=10K \Omega, T_A=25^\circ C$ , unless specified.

Parameters	Symbol	Min.	Typ.	Max.	Unit	Remark
Primary nominal rms current	$I_{pn}$		15		A	
Primary current measuring range	$I_{pm}$	-51		51	A	
Supply voltage	$V_C$	4.75	5	5.25	V	
Consumption current	$I_C$		$15+IP*NP/NS*1000$			NS=1200
current turns	NP		1,2,3			
Reference voltage	$V_{ref}$	2.48	2.5	2.52	V	
Offset voltage @ $I_{pn}$	$V_{FS}$		$V_{off}\pm 0.625$		V	
Offset voltage @ $I_{pm}$	$V_{FSM}$		$V_{off}\pm 2.125$		V	
Electrical offset voltage	$V_{OE}$		5		mV	100% tested $V_{out}-V_{ref}@0A$
Theoretical sensitivity	$G_{th}$		41.667		mV/A	$0.625@I_{pn}$
Linearity error @ $I_{pn}$	$\xi_L$		0.3		% of $I_{pn}$	Tested@25°C
Reaction time @10 % of $I_{PN}$	$t_{ra}$		1		us	
Setp response time @90 % of $I_{PN}$	$t_r$		1		us	
-3dB bond width	BW		400		kHz	
Noise DC~10kHz	$V_{noise}$		5		mVpp	
DC~100kHz			6			
Accuracy @RT	X	-0.8		0.8	% of $I_{pn}$	@25°C
Accuracy @ $T_A=85^\circ C$ (105°C)	$X_{TRange}$	-1.15 (-1.5)		1.15 (1.5)	% of $I_{pn}$	-40°C~105°C

### MCB-25CASR Parameters

condition:  $V_{CC}=5.0V, NP=1, RL=10K \Omega, T_A=25^\circ C$ , unless specified.

Parameters	Symbol	Min.	Typ.	Max.	Unit	Remark
Primary nominal rms current	$I_{pn}$		25		A	
Primary current measuring range	$I_{pm}$	-85		85	A	
Supply voltage	$V_C$	4.75	5	5.25	V	
Consumption current	$I_C$		$15+IP*NP/NS*1000$			NS=1200
current turns	NP		1,2,3			
Reference voltage	$V_{ref}$	2.48	2.5	2.52	V	
Offset voltage @ $I_{pn}$	$V_{FS}$		$V_{off}\pm 0.625$		V	
Offset voltage @ $I_{pm}$	$V_{FSM}$		$V_{off}\pm 2.125$		V	
Electrical offset voltage	$V_{OE}$		5		mV	100% tested $V_{out}-V_{ref}@0A$
Theoretical sensitivity	$G_{th}$		25		mV/A	$0.625@I_{pn}$
Linearity error 0~ $I_{pn}$	$\xi_L$		0.3		% of $I_{pn}$	Tested@25°C
Reaction time @10 % of $I_{PN}$	$t_{ra}$		1		us	
Setp response time @90 % of $I_{PN}$	$t_r$		1		us	
-3dB bond width	BW		400		kHz	
Noise DC~10kHz	$V_{noise}$		5		mVpp	
DC~100kHz			6			
Accuracy @RT	X	-0.8		0.8	% of $I_{pn}$	@25°C
Accuracy @ $T_A=85^\circ C$ (105°C)	$X_{TRange}$	-1.15 (-1.3)		1.15 (1.3)	% of $I_{pn}$	-40°C~105°C

### MCB-50CASR Parameters

condition:  $V_{CC}=5.0V, NP=1, RL=10K \Omega, T_A=25^\circ C$ , unless specified.

Parameters	Symbol	Min.	Typ.	Max.	Unit	Remark
Primary nominal rms current	$I_{pn}$		50		A	
Primary current measuring range	$I_{pm}$	-150		150	A	
Supply voltage	$V_C$	4.75	5	5.25	V	
Consumption current	$I_C$		$15+I_P*NP/NS*1000$			NS=1200
current turns	NP		1,2,3			
Reference voltage	$V_{ref}$	2.48	2.5	2.52	V	
Offset voltage @ $I_{pn}$	$V_{FS}$		$V_{off}\pm 0.625$		V	
Offset voltage @ $I_{pm}$	$V_{FSM}$		$V_{off}\pm 1.875$		V	
Electrical offset voltage	$V_{OE}$		5		mV	100% tested $V_{out}-V_{ref}@0A$
Theoretical sensitivity	$G_{th}$		12.5		mV/A	$0.625@I_{pn}$
Linearity error@ $I_{pn}$	$\xi_L$		0.3		% of $I_{pn}$	Tested@25°C
Reaction time @10 % of $I_{PN}$	$t_{ra}$		1		us	
Setp response time @90 % of $I_{PN}$	$t_r$		1		us	
-3dB bond width	BW		400		kHz	
Noise DC~10kHz	$V_{noise}$		5		mVpp	
DC~100kHz			6			
Accuracy @RT	X	-0.8		0.8	% of $I_{pn}$	@25°C
Accuracy @ $T_A=85^\circ C$ ( $105^\circ C$ )	$X_{TRange}$	-1.1 (-1.3)		1.1 (1.3)	% of $I_{pn}$	-40°C~105°C



**MCB-15CKSR Parameters**

condition:  $V_{CC}=5.0V, NP=1, RL=10K \Omega, T_A=25^\circ C$ , unless specified.

Parameters	Symbol	Min.	Typ.	Max.	Unit	Remark
Primary nominal rms current	$I_{pn}$		15		A	
Primary current measuring range	$I_{pm}$	-51		51	A	
Supply voltage	$V_C$	4.75	5	5.25	V	
Consumption current	$I_C$		$15+IP*NP/NS*1000$			NS=1200
current turns	NP		1,2,4			
Reference voltage	$V_{ref}$	2.48	2.5	2.52	V	
Offset voltage @ $I_{pn}$	$V_{FS}$		$V_{off}\pm 0.625$		V	
Offset voltage @ $I_{pm}$	$V_{FSM}$		$V_{off}\pm 2.125$		V	
Electrical offset voltage	$V_{OE}$		5		mV	100% tested $V_{out}-V_{ref}@0A$
Theoretical sensitivity	$G_{th}$		41.67		mV/A	0.625@ $I_{pn}$
Linearity error@ $I_{pn}$	$\xi_L$		0.3		% of $I_{pn}$	Tested@25 °C
Reaction time @10 % of $I_{PN}$	$t_{ra}$		1		us	
Setp response time @90 % of $I_{PN}$	$t_r$		1		us	
-3dB bond width	BW		400		kHz	
Noise DC~10kHz	$V_{noise}$		5		mVpp	
DC~100kHz			6			
Accuracy @RT	X	-0.8		0.8	% of $I_{pn}$	@25°C
Accuracy @ $T_A=85^\circ C$ (105°C)	$X_{TRange}$	-1.15 (-1.3)		1.15 (1.3)	% of $I_{pn}$	-40°C~105°C

### MCB-25CKSR Parameters

condition:  $V_{CC}=5.0V, NP=1, RL=10K \Omega, T_A=25^\circ C$ , unless specified.

Parameters	Symbol	Min.	Typ.	Max.	Unit	Remark
Primary nominal rms current	$I_{pn}$		25		A	
Primary current measuring range	$I_{pm}$	-85		85	A	
Supply voltage	$V_C$	4.75	5	5.25	V	
Consumption current	$I_C$		$15+IP*NP/NS*1000$			NS=1200
current turns	NP		1,2,4			
Reference voltage	$V_{ref}$	2.48	2.5	2.52	V	
Offset voltage @ $I_{pn}$	$V_{FS}$		$V_{off}\pm 0.625$		V	
Offset voltage @ $I_{pm}$	$V_{FSM}$		$V_{off}\pm 2.125$		V	
Electrical offset voltage	$V_{OE}$		5		mV	100% tested $V_{out}-V_{ref}@0A$
Theoretical sensitivity	$G_{th}$		25		mV/A	$0.625@I_{pn}$
Linearity error@ $I_{pn}$	$\xi_L$		0.3		% of $I_{pn}$	Tested@25 $^\circ C$
Reaction time @10 % of $I_{PN}$	$t_{ra}$		1		us	
Setp response time @90 % of $I_{PN}$	$t_r$		1		us	
-3dB bond width	BW		400		kHz	
Noise DC~10kHz	$V_{noise}$		5		mVpp	
DC~100kHz			6			
Accuracy @RT	X	-0.8		0.8	% of $I_{pn}$	@25 $^\circ C$
Accuracy @ $T_A=85^\circ C$ (105 $^\circ C$ )	$X_{TRange}$	-1.15 (-1.3)		1.15 (1.3)	% of $I_{pn}$	-40 $^\circ C$ ~105 $^\circ C$

### MCB-50CKSR Parameters

condition:  $V_{CC}=5.0V, NP=1, RL=10K \Omega, T_A=25^\circ C$ , unless specified.

Parameters	Symbol	Min.	Typ.	Max.	Unit	Remark
Primary nominal rms current	$I_{pn}$		50		A	
Primary current measuring range	$I_{pm}$	-150		150	A	
Supply voltage	$V_C$	4.75	5	5.25	V	
Consumption current	$I_C$		$15+IP*NP/NS*1000$			NS=1200
current turns	NP		1,2,4			
Reference voltage	$V_{ref}$	2.48	2.5	2.52	V	
Offset voltage @ $I_{pn}$	$V_{FS}$		$V_{off}\pm 0.625$		V	
Offset voltage @ $I_{pm}$	$V_{FSM}$		$V_{off}\pm 1.875$		V	
Electrical offset voltage	$V_{OE}$		5		mV	100% tested $V_{out}-V_{ref}@0A$
Theoretical sensitivity	$G_{th}$		12.5		mV/A	$0.625@I_{pn}$
Linearity error@ $I_{pn}$	$\xi_L$		0.3		% of $I_{pn}$	Tested@25 $^\circ C$
Reaction time @10 % of $I_{PN}$	$t_{ra}$		1		us	
Setp response time @90 % of $I_{PN}$	$t_r$		1		us	
-3dB bond width	BW		400		kHz	
Noise DC~10kHz	$V_{noise}$		5		mVpp	
DC~100kHz			6			
Accuracy @RT	X	-0.8		0.8	% of $I_{pn}$	@25 $^\circ C$
Accuracy @ $T_A=85^\circ C$ (105 $^\circ C$ )	$X_{TRange}$	-1.1 (-1.3)		1.1 (1.3)	% of $I_{pn}$	-40 $^\circ C$ ~105 $^\circ C$

### MCB-75CKSR Parameters

condition:  $V_{CC}=5.0V, NP=1, RL=10K\Omega, T_A=25^\circ C$ , unless specified.

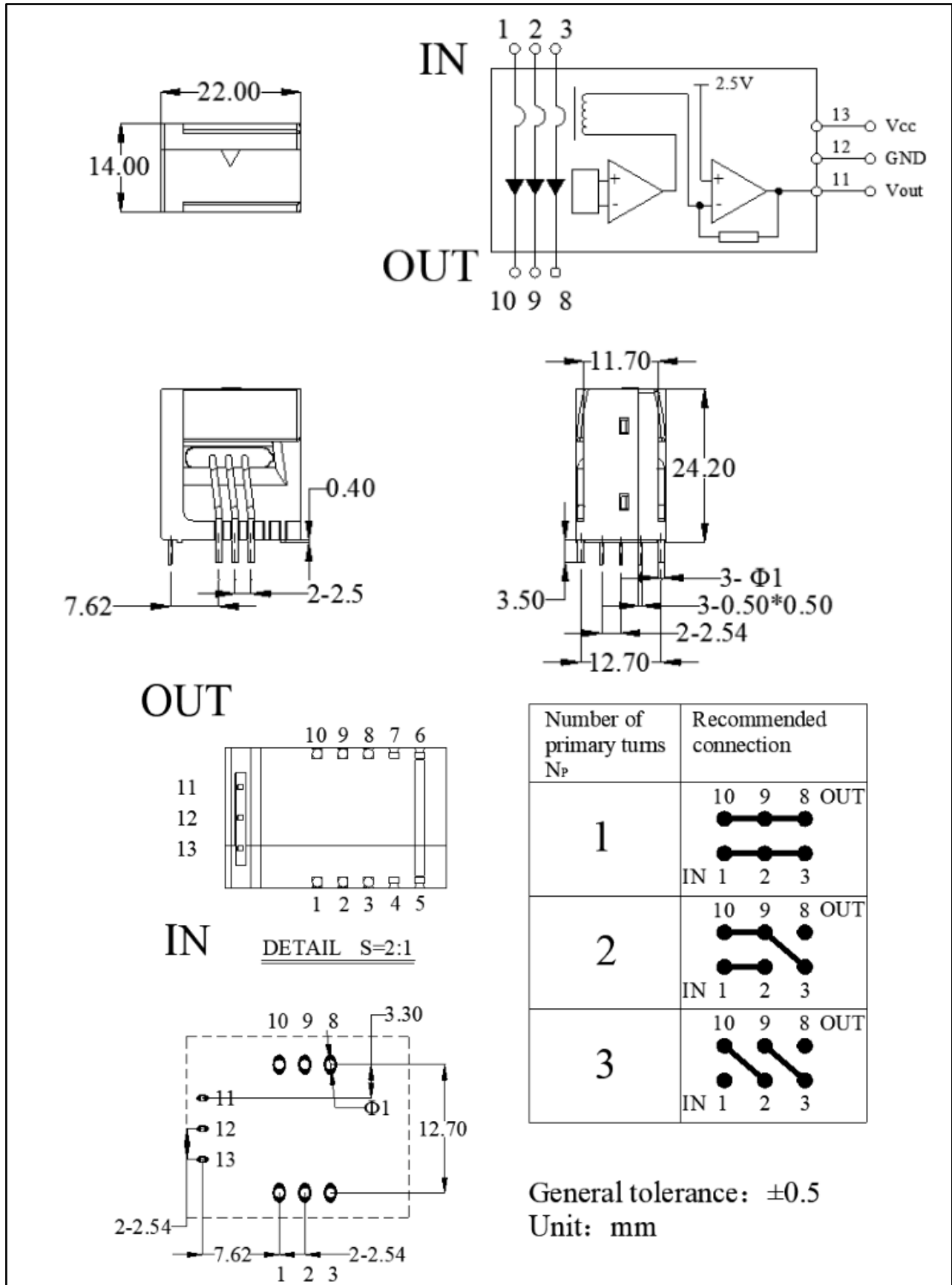
Parameters	Symbol	Min.	Typ.	Max.	Unit	Remark
Primary nominal rms current	I <sub>pn</sub>		75		A	
Primary current measuring range	I <sub>pm</sub>	-220		220	A	With UC=5V, TA=25°C, RL=10kΩ
Primary current measuring range	I <sub>pm</sub>	-180		180	A	With UC=4.75V, TA=85°C, RL=10kΩ
Supply voltage	V <sub>C</sub>	4.75	5	5.25	V	
Consumption current	I <sub>C</sub>		15+IP*NP/NS*1000			NS=960
current turns	NP		1,2,4			
Reference voltage	V <sub>ref</sub>	2.48	2.5	2.52	V	
Offset voltage @I <sub>pn</sub>	V <sub>FS</sub>		V <sub>off</sub> ±0.46875		V	
Offset voltage @I <sub>pm</sub>	V <sub>FSM</sub>		V <sub>off</sub> ±1.125		V	With UC=4.75V, TA=85°C, RL=10kΩ
Electrical offset voltage	V <sub>OE</sub>		5		mV	100% tested V <sub>out</sub> -V <sub>ref</sub> @0A
Theoretical sensitivity	G <sub>th</sub>		6.25		mV/A	0.4685@I <sub>pn</sub>
Linearity error0~I <sub>pn</sub>	ξ <sub>L</sub>		0.3		% of I <sub>pn</sub>	Tested@25°C
Reaction time @10 % of I <sub>PN</sub>	t <sub>ra</sub>		1		us	
Setp response time @90 % of I <sub>PN</sub>	t <sub>r</sub>		1		us	
-3dB bond width	BW		400		kHz	
Noise DC~10kHz	V <sub>noise</sub>		5		mVpp	
DC~100kHz			6			
Accuracy @RT	X	-0.8		0.8	% of I <sub>pn</sub>	@25°C



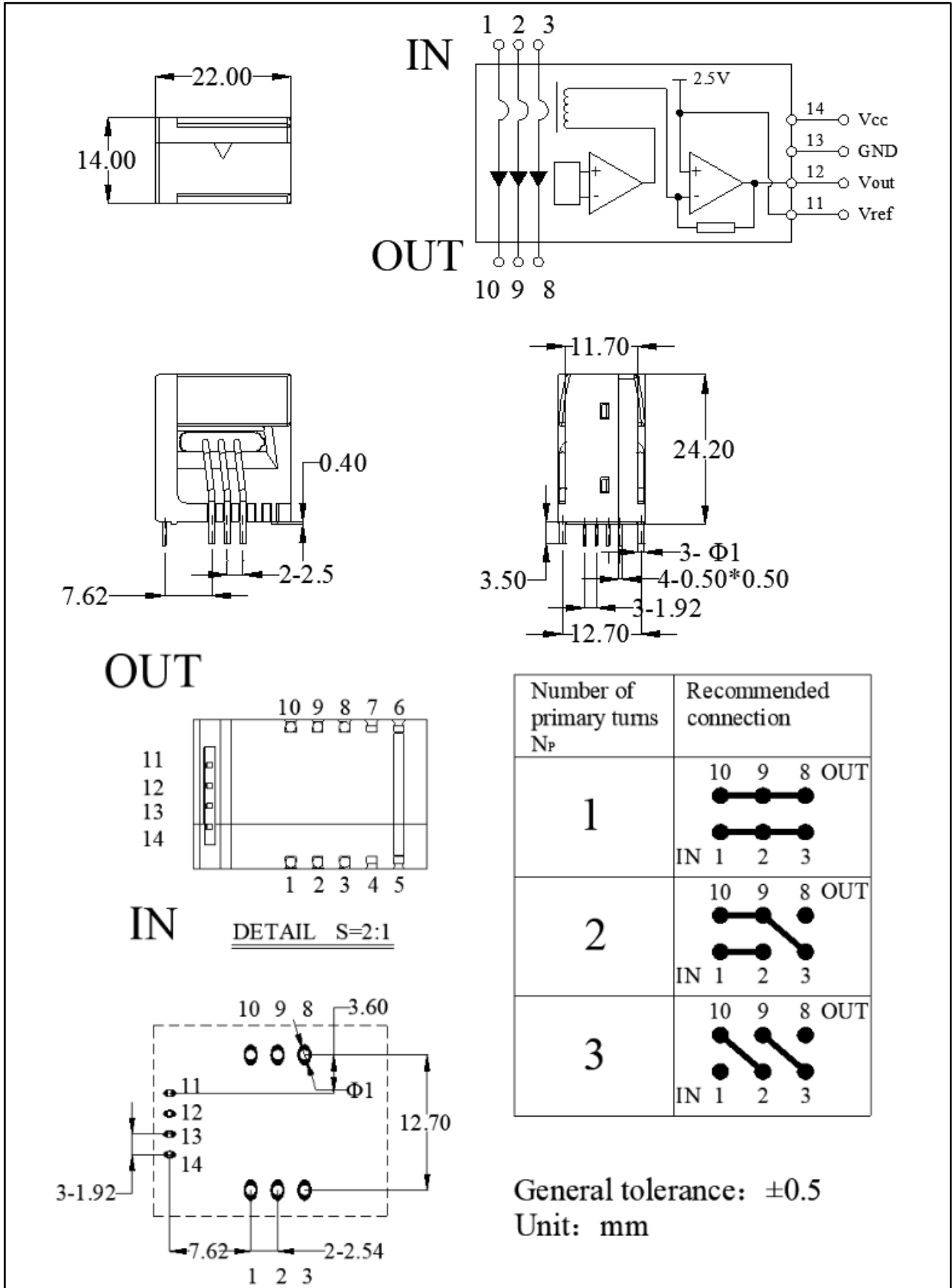
## *MCB-CAS/CASR/CKSR Series*

Accuracy @TA=85°C (105°C)	X_TRange	-1.1 (-1.3)		1.1 (1.3)	% of I <sub>pn</sub>	-40°C~105°C
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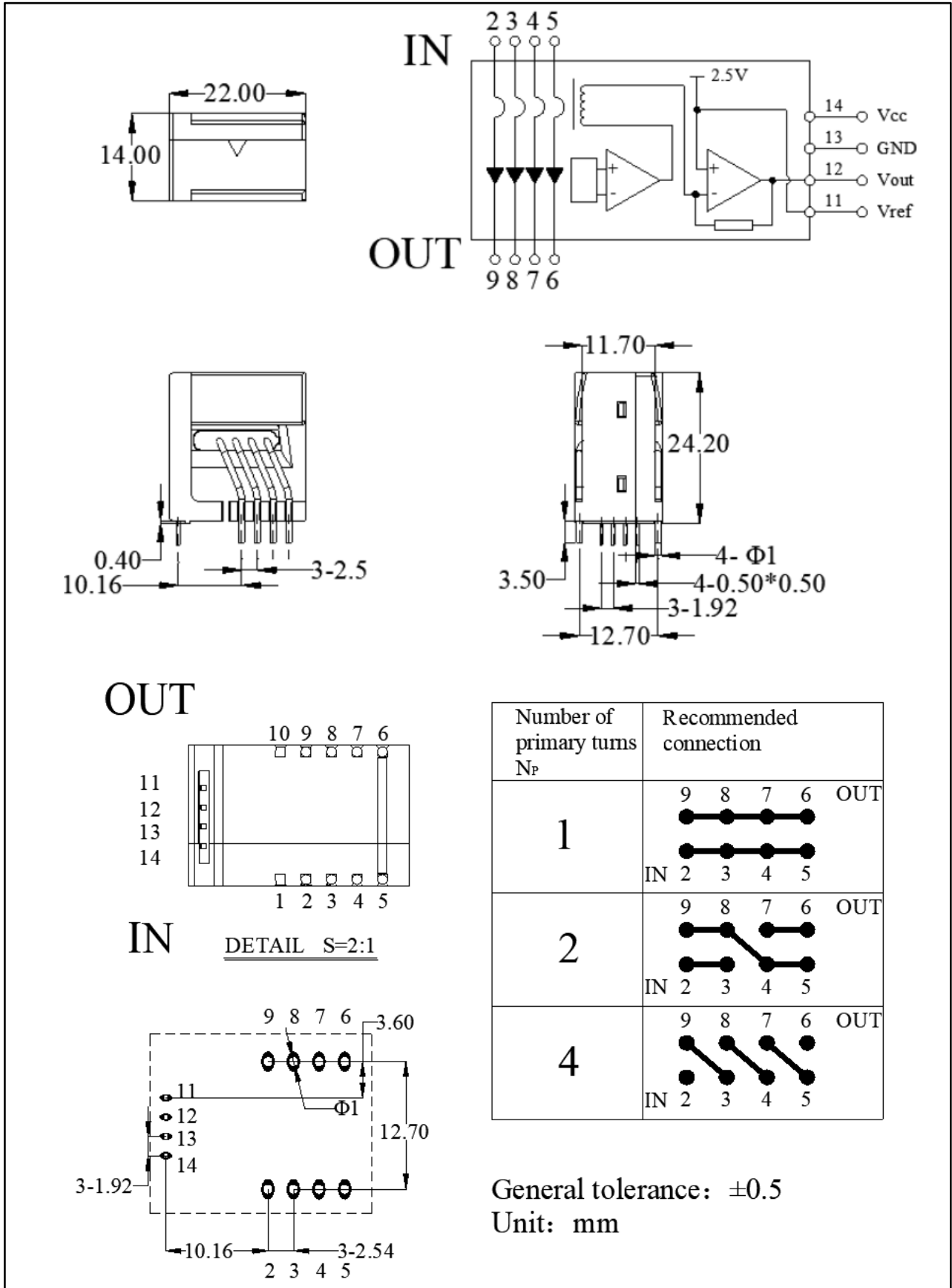
Package Drawing  
MCB-CAS



## MCB-CASR

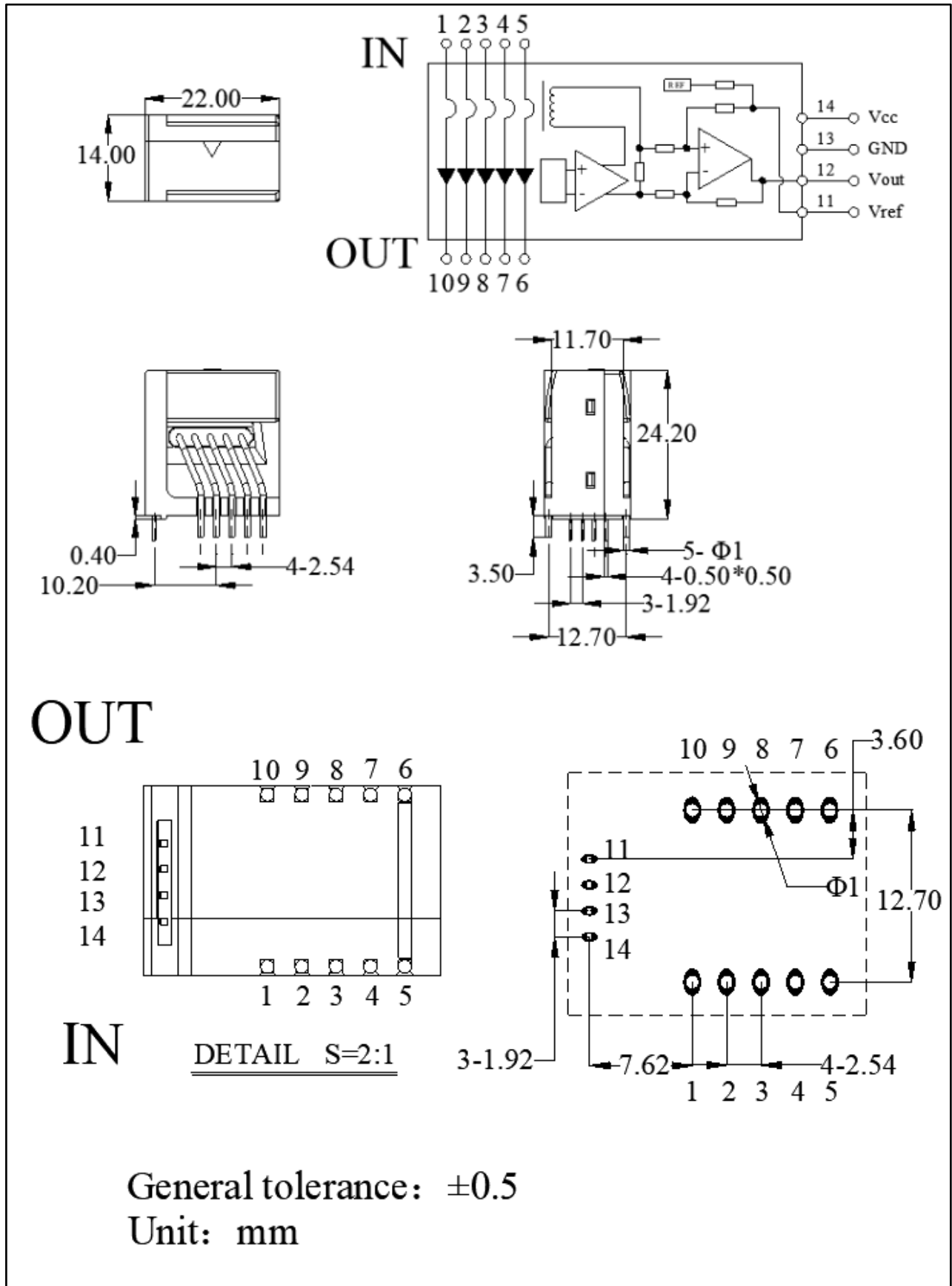


## MCB-CKSR





**MCB-75CKSR**



General tolerance:  $\pm 0.5$   
Unit: mm