



HX1006

303.825 MHz Hybrid Transmitter



SM-4 Case

- **Ideal for 303.825 MHz Unlicensed Transmitters in Japan and Korea**
- **Quartz SAW Frequency Stabilization and Harmonic Filtering**
- **Compact, Surface-Mount Case with < 90 mm² Footprint**

The HX1006 is a miniature transmitter module that generates on-off keyed (OOK) modulation from an external digital encoder (not included). The carrier frequency is quartz, surface-acoustic-wave (SAW) stabilized, and output harmonics are suppressed by a SAW filter. The result is excellent performance in a simple-to-use, surface-mount device with a low external component count. The HX1006 is designed specifically for unlicensed remote-control and wireless security transmitters operating in Japan under MPT and in Korea. Applications also include very short-range devices in the USA and Australia.

Absolute Maximum Ratings

Rating	Value	Units
Power Supply and/or Modulation Input Voltage	10	V
Nonoperating Case Temperature	-40 to +85	°C
Ten-Second Soldering Temperature	230	°C

Electrical Characteristics

Characteristic		Sym	Notes	Minimum	Typical	Maximum	Units	
Operating Frequency	Absolute Frequency	f _O	1, 2, 3, 4,	303.675		303.975	MHz	
	Tolerance from 303.825 MHz	Δf _O	10			±150	kHz	
RF Output Power into 50 Ω at 25°C		P _O	2, 4, 5, 10	-14	11	-9	dBm	
	Within Specified Temperature Range		2, 3, 4, 5	-16	11	-9		
Harmonic Spurious Emissions			2, 3, 4, 5		-45	-35	dBc	
Modulation Input	Input HIGH Voltage	V _{IH}	3, 4, 5	2.5		V _{CC}	V	
	Input LOW Voltage	V _{IL}		0.0		0.3		
	Input HIGH Current	I _{IH}				100		μA
	Input LOW Current	I _{IL}		0.0				
Data Timing Parameters	Modulation Rise Time	t _R	3, 4, 5, 6			100	μs	
	Modulation Fall Time	t _F				100		
Power Supply	Voltage	V _{CC}	5, 7	2.7	3	3.3	VDC	
	Peak Current	I _{CC}	3, 4, 5, 8		1.5	3.0	mA	
	Standby Current		5, 9			1.0	μA	
Operating Case Temperature Range		T _C	5	-40		+85	°C	
Lid Symbolization (in addition to Lot and/or Date Codes)				RFM HX1006				



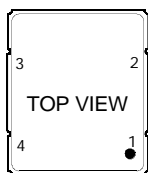
CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.

NOTES:

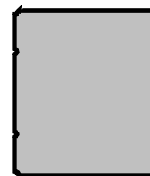
- One or more of the following United States patents apply: 4,454,488; 4,616,197; 4,670,681; and 4,760,352.
- Typically, equipment utilizing this device requires emissions testing and government approval, which is the responsibility of the equipment manufacturer.
- Applies over the specified range of operating temperature.
- Applies over the specified range of operating power supply voltage.
- The design, manufacturing process, and specifications of this device are subject to change without notice.
- The maximum modulation bandwidth (and data rate) is dependent on the characteristics of the external encoding circuitry (not included).
- Unless noted otherwise, case temperature T_C = +25°C ± 2°C, test load impedance = 50 Ω, and modulation input is at logic HIGH.
- The maximum operating current occurs at the maximum specified power supply voltage and maximum specified operating temperature.
- Standby current is defined as the supply current consumed with the modulation input at logic LOW.
- Improper antenna loading affects performance of HX device.

Electrical Connections

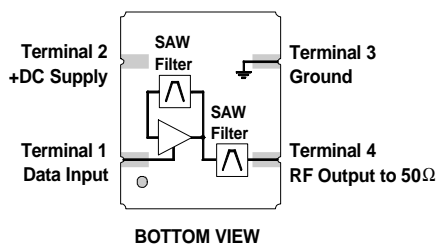
Terminal Number	Connections
1	Data Input
2	+DC Supply
3	Ground
4	RF Output to 50 Ω



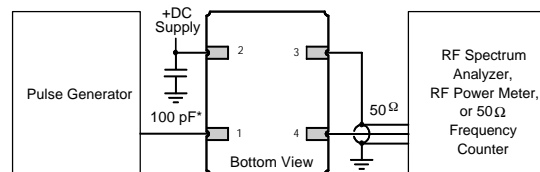
Footprint



Block Diagram

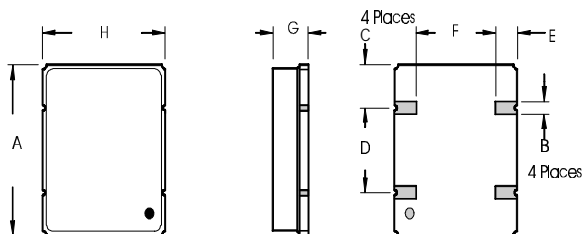


Typical Test Circuit



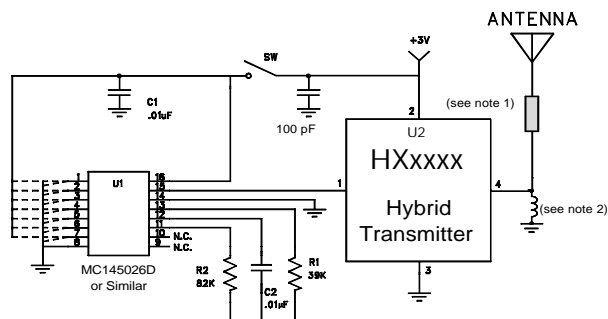
***Note:** Bypass required only for "HX2..." series transmitters in the 902 to 928 MHz band.

Case Design



Dimensions	Millimeters		Inches	
	Min	Max	Min	Max
A		10.67		0.420
B	1.27 Nominal		0.050 Nominal	
C	2.67 Nominal		0.105 Nominal	
D	5.08 Nominal		0.200 Nominal	
E	1.70 Nominal		0.067 Nominal	
F	5.36 Nominal		0.211 Nominal	
G		2.80		0.110
H		9.02		0.355

Typical Transmitter Application



Notes:

1. This matching component is required only for antennas that are not 50 ohms. It is typically a chip inductor to match to stub antennas shorter than $\frac{1}{4}$ wavelength. For very low radiated field-strength applications, a resistor can also be used.
2. For ESD protection.