

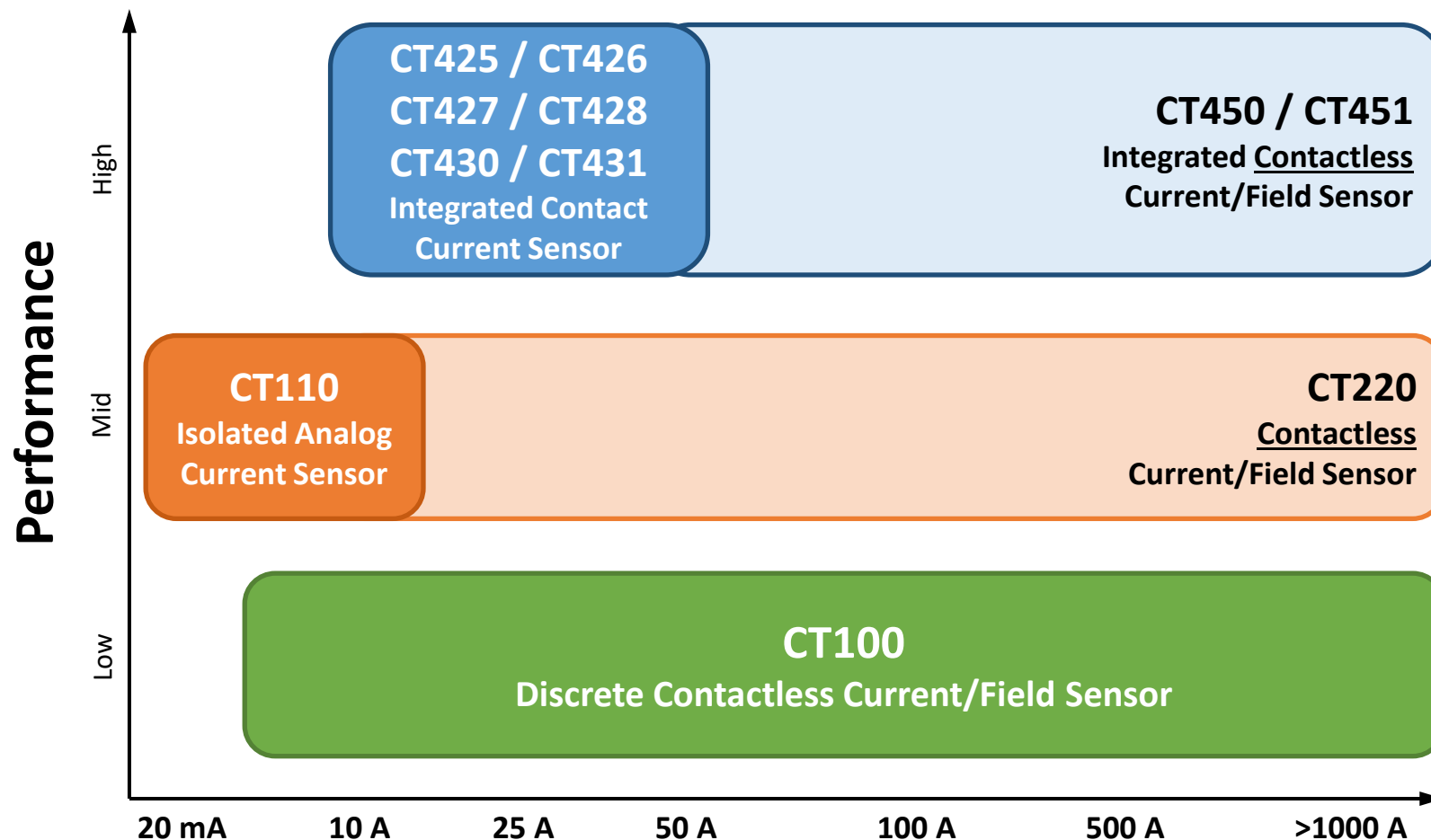


CT425/6 & CT427/8: XtremeSense® TMR Ultra-Low Noise, <1% Total Error Current Sensor

August 2021

Crocus Current Sensor Product Family

Product Lineup



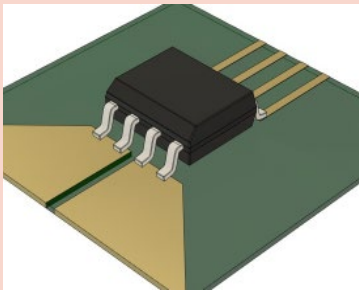
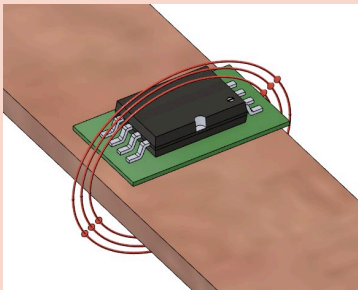
XtremeSense® Current Sensors

Product Selection Table

Parameter	CT100	CT110	CT220	CT425/6/7/8	CT430/CT431	CT450/CT451
Type	Contactless	Contact	Contactless	Contact	Contact	Contactless
Samples	Now	Now	Now	Now	Now	Now
Current Range	±20 mT	±5 A, ±10 A, ±15 A	±1.5 mT, ±5 mT, ±10 mT, ±15 mT	±20 A, ±30 A	±20 A, ±30 A, ±50 A	±4 mT, ±8 mT, ±12 mT, ±20 mT
Current Type	AC & DC	AC & DC	AC & DC	AC & DC	AC & DC	AC & DC
Performance	Low	Mid	Mid	High	High	High
• Bandwidth	1 MHz	30 kHz	30 kHz	1 MHz	1 MHz	1 MHz
• Total Error	$E_{TOT} < 3\% \text{ FS}$	$E_{TOT} < 5\% \text{ FS}$	$E_{TOT} < 5\% \text{ FS}$	$E_{TOT} < 1\% \text{ FS}$	$E_{TOT} < 1\% \text{ FS}$	$E_{TOT} < 1\% \text{ FS}$
• Common Mode Rejection				✓	✓	
Design Complexity	High	Low	Requires In-System Calibration	Low	Low	Requires In-System Calibration
Package	SOT23-6, DFN-6	DFN-6	SOT23-5	SOIC-8	SOICW-16	TSSOP-8

CT425/6 vs. CT450 Current Sensors

Contact vs. Contactless

	Contact Current Sensor	Contactless Current Sensor
Concept		
Description	- Intrusive Current Sensing via integrated busbar in package. ➤ <i>Current goes thru package.</i> - Senses magnetic field of current going thru busbar.	- Non-intrusive Current Sensing by measuring magnetic field of current thru PCB trace of busbar. ➤ <i>PCB trace or busbar is above or below package.</i>
Crocus Solution	CT425/6 & CT427/8 (Plus CT110, CT430 & CT431)	CT450 & CT451 (Plus CT100 & CT220)
Current Type	AC or DC	AC or DC
Current Sensing Range	5 mA to 30 A	5 mA to 1,000's A

CT425 & CT426

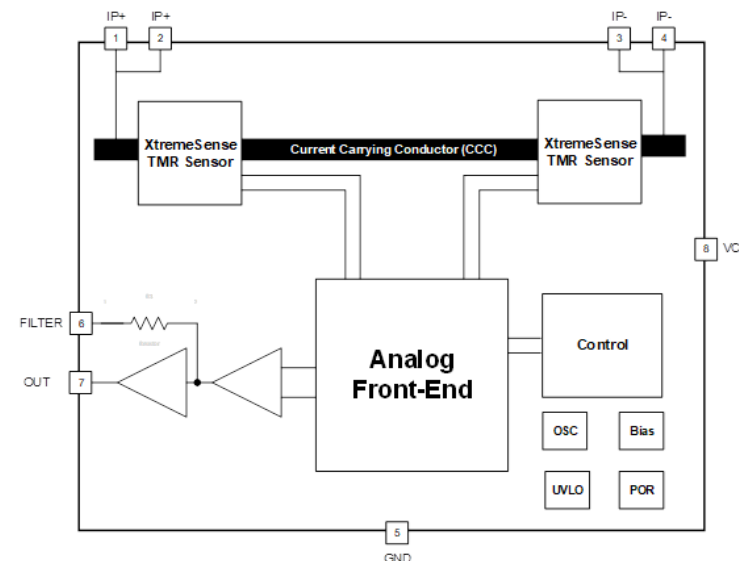
XtremeSense® TMR Ultra-Low Noise, <1% Total Error Current Sensors

Features

- Total Output Error: <1.0 %FS
- Ultra-low Noise: $\sim 10 \text{ mA}_{\text{RMS}}$
- 1.0 MHz Bandwidth
 - Response Time: $0.30 \mu\text{s}$
- Immunity to Common Mode Fields: $<5.0 \text{ mA/mT}$
- Rated Isolation Voltage: $>3 \text{ kV}_{\text{RMS}}$
- Linear Analog Output
- FILTER Pin to Lower Noise on Output
- Temperature Range: -40°C to $+125^\circ\text{C}$
- Supply Voltage:
 - CT425 = 4.75 V to 5.50 V
 - CT426 = 3.00 V to 3.60 V
- 8-lead SOIC Package

Applications

- Solar/Power Inverters
- UPS, SMPS and Telecom Power Supplies
- Battery Management Systems
- Motor Control
- White Goods/Appliances



Part Number	Current Range
CT42x-xSN820DR	0 A to +20 A
CT42x-xSN820MR	-20 A to +20 A
CT42x-xSN830DR	0 A to +30 A
CT42x-xSN830MR	-30 A to +30 A

CT427 & CT428

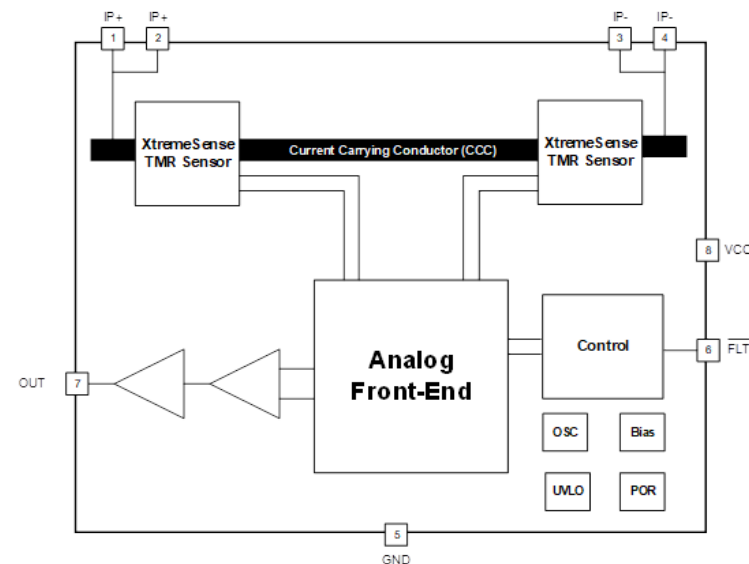
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Features

- Total Output Error: <1.0 %FS
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- 1.0 MHz Bandwidth
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- Immunity to Common Mode Fields: $<5.0 \text{ mA/mT}$
- Rated Isolation Voltage: $>3 \text{ kV}_{\text{RMS}}$
- Linear Analog Output
- FLT Open Drain Output to Indicate Overcurrent Events
- Temperature Range: -40°C to $+125^\circ\text{C}$
- Supply Voltage:
 - CT427 = 3.00 V to 3.60 V
 - CT428 = 4.75 V to 5.50 V
- 8-lead SOIC Package

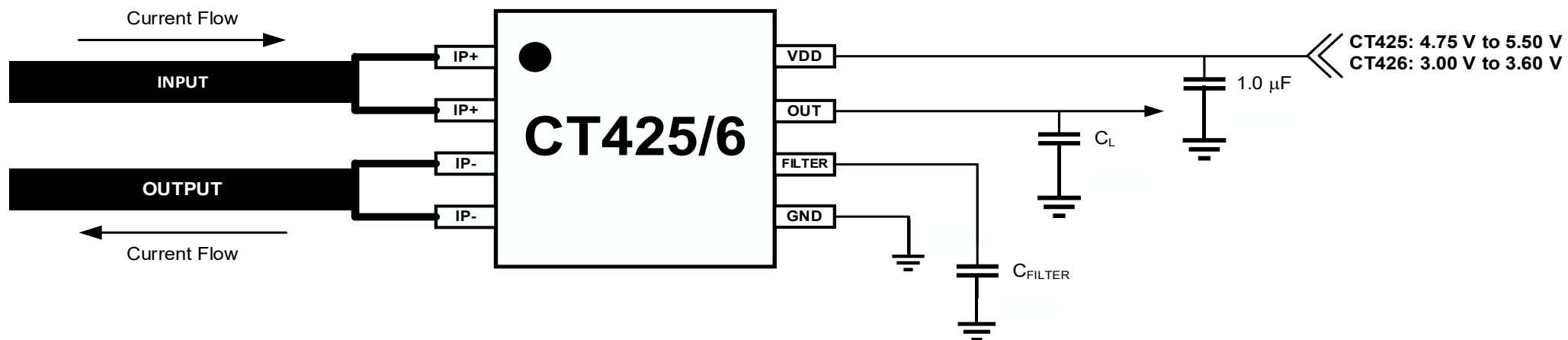
Applications

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- UPS, SMPS and Telecom Power Supplies
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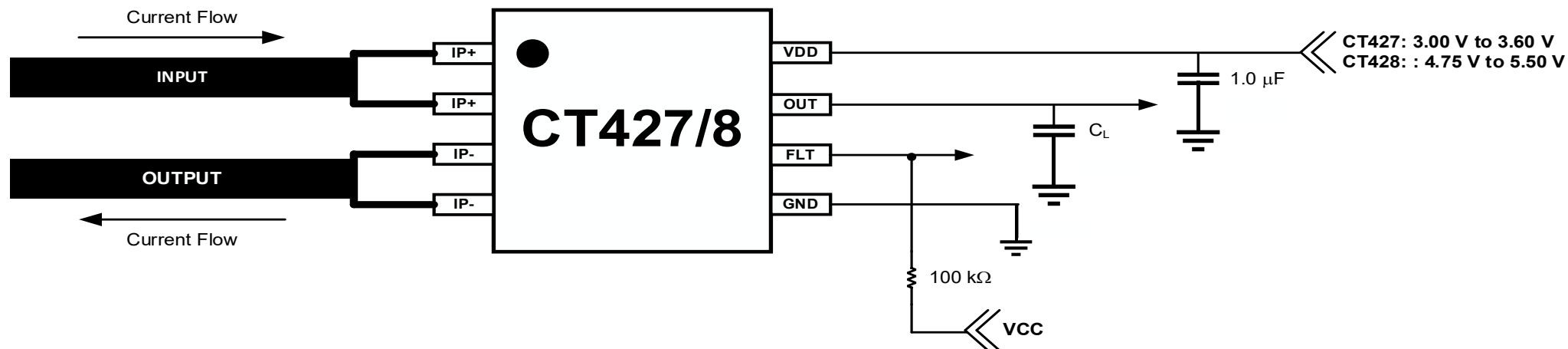


Part Number	Current Range
CT42x-xSN820MR	-20 A to +20 A
CT42x-xSN830MR	-30 A to +30 A

CT425/6 Application Diagram



CT427/8 Application Diagram



CT425/6/7/8 End-Applications



PLCs/Control Boards



Printer/Copiers



Solar/Power Inverters



Outdoor Products



Smart Appliances



Smart e-Meters

■ CT425/6/7/8 Key Advantages:

- High Resolution and Low Noise; Noise $\sim 10 \text{ mA}_{\text{RMS}}$
- Total Error $< \pm 1.0\%$ FS for Ambient Temperature: -40°C to $+125^\circ\text{C}$
- High Bandwidth and Fast Response Times
- Excellent Common Mode Field Rejection: $< 5.0 \text{ mA/mT}$
- Rated Isolation Voltage $> 3 \text{ kV}_{\text{RMS}}$



Residential HVAC



Motor Control



Commercial HVAC



Battery Management



Industrial Appliances



Power Supplies

CT425 & CT428 vs. Competition (1)

CT425 & CT428 with XtremeSense TMR Delivers Ultra-Low Noise, Low Total Error and High-Resolution Performance while Consuming Less Power



Parameter	CT425	ACS711	ACS712	ACS723	ACS724	ACS730
Current Range	+20 A, ±20A, +30 A, ±30 A	±12.5 A, ±25 A,	±5 A, ±20 A, ±30 A	±5 A, +10 A, ±10 A, +20 A, ±20 A, +40 A, ±40 A, ±50 A	±5 A, +10 A, ±10 A, +20 A, ±20 A, +30 A, ±30 A, ±50 A	±20 A, +30 A, ±30 A, +40 A, ±40 A, ±50 A, ±65 A, +80 A
Current Type	AC & DC	AC	AC	AC & DC	AC & DC	AC & DC
Max. Total Output Error (T _A = -40°C to +125°C)	±1.0% FS	±4.0% FS to ±5.0% FS (Typ.)	±1.5% FS (Typ.)	±2.0% FS to ±3.0% FS (Typ.)	±2.0% FS to ±6.0% FS	±8.0% FS to ±10.0% FS
Linearity Error	±0.3% FS	±1.0% FS	±1.5% FS	±1.0% FS	±1.5% FS	±1.50% FS to ±3.30% FS
CMFR	5.0 mA/mT	-	-	-	40 dB	70 mA/mT
Bandwidth	1.0 MHz	100 kHz	80 kHz	20 kHz or 80 kHz	120 kHz	1.0 MHz
Response Time	0.30 µs	4.6 µs	5.00 µs	22.5 µs or 5.0 µs	4.00 µs	0.70 µs
Supply Voltage Range	4.75 V to 5.50 V	3.0 V to 5.5 V	4.5 V to 5.5 V	4.5 V to 5.5 V	4.5 V to 5.5 V	4.5 V to 5.5 V
Supply Current	6.0 mA	4.0 mA	10.0 mA	9.0 mA	10.0 mA	17.0 mA
Noise	~10 mA _{RMS} @ 100 kHz	100 mA to 145 mA	106 mA _{RMS} to 113 mA _{RMS} @ 2 kHz	15 mA _{RMS} @ 20 kHz 40 mA _{RMS} @ 80 kHz	20 mA _{RMS} @ 18 kHz	40 mA _{RMS} @ 1 MHz
Pin-to-Pin Compatible	-	Footprint Compatible	Yes	Footprint Compatible	Yes	Footprint Compatible
Pin #6 Function	FILTER / FLT#	FAULT	FILTER	BW_SEL	FILTER	VREF
Package Type	SOIC-8	SOIC-8	SOIC-8	SOIC-8	SOIC-8	SOIC-8

NOTE: Comparison of data sheet specifications

CT425 & CT428 vs. Competition (2)

CT425 & CT428 with XtremeSense TMR Delivers Ultra-Low Noise, Low Total Error and High-Resolution Performance while Consuming Less Power

					
Parameter	CT425 / CT428	MLX91210	MLX91220KDC	LKSR (CT)	GO 10/20/30-SMS
Current Range	+20 A, ±20A, +30 A, ±30 A	±25 A, ±30 A, ±40 A, ±50 A, ±62.5 A, ±75 A	±20 A, ±25 A, ±30 A, ±50 A	6 A _{RMS} , 15 A _{RMS} 25 A _{RMS} , 50 A _{RMS}	±25 A, ±50 A, ±75 A
Current Type	AC & DC	AC	AC	AC	AC
Max. Total Output Error (T _A = -40°C to +125°C)	±1.0% FS	±2.00% FS	±2.55% FS	±0.80% FS to ±1.25% (Up to 105°C)	±2.3% FS
Linearity Error	±0.3% FS	±0.50% FS	±0.60% FS	±0.10% FS	±0.30% FS
CMRR	5.0 mA/mT	-	4.0 mA/mT	-	-
Bandwidth	1.0 MHz	100 kHz	300 kHz	300 kHz	300 kHz
Response Time	0.30 µs	5.00 µs	2.00 µs	2.00 µs	2.00 µs
Supply Voltage Range	4.75 V to 5.50 V	4.5 V to 5.5 V	4.5 V to 5.5 V	4.75 V to 5.25 V	4.5 V to 5.5 V
Supply Current	6.0 mA	12.0 mA	20.0 mA	>12.0 mA	20.0 mA
Noise	~10 mA _{RMS} @ 100 kHz	150 mA _{RMS} @ 100 kHz	120 to 131 mA _{RMS} @ 300 kHz	45 mA _{RMS} to 90 mA _{RMS} @ 100 kHz	55 mA _{RMS} to 65 mA _{RMS} @ 100 kHz
Pin-to-Pin Compatible	-	Footprint Compatible	Footprint Compatible	No	No
Pin #6 Function	FILTER / FLT#	-	VREF	N/A	N/A
Package Type	SOIC-8	SOIC-8	SOIC-8	14-Icd Package	SOICW-16

NOTE: Comparison of data sheet specifications

Compatible Current Sensors to CT425/CT428

Allegro and Melexis Ordering Part Numbers

CT425 Pin-to-Pin Compatible Parts		CT425 & CT428 Footprint Compatible Parts	
ACS712	ACS712ELCTR-20A ACS712ELCTR-30A	ACS711	ACS711xLCTR-25AB
		ACS723	ACS723LLCTR-20AU ACS723LLCTR-20AB ACS723LLCTR-40AU ACS723LLCTR-40AB ACS723LLCTR-50AB
ACS724	ACS724LLCTR-20AU ACS724LLCTR-20AB ACS724LLCTR-30AU ACS724LLCTR-30AB ACS724LLCTR-40AU ACS724LLCTR-50AB	ACS730	ACS730KLCTR-20AB ACS730KLCTR-30AB ACS730KLCTR-30AU ACS730KLCTR-40AB ACS730KLCTR-40AU ACS730KLCTR-50AB
		MLX91210	MLX91210KDC-CAS-101 MLX91210KDC-CAS-102 MLX91210KDC-CAS-105 MLX91210KDC-CAS-106
		MLX91220KDC	MLX91220KDC-ABF-025 MLX91220KDC-ABF-050 MLX91220KDC-ABR-020 MLX91220KDC-ABR-025 MLX91220KDC-ABR-030 MLX91220KDC-ABR-050

CT426 & CT427 vs. Competition (1)

CT426 & CT427 with XtremeSense TMR Delivers Ultra-Low Noise, Low Total Error and High-Resolution Performance while Consuming Less Power



Parameter	CT425 / CT427	ACS722	ACS725	ACS71240	MLX91221KDC
Current Range	+20 A, ±20A, +30 A, ±30 A	±5 A, +10 A, ±10 A, +20 A, ±20 A, +40 A, ±40 A	±5 A, +10 A, ±10 A, +20 A, ±20 A, +30 A, ±30 A, ±40 A, ±50 A	±10 A, ±30 A	±20 A, ±25 A, ±38 A, ±50 A
Current Type	AC & DC	AC & DC	AC & DC	AC & DC	AC
Max. Total Output Error (T _A = -40°C to +125°C)	±1.0% FS	±2.0% FS to ±3.0% FS (Typ.)	±2.0% FS to ±6.0% FS	±2.0% FS to ±3.0% FS (Typ.)	±2.0% FS
Linearity Error	±0.3% FS	±1.0% FS	±1.5% FS	±1.0% FS	±0.6% FS
CMFR	5.0 mA/mT	-	40 dB	6.0 mA/mT	4.0 mA/mT
Bandwidth	1.0 MHz	20 kHz / 80 kHz	120 kHz	120 kHz	300 kHz
Response Time	0.30 µs	22.5 µs / 5.0 µs	4.00 µs	4.00 µs	2.00 µs
Supply Voltage Range	3.0 to 3.6 V	3.0 to 3.6 V	3.0 to 3.6 V	3.0 to 3.6 V	3.0 to 3.6 V
Supply Current	6.0 mA	9.0 mA	10.0 mA	7.5 mA	20.0 mA
Noise	~10 mA _{RMS} @ 100 kHz	21 mA _{RMS} @ 20 kHz 42 mA _{RMS} @ 80 kHz	27 mA _{RMS} @ 18 kHz	52 mA _{RMS} @ 120 kHz	136 to 143 mA _{RMS} @ 300 kHz
Pin-to-Pin Compatible	-	Footprint Compatible	Yes	Footprint Compatible	Footprint Compatible
Pin #6 Function	FILTER / FLT#	BW_SEL	FILTER	FAULT	VREF
Package Type	SOIC-8	SOIC-8	SOIC-8	SOIC-8	SOIC-8

NOTE: Comparison of data sheet specifications

Compatible Current Sensors to CT426/CT427

Allegro and Melexis Ordering Part Numbers

CT426 Pin-to-Pin Compatible Parts		CT426 & CT427 Footprint Compatible Parts	
ACS724	ACS724LLCTR-20AU	ACS71240	ACS71240LLCBTR-30B
	ACS724LLCTR-20AB ACS724LLCTR-30AU ACS724LLCTR-30AB ACS724LLCTR-40AU ACS724LLCTR-50AB	ACS722	ACS722LLCTR-20AU ACS722LLCTR-20AB ACS722LLCTR-40AU ACS722LLCTR-40AB
		MLX91220KDC	MLX91220KDC-ABF-025 MLX91220KDC-ABF-050 MLX91220KDC-ABR-020 MLX91220KDC-ABR-025 MLX91220KDC-ABR-030 MLX91220KDC-ABR-050

CT42x Schedule

Item	CT425 & CT426	CT427 & CT428
Data Sheet	Now	Now
Samples	Now	Now
Evaluation Kits	Now	Now
Production Date	Oct. 15, 2021	Oct. 15, 2021
UL/IEC Certification	Oct. 31, 2021	Oct. 31, 2021



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