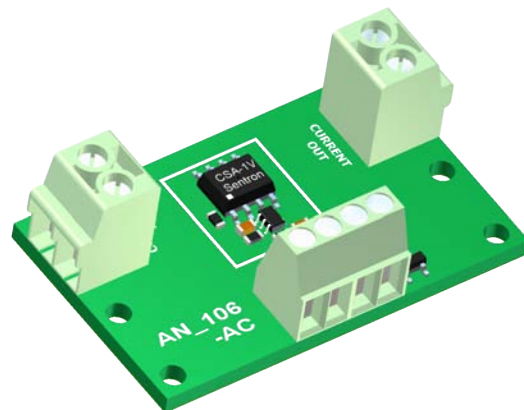


The AN_106 is a development kit that provides a reference design using the CSA-1VG-SO IC and a scaling amplifier that will measure AC and DC currents from 0 to 20A continuous. This reference design provides a high dielectric voltage isolation between the primary conductor and the sensor circuitry that may be required for applications requiring UL approval. The CSA-1VG IC measures the magnetic field created by the current flowing in the conductor and converts it to a voltage proportional to the current. The primary current conductor is on the back side of the PCB and there is a SMD ferrite chip mounted over the conductor to increase the sensitivity as well as increased immunity to external magnetic fields. There are two versions shown, the AN_106-AC and the AN_106-DC. The AC version de-couples the DC components from the output and is reconnected for use in AC current applications. The Sensitivity is 50mV/A with a 20A continuous rating. The design can respond to short, high current pulses (<500mS) up to 50A. This reference design can be incorporated into the customer's PCB with expectation of providing the same performance as this kit. The PCB footprint for this reference design is ~100 mm² and is identified by the white square on the PCB.



AN_106-AC Reference Design Kit

The terminal blocks are not part of the reference design and are only provided to facilitate easy interfacing with the PCB board. Three extra CSA-1VG IC's are included with the kit and can be used in the customer's own layout if desired. See the CSA-1VG-SO specification at www.gmw.com for the specific details of the IC.

Ordering Information:

DC Version P/N is AN_106-DC KIT

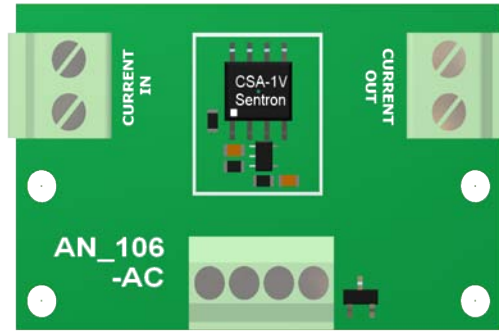
AC Version P/N is AN_106-AC KIT

Electrical and Characteristics Specifications of the reference design at -40C to +85C unless otherwise noted

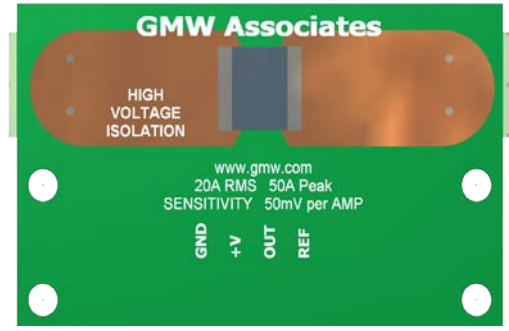
Sym	Description	Units	AN_106-AC	AN_106-DC	Comments
V _{DD}	Supply Voltage	V	5.0 ±0.5	5.0 ±0.5	
I _{DD}	Power Supply Current Consumption	mA	8 typ	8 typ	
A _{out}	Analog Output Voltage	V	2.5 ±2.5	2.5 ±2.5	
V _{os}	Offset Voltage	mV	±5	±25	I _{pri} = 0A
V _{os} /ΔT	Offset Voltage Temperature Drift	mV/°C	±0.2	±0.2	
V _{ref}	Reference Voltage	V	V _{DD} /2 ±0.020	V _{DD} /2 ±0.020	
S	Sensitivity	mV/A	50±2.5	50±2.5	
ΔS/ΔT	Sensitivity Temperature Drift	%/°C	±0.02	±0.02	
I _{pRI}	Primary Current	Arms	20	20	
I _{pK}	Peak Current	A	50	50	Less than 500mS
BW	Bandwidth	Hz	10-100k	DC-100k	
Nrej	Immunity to 0.1mT homogenous magnetic field	dB			
T _{OP}	Operating Temperature	Deg C	-40 to 85	-40 to 85	
ΔTr	Temperature Rise at Rated Current	Deg C			IC temp rise at 20A
NL	Non Linearity	%	±1	±1	
t _r	Response Time	uS	10max	10max	
Vrem	(Hysterisis Remanence) afterfull scale current	mV	~0	~30	same sign as current

Revision Date: 13 MAY 2009

AN_106-AC PCB Layout
(2 layer PCB)

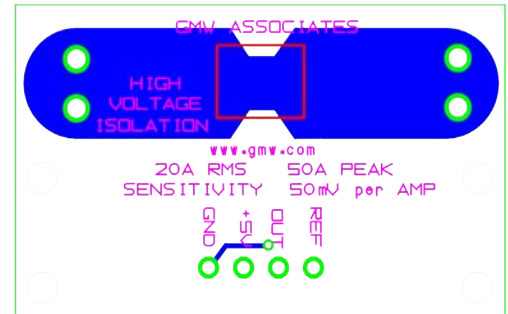
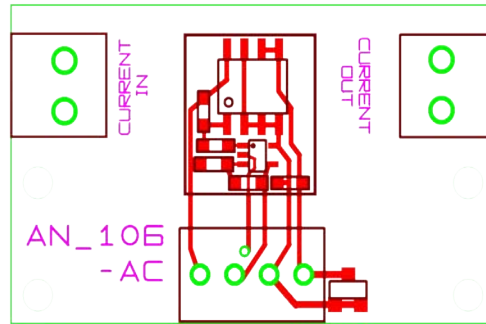


Top Layer

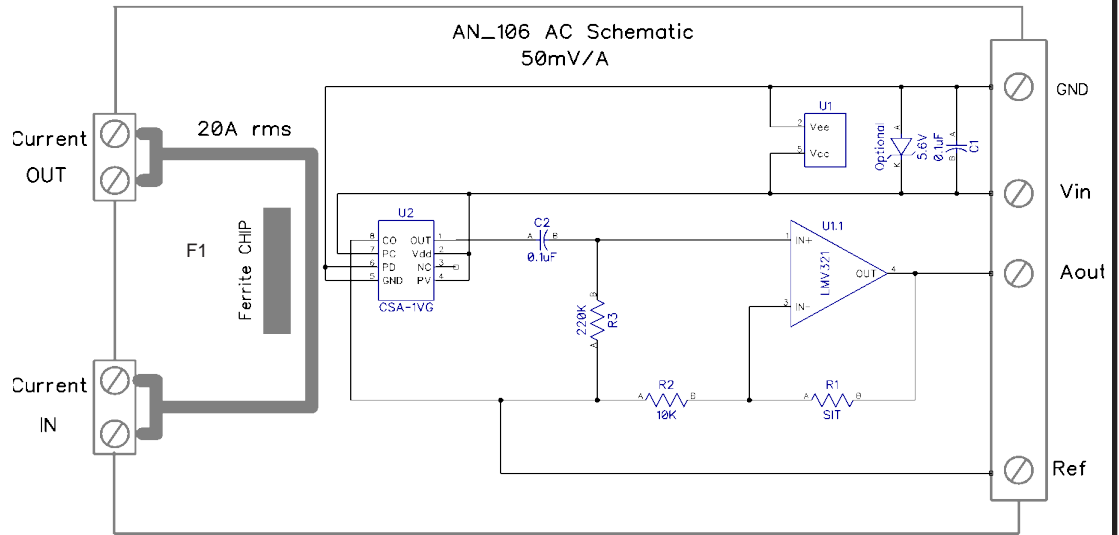


Bottom Layer

Contact GMW for Gerber files.



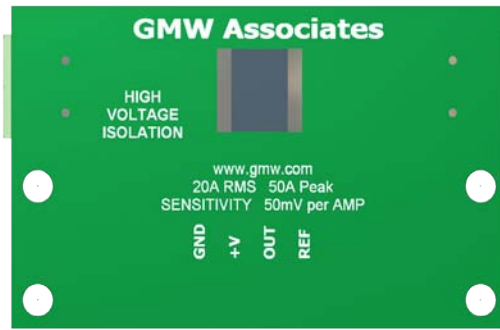
Schematic AN_106-AC



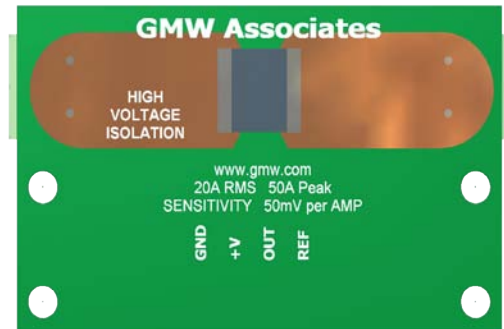
Parts List

Ref Des	P/N	Description	Vendor	Comments	Ref Des	P/N	Description	Vendor	Comments
J1,J2	1984617	CONN TERM BLOCK T/H 2POS 3.5MM	Phoenix Contact	Optional	R2	ERJ-3EKF1002V	RES 10.0K OHM 1/10W 1% 0603 SMD	Panasonic - ECG	Or Equivalent
J3	1725672	CONN TERM BLOCK R-R SC-70-5	Phoenix Contact	Optional	D1	AZ23C5V6-7-F	Diode, Zener, 5.6V, SMD	Diodes Inc	Optional
U1	LMV321M7/NOPB	IC OP AMP LOW VOLT R-R SC-70-5	National Semiconductor		C1,C2	ECJ-1VF1E104Z	CAP CER .1UF 25V Y5V 0603	Panasonic - ECG	Or Equivalent
U2	CSA-1VG-SO	Linear Hall Sensor	GMW		F1	HI220P171R-10	FERRITE 4A 170 OHM 2220 SMD	Steward	
R1	TBD	TBD	Panasonic - ECG	Or Equivalent	R3	ERJ-3EKF2203V	RES 220K OHM 1/10W 1% 0603 SMD	Panasonic - ECG	Or Equivalent

AN_106-DC PCB Layout
(2 layer PCB)

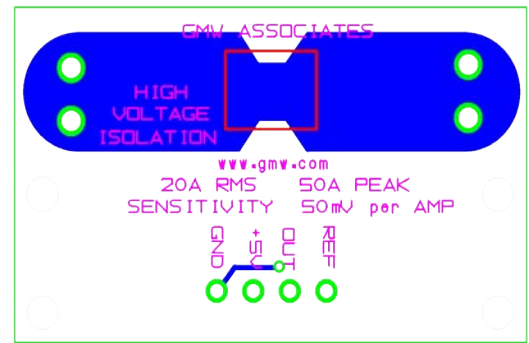
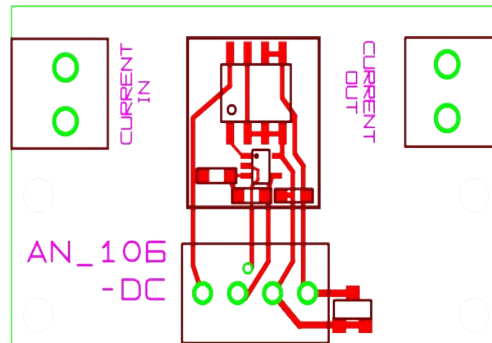


Top Layer

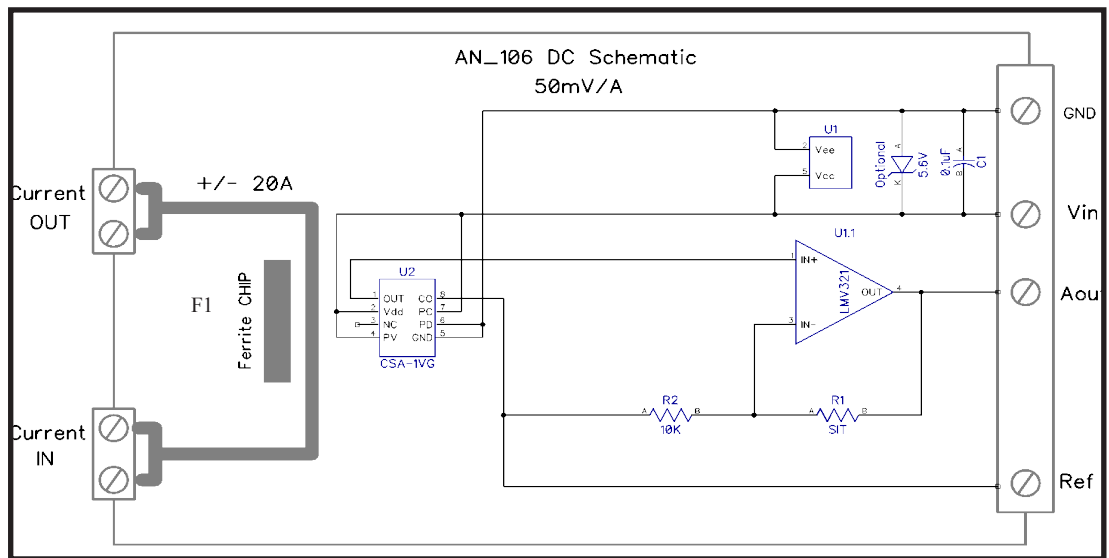


Bottom Layer

Please contact GMW for Gerber files



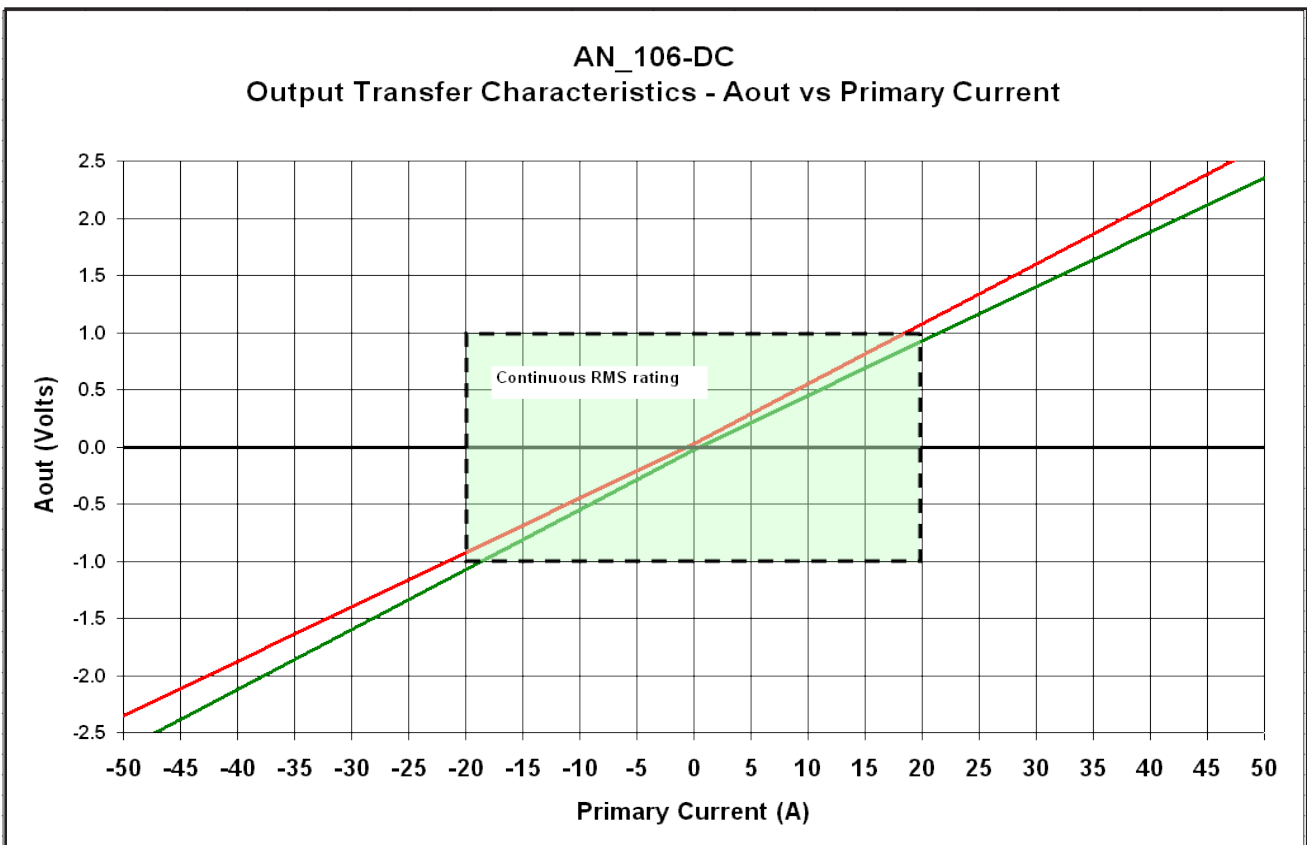
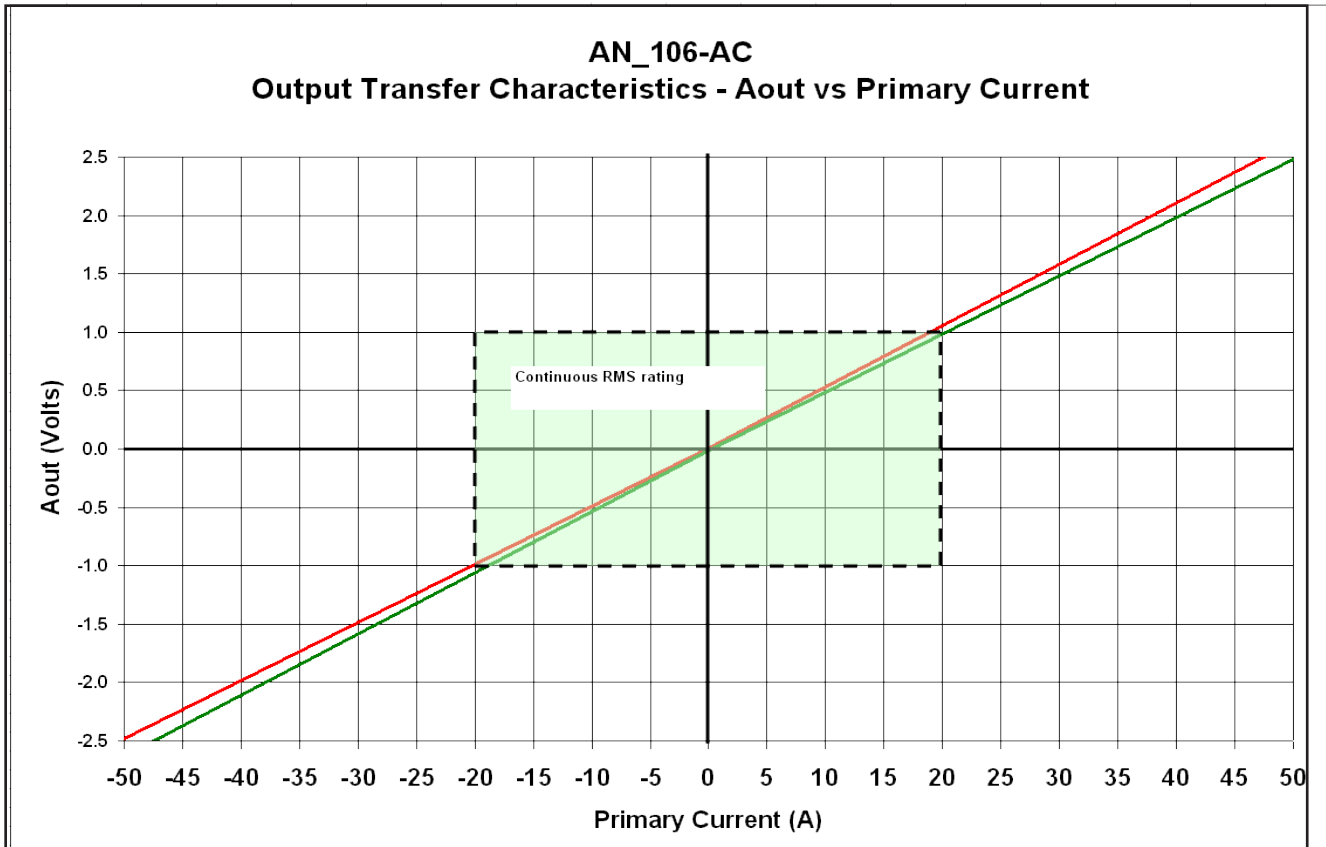
Schematic AN_106-DC



Parts List

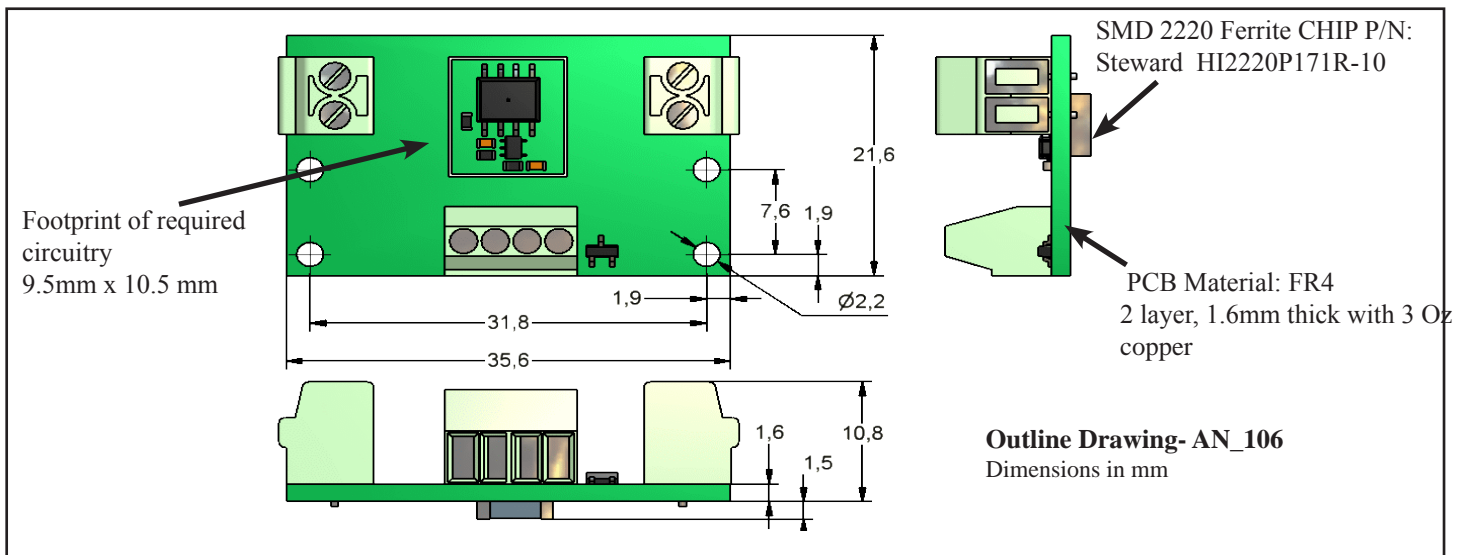
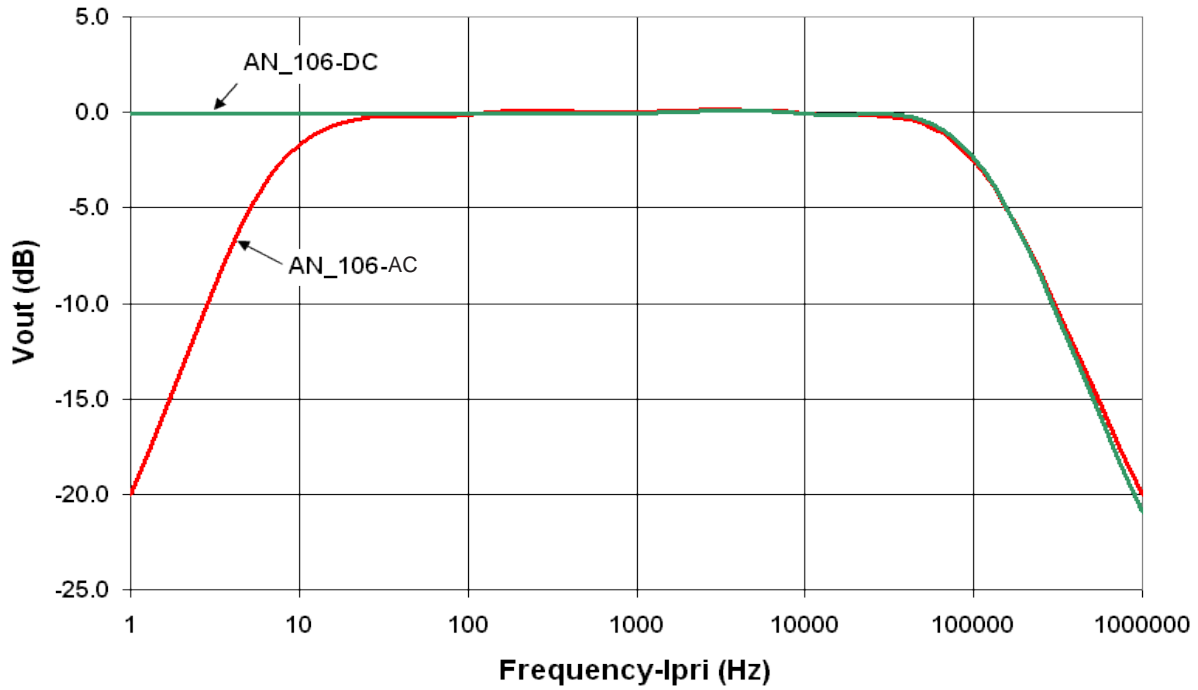
Ref Des	P/N	Description	Vendor	Comments	Ref Des	P/N	Description	Vendor	Comments
J1,J2	1984617	CONN TERM BLOCK T/H 2POS 3.5MM	Phoenix Contact	Optional	R2	ERJ-3EKF1002V	RES 10.0K OHM 1/10W 1% 0603 SMD	Panasonic - ECG	Or Equivalent
J3	1725672	CONN TERM BLOCK 2.54MM 4POS	Phoenix Contact	Optional	D1	AZ23C5V6-7-F	Diode, Zener, 5.6V, SMD	Diodes Inc	Optional
U1	LMV321M7/NOPB	IC OP AMP LOW VOLT R-R SC-70-5	National Semiconductor		C1	ECJ-1VF1E104Z	CAP CER .1UF 25V Y5V 0603	Panasonic - ECG	Or Equivalent
U2	CSA-1VG-SO	Linear Hall Sensor	GMW		F1	HI2220P171R-10	FERRITE 4A 170 OHM 2220 SMD	Steward	
R1	TBD	TBD	Panasonic - ECG	Or Equivalent					

Revision Date: 13 MAY 2009



Revision Date: 13 MAY 2009

Bandwidth AN_106-AC and AN_106-DC



Revision Date: 13 MAY 2009