

G(s) =

1.00  
STANDARD SECOND ORDER TRANSFER FUNCTION.  
 $LC^2 + L/R + 1$

UNIT STEP RESPONSE:

$$Y(t) = 1 - e^{-\zeta/\tau RC} (A \sin \omega t + \cos \omega t)$$

$$w = (1/\sqrt{RC(LC)}) \cdot (1/\zeta RC)$$

$$A = \zeta / (\sqrt{RC(LC)} - (\zeta^2 RC))$$

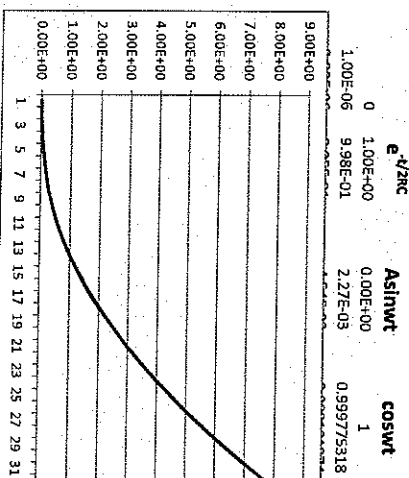
PERIODIC SQUARE WAVE RESPONSE:

$$Y(t) = B * \{ (1 - e^{-\zeta/\tau RC} (A \sin \omega t + \cos \omega t)) - ((1 - e^{-(t-t_1)/\tau RC}) / \zeta RC (A \sin \omega(t-t_1) + \cos \omega(t-t_1))) * u(t-t_1) \}$$

$$Y(t) = B * [Y_1(t) - Y_2(t)]$$

$L = 1.00E-04$  Damping ( $\zeta$ ) =  $1.07E-01$  A =  $1.07E-01$   
 $C = 2.20E-08$  Natural Freq  $\omega_n = 2.13E+04$   
 $L = 1.00E-04$  Natural Freq  $\omega_n = 2.13E+04$   
 $C = 2.20E-05$   $w = 1.90E+04$   
 $R = 1.00E+00$   $w = 2.12E+04$

Freq = 43000 D = 0.28  
 $T = 2.32558E-05$   $t_1 = 6.51163E-06$   
 $B = 23.5$   $w = 2.12E+04$



t =	$e^{-\zeta/\tau RC}$	Asinwt	coswt	Y(t) =	t-t <sub>1</sub>	u(t-t <sub>1</sub> )	Asinw(t-t <sub>1</sub> )	cosw(t-t <sub>1</sub> )	$e^{-(t-t_1)/\tau RC}$	Y(t) =
0	1.00E+00	0.00E+00	1	0	-6.51E-06	0	-1.48E-02	0.990487967	1.01E+00	0.90E-01
1	1.00E-06	0.00E+00	1	0	-5.51E-06	0	-1.25E-02	0.993182117	1.01E+00	0.93E-01
2	9.98E-01	0.999775318	1	0.00022692	-4.51E-06	0	-1.02E-02	0.995429966	1.01E+00	0.95E-01
3	9.00E+00			0.05	-3.51E-06	0	-7.97E-03	0.997230507	1.01E+00	0.95E-01
4	8.00E+00			0.05	-2.51E-06	0	-5.71E-03	0.998582928	1.01E+00	0.95E-01
5	7.00E+00			0.05	-1.51E-06	0	-3.43E-03	0.999486623	1.00E+00	0.99E-01
6	6.00E+00			0.05	-5.12E-07	0	-1.16E-03	0.999941185	1.00E+00	0.99E-01
7	5.00E+00			0.05	1.49E-06	1	1.11E-03	0.999502296	9.97E-01	1.00E+00
8	4.00E+00			0.05	2.49E-06	1	5.65E-03	0.998609043	9.94E-01	9.99E-01
9	3.00E+00			0.05	3.49E-06	1	7.92E-03	0.997267051	9.92E-01	9.99E-01
10	2.00E+00			0.05	4.49E-06	1	1.02E-02	0.995476923	9.90E-01	9.99E-01
11	1.00E+00			0.05	5.49E-06	1	1.24E-02	0.993239465	9.87E-01	9.99E-01
12	0.00E+00			0.05	6.49E-06	1	1.47E-02	0.990555682	9.85E-01	9.99E-01
13				0.05	7.49E-06	1	1.69E-02	0.987426779	9.83E-01	9.99E-01
14				0.05	8.49E-06	1	1.92E-02	0.983854163	9.81E-01	9.99E-01
15				0.05	9.49E-06	1	2.14E-02	0.979339438	9.79E-01	9.99E-01
16				0.05	1.05E-05	1	2.36E-02	0.97538441	9.76E-01	9.99E-01
17				0.05	1.15E-05	1	2.59E-02	0.97049108	9.74E-01	9.99E-01
18				0.05	1.25E-05	1	2.81E-02	0.965161647	9.72E-01	9.99E-01
19				0.05	1.35E-05	1	3.02E-02	0.959398505	9.70E-01	9.99E-01
20				0.05	1.45E-05	1	3.24E-02	0.953204245	9.68E-01	9.99E-01
21				0.05	1.55E-05	1	3.46E-02	0.94635165	9.66E-01	9.99E-01
22				0.05	1.65E-05	1	3.67E-02	0.939333696	9.63E-01	9.99E-01
23				0.05	1.75E-05	1	3.88E-02	0.93206335	9.61E-01	9.99E-01
24				0.05	1.85E-05	1	4.10E-02	0.924174568	9.59E-01	9.99E-01
25				0.05	1.95E-05	1	4.30E-02	0.915870297	9.57E-01	9.99E-01
26				0.05	2.05E-05	1	4.51E-02	0.907154467	9.55E-01	9.99E-01
27				0.05	2.15E-05	1	4.72E-02	0.898030995	9.52E-01	9.99E-01
28				0.05	2.25E-05	1	4.92E-02	0.888503981	9.50E-01	9.99E-01
29				0.05	2.35E-05	1	5.12E-02	0.878777705	9.48E-01	9.99E-01
30				0.05	2.45E-05	1	5.32E-02	0.868236629	9.46E-01	9.99E-01
31				0.05						