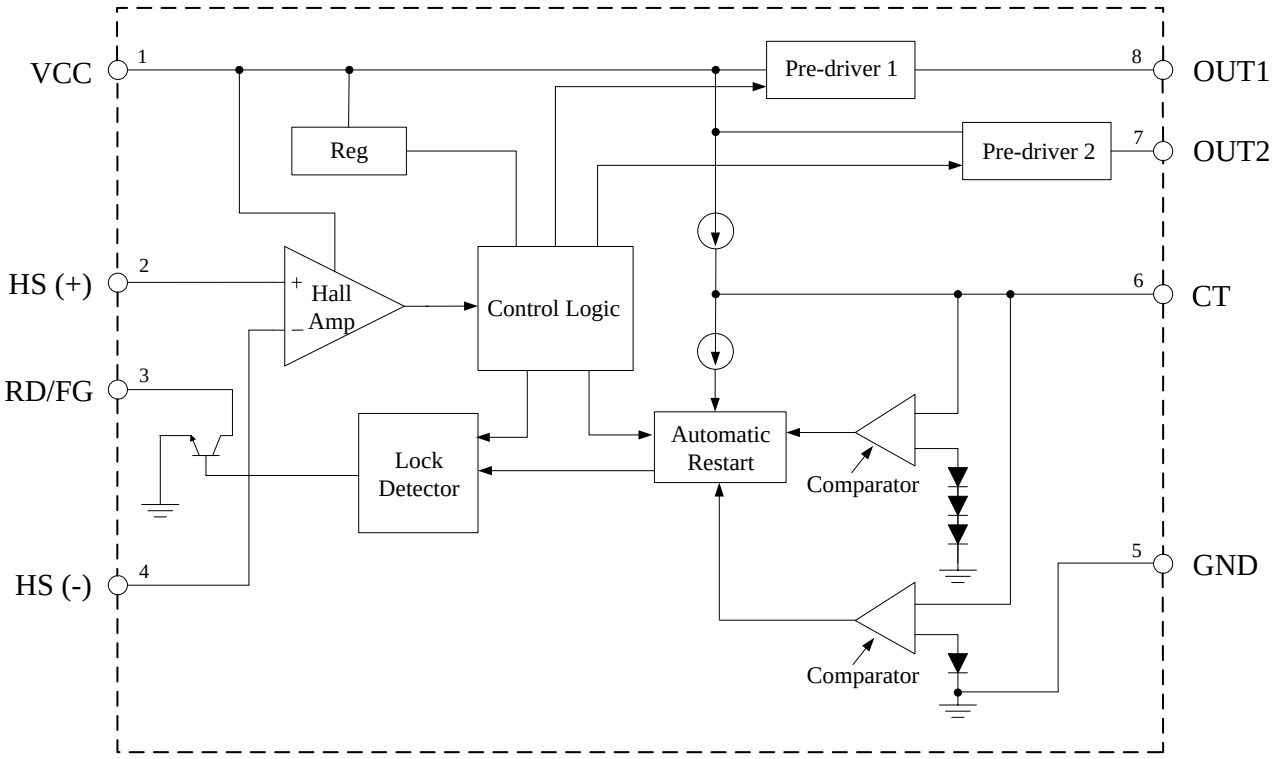
Pin Descriptions

Pin Number	Pin Name		Function
	AM4406	AM4406F	
1	VCC	VCC	Power supply
2	HS (+)	HS (+)	Hall input (+)
3	RD	FG	Rotation detection/Frequency generation
4	HS (-)	HS (-)	Hall input (-)
5	GND	GND	Ground
6	CT	CT	Timing capacitor
7	OUT2	OUT2	Driver output 2
8	OUT1	OUT1	Driver output 1

Functional Block Diagram



Absolute Maximum Ratings (Note 2)

Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage	30	V
I_{OUT}	Output Current	70	mA
P_D	Power Dissipation	550 (Note 3)	mW
T_{STG}	Storage Temperature Range	-55 to +125	°C
ESD	ESD (Human Body Model)	3000	V
ESD	ESD (Machine Model)	300	V

Note 2: Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

Note 3: Reduced by 5.5mW/°C when T_A is over +25°C.

Recommended Operating Conditions

Symbol	Parameter	Min	Max	Unit
V_{CC}	Supply Voltage	4	28	V
V_{HS} (+)	Hall Input Voltage (+) (Note 4)	1.0	V_{CC}-0.5	V
V_{HS} (-)	Hall Input Voltage (-) (Note 4)	1.0	V_{CC}-0.5	V
T_A	Operating Temperature	-40	+95	°C

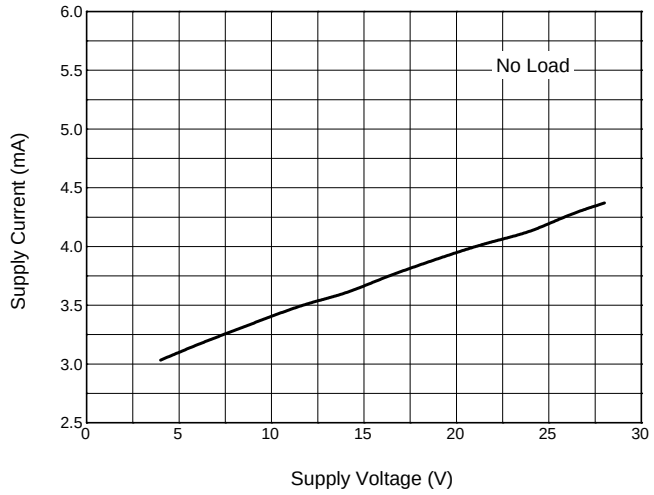
Note 4: Hall input voltage range includes the amplitude of signal.

Electrical Characteristics (V_{CC}=12V, T_A=+25°C, unless otherwise specified.)

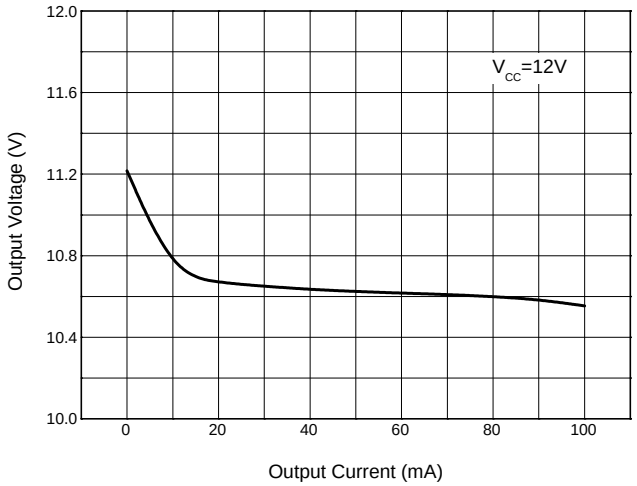
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I_{CC}	Supply Current	No load	_	3.2	5.0	mA
V_{HYS} (+)	Hall Amplifier Input Hysteresis (+)	Zero to peak including offset and hysteresis	3	_	15	mV
V_{HYS} (-)	Hall Amplifier Input Hysteresis (-)	Zero to peak including offset and hysteresis	-3	_	-15	mV
I_{CHG}	CT Charge Current	V_{CT}=1.5V	2	3.45	5.25	μA
I_{DHG}	CT Discharge Current	V_{CT}=1.5V	0.35	0.8	1.45	μA
R_{CD}	CT Charge and Discharge Ratio	I_{CHG}/ I_{DHG}	3	4.5	8	_
V_{CL}	CT Clamp Voltage	_	2.2	2.6	3	V
V_{CP}	CT Comparator Voltage	_	0.4	0.6	0.8	V
V_{OH1}	OUT1 High Level Voltage	I_{OUT1}=10mA	10	10.5	_	V
V_{OH2}	OUT2 High Level Voltage	I_{OUT2}=10mA	10	10.5	_	V
V_{RDL}	RD Output Low Level Voltage	I_{RD}=5mA	_	0.2	0.5	V
I_{RD}	RD Current Capacity	V_{RD}=2V	8	18	_	mA
V_{FGL}	FG Output Low Level Voltage	I_{FG}=5mA	_	0.2	0.5	V
I_{FG}	FG Current Capacity	V_{FG}=2V	8	18	_	mA

Performance Characteristics

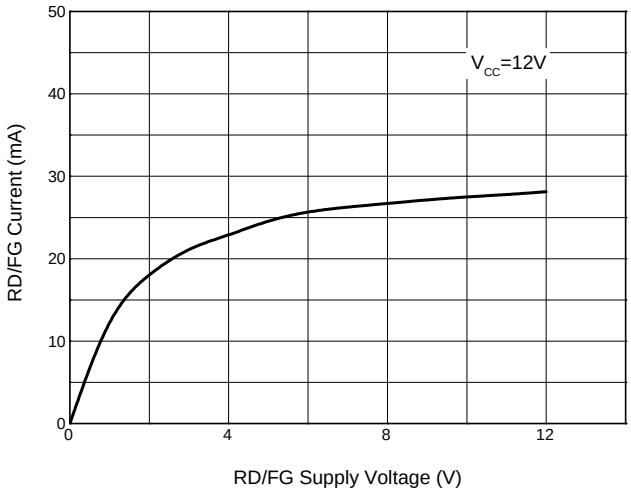
Supply Current vs. Supply Voltage



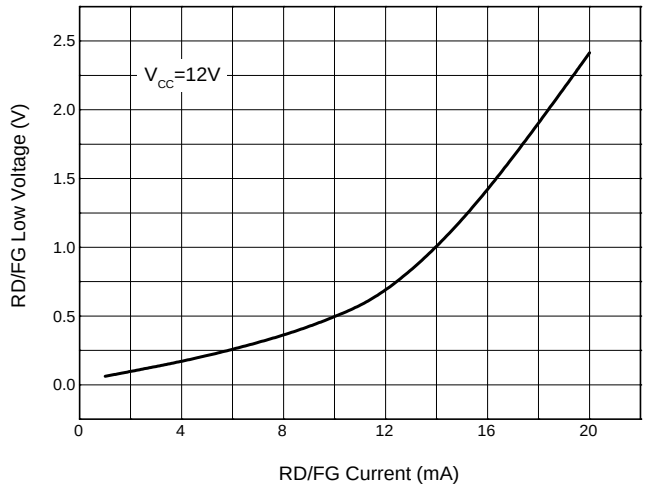
Output Voltage vs. Output Current



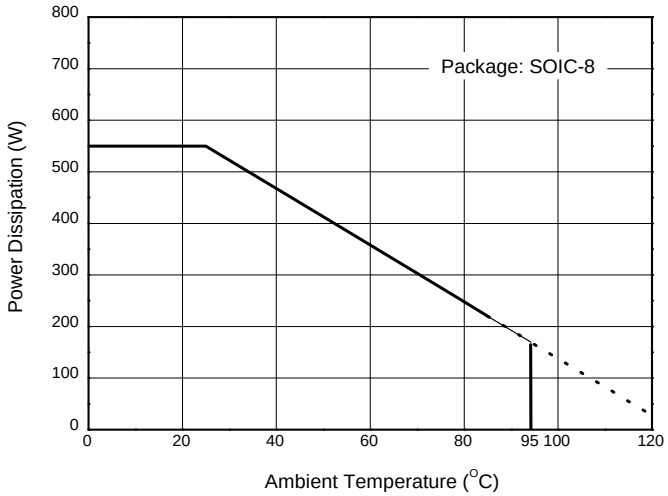
RD/FG Current vs. RD/FG Supply Voltage



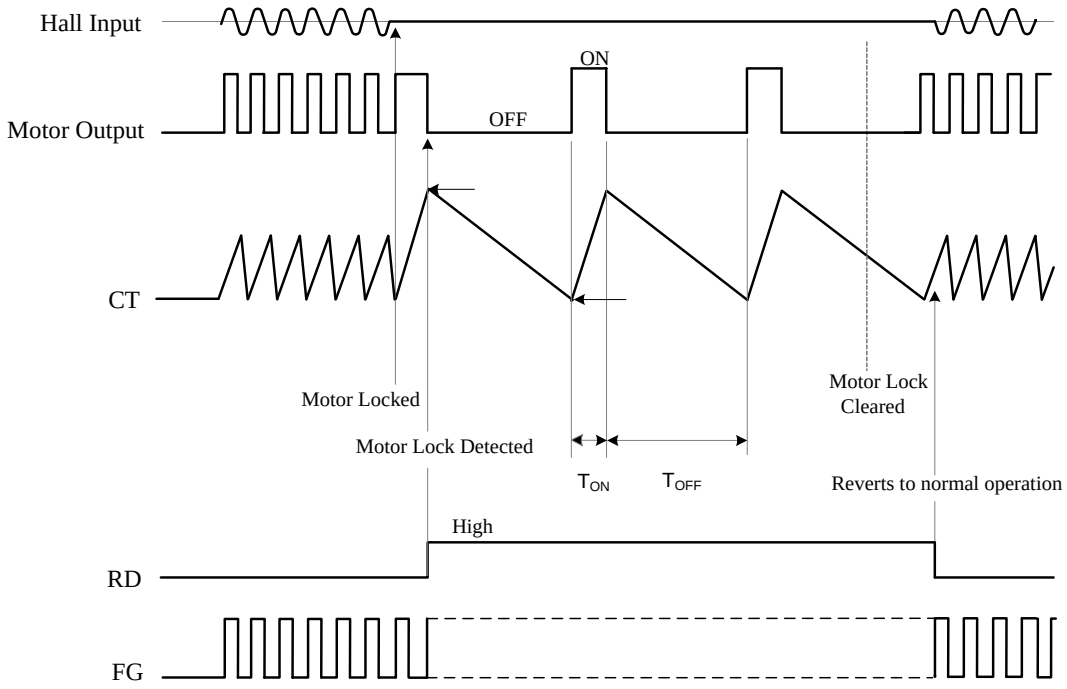
RD/FG Low Voltage vs. RD/FG Current



Power Dissipation vs. Ambient Temperature



Operating Diagram



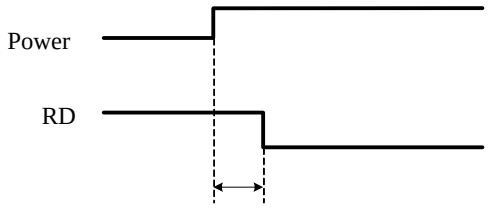
Note 5: Automatic restart is performed in the following manner. A motor lock condition is detected when the Hall signal stops switching. The output is ON when CT pin is being charged. C2 is the external capacitor of the CT pin. Output ON time and OFF time are determined by the capacitance of C2.

Note 6: RD pin is ON during normal operation, and OFF when the motor is locked. It is an open collector output pin.

$$T_{ON} = \frac{C2*(V_{CL}-V_{CP})}{I_{CHG}}(Sec.)$$

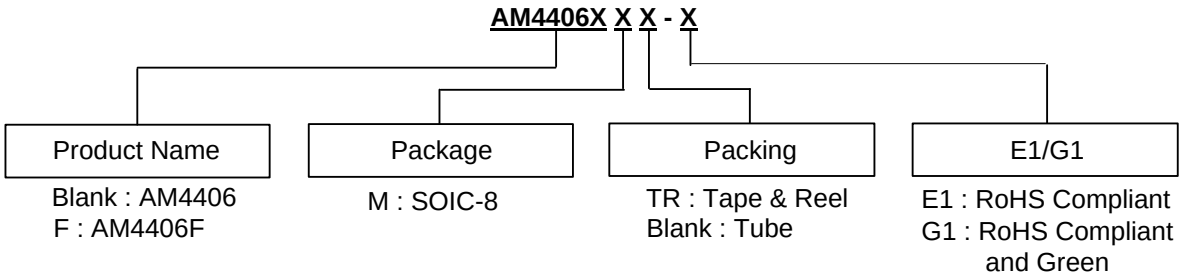
$$T_{OFF} = \frac{C2*(V_{CL}-V_{CP})}{I_{DHG}}(Sec.)$$

Note 7: The RD pin may maintain HIGH level for a few hundred milliseconds when the power is turned on.



A few hundred milliseconds

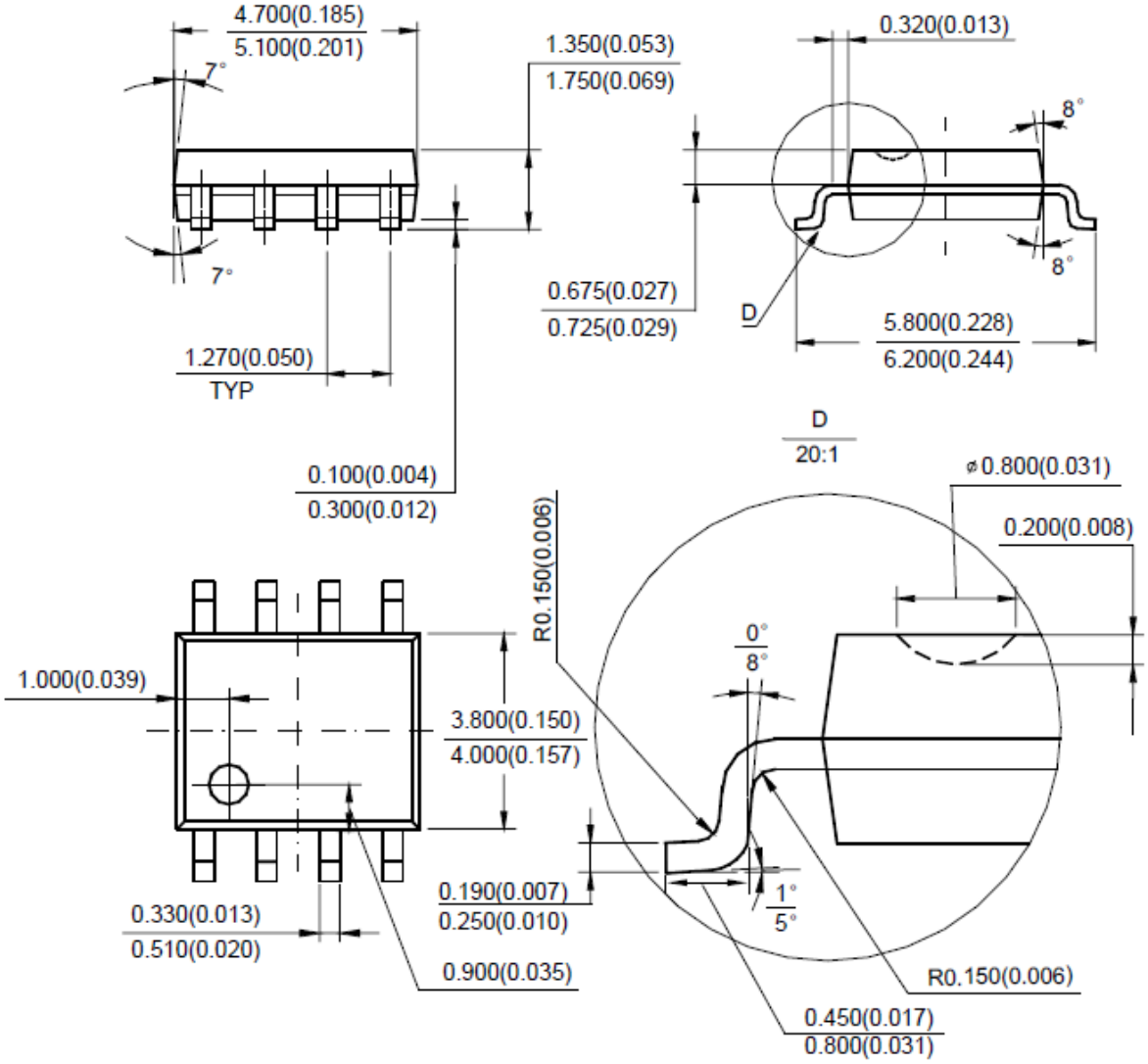
Ordering Information



Package	Temperature Range	Part Number		Marking ID		Packing
		RoHS Compliant	RoHS Compliant and Green	RoHS Compliant	RoHS Compliant and Green	
SOIC-8	-40 to +95℃	AM4406M-E1	AM4406M-G1	AM4406M	AM4406M-G1	Tube
		AM4406MTR-E1	AM4406MTR-G1	AM4406M	AM4406M-G1	Tape & Reel
		–	AM4406FMTR-G1	–	AM4406FM-G1	Tape & Reel

Package Outline Dimensions (All dimensions in mm(inch).)

(1) Package Type: SOIC-8



Note: Eject hole, oriented hole and mold mark is optional.

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