CC6905

High-performance Hall-effect Current Sensor 5A/10A/20A/30A/40A/50A

FEATURES

- Built-in VREF Output，External VREF Input:
  - Built-in VREF Output: V_{OE} is programmable to < 5mV
  - External VREF Input: V_{OUT} quiescent output voltage is consistent with it
- Measuring current range: 5A,10A,20A,30A,40A,50A
- High bandwidth (230kHz), Low noise，Single-end analog output
- 100V_{RMS} isolation voltage between pins 1-4 and 5-8
- Less power loss, internal conductor's resistance is 0.5mΩ (SOP8) or 0.4mΩ (QFN-3×3-12)
- Response time t_{RES} = 1.5us
- Room temperature error ±1%, sensitivity temperature drift up to ±2.5%
- Good temperature stability, using Hall signal amplification circuit and temperature compensation circuit
- Differential Hall structure, strong resistance to external magnetic interference
- Strong resistance to mechanical stress, magnetic parameters will not be shifted by external pressure
- Fixed output
- ESD (HBM) 4kV, ESD (CDM) 1kV, LU 200mA

APPLCATIONS

- Base Station
- Air-conditioner
- Power Supply
- Control Board
- Other markets with demand for Current Sensor Applications

GENERAL DESCRIPTION

The CC6905 device is a high-performance Hall-effect current sensor that can measure DC or AC current more efficiently, and has the advantages of high accuracy, excellent linearity and temperature stability in industrial, consumer, and communication equipment.

The CC6905 device consists of a high-precision, low-noise linear Hall integrated circuit and a low-resistance main current conductor.When current flows through the copper conduction path, a magnetic field generates. Meanwhile the Hall circuit converts this magnetic signal to output voltage signal. Internal copper conductor's resistance is typical 0.5mΩ, which provides much less power loss than the universal resistor sampling method. Otherwise, its internal inherent insulation provides 100V_{RMS} insulation withstand voltage between the input current path and the secondary circuit.

The Hall circuit based on BiCMOS process integrates a differential Hall sensor, chopper amplifier, variable gain amplifier, output polarity/sensitivity/offset, oscillator, filter, zero reference output, overcurrent output, and amplifier buffer output and so on.The sensor adopts linear Hall sensor temperature compensation technology, which has high temperature stability characteristics.

The differential common-mode suppression circuit integrated in CC6905 can make the chip output unaffected by external interference magnetic signals. The integrated dynamic offset elimination circuit makes the sensitivity of the chip independent of external stress and chip packaging stress.

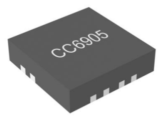
CC6905 is available in SOP8 and QFN-3×3-12 package. It's operating ambient temperature range is -40~125°C. Comply with RoHS requirements.

DEVICE INFORMATION

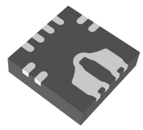
Part Number	Package	Body Size（TYP.）
CC6905S8	SOP8	4.90mm×3.90mm
CC6905QC	QFN-3×3-12	3.00mm×3.00mm

PRODUCT PACKAGE PICTURE

SOP8 package

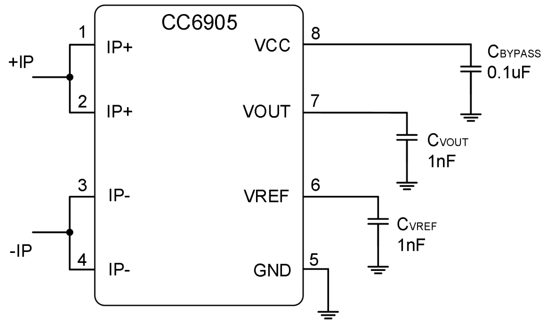


QFN-3×3-12 package — front side

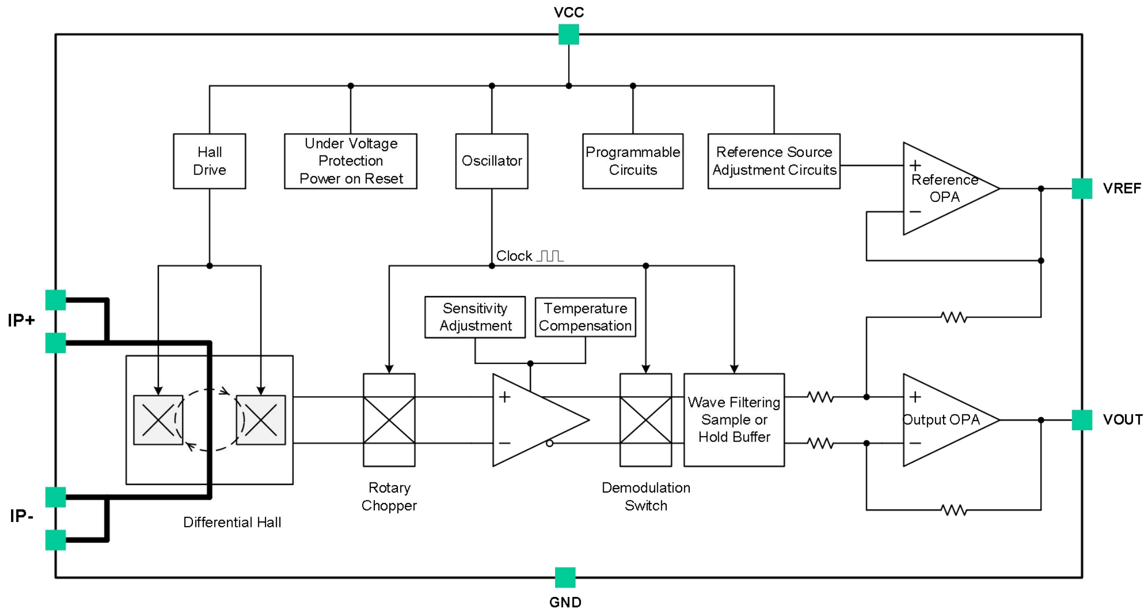


QFN-3×3-12 package — back side

TYPICAL APPLICATION



FUNCTION BLOCK DIAGRAM



ORDERING INFORMATION

Part No.	SENS. (mV/A)	Package	Packing Form
CC6905S8-5FB005	400	SOP8	tape reel, 2000 pcs/reel
CC6905S8-5FB010	200	SOP8	tape reel, 2000 pcs/reel
CC6905S8-5FB020	100	SOP8	tape reel, 2000 pcs/reel
CC6905S8-5FB030	66.67	SOP8	tape reel, 2000 pcs/reel
CC6905S8-5FB040	50	SOP8	tape reel, 2000 pcs/reel
CC6905S8-5FB050	40	SOP8	tape reel, 2000 pcs/reel
CC6905S8-3FB005	264	SOP8	tape reel, 2000 pcs/reel
CC6905S8-3FB010	132	SOP8	tape reel, 2000 pcs/reel
CC6905S8-3FB020	66	SOP8	tape reel, 2000 pcs/reel
CC6905S8-3FB030	44	SOP8	tape reel, 2000 pcs/reel
CC6905S8-3FB040	33	SOP8	tape reel, 2000 pcs/reel
CC6905S8-3FB050	26.4	SOP8	tape reel, 2000 pcs/reel
CC6905S8-3FU030	88	SOP8	tape reel, 2000 pcs/reel
CC6905S8-3FU050	52.8	SOP8	tape reel, 2000 pcs/reel
CC6905QC-5FB010	200	QFN-3×3-12	tape reel, 5000 pcs/reel
CC6905QC-5FB020	100	QFN-3×3-12	tape reel, 5000 pcs/reel
CC6905QC-5FB030	66.67	QFN-3×3-12	tape reel, 5000 pcs/reel
CC6905QC-3FB010	132	QFN-3×3-12	tape reel, 5000 pcs/reel
CC6905QC-3FB020	66	QFN-3×3-12	tape reel, 5000 pcs/reel
CC6905QC-3FB030	44	QFN-3×3-12	tape reel, 5000 pcs/reel
CC6905QC-3FU030	88	QFN-3×3-12	tape reel, 5000 pcs/reel
CC6905QC-3FU050	52.8	QFN-3×3-12	tape reel, 5000 pcs/reel
CC6905XX-YYY（**Note 1**）	-	-	-

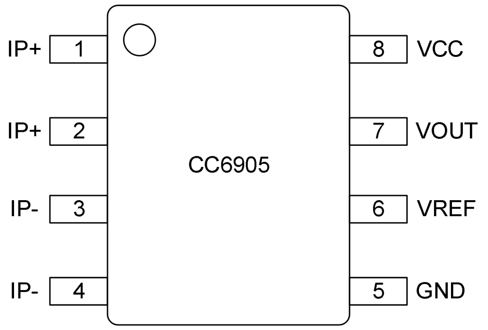
Note1: Customization is possible when YYY is in the 50A range; XX contains both S8 (SOP8) and QC (QFN-3×3-12) packages.

PRODUCTION NAME DEFINITION

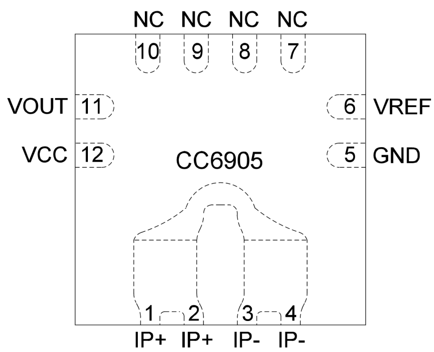
CC 6905 S8 - 5 FB 020

- **Current Range**
  020: 20A range
- **Output Type and Directionality**
  F: Fixed output
  B: Bidirectional; U: unidirectional
- **Supply Voltage**
  5: VCC=5V
  3: VCC=3.3V
- **Package Part Number**
  S8: SOP8
  QC: QFN-3×3-12
- **Main Device Name**
  6905
- **CrossChip Part Number**
  Fixed to CC

PINOUT DIAGRAM



SOP8 Package



QFN-3×3-12 Package

Name	Number		Function
	SOP8	QFN-3×3-12	
IP+	1	1	Current Sampled +
IP+	2	2	Current Sampled +
IP-	3	3	Current Sampled -
IP-	4	4	Current Sampled -
GND	5	5	Ground
VREF	6	6	Reference Output Voltage
VOUT	7	11	Output Voltage
VCC	8	12	Supply Voltage
NC	-	7	NC
NC	-	8	NC
NC	-	9	NC
NC	-	10	NC

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Power Supply Voltage	V_{CC}	6.5	V
Output Voltage	V_{OUT}	V_{CC} +0.3	V
Output Source Current	$I_{OUT(SOURCE)}$	25	mA
Operating Ambient Temperature	T_A	125	°C
Junction Temperature	T_J	165	°C
Storage Temperature	T_S	150	°C
Electrostatic Discharge Voltage (ESD)	HBM	4	kV
	CDM	1	kV
Latch Up	LU	200	mA

Note: Stresses beyond those listed under *Absolute Maximum Ratings* may cause permanent damage to the device. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

ISOLATION CHARACTERISTICS

Parameter	Symbol	Test Conditions		Value	Unit
Withstand Isolation Voltage	V_{ISO}	50/60Hz，1min		100	V_{RMS}
		t = 1s		150	
Clearance	D_{cl}	minimum distance through air from IP leads to signal leads	SOP8	4.3	mm
Creepage	D_{cr}	minimum distance from the IP wire to the signal wire along the package	SOP8	4.3	mm

ELECTRICAL PARAMETERS (V_{CC}=5V/3.3V，C_{OUT}=1nF，C_{REF}=1nF，T_A=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Supply Section，VCC=5V						
Power Supply	V_{CC}	-	4.5	5.0	5.5	V
Undervoltage Protection Release Threshold	UV	V_{CC}> UV,Undervoltage protection release		2.7		V
Undervoltage Protection Hysteresis Voltage	UV_{HYS}	V_{CC} < UV - UV_{HYS}，Lock the chip		0.22		V
Quiescent Current	I_{CC}		10	12	14	mA
Supply Section，VCC=3.3V						
Power Supply	V_{CC}	-	3	3.3	3.6	V
Undervoltage Protection Release Threshold	UV	V_{CC}> UV,Undervoltage protection release		2.8		V
Undervoltage Protection Hysteresis Voltage	UV_{HYS}	V_{CC} < UV - UV_{HYS}，Lock the chip		0.16		V
Quiescent Current	I_{CC}		8	10	13	mA
Output Section，VOUT						
VOUT Filter Capacitors	C_{OUT}	VOUT to GND		1	2.2	nF
VOUT Load Resistance	R_{L_OUT}	VOUT to GND	1.5			kΩ
VOUT Output Short Circuit Current	$I_{OUT\_SC\_GND}$	VOUT to GND short-circuit current, 5V series		30		mA
		VOUT to GND short-circuit current, 3.3V series		20		mA
	$I_{OUT\_SC\_VCC}$	VOUT to VCC short-circuit current, 5V series		23		mA
		VOUT to VCC short-circuit current, 3.3V series		20		mA
Signal Chain -3dB Bandwidth	f_{-3dB}	Small signal -3dB bandwidth		230		kHz
Signal Response Time	t_{RES}	Input current up to 90% to VOUT 90%		1.5		us
Reference Section，VREF						
VREF Filter Capacitors	C_{REF}	VREF to GND		1	2.2	nF
VREF Load Resistance	R_{L_REF}	VREF to GND	1.5			kΩ
VREF Output Voltage	V_{REF}	5V bidirectional Nominal Supply Voltage Series	2.45	2.50	2.55	V
		3.3V bidirectional Nominal Supply Voltage Series	1.60	1.65	1.70	V
		3.3V unidirectional nominal supply voltage series	0.31	0.33	0.35	V
VREF Input Voltage	V_{REFIN}	VREF Input voltage range	0		4	V
VREF Output Short Circuit Current	$I_{REF\_SC\_GND}$	VREF to GND short-circuit current, 5V series		10		mA
		VREF to GND short-circuit current, 3.3V series		5		mA
	$I_{REF\_SC\_VCC}$	VREF to VCC short-circuit current, 5V series		10		mA
		VREF to VCC short-circuit current, 3.3V series		5		mA
On-resistance						
Primary on-resistance	R_P	T_A =25°C, I_P = 2A, SOP8 package		0.5	0.6	mΩ
		T_A =25°C, I_P = 2A, QFN-3×3-12 package		0.4	0.5	mΩ

CC6905S8-5FB005 (V_{CC}=5V, C_{OUT}=1nF, C_{REF}=1nF, T_A=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current Accuracy Range	I_P	-	-5		5	A
Sensitivity	Sens	full range of I_P		400		mV/A
Zero Current Differential Output Error	V_{OE}	T_A=25°C, V_{OE}=V_{OUT}-V_{REF}, I_P=0A	-20		20	mV
Zero Current Output Offset Drift	ΔV_{OE}	T_A=-40°C ~125°C V_{OE} offset voltage drift =V_{OE_TA} - $V_{OE\_25℃}$	-120		120	mV
Noise	$V_{N(RMS)}$	I_P=0A		64		mV
Zero Current Quiescent Output Voltage	$V_{OUT(Q)}$	T_A=25°C, I_P=0A	2.485	2.500	2.515	V
Zero Current Quiescent Output Voltage Temperature Drift	$\Delta V_{OUT(Q)}$	T_A=-40°C ~125°C $V_{OUT(Q)}$ voltage drift=$V_{OUT(Q)\_TA}$ -$V_{OUT(Q)\_25℃}$	-120		120	mV
Sensitivity Error	ΔSens	T_A=-40°C ~ 125°C	-2.0		2.0	%
Total Output Error	E_{TOT}	T_A=-40°C ~ 125°C, I_P=I_{P_MAX}	-2.5		2.5	%

CC6905S8-5FB010 (V_{CC}=5V, C_{OUT}=1nF, C_{REF}=1nF, T_A=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current Accuracy Range	I_P	-	-10		10	A
Sensitivity	Sens	full range of I_P		200		mV/A
Zero Current Differential Output Error	V_{OE}	T_A=25°C, V_{OE}=V_{OUT}-V_{REF}, I_P=0A	-20		20	mV
Zero Current Output Offset Drift	ΔV_{OE}	T_A=-40°C ~125°C V_{OE} offset voltage drift =V_{OE_TA} - $V_{OE\_25℃}$	-60		60	mV
Noise	$V_{N(RMS)}$	I_P=0A		32		mV
Zero Current Quiescent Output Voltage	$V_{OUT(Q)}$	T_A=25°C, I_P=0A	2.492	2.500	2.508	V
Zero Current Quiescent Output Voltage Temperature Drift	$\Delta V_{OUT(Q)}$	T_A=-40°C ~125°C $V_{OUT(Q)}$ voltage drift=$V_{OUT(Q)\_TA}$ -$V_{OUT(Q)\_25℃}$	-60		60	mV
Sensitivity Error	ΔSens	T_A=-40°C ~ 125°C	-2.0		2.0	%
Total Output Error	E_{TOT}	T_A=-40°C ~ 125°C, I_P=I_{P_MAX}	-2.5		2.5	%

CC6905S8-5FB020 (V_{CC}=5V，C_{OUT}=1nF，C_{REF}=1nF，T_A=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current Accuracy Range	I_P	-	-20		20	A
Sensitivity	Sens	full range of I_P		100		mV/A
Zero Current Differential Output Error	V_{OE}	T_A=25°C，V_{OE}=V_{OUT}-V_{REF}，I_P=0A	-5		5	mV
Zero Current Output Offset Drift	ΔV_{OE}	T_A=-40°C ~125°C V_{OE} offset voltage drift =V_{OE_TA} - $V_{OE\_25°C}$	-30		30	mV
Noise	$V_{N(RMS)}$	I_P=0A		16		mV
Zero Current Quiescent Output Voltage	$V_{OUT(Q)}$	T_A=25°C，I_P=0A	2.492	2.500	2.508	V
Zero Current Quiescent Output Voltage Temperature Drift	$\Delta V_{OUT(Q)}$	T_A=-40°C ~125°C $V_{OUT(Q)}$ voltage drift=$V_{OUT(Q)\_TA}$ -$V_{OUT(Q)\_25°C}$	-30		30	mV
Sensitivity Error	ΔSens	T_A=-40°C ~ 125°C	-2.0		2.0	%
Total Output Error	E_{TOT}	T_A=-40°C ~ 125°C，I_P=I_{P_MAX}	-2.5		2.5	%

CC6905S8-5FB030 (V_{CC}=5V，C_{OUT}=1nF，C_{REF}=1nF，T_A=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current Accuracy Range	I_P	-	-30		30	A
Sensitivity	Sens	full range of I_P		66.67		mV/A
Zero Current Differential Output Error	V_{OE}	T_A=25°C，V_{OE}=V_{OUT}-V_{REF}，I_P=0A	-5		5	mV
Zero Current Output Offset Drift	ΔV_{OE}	T_A=-40°C ~125°C V_{OE} offset voltage drift =V_{OE_TA} - $V_{OE\_25°C}$	-20		20	mV
Noise	$V_{N(RMS)}$	I_P=0A		10.67		mV
Zero Current Quiescent Output Voltage	$V_{OUT(Q)}$	T_A=25°C，I_P=0A	2.492	2.500	2.508	V
Zero Current Quiescent Output Voltage Temperature Drift	$\Delta V_{OUT(Q)}$	T_A=-40°C ~125°C $V_{OUT(Q)}$ voltage drift=$V_{OUT(Q)\_TA}$ -$V_{OUT(Q)\_25°C}$	-20		20	mV
Sensitivity Error	ΔSens	T_A=-40°C ~ 125°C	-2.5		2.0	%
Total Output Error	E_{TOT}	T_A=-40°C ~ 125°C，I_P=I_{P_MAX}	-3.0		2.5	%

CC6905S8-5FB040 (V_{CC}=5V，C_{OUT}=1nF，C_{REF}=1nF，T_A=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current Accuracy Range	I_P	-	-40		40	A
Sensitivity	Sens	full range of I_P		50		mV/A
Zero Current Differential Output Error	V_{OE}	T_A=25°C，V_{OE}=V_{OUT}-V_{REF}，I_P=0A	-5		5	mV
Zero Current Output Offset Drift	ΔV_{OE}	T_A=-40°C ~125°C V_{OE} offset voltage drift =V_{OE_TA} - $V_{OE\_25°C}$	-20		20	mV
Noise	$V_{N(RMS)}$	I_P=0A		8		mV
Zero Current Quiescent Output Voltage	$V_{OUT(Q)}$	T_A=25°C，I_P=0A	2.492	2.500	2.508	V
Zero Current Quiescent Output Voltage Temperature Drift	$\Delta V_{OUT(Q)}$	T_A=-40°C ~125°C $V_{OUT(Q)}$ voltage drift=$V_{OUT(Q)\_TA}$ -$V_{OUT(Q)\_25°C}$	-20		20	mV
Sensitivity Error	ΔSens	T_A=-40°C ~ 125°C	-2.0		2.5	%
Total Output Error	E_{TOT}	T_A=-40°C ~ 125°C，I_P=I_{P_MAX}	-2.5		3.0	%

CC6905S8-5FB050 (V_{CC}=5V，C_{OUT}=1nF，C_{REF}=1nF，T_A=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current Accuracy Range	I_P	-	-50		50	A
Sensitivity	Sens	full range of I_P		40		mV/A
Zero Current Differential Output Error	V_{OE}	T_A=25°C，V_{OE}=V_{OUT}-V_{REF}，I_P=0A	-5		5	mV
Zero Current Output Offset Drift	ΔV_{OE}	T_A=-40°C ~125°C V_{OE} offset voltage drift =V_{OE_TA} - $V_{OE\_25°C}$	-20		20	mV
Noise	$V_{N(RMS)}$	I_P=0A		6.4		mV
Zero Current Quiescent Output Voltage	$V_{OUT(Q)}$	T_A=25°C，I_P=0A	2.492	2.500	2.508	V
Zero Current Quiescent Output Voltage Temperature Drift	$\Delta V_{OUT(Q)}$	T_A=-40°C ~125°C $V_{OUT(Q)}$ voltage drift=$V_{OUT(Q)\_TA}$ -$V_{OUT(Q)\_25°C}$	-20		20	mV
Sensitivity Error	ΔSens	T_A=-40°C ~ 125°C	-2.0		2.5	%
Total Output Error	E_{TOT}	T_A=-40°C ~ 125°C，I_P=I_{P_MAX}	-2.5		3.0	%

CC6905S8-3FB005 (V_{CC}=3.3V, C_{OUT}=1nF, C_{REF}=1nF, T_A=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current Accuracy Range	I_P	-	-5		5	A
Sensitivity	Sens	full range of I_P		264		mV/A
Zero Current Differential Output Error	V_{OE}	T_A=25°C, V_{OE}=V_{OUT}-V_{REF}, I_P=0A	-20		20	mV
Zero Current Output Offset Drift	ΔV_{OE}	T_A=-40°C ~125°C V_{OE} offset voltage drift =V_{OE_TA} - $V_{OE\_25°C}$	-80		80	mV
Noise	$V_{N(RMS)}$	I_P=0A		60		mV
Zero Current Quiescent Output Voltage	$V_{OUT(Q)}$	T_A=25°C, I_P=0A	1.64	1.65	1.66	V
Zero Current Quiescent Output Voltage Temperature Drift	$\Delta V_{OUT(Q)}$	T_A=-40°C ~125°C $V_{OUT(Q)}$ voltage drift=$V_{OUT(Q)\_TA}$ -$V_{OUT(Q)\_25°C}$	-80		80	mV
Sensitivity Error	ΔSens	T_A=-40°C ~ -10°C	-2.0		2.0	%
		T_A=-10°C ~ 125°C	-3.0		3.0	
Total Output Error	E_{TOT}	T_A=-40°C ~ -10°C, I_P=I_{P_MAX}	-2.5		2.5	%
		T_A=-10°C ~ 125°C, I_P=I_{P_MAX}	-3.5		3.5	

CC6905S8-3FB010 (V_{CC}=3.3V, C_{OUT}=1nF, C_{REF}=1nF, T_A=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current Accuracy Range	I_P	-	-10		10	A
Sensitivity	Sens	full range of I_P		132		mV/A
Zero Current Differential Output Error	V_{OE}	T_A=25°C, V_{OE}=V_{OUT}-V_{REF}, I_P=0A	-10		10	mV
Zero Current Output Offset Drift	ΔV_{OE}	T_A=-40°C ~125°C V_{OE} offset voltage drift =V_{OE_TA} - $V_{OE\_25°C}$	-40		40	mV
Noise	$V_{N(RMS)}$	I_P=0A		30		mV
Zero Current Quiescent Output Voltage	$V_{OUT(Q)}$	T_A=25°C, I_P=0A	1.64	1.65	1.66	V
Zero Current Quiescent Output Voltage Temperature Drift	$\Delta V_{OUT(Q)}$	T_A=-40°C ~125°C $V_{OUT(Q)}$ voltage drift=$V_{OUT(Q)\_TA}$ -$V_{OUT(Q)\_25°C}$	-40		40	mV
Sensitivity Error	ΔSens	T_A=-40°C ~ -10°C	-2.0		2.0	%
		T_A=-10°C ~ 125°C	-2.5		2.5	
Total Output Error	E_{TOT}	T_A=-40°C ~ -10°C, I_P=I_{P_MAX}	-2.5		2.5	%
		T_A=-10°C ~ 125°C, I_P=I_{P_MAX}	-3.0		3.0	

CC6905S8-3FB020 (V_{CC}=3.3V, C_{OUT}=1nF, C_{REF}=1nF, T_A=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current Accuracy Range	I_P	-	-20		20	A
Sensitivity	Sens	full range of I_P		66		mV/A
Zero Current Differential Output Error	V_{OE}	T_A=25°C, V_{OE}=V_{OUT}-V_{REF}, I_P=0A	-5		5	mV
Zero Current Output Offset Drift	ΔV_{OE}	T_A=-40°C ~125°C V_{OE} offset voltage drift =V_{OE_TA} - $V_{OE\_25°C}$	-30		30	mV
Noise	$V_{N(RMS)}$	I_P=0A		15		mV
Zero Current Quiescent Output Voltage	$V_{OUT(Q)}$	T_A=25°C, I_P=0A	1.64	1.65	1.66	V
Zero Current Quiescent Output Voltage Temperature Drift	$\Delta V_{OUT(Q)}$	T_A=-40°C ~125°C $V_{OUT(Q)}$ voltage drift=$V_{OUT(Q)\_TA}$ -$V_{OUT(Q)\_25°C}$	-30		30	mV
Sensitivity Error	ΔSens	T_A=-40°C ~ -10°C	-3.0		3.0	%
		T_A=-10°C ~ 125°C	-3.0		3.0	
Total Output Error	E_{TOT}	T_A=-40°C ~ -10°C, I_P=I_{P_MAX}	-3.5		3.5	%
		T_A=-10°C ~ 125°C, I_P=I_{P_MAX}	-3.5		3.5	

CC6905S8-3FB030 (V_{CC}=3.3V, C_{OUT}=1nF, C_{REF}=1nF, T_A=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current Accuracy Range	I_P	-	-30		30	A
Sensitivity	Sens	full range of I_P		44		mV/A
Zero Current Differential Output Error	V_{OE}	T_A=25°C, V_{OE}=V_{OUT}-V_{REF}, I_P=0A	-5		5	mV
Zero Current Output Offset Drift	ΔV_{OE}	T_A=-40°C ~125°C V_{OE} offset voltage drift =V_{OE_TA} - $V_{OE\_25°C}$	-20		20	mV
Noise	$V_{N(RMS)}$	I_P=0A		10		mV
Zero Current Quiescent Output Voltage	$V_{OUT(Q)}$	T_A=25°C, I_P=0A	1.64	1.65	1.66	V
Zero Current Quiescent Output Voltage Temperature Drift	$\Delta V_{OUT(Q)}$	T_A=-40°C ~125°C $V_{OUT(Q)}$ voltage drift=$V_{OUT(Q)\_TA}$ -$V_{OUT(Q)\_25°C}$	-20		20	mV
Sensitivity Error	ΔSens	T_A=-40°C ~ -10°C	-3.5		3.5	%
		T_A=-10°C ~ 125°C	-2.5		2.5	
Total Output Error	E_{TOT}	T_A=-40°C ~ -10°C, I_P=I_{P_MAX}	-4.0		4.0	%
		T_A=-10°C ~ 125°C, I_P=I_{P_MAX}	-3.0		3.0	

CC6905S8-3FB040 (V_{CC}=3.3V, C_{OUT}=1nF, C_{REF}=1nF, T_A=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current Accuracy Range	I_P	-	-40		40	A
Sensitivity	Sens	full range of I_P		33		mV/A
Zero Current Differential Output Error	V_{OE}	T_A=25°C, V_{OE}=V_{OUT}-V_{REF}, I_P=0A	-5		5	mV
Zero Current Output Offset Drift	ΔV_{OE}	T_A=-40°C ~125°C V_{OE} offset voltage drift =V_{OE_TA} - $V_{OE\_25°C}$	-15		15	mV
Noise	$V_{N(RMS)}$	I_P=0A		7.5		mV
Zero Current Quiescent Output Voltage	$V_{OUT(Q)}$	T_A=25°C, I_P=0A	1.64	1.65	1.66	V
Zero Current Quiescent Output Voltage Temperature Drift	$\Delta V_{OUT(Q)}$	T_A=-40°C ~125°C $V_{OUT(Q)}$ voltage drift=$V_{OUT(Q)\_TA}$ -$V_{OUT(Q)\_25°C}$	-15		15	mV
Sensitivity Error	ΔSens	T_A=-40°C ~ -10°C	-3.5		3.5	%
		T_A=-10°C ~ 125°C	-2.5		2.5	
Total Output Error	E_{TOT}	T_A=-40°C ~ -10°C, I_P=I_{P_MAX}	-4.0		4.0	%
		T_A=-10°C ~ 125°C, I_P=I_{P_MAX}	-3.0		3.0	

CC6905S8-3FB050 (V_{CC}=3.3V, C_{OUT}=1nF, C_{REF}=1nF, T_A=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current Accuracy Range	I_P	-	-50		50	A
Sensitivity	Sens	full range of I_P		26.4		mV/A
Zero Current Differential Output Error	V_{OE}	T_A=25°C, V_{OE}=V_{OUT}-V_{REF}, I_P=0A	-6		6	mV
Zero Current Output Offset Drift	ΔV_{OE}	T_A=-40°C ~125°C V_{OE} offset voltage drift =V_{OE_TA} - $V_{OE\_25°C}$	-15		15	mV
Noise	$V_{N(RMS)}$	I_P=0A		6		mV
Zero Current Quiescent Output Voltage	$V_{OUT(Q)}$	T_A=25°C, I_P=0A	1.64	1.65	1.66	V
Zero Current Quiescent Output Voltage Temperature Drift	$\Delta V_{OUT(Q)}$	T_A=-40°C ~125°C $V_{OUT(Q)}$ voltage drift=$V_{OUT(Q)\_TA}$ -$V_{OUT(Q)\_25°C}$	-15		15	mV
Sensitivity Error	ΔSens	T_A=-40°C ~ -10°C	-3.5		3.5	%
		T_A=-10°C ~ 125°C	-2.5		2.5	
Total Output Error	E_{TOT}	T_A=-40°C ~ -10°C, I_P=I_{P_MAX}	-4.0		4.0	%
		T_A=-10°C ~ 125°C, I_P=I_{P_MAX}	-3.0		3.0	

CC6905S8-3FU030 (V_{CC}=3.3V， C_{OUT}=1nF， C_{REF}=1nF， T_A=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current Accuracy Range	I_P	-	0		30	A
Sensitivity	Sens	full range of I_P		88		mV/A
Zero Current Differential Output Error	V_{OE}	T_A=25°C， V_{OE}=V_{OUT}-V_{REF}， I_P=0A	-6		6	mV
Zero Current Output Offset Drift	ΔV_{OE}	T_A=-40°C ~125°C V_{OE} offset voltage drift =V_{OE_TA} - $V_{OE\_25℃}$	-25		25	mV
Noise	$V_{N(RMS)}$	I_P=0A		10.67		mV
Zero Current Quiescent Output Voltage	$V_{OUT(Q)}$	T_A=25°C， I_P=0A	0.32	0.33	0.34	V
Zero Current Quiescent Output Voltage Temperature Drift	$\Delta V_{OUT(Q)}$	T_A=-40°C ~125°C $V_{OUT(Q)}$ voltage drift=$V_{OUT(Q)\_TA}$ -$V_{OUT(Q)\_25℃}$	-25		25	mV
Sensitivity Error	ΔSens	T_A=-40°C ~ 125°C	-1.5		1.5	%
Total Output Error	E_{TOT}	T_A=-40°C ~ 125°C， I_P=I_{P_MAX}	-2.0		2.0	%

CC6905S8-3FU050 (V_{CC}=3.3V， C_{OUT}=1nF， C_{REF}=1nF， T_A=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current Accuracy Range	I_P	-	0		50	A
Sensitivity	Sens	full range of I_P		52.8		mV/A
Zero Current Differential Output Error	V_{OE}	T_A=25°C， V_{OE}=V_{OUT}-V_{REF}， I_P=0A	-10		10	mV
Zero Current Output Offset Drift	ΔV_{OE}	T_A=-40°C ~125°C V_{OE} offset voltage drift =V_{OE_TA} - $V_{OE\_25℃}$	-20		20	mV
Noise	$V_{N(RMS)}$	I_P=0A		3.56		mV
Zero Current Quiescent Output Voltage	$V_{OUT(Q)}$	T_A=25°C， I_P=0A	0.32	0.33	0.34	V
Zero Current Quiescent Output Voltage Temperature Drift	$\Delta V_{OUT(Q)}$	T_A=-40°C ~125°C $V_{OUT(Q)}$ voltage drift=$V_{OUT(Q)\_TA}$ -$V_{OUT(Q)\_25℃}$	-20		20	mV
Sensitivity Error	ΔSens	T_A=-40°C ~ 125°C	-2.5		2.5	%
Total Output Error	E_{TOT}	T_A=-40°C ~ 125°C， I_P=I_{P_MAX}	-3.0		3.0	%

CC6905QC-5FB010 (V_{CC}=5V, C_{OUT}=1nF, C_{REF}=1nF, T_A=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current Accuracy Range	I_P	-	-10		10	A
Sensitivity	Sens	full range of I_P		200		mV/A
Zero Current Differential Output Error	V_{OE}	T_A=25°C, V_{OE}=V_{OUT}-V_{REF}, I_P=0A	-16		16	mV
Zero Current Output Offset Drift	ΔV_{OE}	T_A=-40°C ~125°C V_{OE} offset voltage drift =V_{OE_TA} - $V_{OE\_25℃}$	-60		60	mV
Noise	$V_{N(RMS)}$	I_P=0A		30		mV
Zero Current Quiescent Output Voltage	$V_{OUT(Q)}$	T_A=25°C, I_P=0A	2.485	2.500	2.515	V
Zero Current Quiescent Output Voltage Temperature Drift	$\Delta V_{OUT(Q)}$	T_A=-40°C ~125°C $V_{OUT(Q)}$ voltage drift=$V_{OUT(Q)\_TA}$ -$V_{OUT(Q)\_25℃}$	-60		60	mV
Sensitivity Error	ΔSens	T_A=-40°C ~ 125°C	-2.5		2.5	%
Total Output Error	E_{TOT}	T_A=-40°C ~ 125°C, I_P=I_{P_MAX}	-3.0		3.0	%

CC6905QC-5FB020 (V_{CC}=5V, C_{OUT}=1nF, C_{REF}=1nF, T_A=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current Accuracy Range	I_P	-	-20		20	A
Sensitivity	Sens	full range of I_P		100		mV/A
Zero Current Differential Output Error	V_{OE}	T_A=25°C, V_{OE}=V_{OUT}-V_{REF}, I_P=0A	-6		6	mV
Zero Current Output Offset Drift	ΔV_{OE}	T_A=-40°C ~125°C V_{OE} offset voltage drift =V_{OE_TA} - $V_{OE\_25℃}$	-40		40	mV
Noise	$V_{N(RMS)}$	I_P=0A		15		mV
Zero Current Quiescent Output Voltage	$V_{OUT(Q)}$	T_A=25°C, I_P=0A	2.485	2.500	2.515	V
Zero Current Quiescent Output Voltage Temperature Drift	$\Delta V_{OUT(Q)}$	T_A=-40°C ~125°C $V_{OUT(Q)}$ voltage drift=$V_{OUT(Q)\_TA}$ -$V_{OUT(Q)\_25℃}$	-40		40	mV
Sensitivity Error	ΔSens	T_A=-40°C ~ 125°C	-2.5		2.5	%
Total Output Error	E_{TOT}	T_A=-40°C ~ 125°C, I_P=I_{P_MAX}	-3.0		3.0	%

CC6905QC-5FB030 (V_{CC}=5V, C_{OUT}=1nF, C_{REF}=1nF, T_A=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current Accuracy Range	I_P	-	-30		30	A
Sensitivity	Sens	full range of I_P		66.67		mV/A
Zero Current Differential Output Error	V_{OE}	T_A=25°C, V_{OE}=V_{OUT}-V_{REF}, I_P=0A	-5		5	mV
Zero Current Output Offset Drift	ΔV_{OE}	T_A=-40°C ~125°C V_{OE} offset voltage drift =V_{OE_TA} - $V_{OE\_25℃}$	-20		20	mV
Noise	$V_{N(RMS)}$	I_P=0A		10		mV
Zero Current Quiescent Output Voltage	$V_{OUT(Q)}$	T_A=25°C, I_P=0A	2.485	2.500	2.515	V
Zero Current Quiescent Output Voltage Temperature Drift	$\Delta V_{OUT(Q)}$	T_A=-40°C ~125°C $V_{OUT(Q)}$ voltage drift=$V_{OUT(Q)\_TA}$ -$V_{OUT(Q)\_25℃}$	-20		20	mV
Sensitivity Error	ΔSens	T_A=-40°C ~ 125°C	-2.5		2.5	%
Total Output Error	E_{TOT}	T_A=-40°C ~ 125°C, I_P=I_{P_MAX}	-3.0		3.0	%

CC6905QC-3FB010 (V_{CC}=3.3V, C_{OUT}=1nF, C_{REF}=1nF, T_A=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current Accuracy Range	I_P	-	-10		10	A
Sensitivity	Sens	full range of I_P		132		mV/A
Zero Current Differential Output Error	V_{OE}	T_A=25°C, V_{OE}=V_{OUT}-V_{REF}, I_P=0A	-10		10	mV
Zero Current Output Offset Drift	ΔV_{OE}	T_A=-40°C ~125°C V_{OE} offset voltage drift =V_{OE_TA} - $V_{OE\_25℃}$	-40		40	mV
Noise	$V_{N(RMS)}$	I_P=0A		30		mV
Zero Current Quiescent Output Voltage	$V_{OUT(Q)}$	T_A=25°C, I_P=0A	1.64	1.65	1.66	V
Zero Current Quiescent Output Voltage Temperature Drift	$\Delta V_{OUT(Q)}$	T_A=-40°C ~125°C $V_{OUT(Q)}$ voltage drift=$V_{OUT(Q)\_TA}$ -$V_{OUT(Q)\_25℃}$	-40		40	mV
Sensitivity Error	ΔSens	T_A=-40°C ~ 125°C	-3.0		3.0	%
Total Output Error	E_{TOT}	T_A=-40°C ~ 125°C, I_P=I_{P_MAX}	-3.5		3.5	%

CC6905QC-3FB020 (V_{CC}=3.3V, C_{OUT}=1nF, C_{REF}=1nF, T_A=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current Accuracy Range	I_P	-	-20		20	A
Sensitivity	Sens	full range of I_P		66		mV/A
Zero Current Differential Output Error	V_{OE}	T_A=25°C, V_{OE}=V_{OUT}-V_{REF}, I_P=0A	-5		5	mV
Zero Current Output Offset Drift	ΔV_{OE}	T_A=-40°C ~125°C V_{OE} offset voltage drift =V_{OE_TA} - $V_{OE\_25°C}$	-20		20	mV
Noise	$V_{N(RMS)}$	I_P=0A		20		mV
Zero Current Quiescent Output Voltage	$V_{OUT(Q)}$	T_A=25°C, I_P=0A	1.64	1.65	1.66	V
Zero Current Quiescent Output Voltage Temperature Drift	$\Delta V_{OUT(Q)}$	T_A=-40°C ~125°C $V_{OUT(Q)}$ voltage drift=$V_{OUT(Q)\_TA}$ -$V_{OUT(Q)\_25°C}$	-20		20	mV
Sensitivity Error	ΔSens	T_A=-40°C ~ 125°C	-3.0		3.0	%
Total Output Error	E_{TOT}	T_A=-40°C ~ 125°C, I_P=I_{P_MAX}	-3.5		3.5	%

CC6905QC-3FB030 (V_{CC}=3.3V, C_{OUT}=1nF, C_{REF}=1nF, T_A=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current Accuracy Range	I_P	-	-30		30	A
Sensitivity	Sens	full range of I_P		44		mV/A
Zero Current Differential Output Error	V_{OE}	T_A=25°C, V_{OE}=V_{OUT}-V_{REF}, I_P=0A	-5		5	mV
Zero Current Output Offset Drift	ΔV_{OE}	T_A=-40°C ~125°C V_{OE} offset voltage drift =V_{OE_TA} - $V_{OE\_25°C}$	-15		15	mV
Noise	$V_{N(RMS)}$	I_P=0A		10		mV
Zero Current Quiescent Output Voltage	$V_{OUT(Q)}$	T_A=25°C, I_P=0A	1.64	1.65	1.66	V
Zero Current Quiescent Output Voltage Temperature Drift	$\Delta V_{OUT(Q)}$	T_A=-40°C ~125°C $V_{OUT(Q)}$ voltage drift=$V_{OUT(Q)\_TA}$ -$V_{OUT(Q)\_25°C}$	-15		15	mV
Sensitivity Error	ΔSens	T_A=-40°C ~ 125°C	-3.0		3.0	%
Total Output Error	E_{TOT}	T_A=-40°C ~ 125°C, I_P=I_{P_MAX}	-3.5		3.5	%

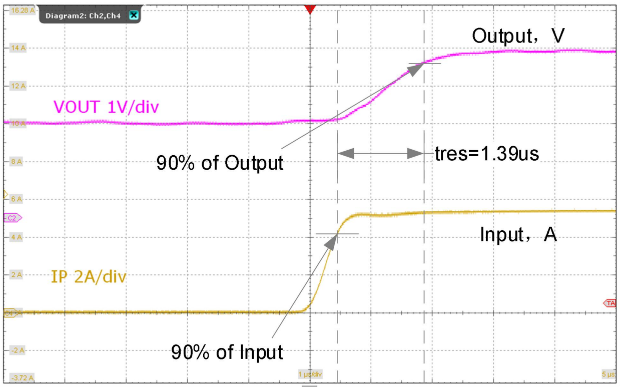
CC6905QC-3FU030 (V_{CC}=3.3V, C_{OUT}=1nF, C_{REF}=1nF, T_A=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current Accuracy Range	I_P	-	0		30	A
Sensitivity	Sens	full range of I_P		88		mV/A
Zero Current Differential Output Error	V_{OE}	T_A=25°C, V_{OE}=V_{OUT}-V_{REF}, I_P=0A	-5		5	mV
Zero Current Output Offset Drift	ΔV_{OE}	T_A=-40°C ~125°C V_{OE} offset voltage drift =V_{OE_TA} - $V_{OE\_25°C}$	-25		25	mV
Noise	$V_{N(RMS)}$	I_P=0A		16.67		mV
Zero Current Quiescent Output Voltage	$V_{OUT(Q)}$	T_A=25°C, I_P=0A	0.32	0.33	0.34	V
Zero Current Quiescent Output Voltage Temperature Drift	$\Delta V_{OUT(Q)}$	T_A=-40°C ~125°C $V_{OUT(Q)}$ voltage drift=$V_{OUT(Q)\_TA}$ -$V_{OUT(Q)\_25°C}$	-25		25	mV
Sensitivity Error	ΔSens	T_A=-40°C ~ 125°C	-3.5		3.5	%
Total Output Error	E_{TOT}	T_A=-40°C ~ 125°C, I_P=I_{P_MAX}	-4.0		4.0	%

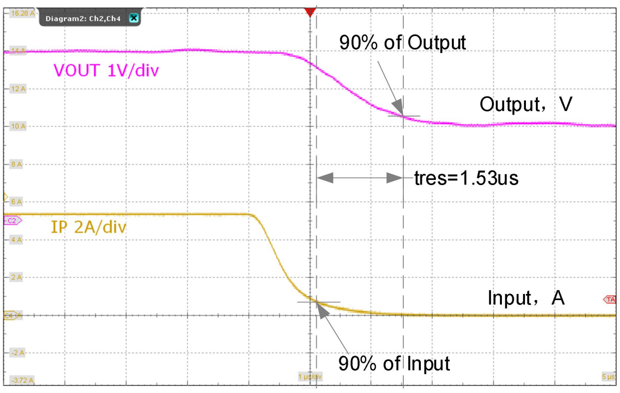
CC6905QC-3FU050 (V_{CC}=3.3V, C_{OUT}=1nF, C_{REF}=1nF, T_A=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Current Accuracy Range	I_P	-	0		50	A
Sensitivity	Sens	full range of I_P		52.8		mV/A
Zero Current Differential Output Error	V_{OE}	T_A=25°C, V_{OE}=V_{OUT}-V_{REF}, I_P=0A	-5		5	mV
Zero Current Output Offset Drift	ΔV_{OE}	T_A=-40°C ~125°C V_{OE} offset voltage drift =V_{OE_TA} - $V_{OE\_25°C}$	-20		20	mV
Noise	$V_{N(RMS)}$	I_P=0A		10		mV
Zero Current Quiescent Output Voltage	$V_{OUT(Q)}$	T_A=25°C, I_P=0A	0.32	0.33	0.34	V
Zero Current Quiescent Output Voltage Temperature Drift	$\Delta V_{OUT(Q)}$	T_A=-40°C ~125°C $V_{OUT(Q)}$ voltage drift=$V_{OUT(Q)\_TA}$ -$V_{OUT(Q)\_25°C}$	-20		20	mV
Sensitivity Error	ΔSens	T_A=-40°C ~ 125°C	-2.5		2.5	%
Total Output Error	E_{TOT}	T_A=-40°C ~ 125°C, I_P=I_{P_MAX}	-3.0		3.0	%

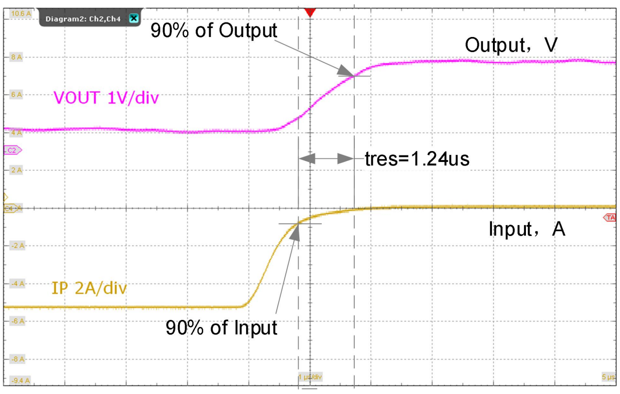
CURVE & WAVEFORM (V_{CC}=5V, T_A=25°C, unless otherwise specified)



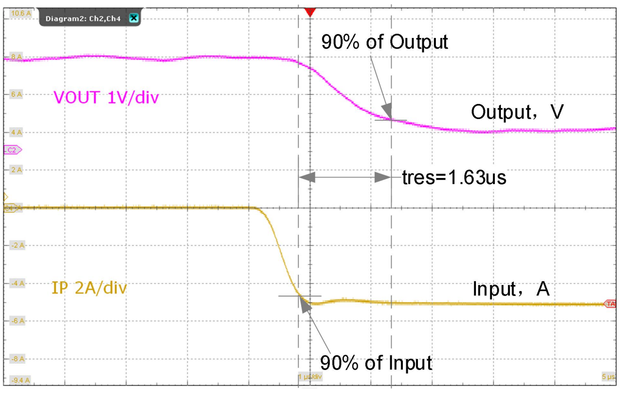
Transmission Response Forward Current Rise Waveform



Transmission Response Forward Current Fall Waveform

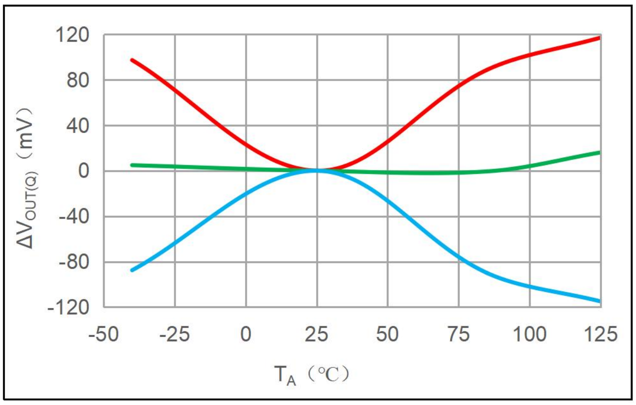


Transmission Response Reverse Current Rise Waveform

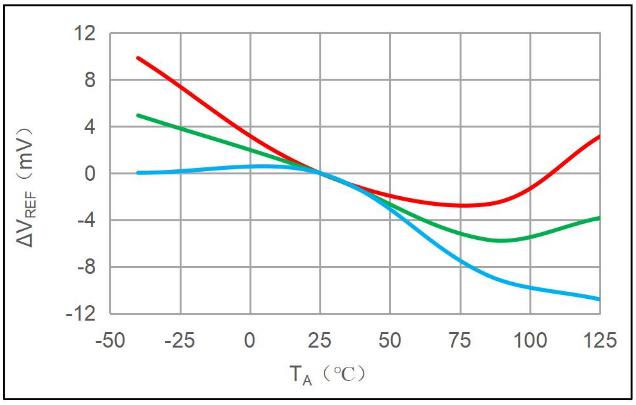


Transmission Response Reverse Current Fall Waveform

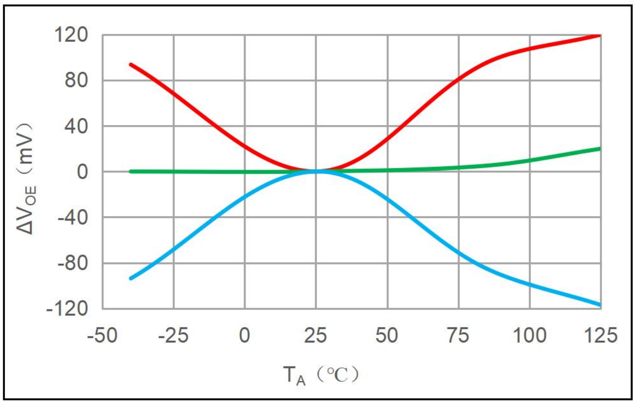
CC6905S8-5FB005[1]



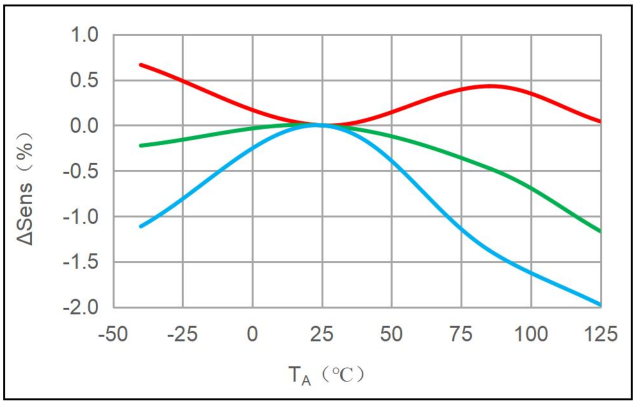
$\Delta V_{OUT(Q)}$ vs T_A



ΔV_{REF} vs T_A



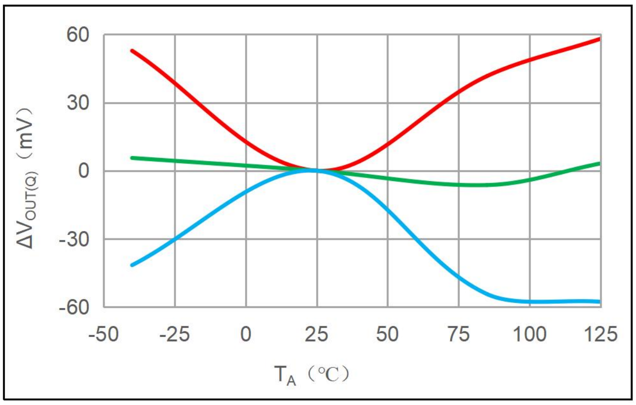
ΔV_{OE} vs T_A



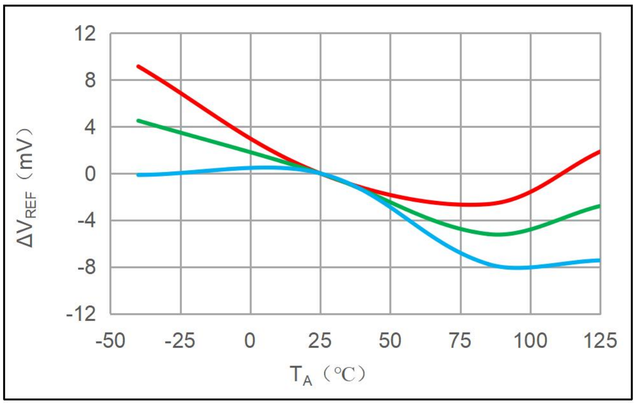
ΔSens vs T_A

[1] Green represents the average，Red represents the average+3Sigma，Blue represents the average-3Sigma(-40°C，25°C，85°C，125°C)

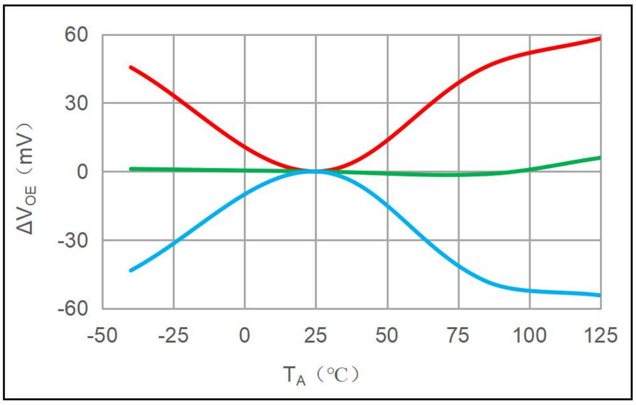
CC6905S8-5FB010[1]



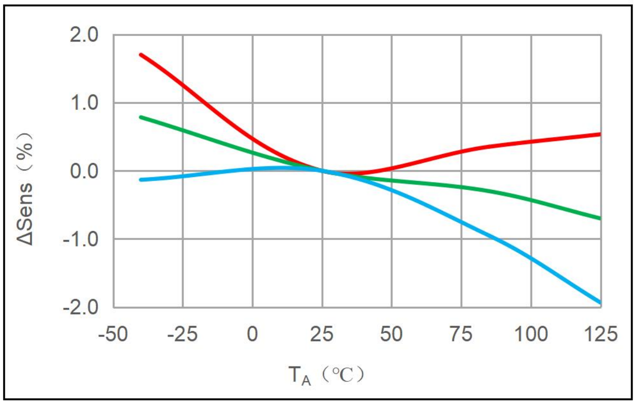
ΔV$_{OUT(Q)}$ vs T$_A$



ΔV$_{REF}$ vs T$_A$



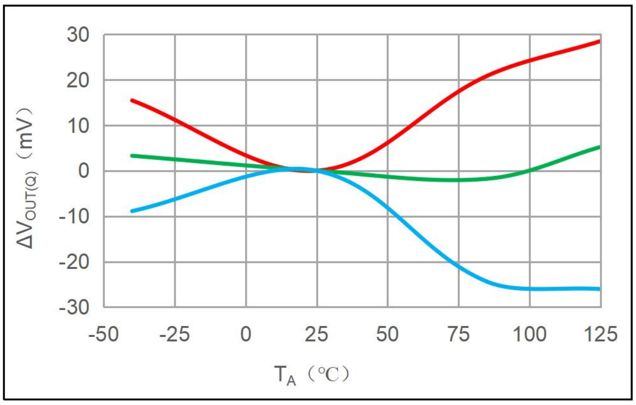
ΔV$_{OE}$ vs T$_A$



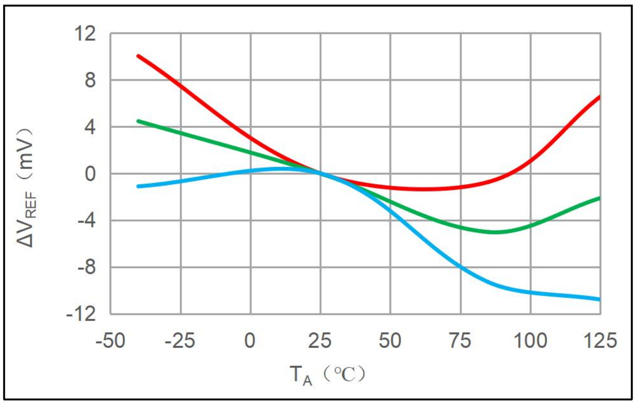
ΔSens vs T$_A$

[1] Green represents the average，Red represents the average+3Sigma，Blue represents the average-3Sigma(-40°C，25°C，85°C，125°C)

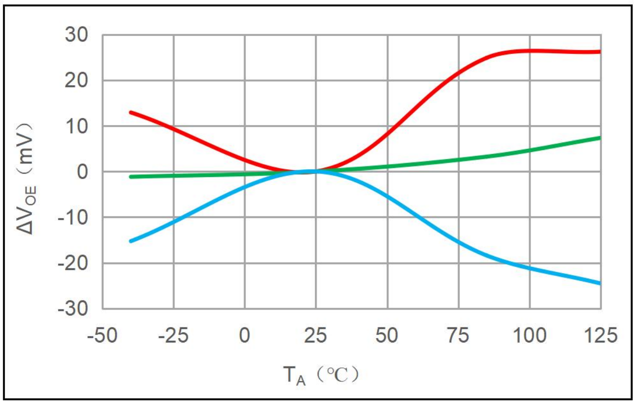
CC6905S8-5FB020[1]



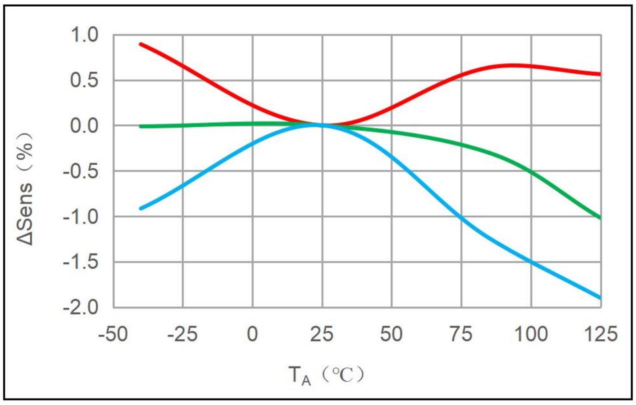
$\Delta V_{OUT(Q)}$ vs T_A



ΔV_{REF} vs T_A



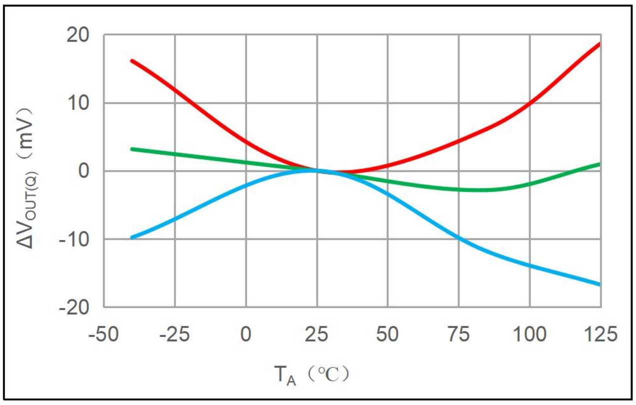
ΔV_{OE} vs T_A



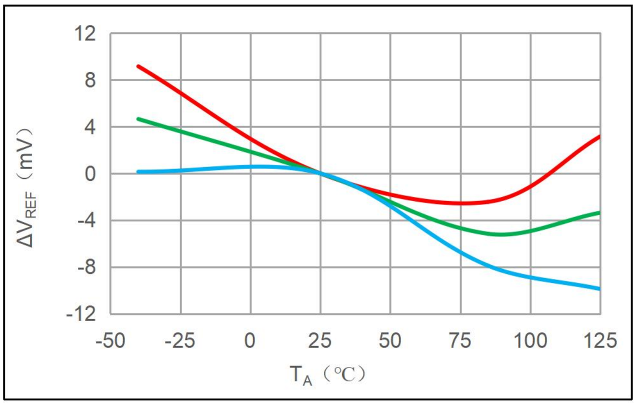
ΔSens vs T_A

[1] Green represents the average，Red represents the average+3Sigma，Blue represents the average-3Sigma(-40°C，25°C，85°C，125°C)

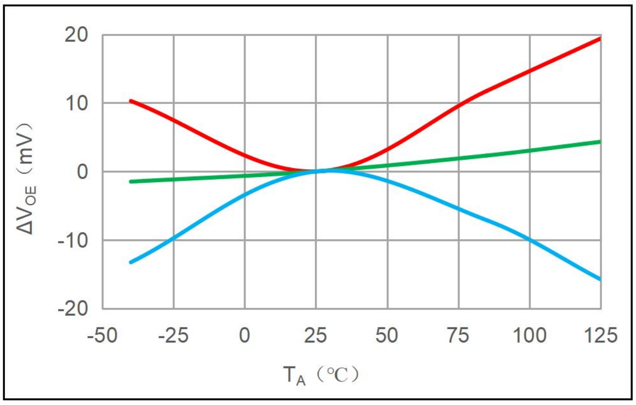
CC6905S8-5FB030[1]



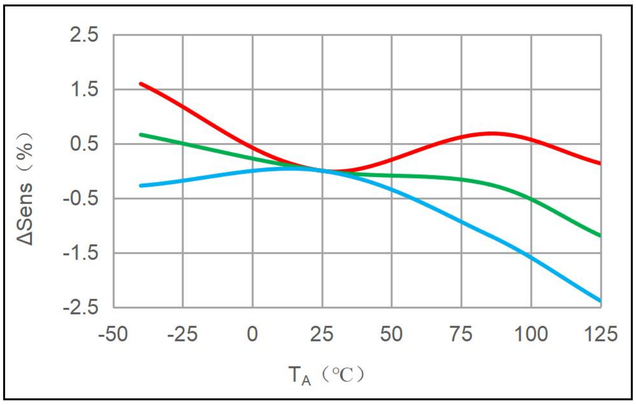
ΔV$_{OUT(Q)}$ vs T$_A$



ΔV$_{REF}$ vs T$_A$



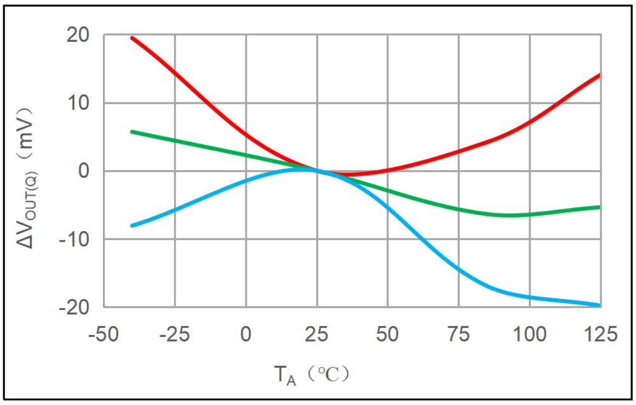
ΔV$_{OE}$ vs T$_A$



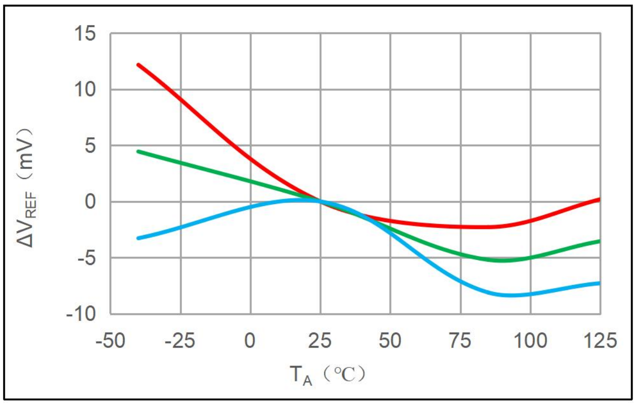
ΔSens vs T$_A$

[1] Green represents the average，Red represents the average+3Sigma，Blue represents the average-3Sigma(-40°C，25°C，85°C，125°C)

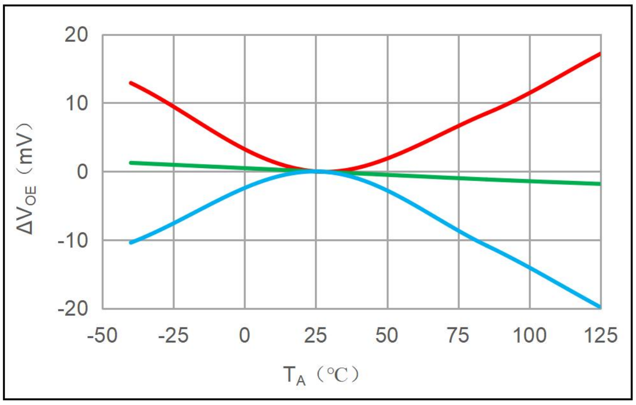
CC6905S8-5FB040[1]



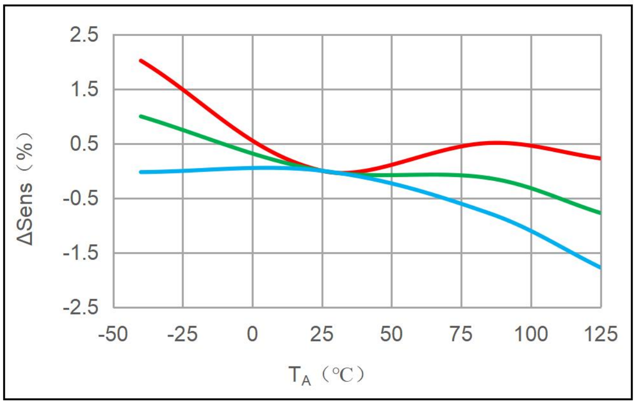
$\Delta V_{OUT(Q)}$ vs T_A



ΔV_{REF} vs T_A



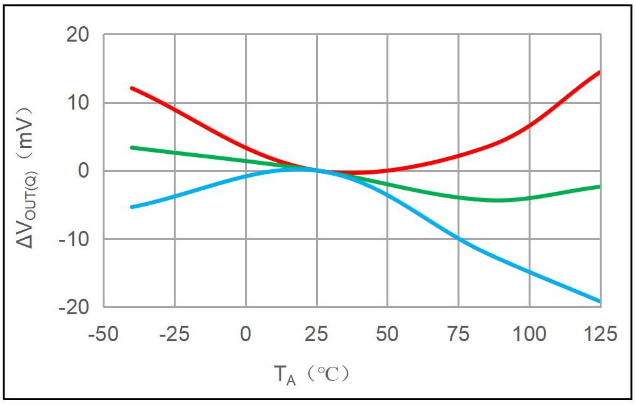
ΔV_{OE} vs T_A



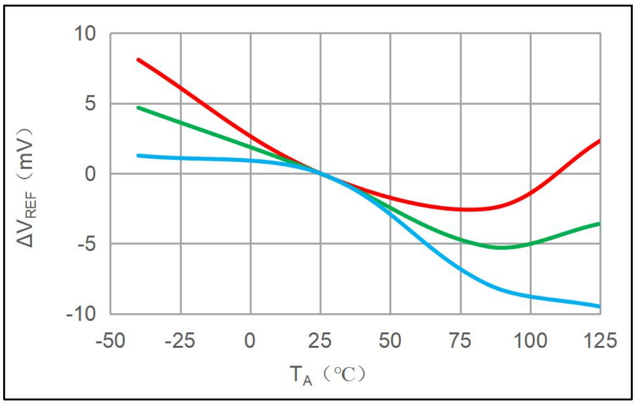
ΔSens vs T_A

[1] Green represents the average，Red represents the average+3Sigma，Blue represents the average-3Sigma(-40°C，25°C，85°C，125°C)

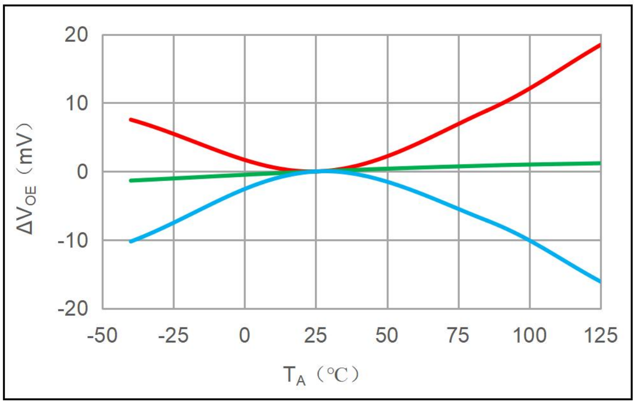
CC6905S8-5FB050[1]



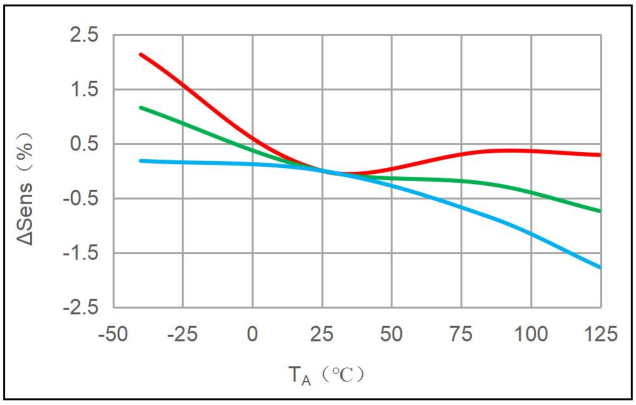
$\Delta V_{OUT(Q)}$ vs T_A



ΔV_{REF} vs T_A



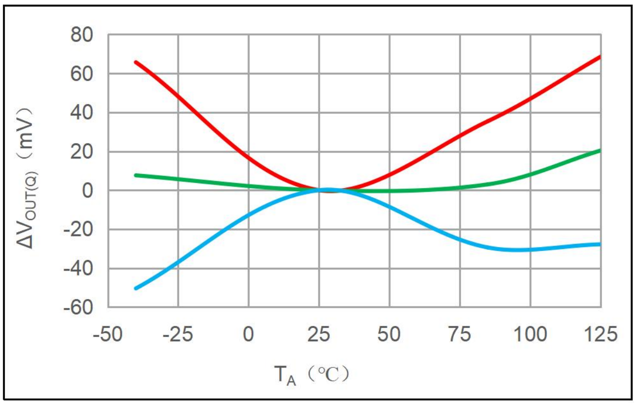
ΔV_{OE} vs T_A



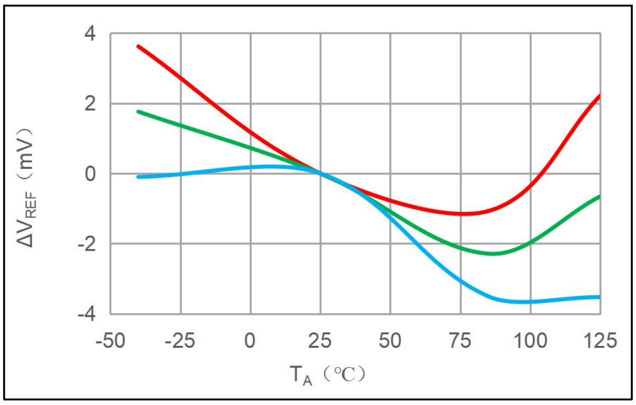
ΔSens vs T_A

[1] Green represents the average，Red represents the average+3Sigma，Blue represents the average-3Sigma(-40°C，25°C，85°C，125°C)

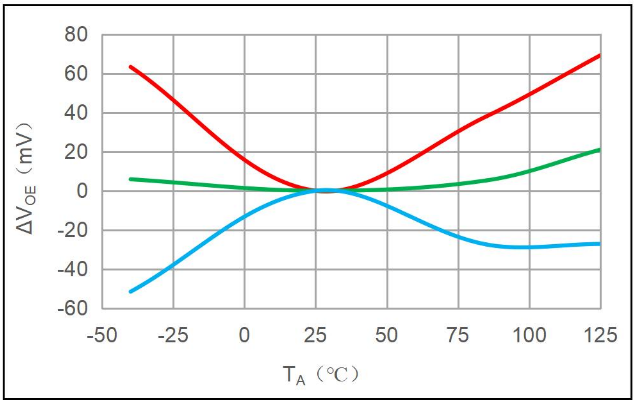
CC6905S8-3FB005[1]



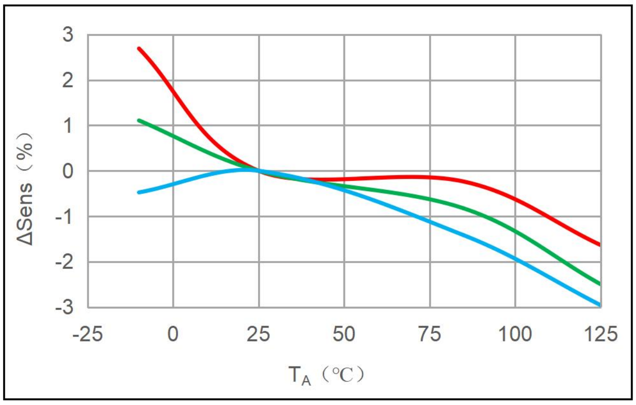
ΔV$_{OUT(Q)}$ vs T$_A$



ΔV$_{REF}$ vs T$_A$



ΔV$_{OE}$ vs T$_A$

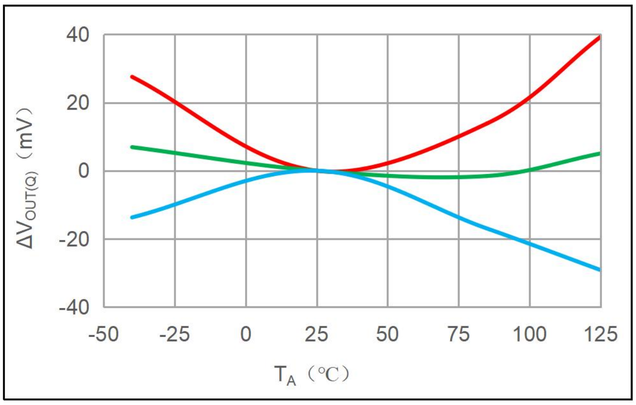


ΔSens vs T$_A$ [2]

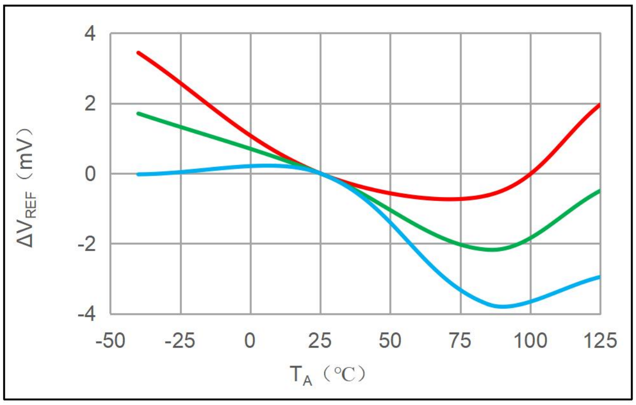
[1] Green represents the average，Red represents the average+3Sigma，Blue represents the average-3Sigma

[2] ΔSens was fitted at -10°C, 25°C, 85°C, and 125°C, and all other temperature drifts were fitted at -40°C, 25°C, 85°C, and 125°C.

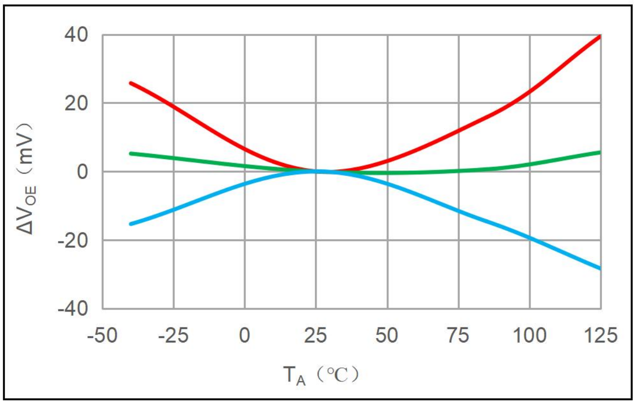
CC6905S8-3FB010[1]



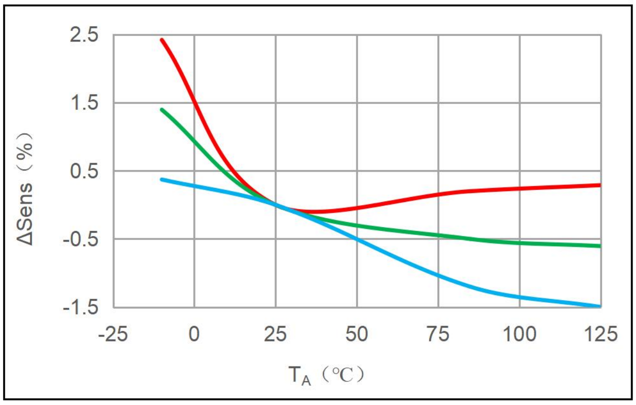
$\Delta V_{OUT(Q)}$ vs T_A



ΔV_{REF} vs T_A



ΔV_{OE} vs T_A

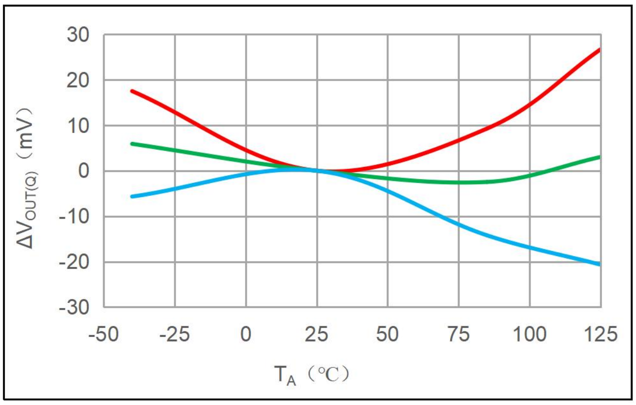


ΔSens vs T_A [2]

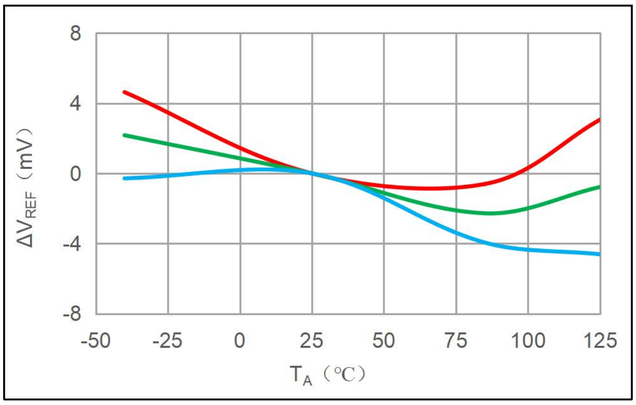
[1] Green represents the average，Red represents the average+3Sigma，Blue represents the average-3Sigma

[2] ΔSens was fitted at -10°C, 25°C, 85°C, and 125°C, and all other temperature drifts were fitted at -40°C, 25°C, 85°C, and 125°C.

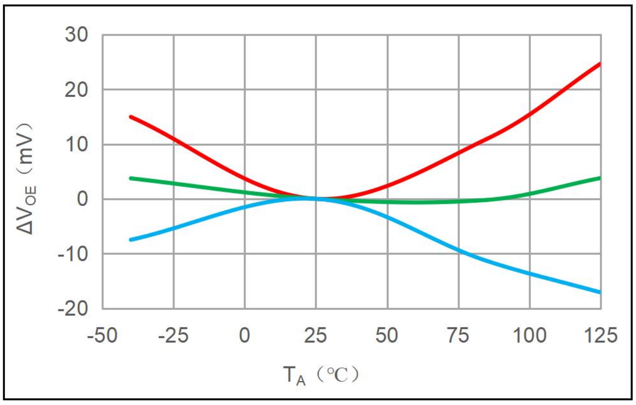
CC6905S8-3FB020[1]



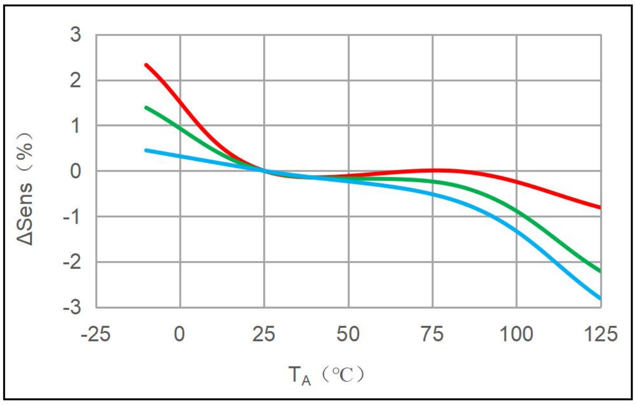
$\Delta V_{OUT(Q)}$ vs T_A



ΔV_{REF} vs T_A



ΔV_{OE} vs T_A

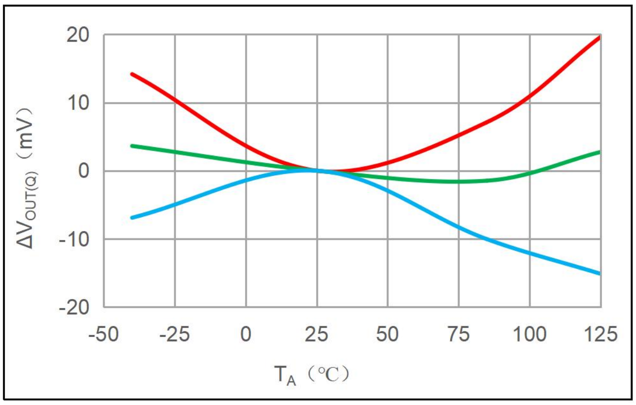


ΔSens vs T_A [2]

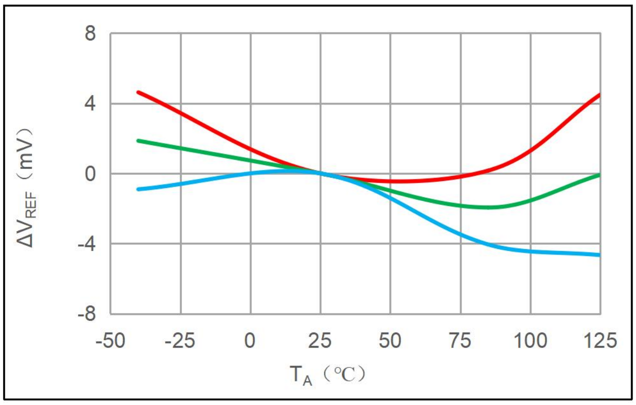
[1] Green represents the average，Red represents the average+3Sigma，Blue represents the average-3Sigma

[2] ΔSens was fitted at -10°C, 25°C, 85°C, and 125°C, and all other temperature drifts were fitted at -40°C, 25°C, 85°C, and 125°C.

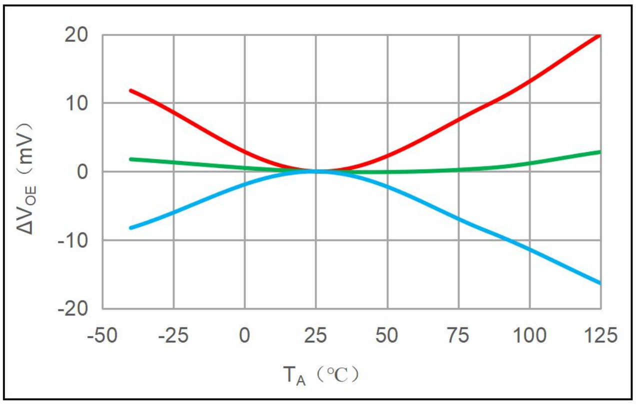
CC6905S8-3FB030[1]



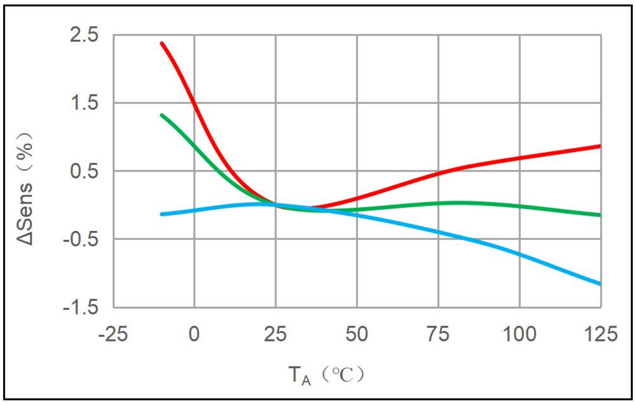
$\Delta V_{OUT(Q)}$ vs T_A



ΔV_{REF} vs T_A



ΔV_{OE} vs T_A

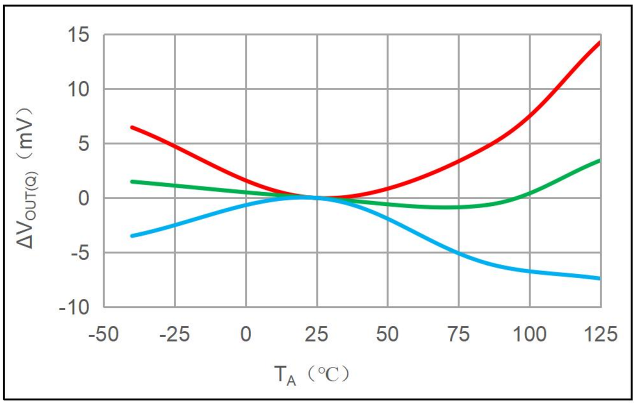


ΔSens vs T_A [2]

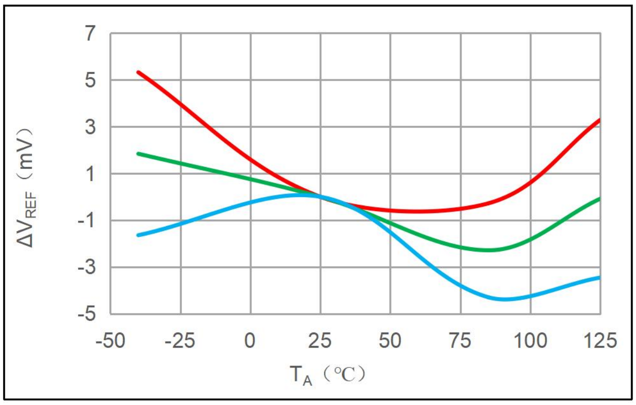
[1] Green represents the average，Red represents the average+3Sigma，Blue represents the average-3Sigma

[2] ΔSens was fitted at -10°C, 25°C, 85°C, and 125°C, and all other temperature drifts were fitted at -40°C, 25°C, 85°C, and 125°C.

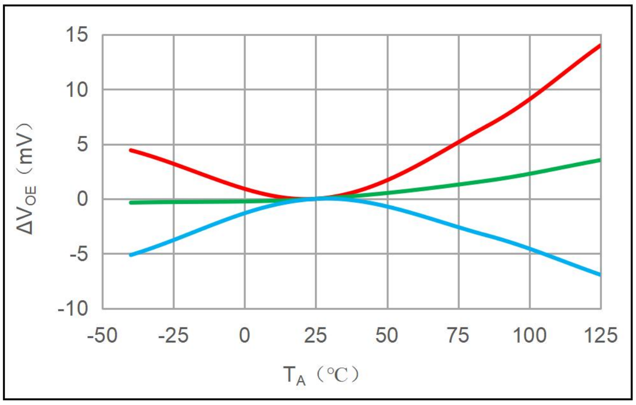
CC6905S8-3FB040[1]



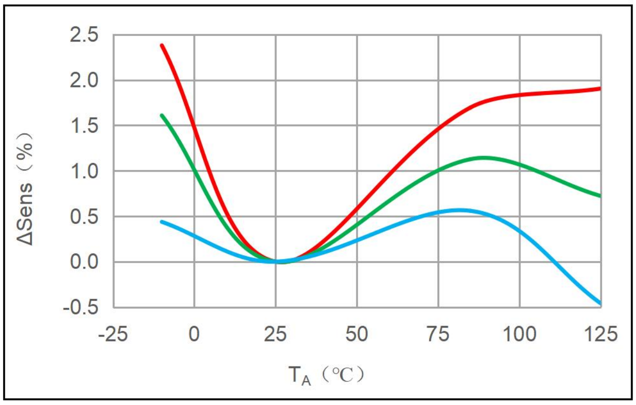
$\Delta V_{OUT(Q)}$ vs T_A



ΔV_{REF} vs T_A



ΔV_{OE} vs T_A

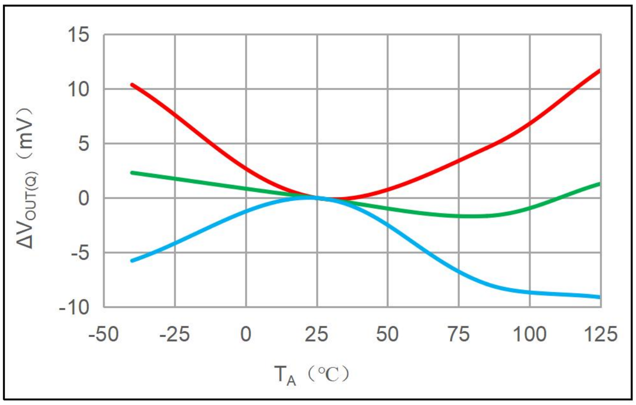


$\Delta Sens$ vs T_A [2]

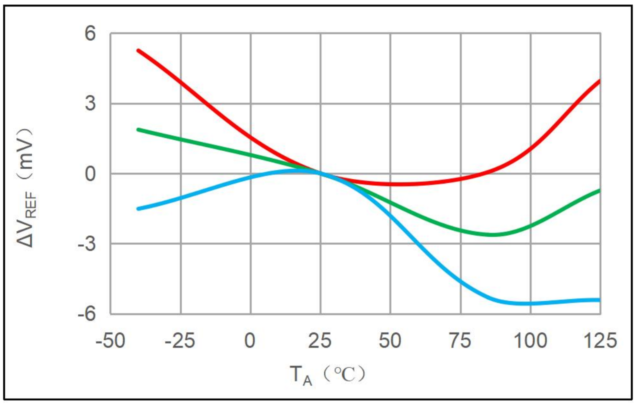
[1] Green represents the average，Red represents the average+3Sigma，Blue represents the average-3Sigma

[2] ΔSens was fitted at -10°C, 25°C, 85°C, and 125°C, and all other temperature drifts were fitted at -40°C, 25°C, 85°C, and 125°C.

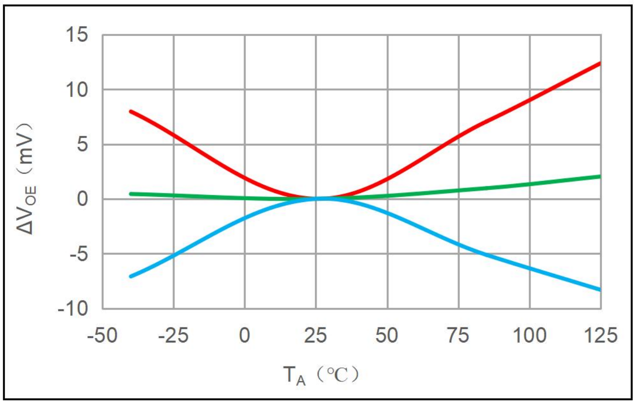
CC6905S8-3FB050[1]



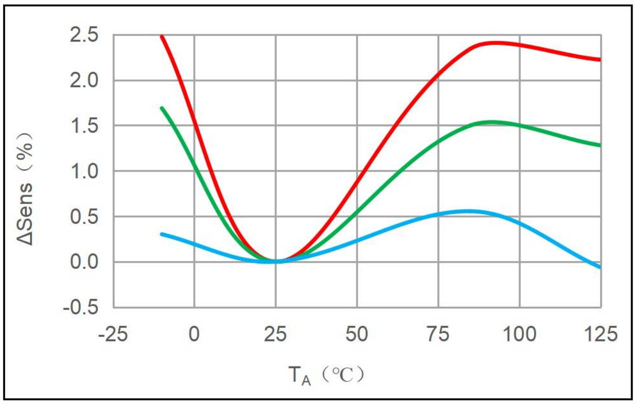
ΔV$_{OUT(Q)}$ vs T$_A$



ΔV$_{REF}$ vs T$_A$



ΔV$_{OE}$ vs T$_A$

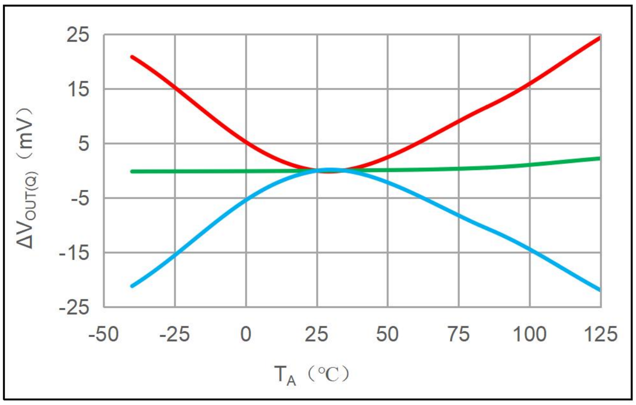


ΔSens vs T$_A$ [2]

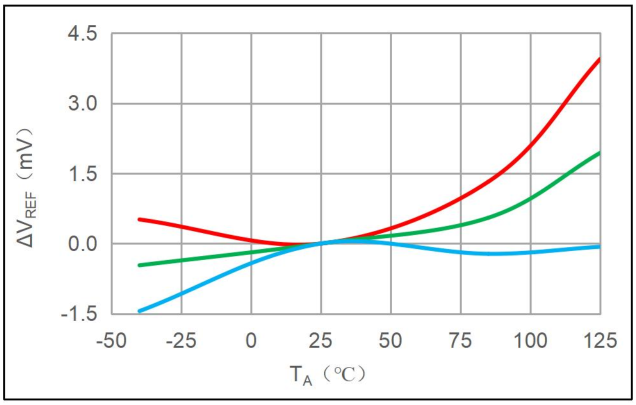
[1] Green represents the average，Red represents the average+3Sigma，Blue represents the average-3Sigma

[2] ΔSens was fitted at -10°C, 25°C, 85°C, and 125°C, and all other temperature drifts were fitted at -40°C, 25°C, 85°C, and 125°C.

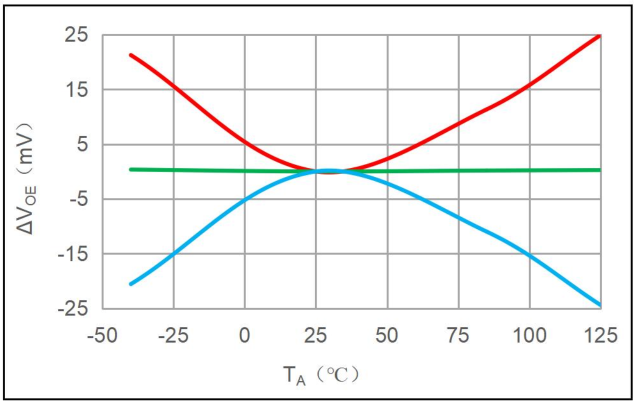
CC6905S8-3FU030[1]



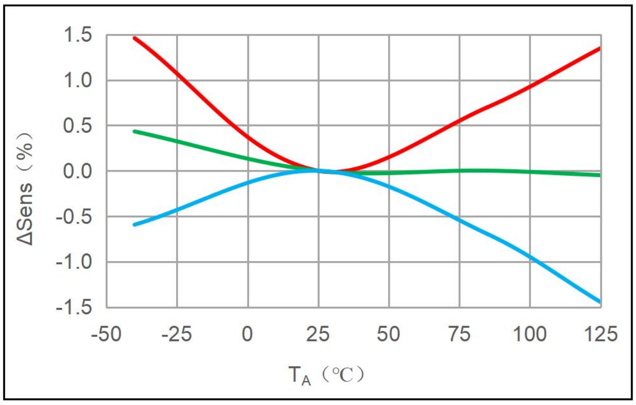
$\Delta V_{OUT(Q)}$ vs T_A



ΔV_{REF} vs T_A



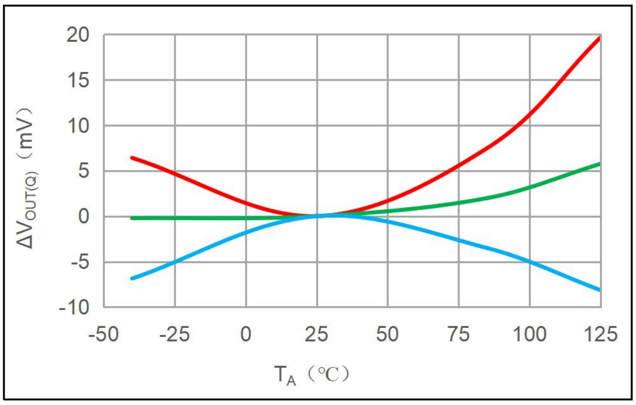
ΔV_{OE} vs T_A



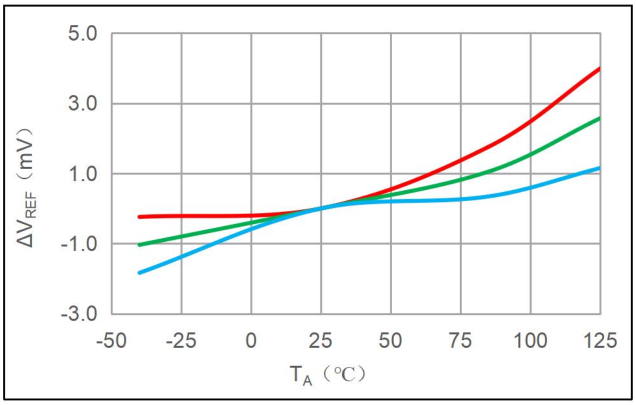
ΔSens vs T_A

[1] Green represents the average，Red represents the average+3Sigma，Blue represents the average-3Sigma(-40°C，25°C，85°C，125°C)

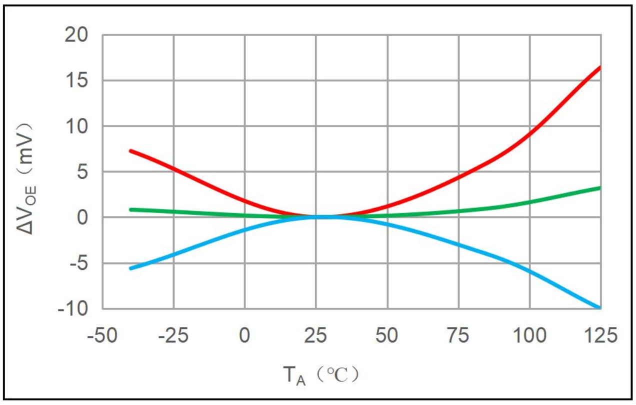
CC6905S8-3FU050[1]



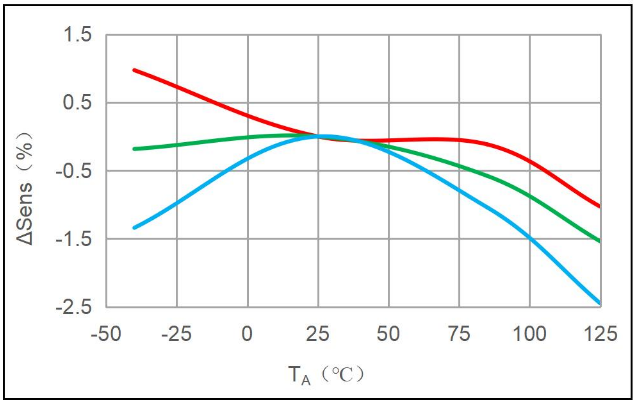
$\Delta V_{OUT(Q)}$ vs T_A



ΔV_{REF} vs T_A



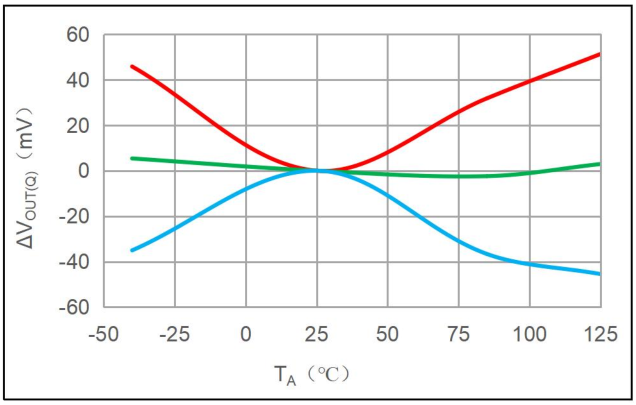
ΔV_{OE} vs T_A



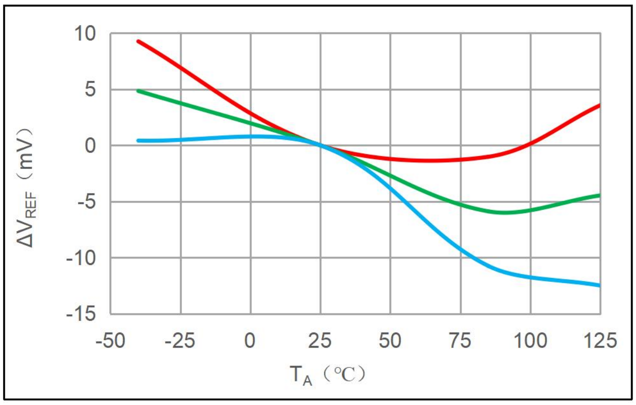
ΔSens vs T_A

[1] Green represents the average，Red represents the average+3Sigma，Blue represents the average-3Sigma(-40°C，25°C，85°C，125°C)

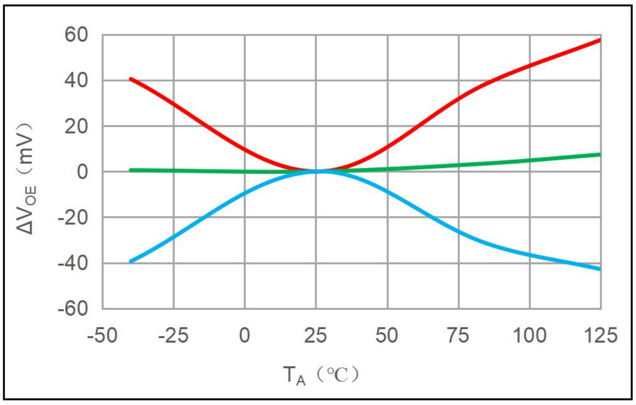
CC6905QC-5FB010[1]



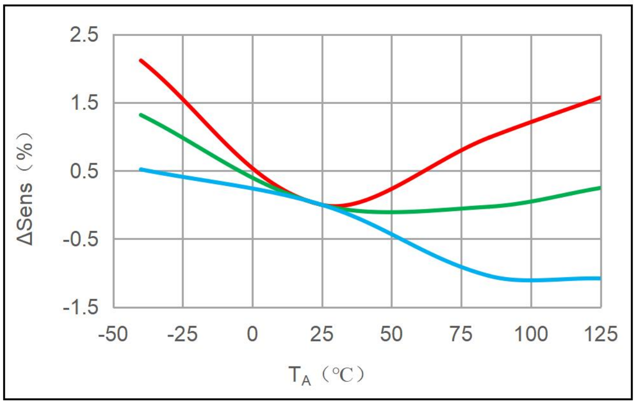
ΔV$_{OUT(Q)}$ vs T$_A$



ΔV$_{REF}$ vs T$_A$



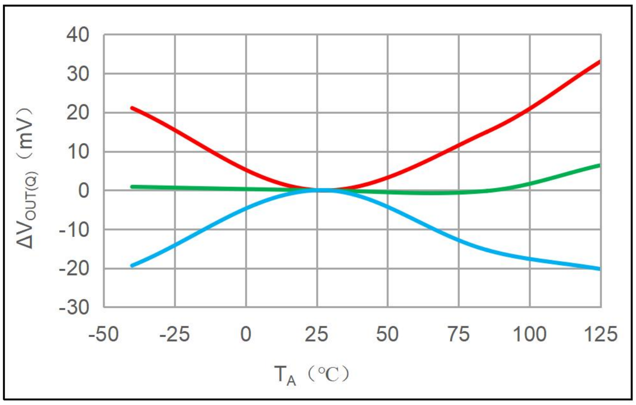
ΔV$_{OE}$ vs T$_A$



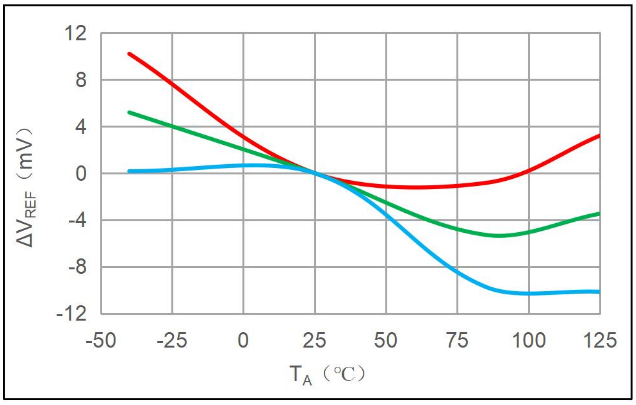
ΔSens vs T$_A$

[1] Green represents the average，Red represents the average+3Sigma，Blue represents the average-3Sigma(-40°C，25°C，85°C，125°C)

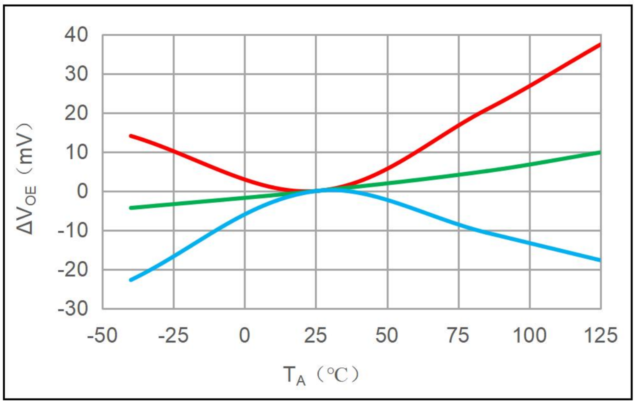
CC6905QC-5FB020[1]



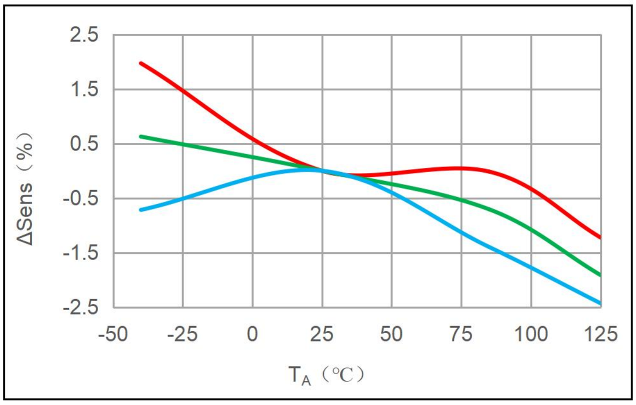
$\Delta V_{OUT(Q)}$ vs T_A



ΔV_{REF} vs T_A



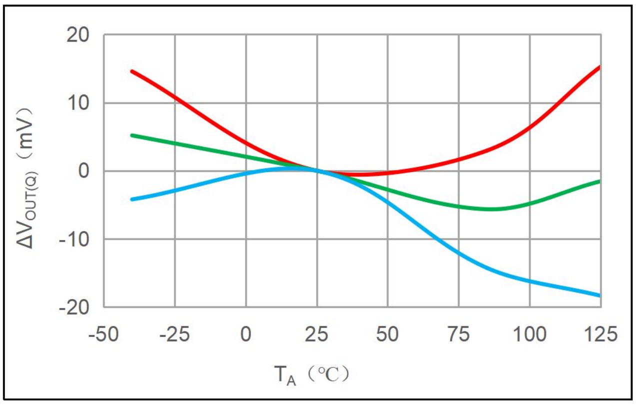
ΔV_{OE} vs T_A



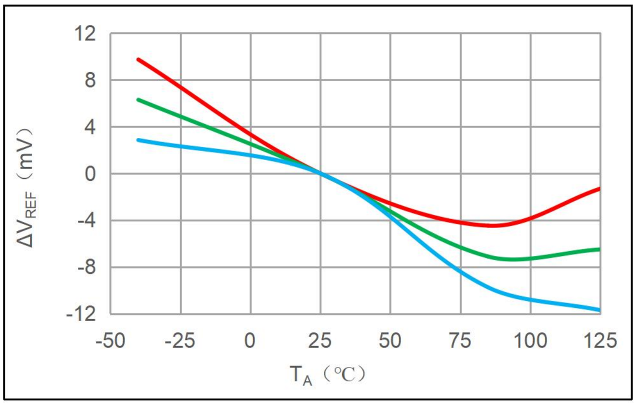
ΔSens vs T_A

[1] Green represents the average，Red represents the average+3Sigma，Blue represents the average-3Sigma(-40°C，25°C，85°C，125°C)

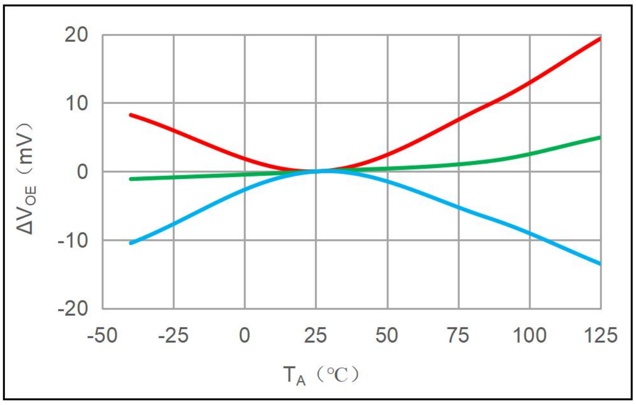
CC6905QC-5FB030[1]



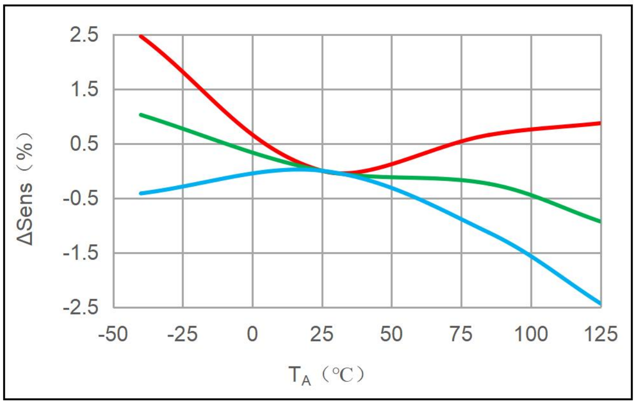
$\Delta V_{OUT(Q)}$ vs T_A



ΔV_{REF} vs T_A



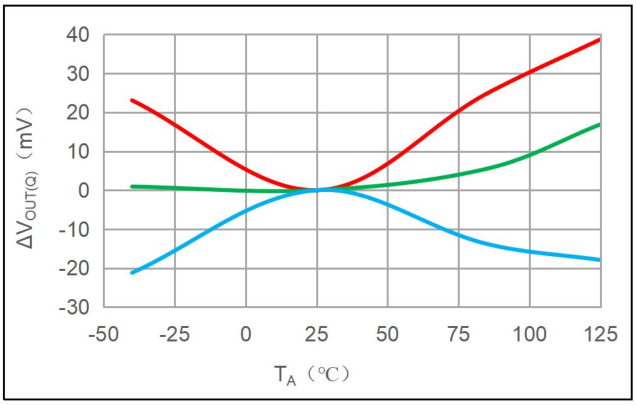
ΔV_{OE} vs T_A



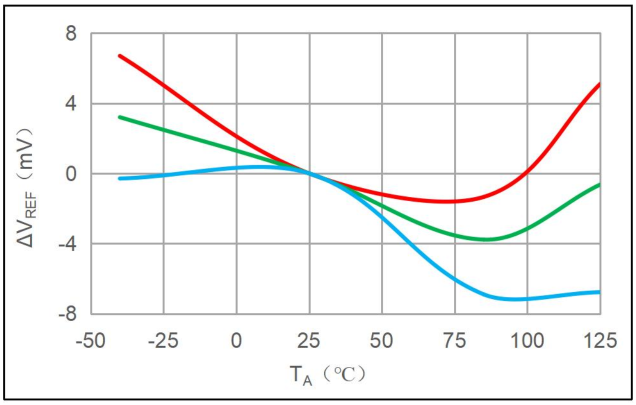
ΔSens vs T_A

[1] Green represents the average，Red represents the average+3Sigma，Blue represents the average-3Sigma(-40°C，25°C，85°C，125°C)

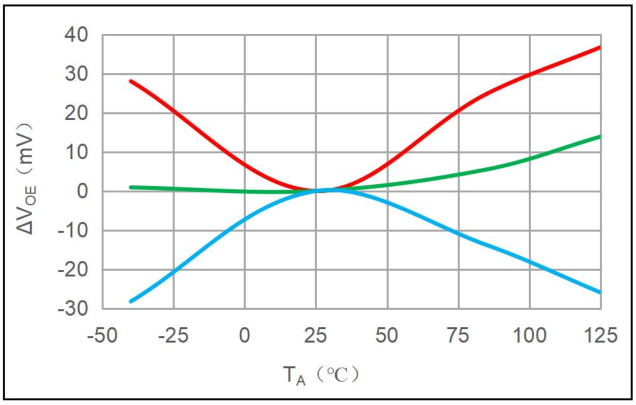
CC6905QC-3FB010[1]



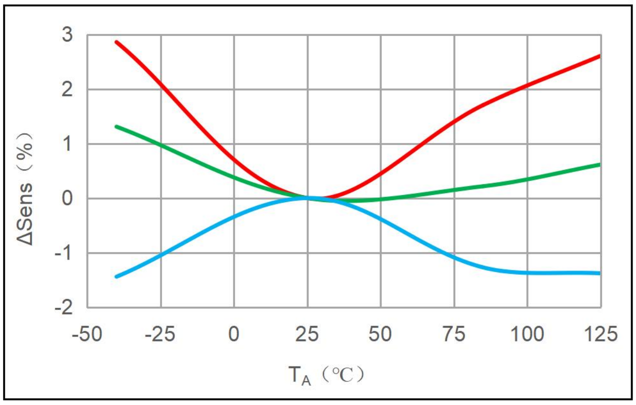
ΔV$_{OUT(Q)}$ vs T$_A$



ΔV$_{REF}$ vs T$_A$



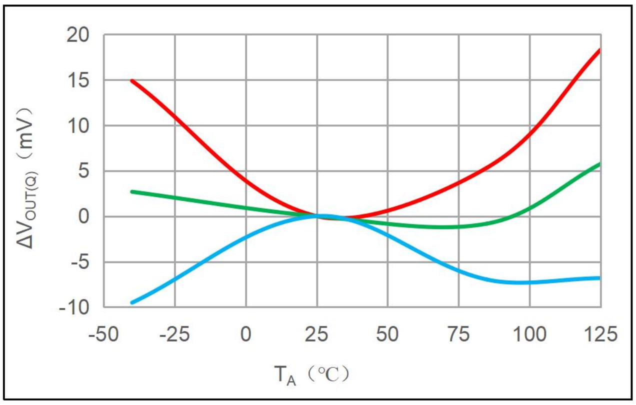
ΔV$_{OE}$ vs T$_A$



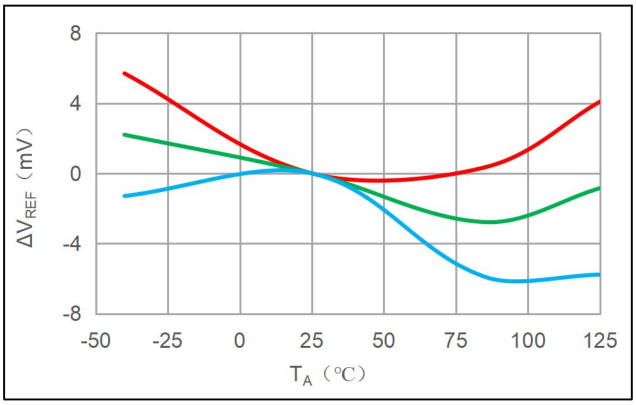
ΔSens vs T$_A$

[1] Green represents the average，Red represents the average+3Sigma，Blue represents the average-3Sigma(-40°C，25°C，85°C，125°C)

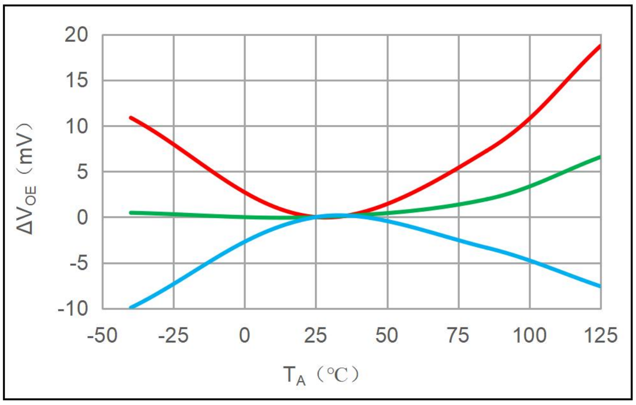
CC6905QC-3FB020[1]



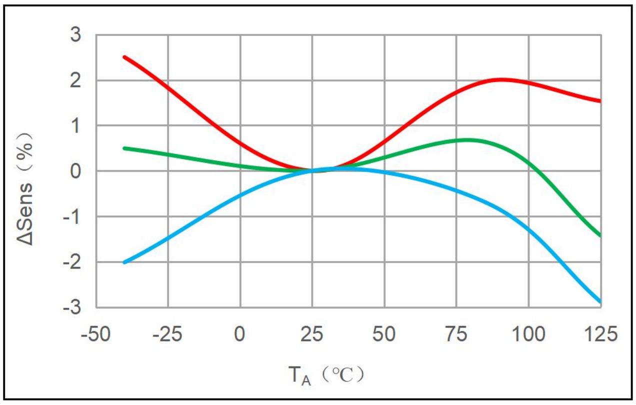
$\Delta V_{OUT(Q)}$ vs T_A



ΔV_{REF} vs T_A



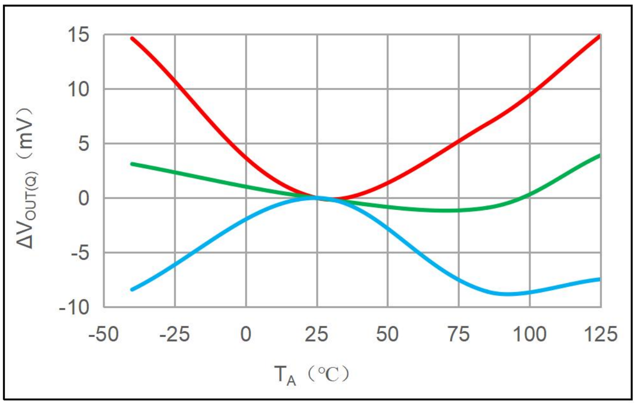
ΔV_{OE} vs T_A



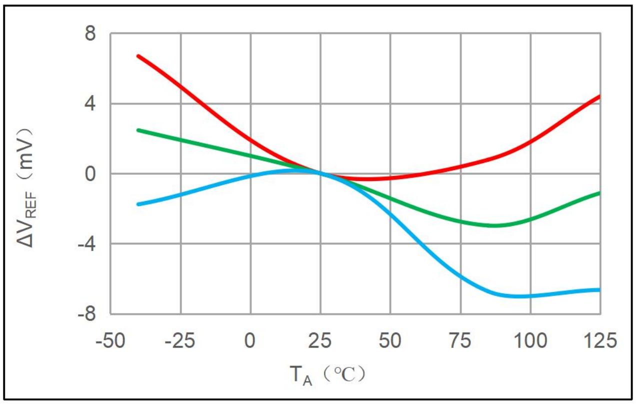
ΔSens vs T_A

[1] Green represents the average，Red represents the average+3Sigma，Blue represents the average-3Sigma(-40°C，25°C，85°C，125°C)

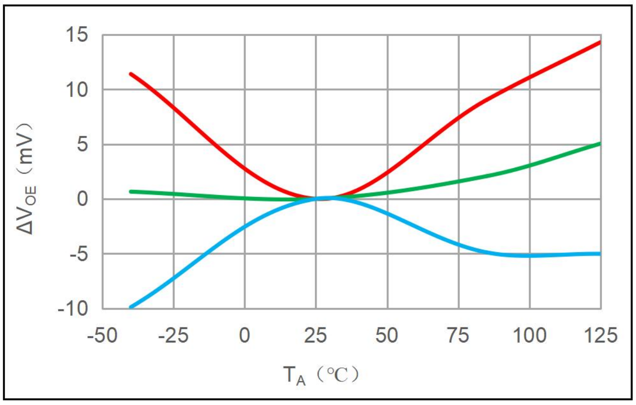
CC6905QC-3FB030[1]



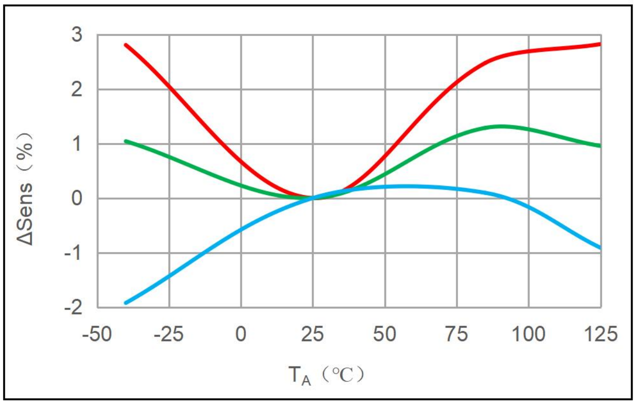
$\Delta V_{OUT(Q)}$ vs T_A



ΔV_{REF} vs T_A



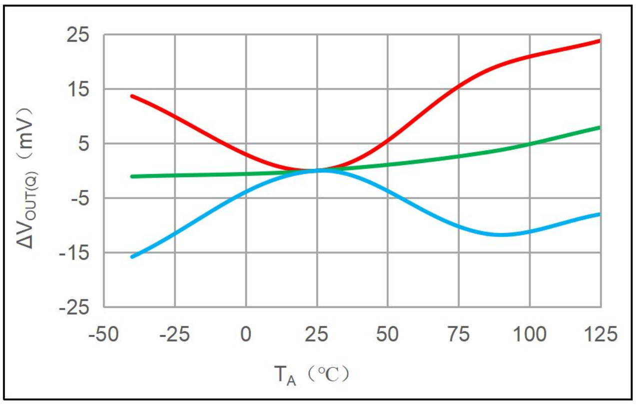
ΔV_{OE} vs T_A



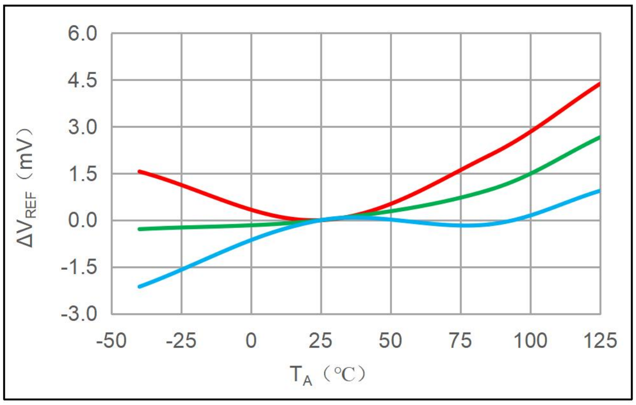
ΔSens vs T_A

[1] Green represents the average，Red represents the average+3Sigma，Blue represents the average-3Sigma(-40°C，25°C，85°C，125°C)

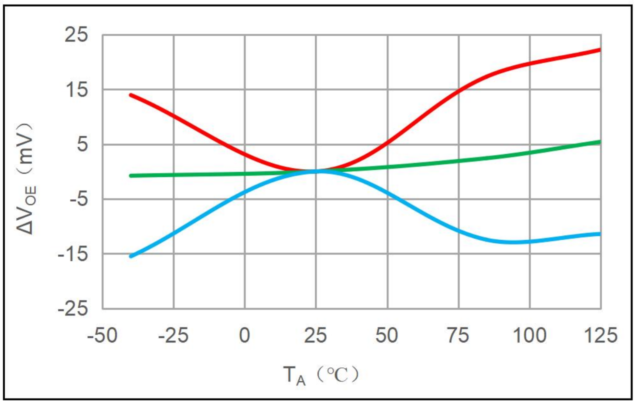
CC6905QC-3FU030[1]



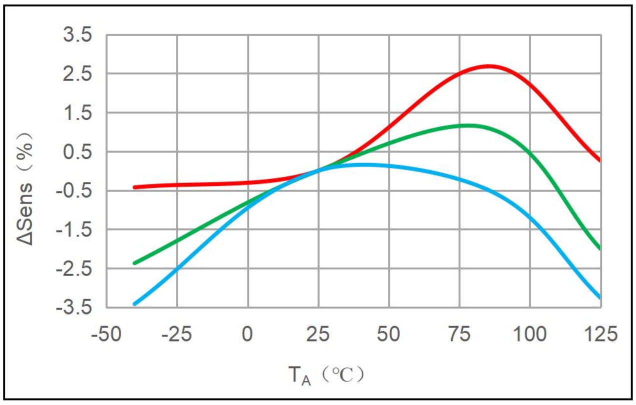
$\Delta V_{OUT(Q)}$ vs T_A



ΔV_{REF} vs T_A



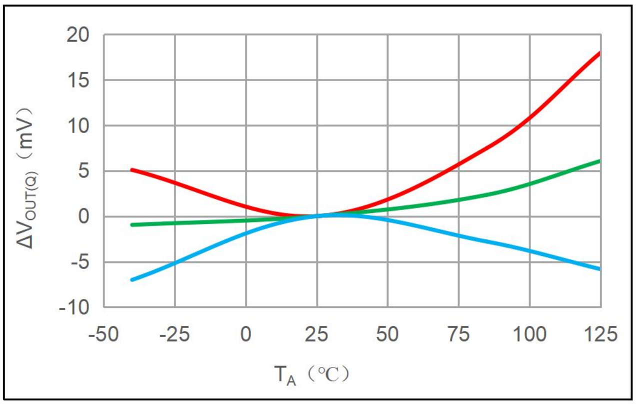
ΔV_{OE} vs T_A



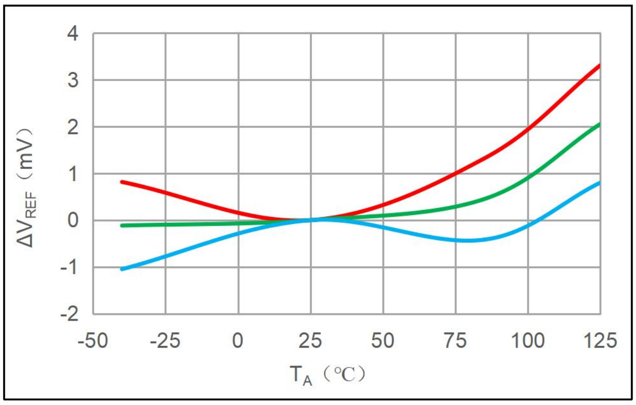
ΔSens vs T_A

[1] Green represents the average，Red represents the average+3Sigma，Blue represents the average-3Sigma(-40°C，25°C，85°C，125°C)

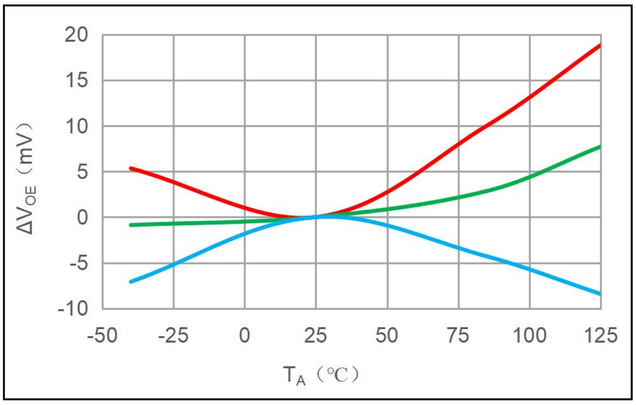
CC6905QC-3FU050[1]



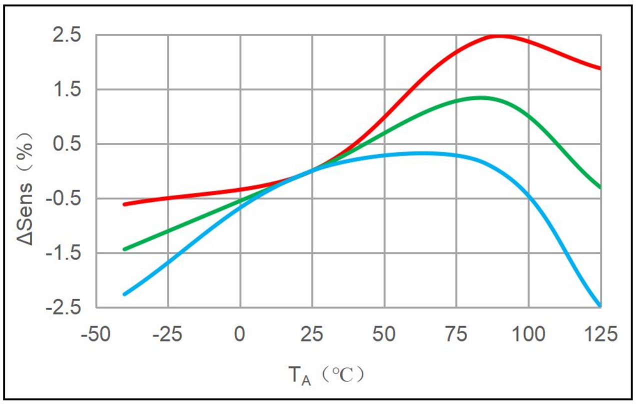
$\Delta V_{OUT(Q)}$ vs T_A



ΔV_{REF} vs T_A



ΔV_{OE} vs T_A



ΔSens vs T_A

[1] Green represents the average，Red represents the average+3Sigma，Blue represents the average-3Sigma(-40°C，25°C，85°C，125°C)

FUNCTION DESCRIPTION

The CC6905 device is a precision current sensor based on Hall sensor.It has less than 3% full scale error and zero current reference signal output in the whole temperature range, which can realize unidirectional or bidirectional current detection.The input current flows through a wire between isolated input current pins, which has a resistance of 0.5mΩ at room temperature to reduce insertion loss.The magnetic field generated by the input current is sensed by Hall sensor and amplified by precise signal chain. It can be used for AC and DC current measurement with a bandwidth of 230kHz.The measuring current is 5 ~ 50A. There are 6 kinds of Current sensing range to choose. CC6905 is optimized for high accuracy and temperature stability, compensating for misalignment and sensitivity over the entire range.

The input current of CC6905 flows through the primary side of the package through IP+ and IP- pins, the current flowing through the chip generates a magnetic field proportional to the input current and is measured by an isolated Precision Hall sensor IC. Compared with other current measurement methods, the low impedance lead frame path reduces power consumption and does not require any external devices on the primary side. In addition, the internal integrated differential common mode suppression circuit can make the chip output not affected by external interference magnetic signal, and only measure the magnetic field generated by the input current, so as to suppress the interference of external magnetic field.

The typical resistance of the primary current input conductor at 25°C is 0.5mΩ. The lead frame is made of copper. The temperature coefficient of the input wire is positive, and the wire resistance increases with the increase of temperature. The typical temperature coefficient is 3900 ppm/°C. For every 100°C increase in temperature, the primary side resistance will increase by 39%.

INPUT CURRENT

In use, the primary side of the chip (package pins 1-4) is connected in series at any position in the whole circuit. The input current flowing from IP+ (package pins 1-2) to IP- (package pins 3-4) is positive, otherwise it is negative. Do not shunt resistors between IP+ and IP-, unless there are very special reasons - such as minimizing insertion loss - which will reduce the current flowing through the chip, and the wire resistance will also be affected by temperature drift, which requires external temperature and precision correction of the whole system.

VREF INPUT/OUTPUT CHARACTERISTIC

The quiescent output voltage V_{OQ} of V_{OUT} is VREF as a reference，VREF has two modes: input / output, which can be used as an internal reference to an external circuit or to adjust the V_{OQ}.

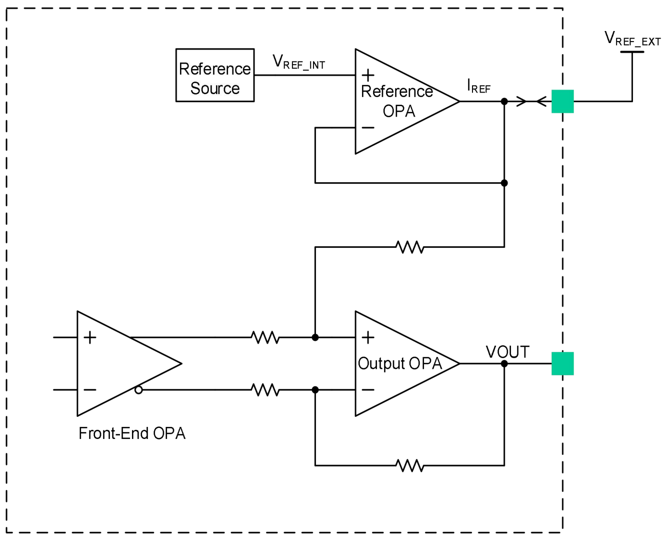
1. When using the VREF output mode：

After factory programming, the nominal value error ≤ 5mV;

The typical value of I_{VREF_SOURCE} = 2.8mA and I_{VREF_SINK} = 6mA. Upon application, the current of 2mA of the V_{REF} is recommended.

2. When using the VREF input mode：

When the drive capability of the external reference exceeds the output of the reference op amp, the external reference forces VOQ to use the external reference as a reference.When the input voltage is lower than the nominal value of V_{REF}, the drive capability of the input source needs to be higher than I_{VREF_SOURCE}; When the input voltage is higher than the nominal value of V_{REF}, the drive capability of the input source needs to be higher than I_{VREF_SINK}. It is recommended that customers use an external reference source that ±10mA drive capability for input. At this time, the sensitivity of CC6905 remains unchanged.



VOUT OUTPUT CHARACTERISTIC

The CC6905 5V bidirectional series has a quiescent output point (I_P = 0A with VREF in output mode) of 2.5V;

The CC6905 3.3V bidirectional series has a quiescent output point (I_P = 0A with VREF in output mode) of 1.65V;

The CC6905 3.3V unidirectional series has a static output point (IP = 0A with VREF in output mode) of 0.33V;

When the current increases, the V_{OUT} increases until the saturation voltage of the output operational amplifier (VCC – rail voltage); when the current decreases, the V_{OUT} decreases until the saturation voltage (GND + rail voltage) of the Output Op Amp. Crosschip ensures the accuracy and linearity of V_{OUT} in the range of 0.5~4.5V/0.33~2.97V. In order to ensure the consistency of mass manufacturing, there is a certain margin in this range, but it is not recommended for customers to use this margin.

When the input current exceeds the range, the output of V_{OUT} is close to the rail voltage of the power supply. When the input current does not exceed the tolerance limit of the chip, the voltage will always be maintained. After the input current returns to the range, the output of V_{OUT} will return to normal without any damage to the chip.

When using the VREF output mode:

Product Name	Input Current	Nominal Supply Voltage(V)	Sensitivity(mV/A)	Calculation Formula *(Note 1)*
CC6905S8-5FB005	-5A ~ +5A	5	400	V_{OUT} =2500 + I_P(A) × 400…………..(mV)
CC6905S8-5FB010	-10A ~ +10A	5	200	V_{OUT} =2500 + I_P(A) × 200…………..(mV)
CC6905S8-5FB020	-20A ~ +20A	5	100	V_{OUT} =2500 + I_P(A) × 100…………..(mV)
CC6905S8-5FB030	-30A ~ +30A	5	66.67	V_{OUT} =2500 + I_P(A) × 66.67………..(mV)
CC6905S8-5FB040	-40A ~ +40A	5	50	V_{OUT} =2500 + I_P(A) × 50…………...(mV)
CC6905S8-5FB050	-50A ~ +50A	5	40	V_{OUT} =2500 + I_P(A) × 40…………...(mV)
CC6905S8-3FB005	-5A ~ +5A	3.3	264	V_{OUT} =1650 + I_P(A) × 264…………..(mV)
CC6905S8-3FB010	-10A ~ +10A	3.3	132	V_{OUT} =1650 + I_P(A) × 132…………..(mV)
CC6905S8-3FB020	-20A ~ +20A	3.3	66	V_{OUT} =1650 + I_P(A) × 66…………...(mV)
CC6905S8-3FB030	-30A ~ +30A	3.3	44	V_{OUT} =1650 + I_P(A) × 44…………...(mV)
CC6905S8-3FB040	-40A ~ +40A	3.3	33	V_{OUT} =1650 + I_P(A) × 33…………...(mV)
CC6905S8-3FB050	-50A ~ +50A	3.3	26.4	V_{OUT} =1650 + I_P(A) × 26.4………....(mV)
CC6905S8-3FU030	0A ~ 30A	3.3	88	V_{OUT} =330 + I_P(A) × 88……………..(mV)
CC6905S8-3FU050	0A ~ 50A	3.3	52.8	V_{OUT} =330 + I_P(A) × 52.8…………..(mV)
CC6905QC-5FB010	-10A ~ +10A	5	200	V_{OUT} =2500 + I_P(A) × 200…………..(mV)
CC6905QC-5FB020	-20A ~ +20A	5	100	V_{OUT} =2500 + I_P(A) × 100…………..(mV)
CC6905QC-5FB030	-30A ~ +30A	5	66.67	V_{OUT} =2500 + I_P(A) × 66.67………..(mV)
CC6905QC-3FB010	-10A ~ +10A	3.3	132	V_{OUT} =1650 + I_P(A) × 132…………..(mV)
CC6905QC-3FB020	-20A ~ +20A	3.3	66	V_{OUT} =1650 + I_P(A) × 66…………...(mV)
CC6905QC-3FB030	-30A ~ +30A	3.3	44	V_{OUT} =1650 + I_P(A) × 44…………...(mV)
CC6905QC-3FU030	0A ~ 30A	3.3	88	V_{OUT} =330 + I_P(A) × 88……………..(mV)
CC6905QC-3FU050	0A ~ 50A	3.3	52.8	V_{OUT} =330 + I_P(A) × 52.8…………..(mV)

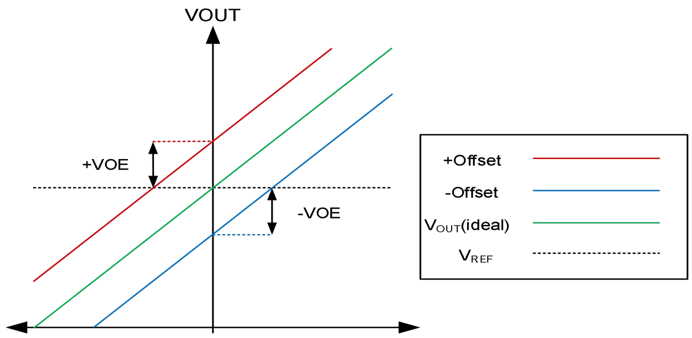
When using the VREF input mode： （0 ≤ V_{REF} ≤ 4V）

Product Name	Input Current	Nominal Supply Voltage(V)	Sensitivity(mV/A)	Calculation Formula *(Note 1)*
CC6905S8-5FB005	-5A ~ +5A	5	400	V_{OUT} =V_{REF} + I_P(A) × 400…............(mV)
CC6905S8-5FB010	-10A ~ +10A	5	200	V_{OUT} =V_{REF} + I_P(A) × 200…............(mV)
CC6905S8-5FB020	-20A ~ +20A	5	100	V_{OUT} =V_{REF} + I_P(A) × 100…............(mV)
CC6905S8-5FB030	-30A ~ +30A	5	66.67	V_{OUT} =V_{REF} + I_P(A) × 66.67…........(mV)
CC6905S8-5FB040	-40A ~ +40A	5	50	V_{OUT} =V_{REF} + I_P(A) × 50…..............(mV)
CC6905S8-5FB050	-50A ~ +50A	5	40	V_{OUT} =V_{REF} + I_P(A) × 40…..............(mV)
CC6905S8-3FB005	-5A ~ +5A	3.3	264	V_{OUT} =V_{REF} + I_P(A) × 264…............(mV)
CC6905S8-3FB010	-10A ~ +10A	3.3	132	V_{OUT} =V_{REF} + I_P(A) × 132…............(mV)
CC6905S8-3FB020	-20A ~ +20A	3.3	66	V_{OUT} =V_{REF} + I_P(A) × 66…..............(mV)
CC6905S8-3FB030	-30A ~ +30A	3.3	44	V_{OUT} =V_{REF} + I_P(A) × 44…..............(mV)
CC6905S8-3FB040	-40A ~ +40A	3.3	33	V_{OUT} =V_{REF} + I_P(A) × 33…..............(mV)
CC6905S8-3FB050	-50A ~ +50A	3.3	26.4	V_{OUT} =V_{REF} + I_P(A) × 26.4…...........(mV)
CC6905S8-3FU030	0A ~ 30A	3.3	88	V_{OUT} =V_{REF} + I_P(A) × 88…..............(mV)
CC6905S8-3FU050	0A ~ 50A	3.3	52.8	V_{OUT} =V_{REF} + I_P(A) × 52.8…...........(mV)
CC6905QC-5FB010	-10A ~ +10A	5	200	V_{OUT} =V_{REF} + I_P(A) × 200…............(mV)
CC6905QC-5FB020	-20A ~ +20A	5	100	V_{OUT} =V_{REF} + I_P(A) × 100…............(mV)
CC6905QC-5FB030	-30A ~ +30A	5	66.67	V_{OUT} =V_{REF} + I_P(A) × 66.67…........(mV)
CC6905QC-3FB010	-10A ~ +10A	3.3	132	V_{OUT} =V_{REF} + I_P(A) × 132…............(mV)
CC6905QC-3FB020	-20A ~ +20A	3.3	66	V_{OUT} =V_{REF} + I_P(A) × 66…..............(mV)
CC6905QC-3FB030	-30A ~ +30A	3.3	44	V_{OUT} =V_{REF} + I_P(A) × 44…..............(mV)
CC6905QC-3FU030	0A ~ 30A	3.3	88	V_{OUT} =V_{REF} + I_P(A) × 88…..............(mV)
CC6905QC-3FU050	0A ~ 50A	3.3	52.8	V_{OUT} =V_{REF} + I_P(A) × 52.8…...........(mV)

Note1: This formula is only applicable to DC current calculations, when AC current applications, one should pay attention to I_{PEAK}=1.414 × I_{RMS} and pay attention to the positive and negative current direction.

OFFSET VOLTAGE

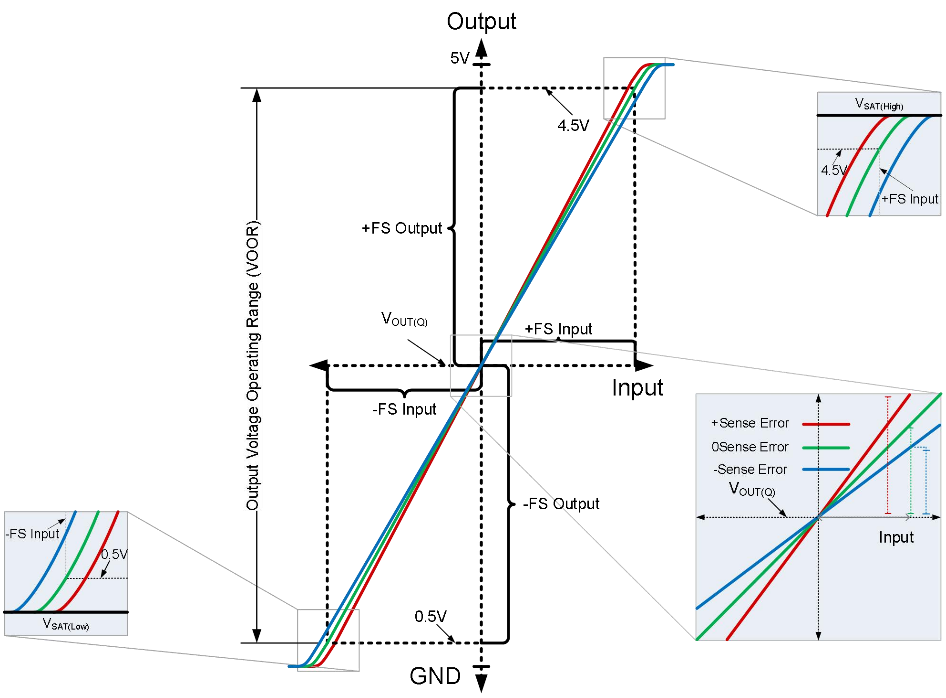
Offset Voltage, or V_{OE}, is defined as the difference between $V_{OUT(Q)}$ and V_{REF} (as shown in the figure below). V_{OE} includes the drift of $V_{OUT(Q)}$ minus V_{REF} from room to hot or room to cold (–40°C to +125°C respectively).



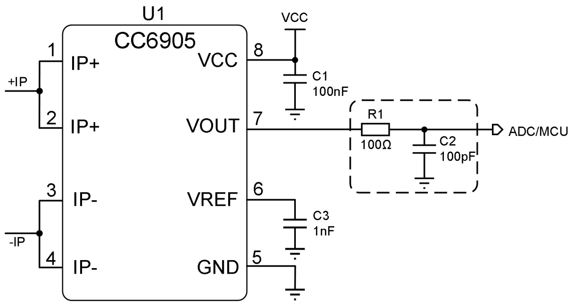
OUTPUT VOLTAGE OPERATING RANGE

As shown in the figure, the output voltage operating range V_{OOR} is the swing range of the linear output of V_{OUT}. V_{OUT} beyond V_{OOR} could still work until V_{SAT}, but performance deteriorated in this range.

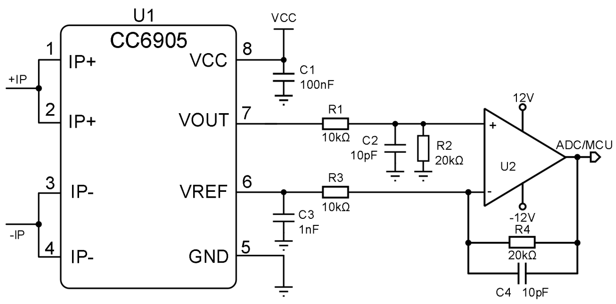
Voltage Output Operating Range for V_{CC} and Output Modes		
V_{CC}	Bidirectional	unidirectional
3.3V	±1.32	0 ~ 2.64
5V	±2	-



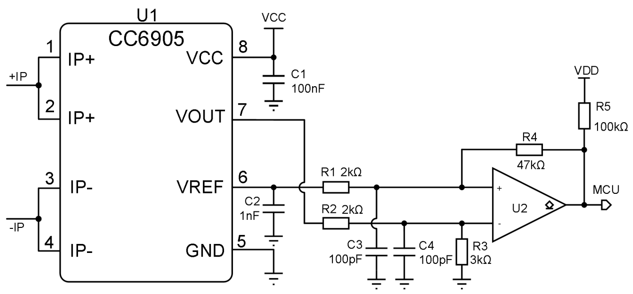
TYPICAL APPLICATION CIRCUITS



Recommended Typical Application



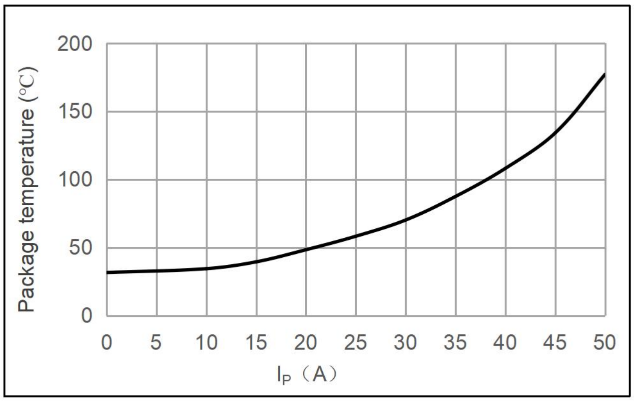
Zero Migration Application (VREF Output Mode)



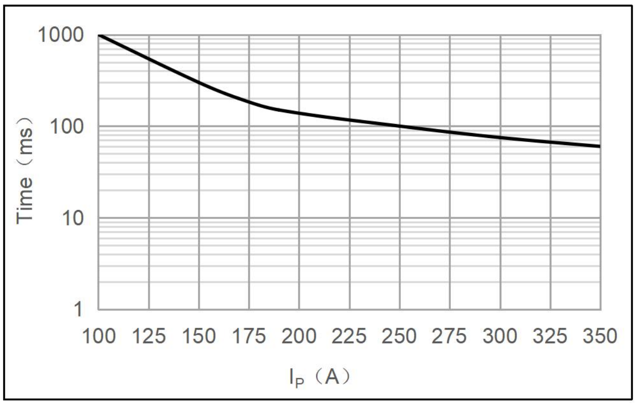
Over-current Fault Detector

RELATIONSHIP BETWEEN PACKAGE TEMPERATURE & INPUT CURRENT

SOP8 package

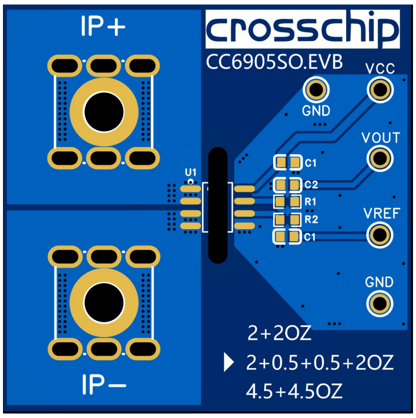


Input Current (IP) vs. Package Temperature



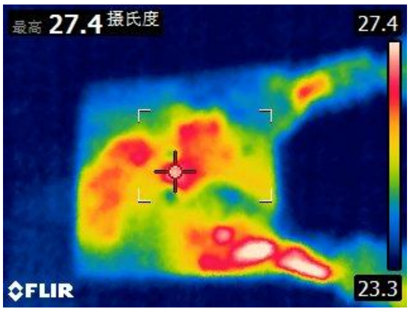
SOA Curve

Note: Based on the demo board test, for specific applications, it is necessary to strengthen heat dissipation or choose Tg high plates according to actual application scenarios.



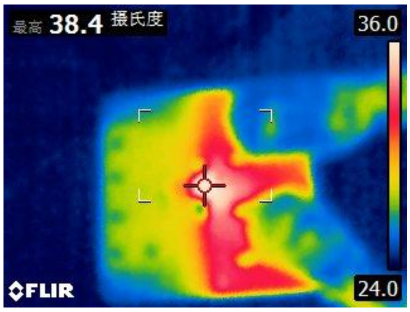
Thickness 1.6mm, FR-4 4-layer board, 2+0.5+0.5+2oz copper foils, each piece of copper foil 400mm² connected to IP pins, each layer of copper foils connected by over-hole.

Test environment: open environment, quiescent air



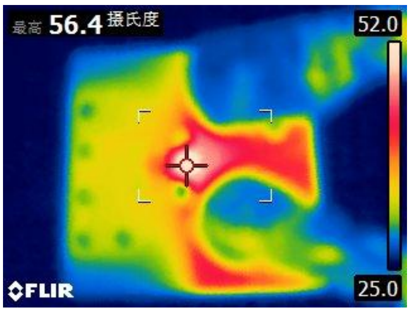
Package Thermography

(Input Current 10A)



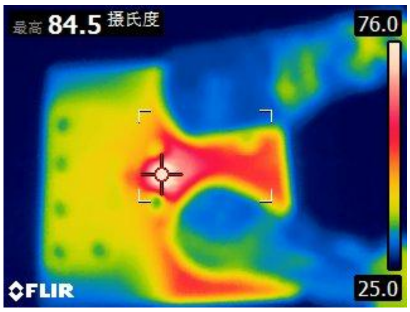
Package Thermography

(Input Current 20A)



Package Thermography

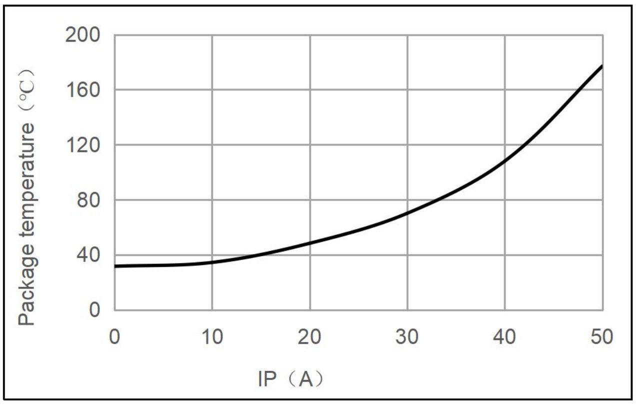
(Input Current 30A)



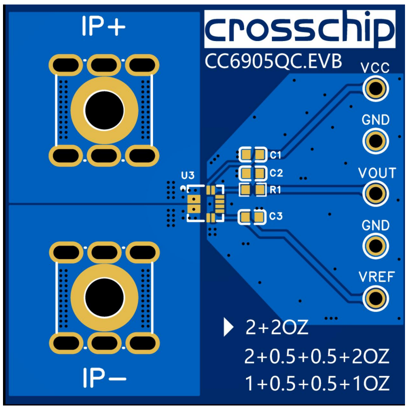
Package Thermography

(Input Current 40A)

QFN-3×3-12 package



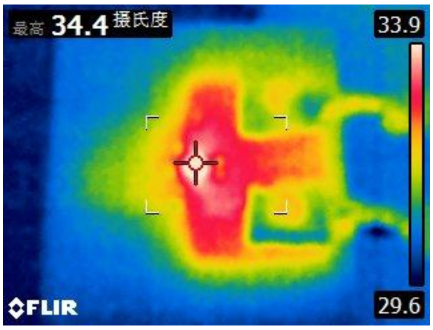
Input Current (IP) vs. Package Temperature



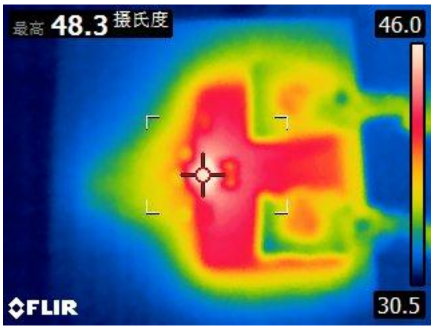
Thickness 1.6mm, FR-4 double layer board, 2+2oz copper foil, each piece of copper foil 400mm^2 connected to IP pins, each layer of copper foil connected with over-hole.

Test environment: open environment, quiescent air

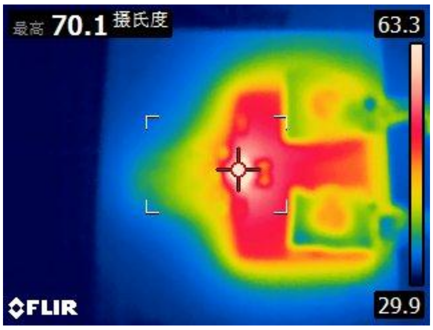
Note： Based on the demo board test, for specific applications, it is necessary to strengthen heat dissipation or choose Tg high plates according to actual application scenarios.



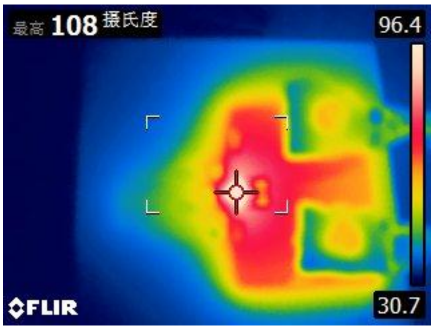
Package Thermography (Input Current 10A)



Package Thermography (Input Current 20A)



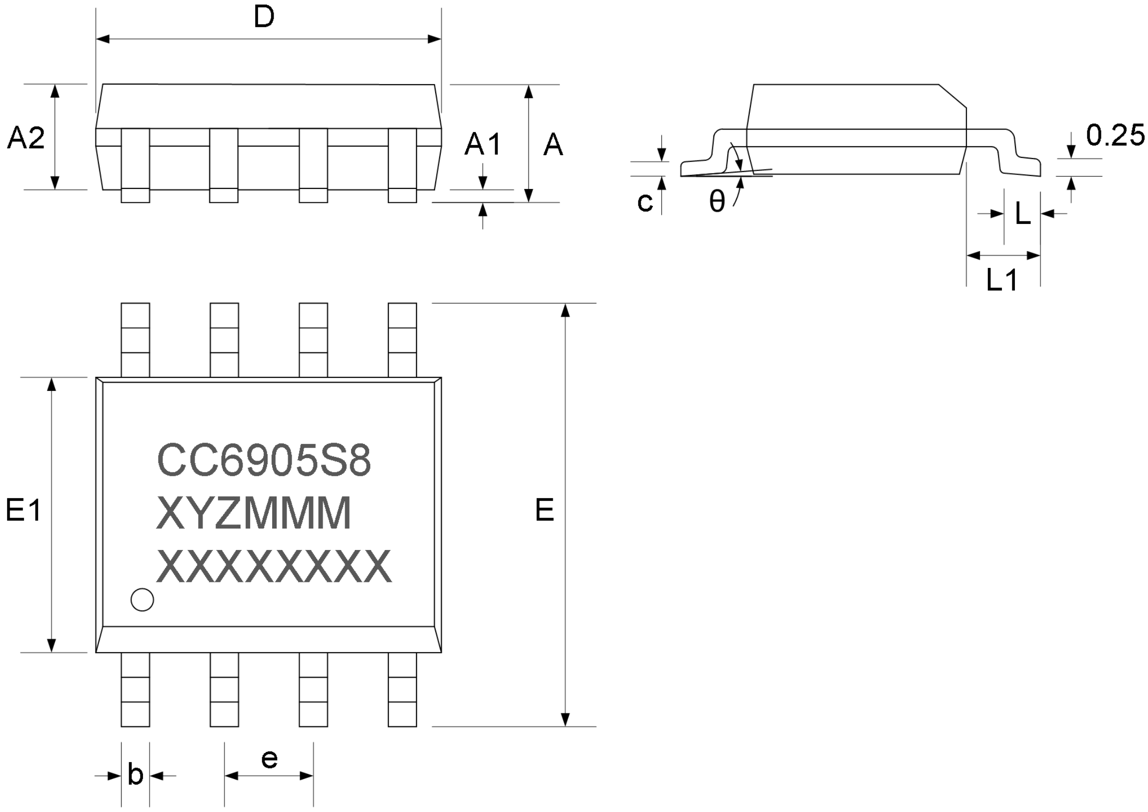
Package Thermography (Input Current 30A)



Package Thermography (Input Current 40A)

PACKAGE INFORMATION

（1）SOP8 package



Symbol	Size（mm）		
	Min.	Typ.	Max.
A	1.50	-	1.70
A1	0.10	-	0.25
A2	1.30	1.40	1.50
b	0.33	0.40	0.47
c	0.20	-	0.25
D	4.70	4.90	5.10
E	5.90	6.00	6.10
E1	3.80	3.90	4.00
e	1.27(BSC)		
L	0.55	0.60	0.75
L1	1.05(BSC)		
θ	0°	4°	8°

Marking:

1st Line: CC6905S8 – Device Name

2nd Line: XYZMMM

- X – Rated operating voltage
- Y – Output type
- Z – Output direction
- MMM – the current range

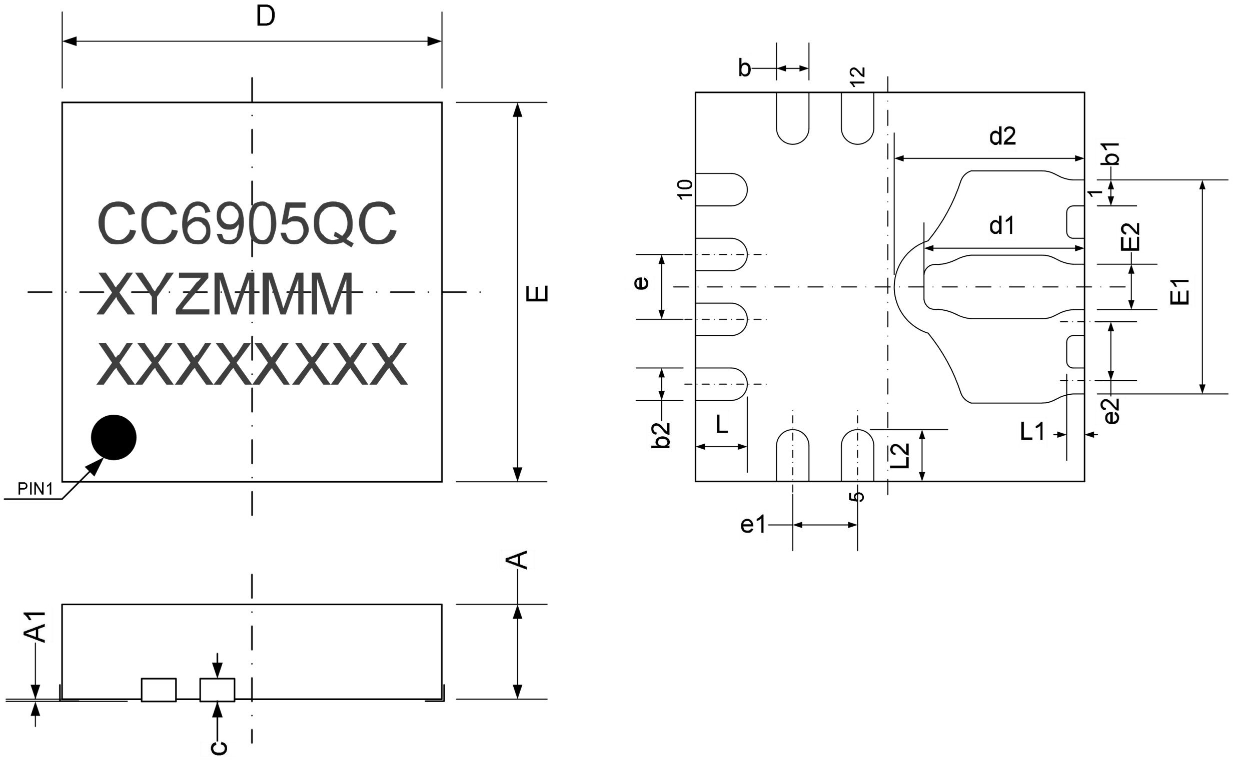
3rd Line: XXXXXXXX

- XXXXXXXX – Production serial number

Note:

1. All dimensions are in millimeters.
2. For details: refer to Product Name Definition

（2）QFN-3×3-12 package



Symbol	Size（mm）		
	Min.	**Typ.**	**Max.**
A	0.70	0.75	0.80
A1	-	0.02	0.05
b	0.20	0.25	0.30
b1	0.15	0.20	0.25
b2	0.20	0.25	0.30
c	0.203 REF		
D	2.90	3.00	3.10
d1	1.14	1.24	1.34
d2	1.37	1.47	1.57
e	0.50 BSC		
e1	0.50 BSC		
e2	0.45 BSC		
E	2.90	3.00	3.10
E1	1.55	1.65	1.75
E2	0.25	0.35	0.45
L	0.35	0.40	0.45
L1	0.09	0.14	0.19
L2	0.35	0.40	0.45

Marking:

1st Line: CC6905QC – Device Name

2nd Line: XYZMMM

- X – Rated operating voltage
- Y – Output type
- Z – Output direction
- MMM – the current range

3rd Line: XXXXXXXX

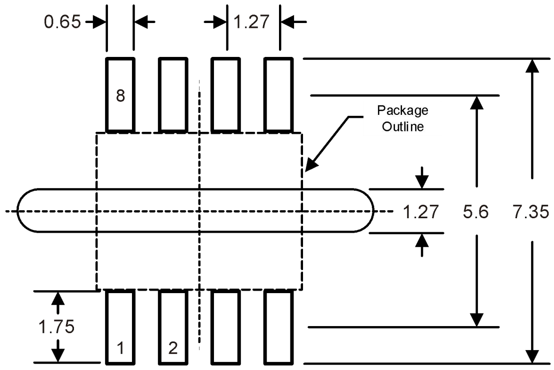
- XXXXXXXX – Production serial number

Note:

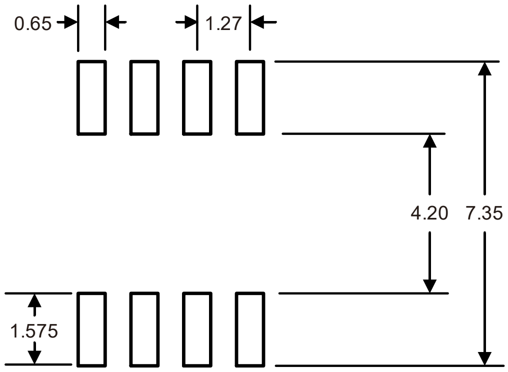
1. All dimensions are in millimeters.
2. For details: refer to Product Name Definition

PACKAGE REFERENCE

（1）Recommended Welding Disc _ SOP8

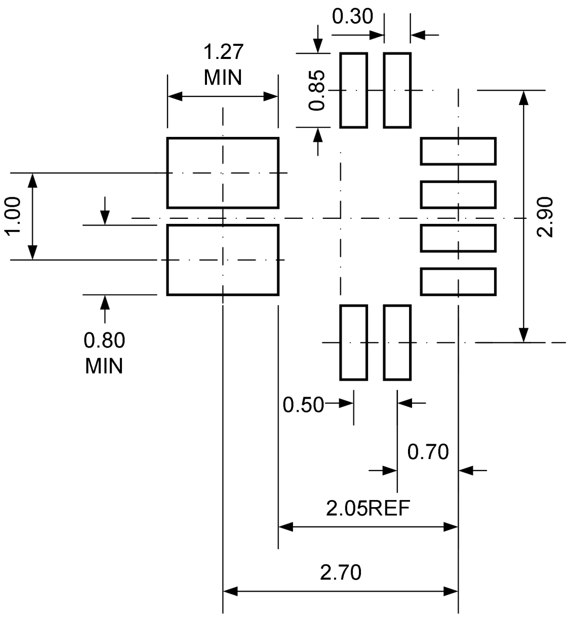


Reference 1: PCB slotting to increase creepage distance



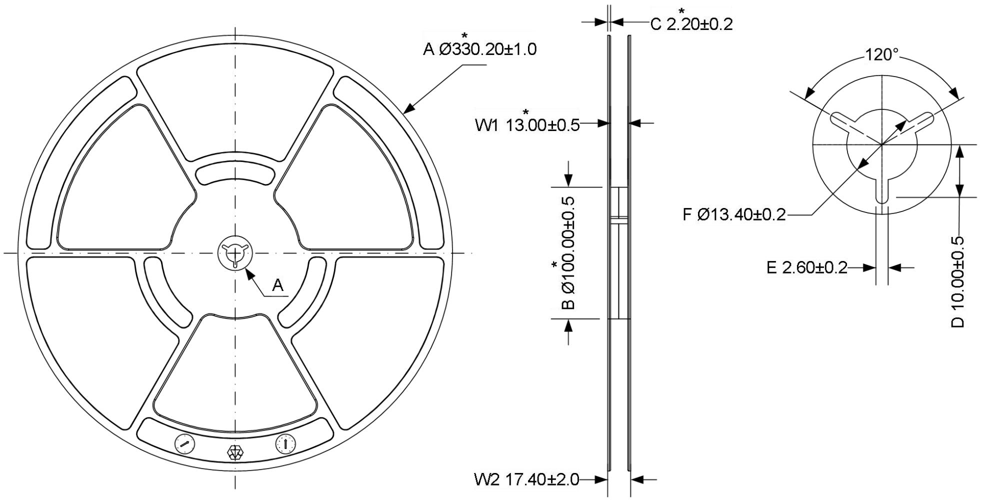
Reference 2: Shorten welding disc length to increase creepage distance

（2）Recommended Welding Disc _ QFN-3×3-12



TAPE AND REEL INFORMATION

(1) Reel Dimensions _ SOP8

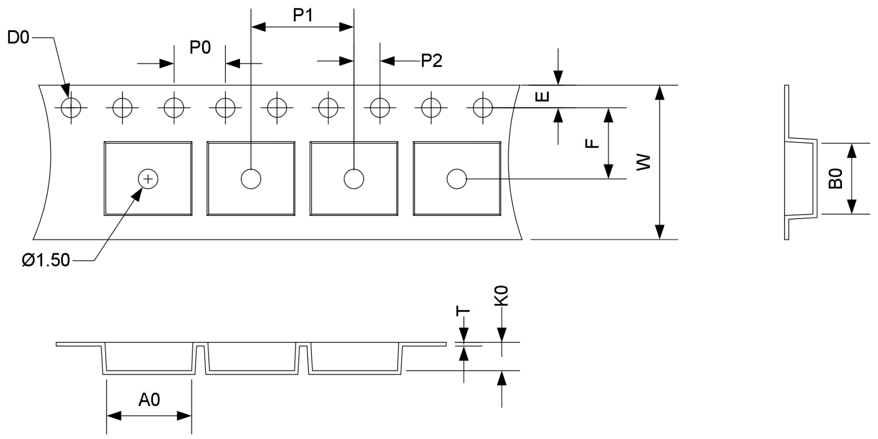


Note:

(1) *Marked as a key dimension.

(2) All dimensions are in millimeters.

Tape Dimensions _ SOP8



Note:

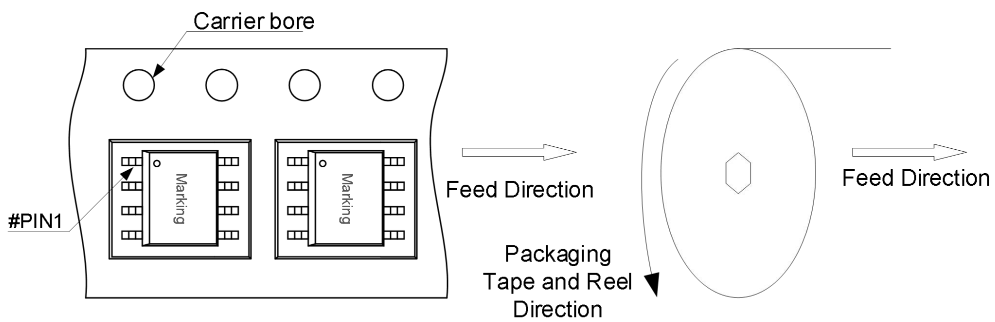
1.*Marked as a key dimension, All dimensions are in millimeters;

2.The cumulative error of any 10 ratchet holes does not exceed ±0.2mm.;

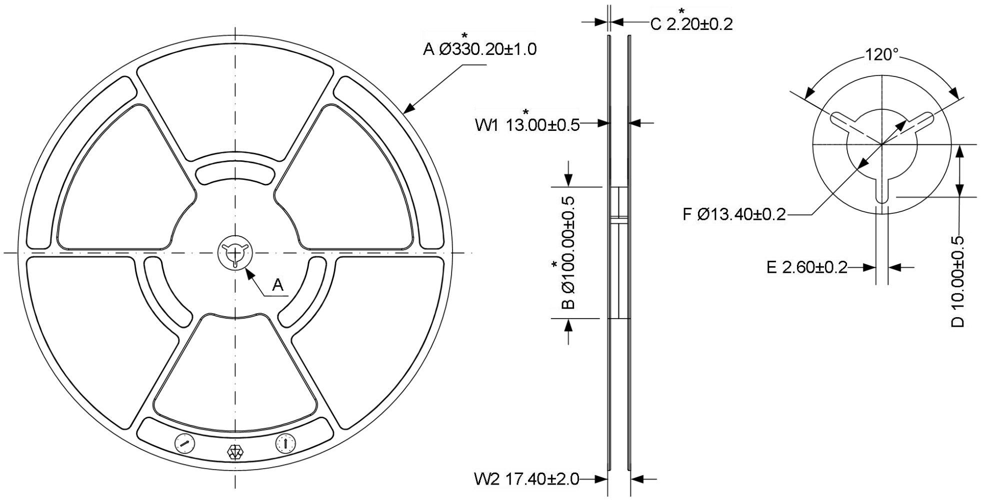
3.Non-parallelism must not exceed 1mm for a distance of 250mm along the length of the carrier tape.

Symbol	*W	*A0	*B0	*K0	P0	P1
Size(mm)	12±0.30	6.50±0.1	5.40±0.1	2.05±0.1	4.0±0.1	8.00±0.1
Symbol	P2	F	S	E	D0	T
Size(mm)	2.0±0.1	5.5±0.1	0.0±0.1	1.75±0.1	$1.5^{+0.1}_{-0.0}$	0.3±0.05

QUADRANT ASSIGNMENTS FOR PIN1 ORIENTATION IN TAPE



（2）Reel Dimensions _ QFN-3×3-12

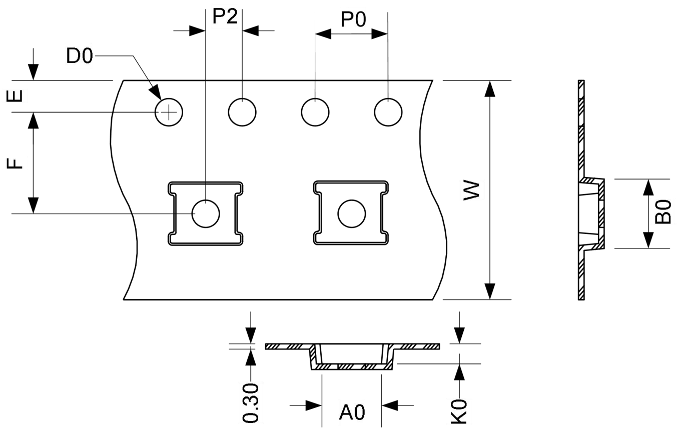


Note:

(1) *Marked as a key dimension.

(2) All dimensions are in millimeters.

Tape Dimensions _ QFN-3×3-12



Note:

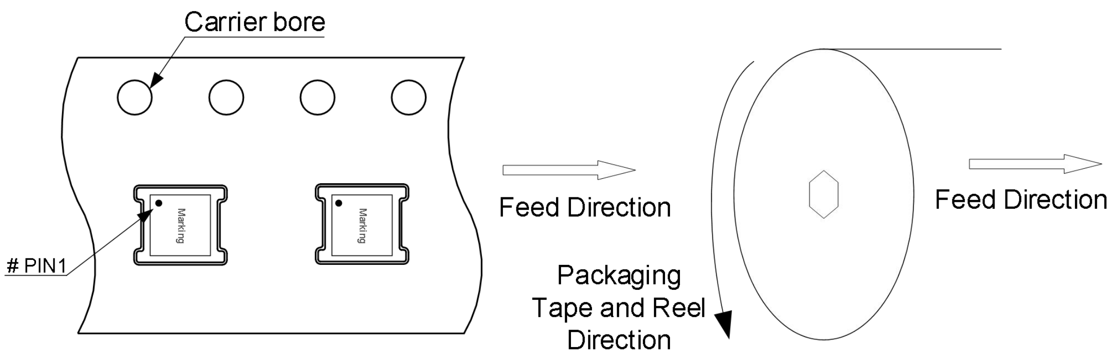
1. *Marked as a key dimension, All dimensions are in millimeters;

2. The cumulative error of any 10 ratchet holes does not exceed ±0.2mm.;

3. Non-parallelism must not exceed 1mm for a distance of 250mm along the length of the carrier tape.

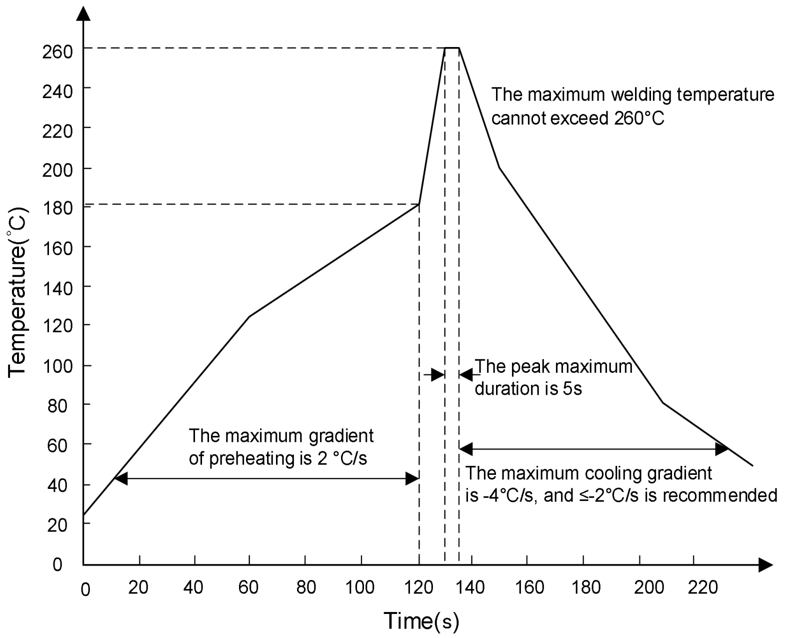
Symbol	*W	*A0	*B0	*K0	P0	P1
Size(mm)	12±0.30	3.25±0.1	3.25±0.1	1.10±0.1	4.0±0.1	8.00±0.1
Symbol	P2	F	E	D0	D1	T
Size(mm)	2.0±0.1	5.50±0.1	1.75±0.1	1.50±0.1	1.50±0.1	0.3±0.05

QUADRANT ASSIGNMENTS FOR PIN1 ORIENTATION IN TAPE



THE WELDING PROCESS OF THE CHIP

Welding Process Requirements:



REVISION HISTORY

Revision Date	Description of Revision	Revision
2024.07.24	Initial released.	rev1.0
2024.08.15	I_{CC} is strongly correlated with V_{CC}, and the I_{CC} values in the normalized electrical parameter table do not need to be differentiated between packages.	rev1.1
2024.09.02	Correct the response time t_{RES} and the description of Sens temperature drift on the first page.	rev1.2
2024.09.18	Add CC6905S8-3FU050 material code.	rev1.3

CrossChip

CrossChip Microsystems Inc. was founded in 2013, is a national high-tech enterprise, engaged in integrated circuit design and sales. The company has strong technical strength, has more than 60 kinds of patents, mainly used in Hall sensor signal processing, with the following product lines:

- ✓ High precision linear Hall sensor
- ✓ All kinds of Hall switches
- ✓ Single phase motor drive
- ✓ Single chip current sensor
- ✓ AMR Magnetoresistance sensor
- ✓ Isolation drive class chip

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