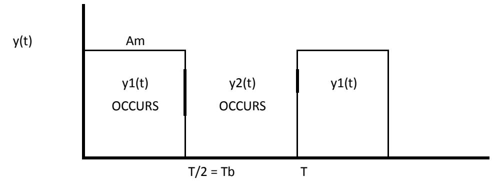
BASEBAND MODULATING SIGNAL - f(t)



This is just the modulating square wave with a frequency (Fm) =	5.00E+04	Hz
Period, T =	2.00E-05	s
Width of Pulse T/2 =	Tb	s
Width of Pulse Tb =	1.00E-05	s
Amplitude, Am =	1	v

Linearity of Fourier Transform

Y(f) = FT { y1(t) + y2(t) } = FT { y1(t) } + FT { y2(t) }

Y(f) = Y1(f) + Y2(f)

y(t) is the 2FSK bandpass signal.
y1(t) is f1 and y2(t) is f2 signal

$$Y1(f) = 1/N \sum_{n=0}^{N-1} y1(n) * e^{-J2\pi fn}$$

Number of =	N	Sample =	n
samples	150	Time	2.00E-07 s

y1(t) = x(t) * f(t)
y1(t) = B*cos2πf1t * Am rect (t/Tb)
y(n) = x(nTs) * f(nTs)
y(n) = B*cos2πf1nTs * Am rect (nTs/Tb)

After some manipulation it can be shown that :

$$Y1(f) = \frac{Am*B}{2} * \frac{\sin (N*Ts*\pi*(fk +/- f1))}{\sin (\pi*Ts*(fk +/- f1))} * \{ \cos N *\pi*Ts*(fk +/- f1)) +/- j \sin (N *\pi*Ts*(fk +/- f1)) \}$$