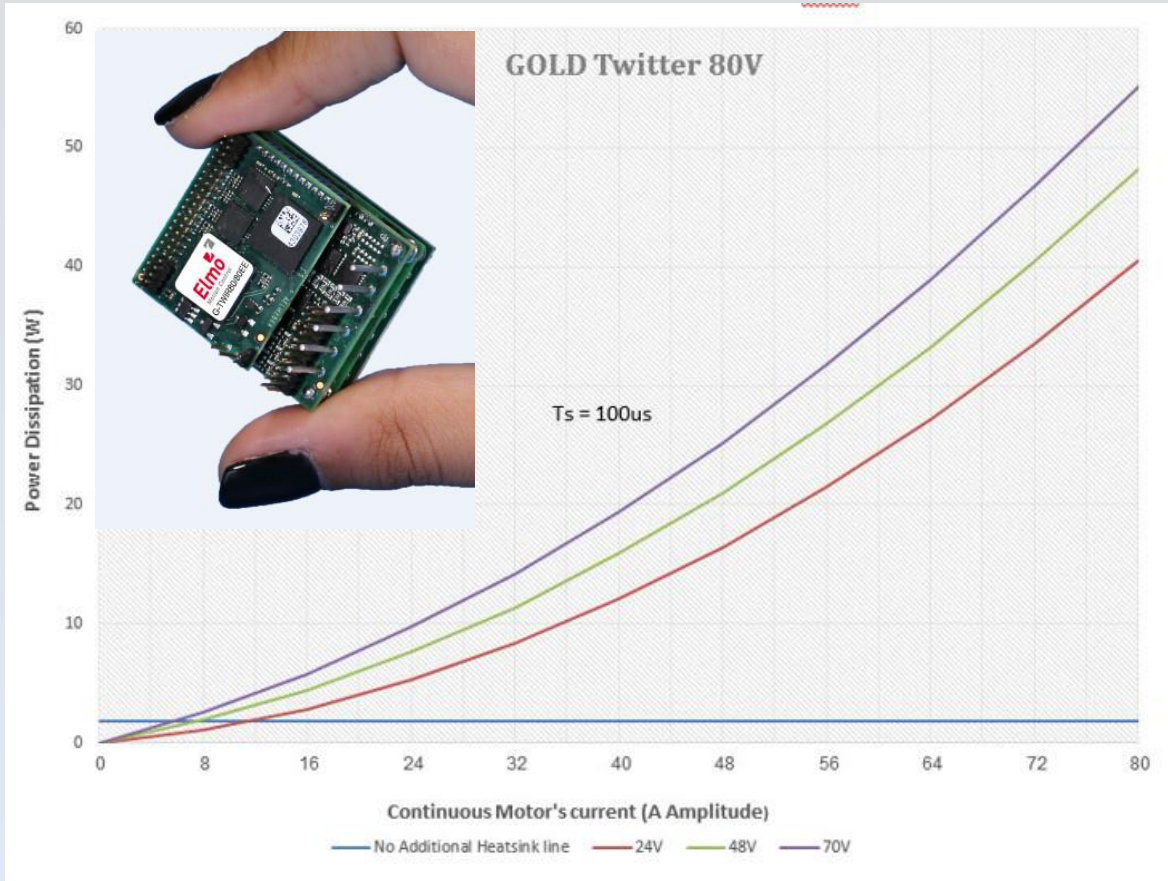
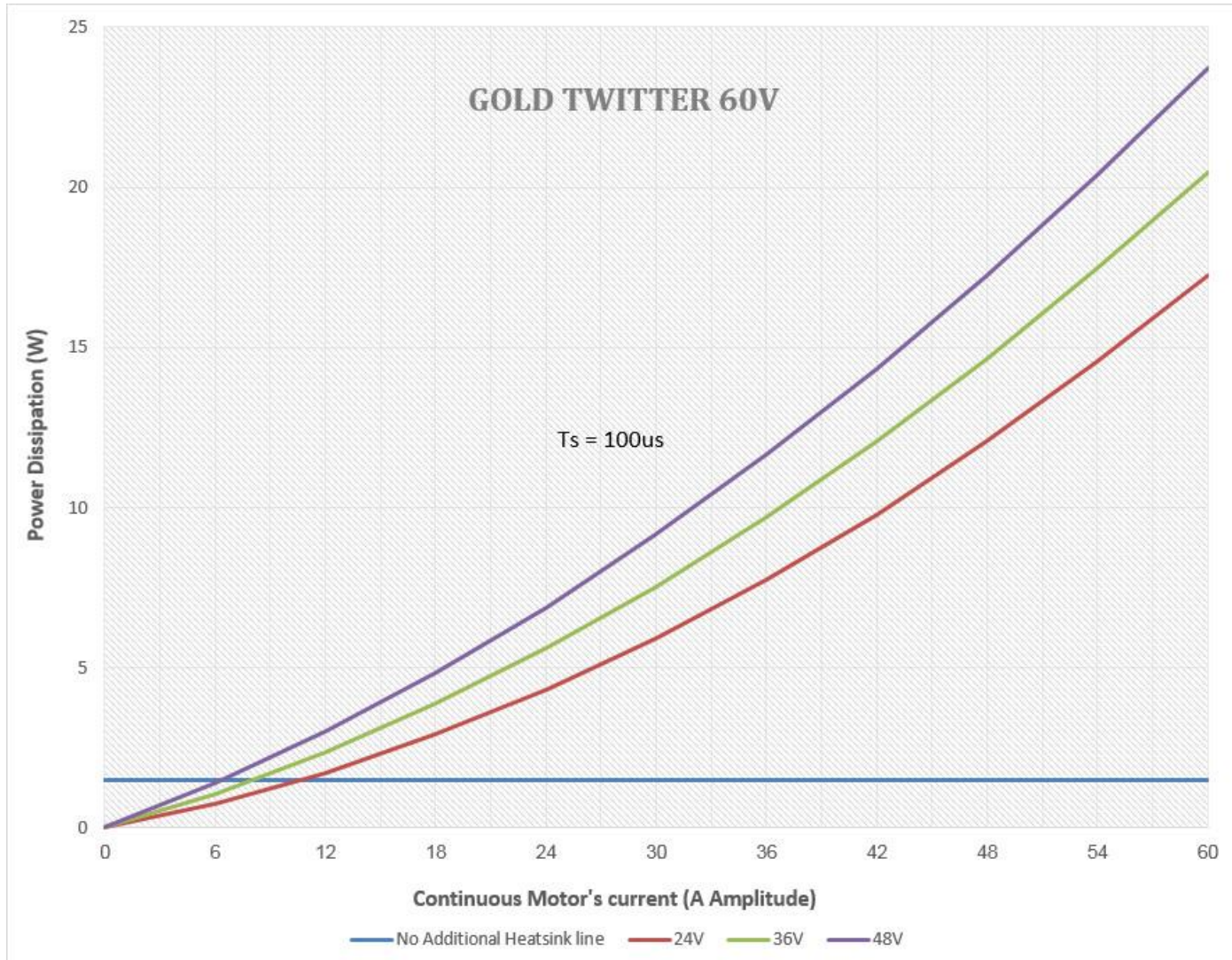


The GOLD Twitter Thermal Data &



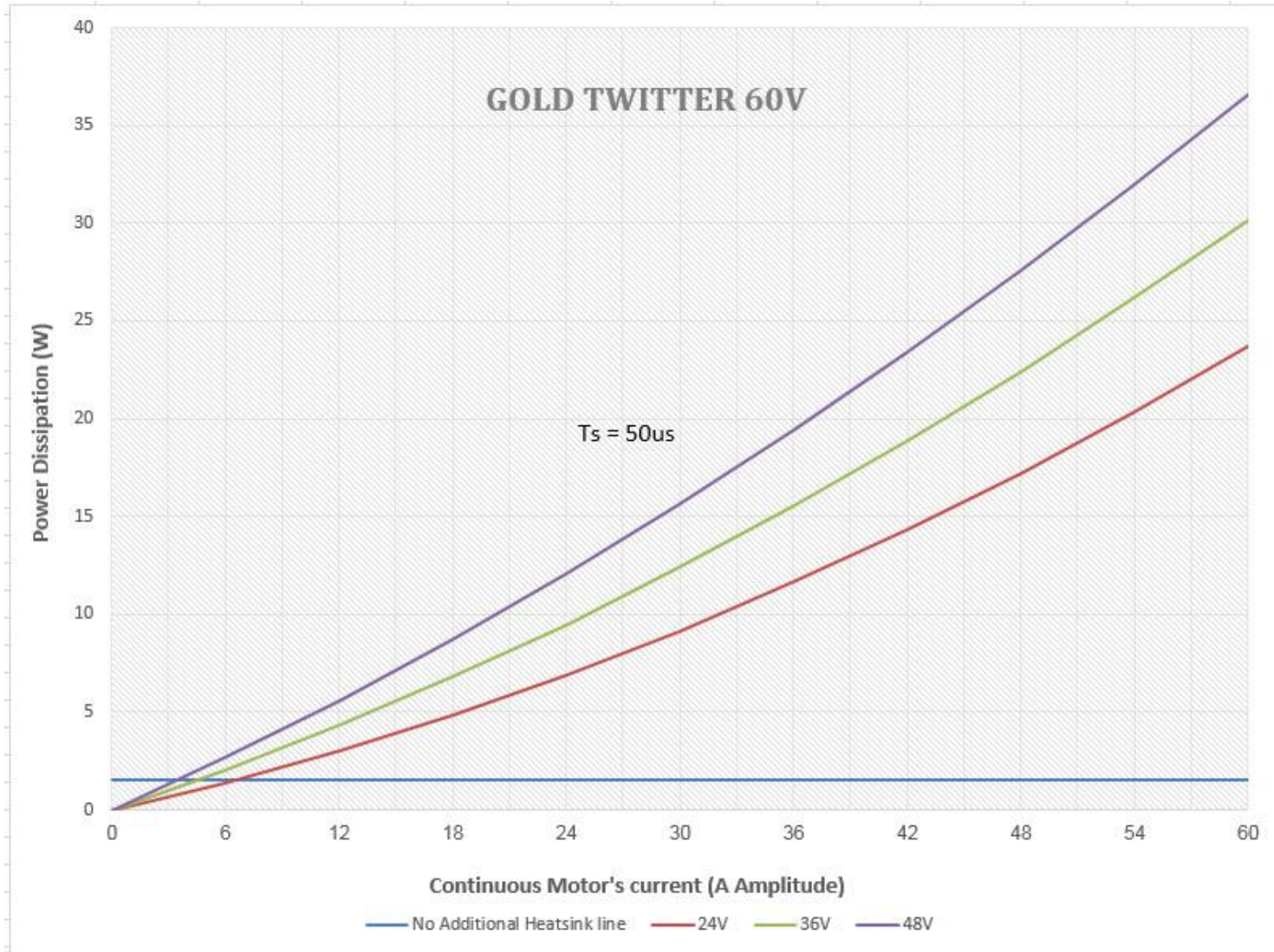
GTWI Power Dissipation Charts

Heat dissipation as a function of The DC bus, Motor's current and Ts



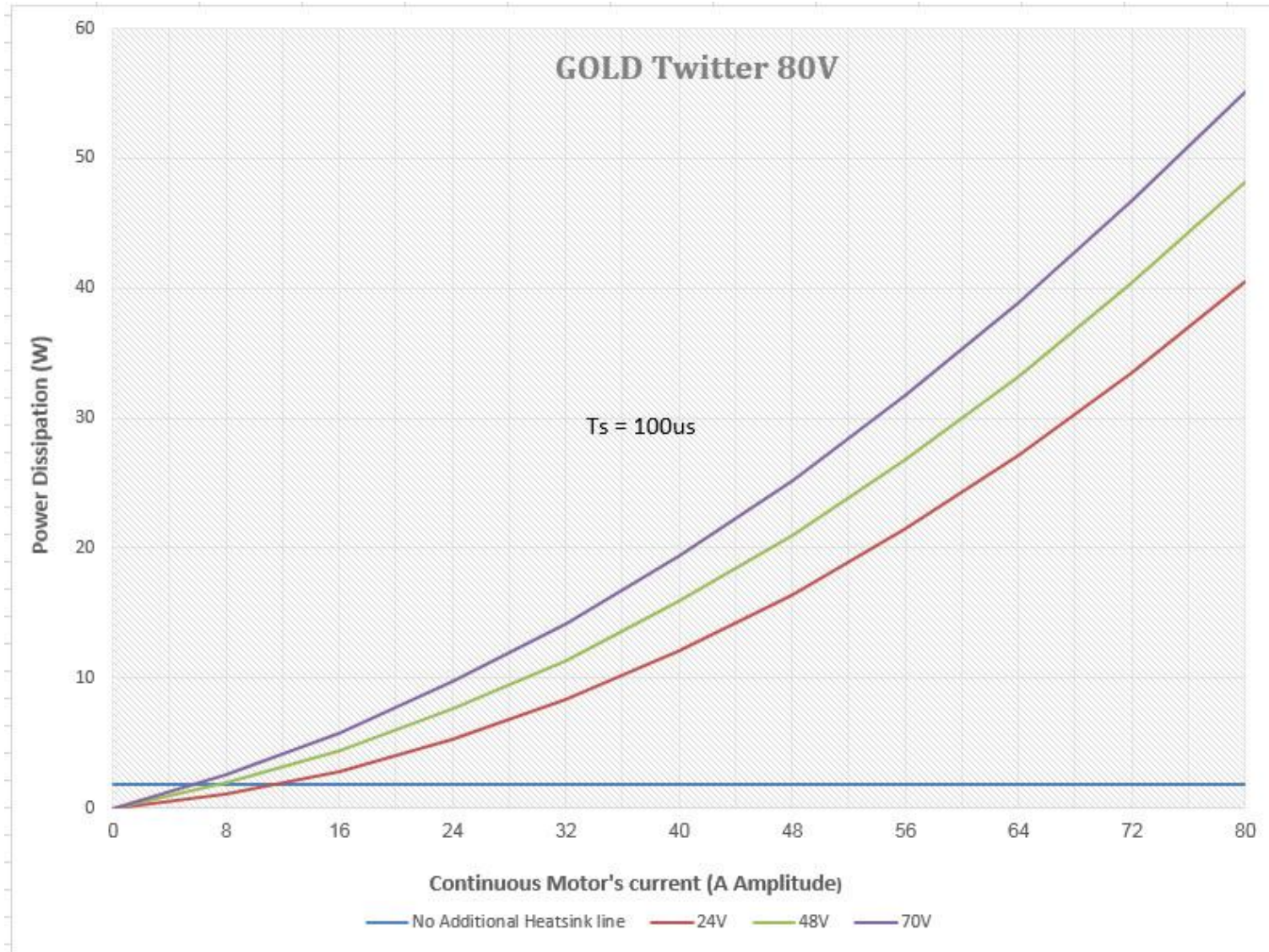
GTWI Power Dissipation Charts

Heat dissipation as a function of The DC bus, Motor's current and Ts



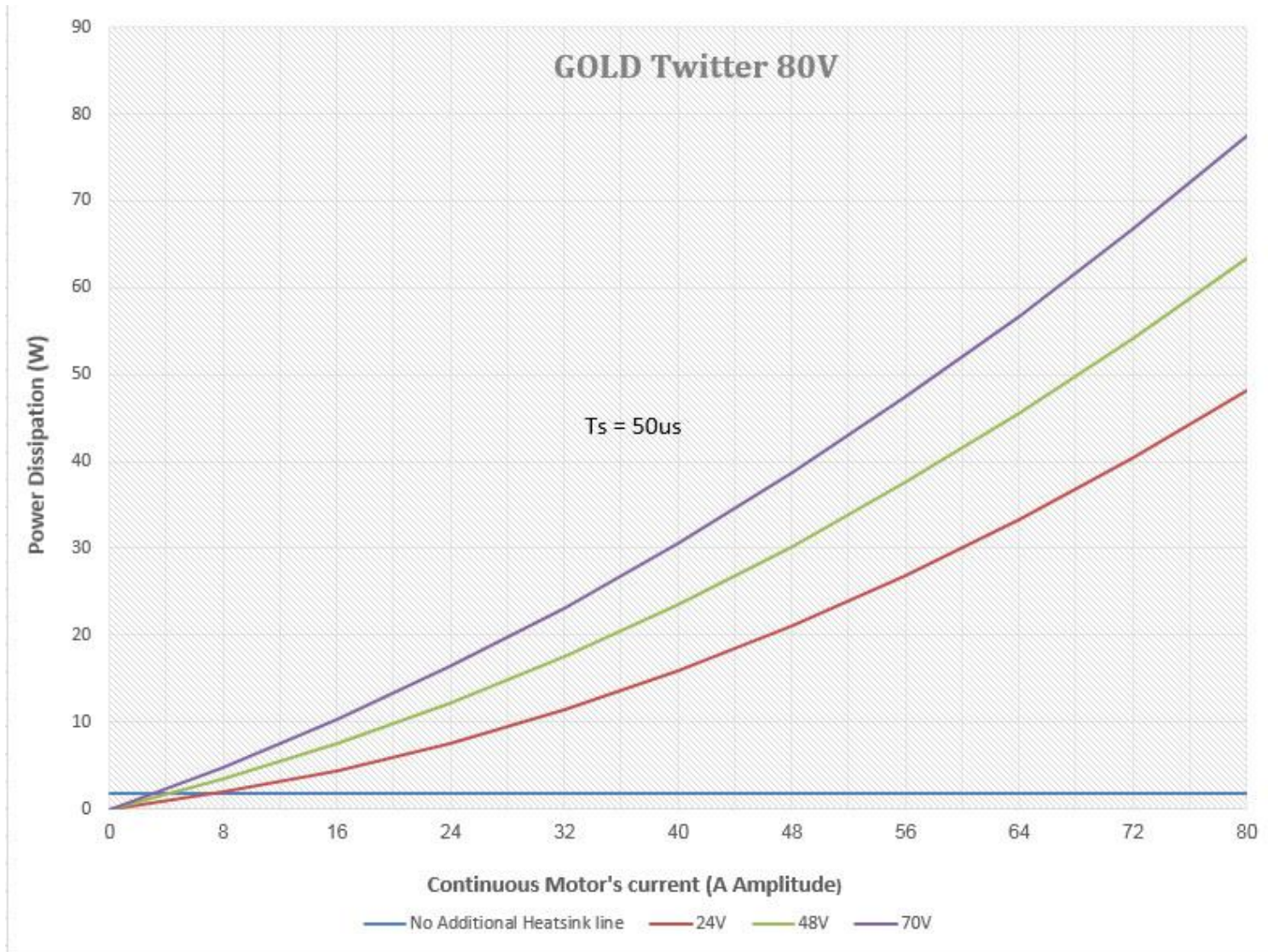
GTWI Power Dissipation Charts

Heat dissipation as a function of The DC bus, Motor's current and Ts



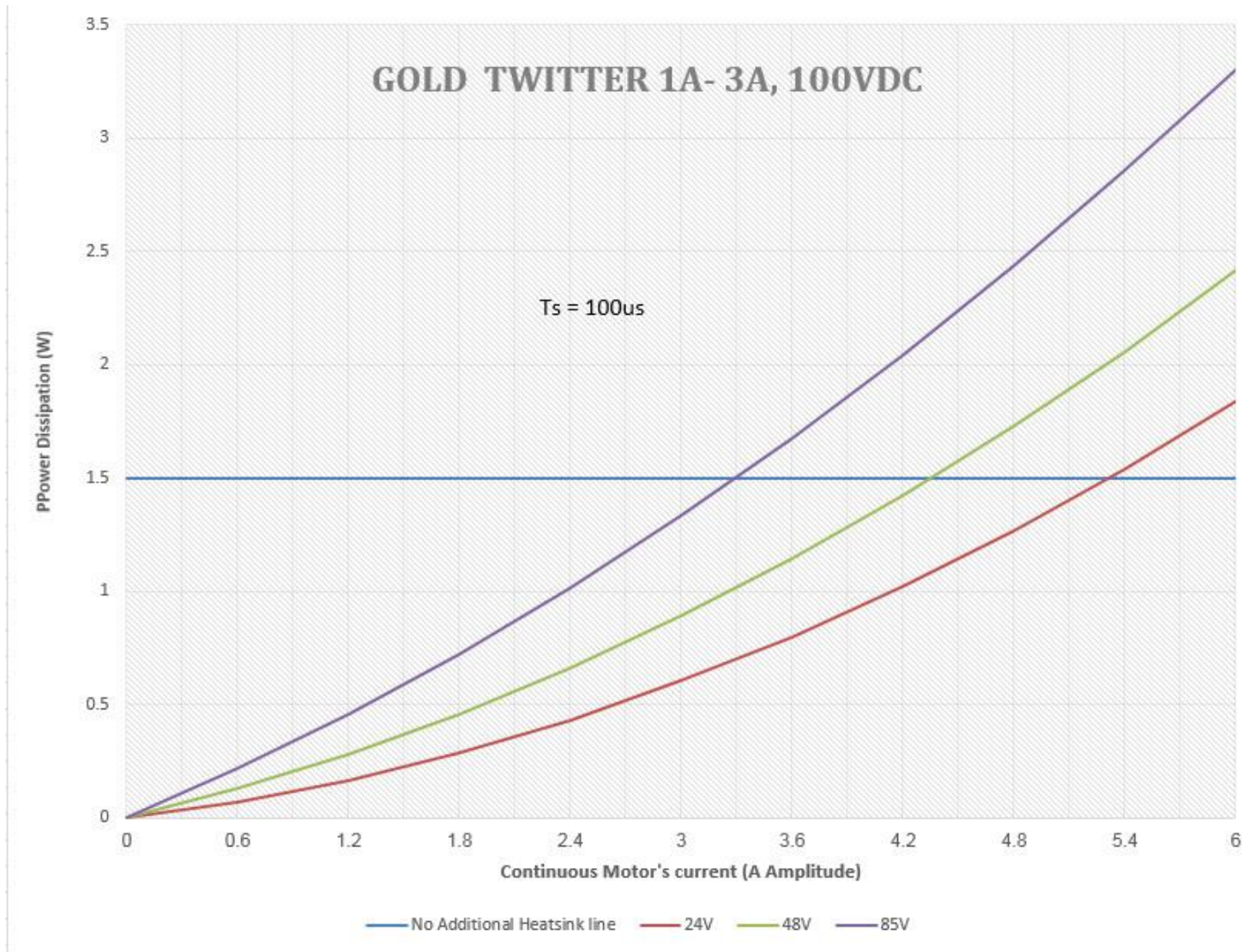
GTWI Power Dissipation Charts

Heat dissipation as a function of The DC bus, Motor's current and Ts



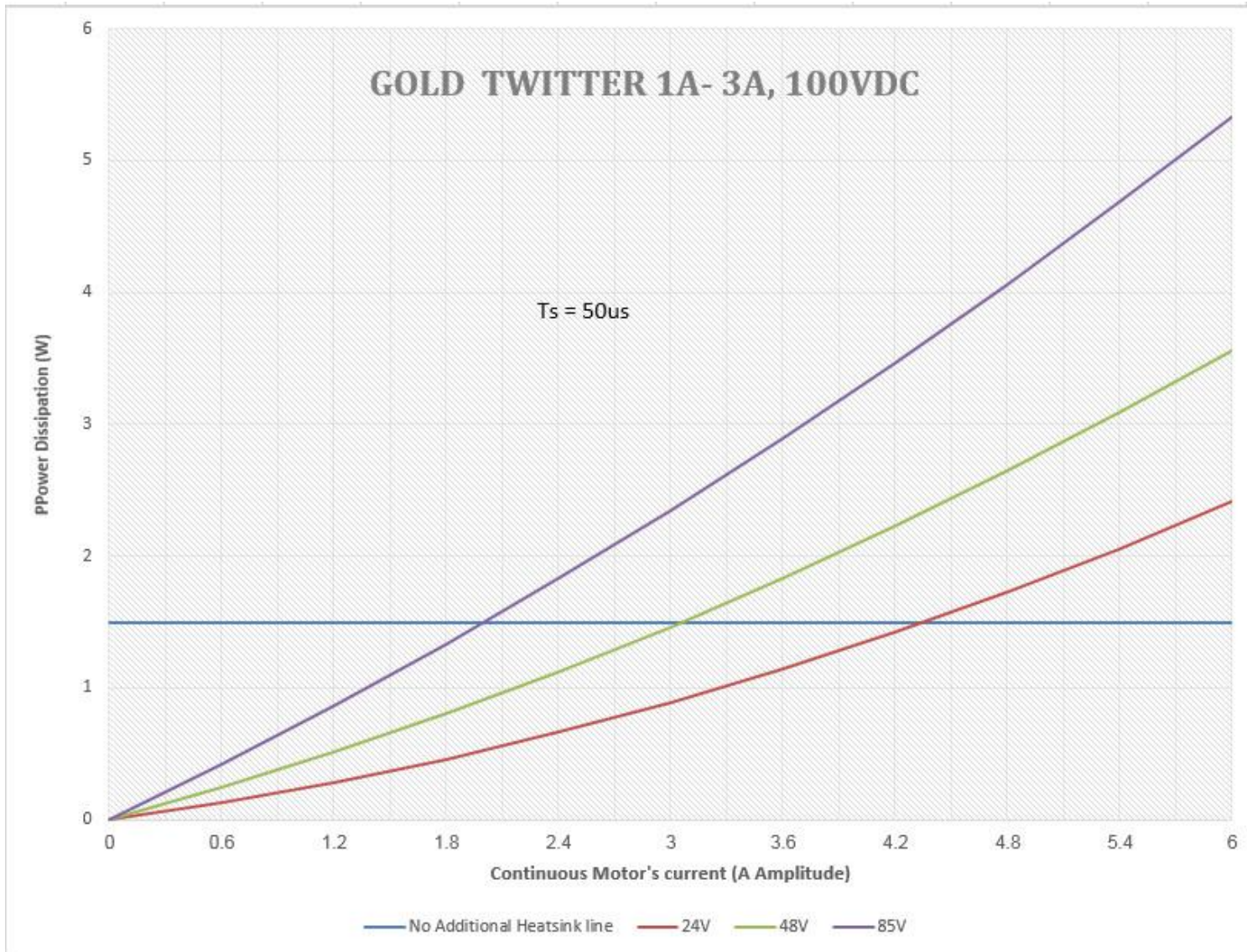
GTWI Power Dissipation Charts

Heat dissipation as a function of The DC bus, Motor's current and Ts



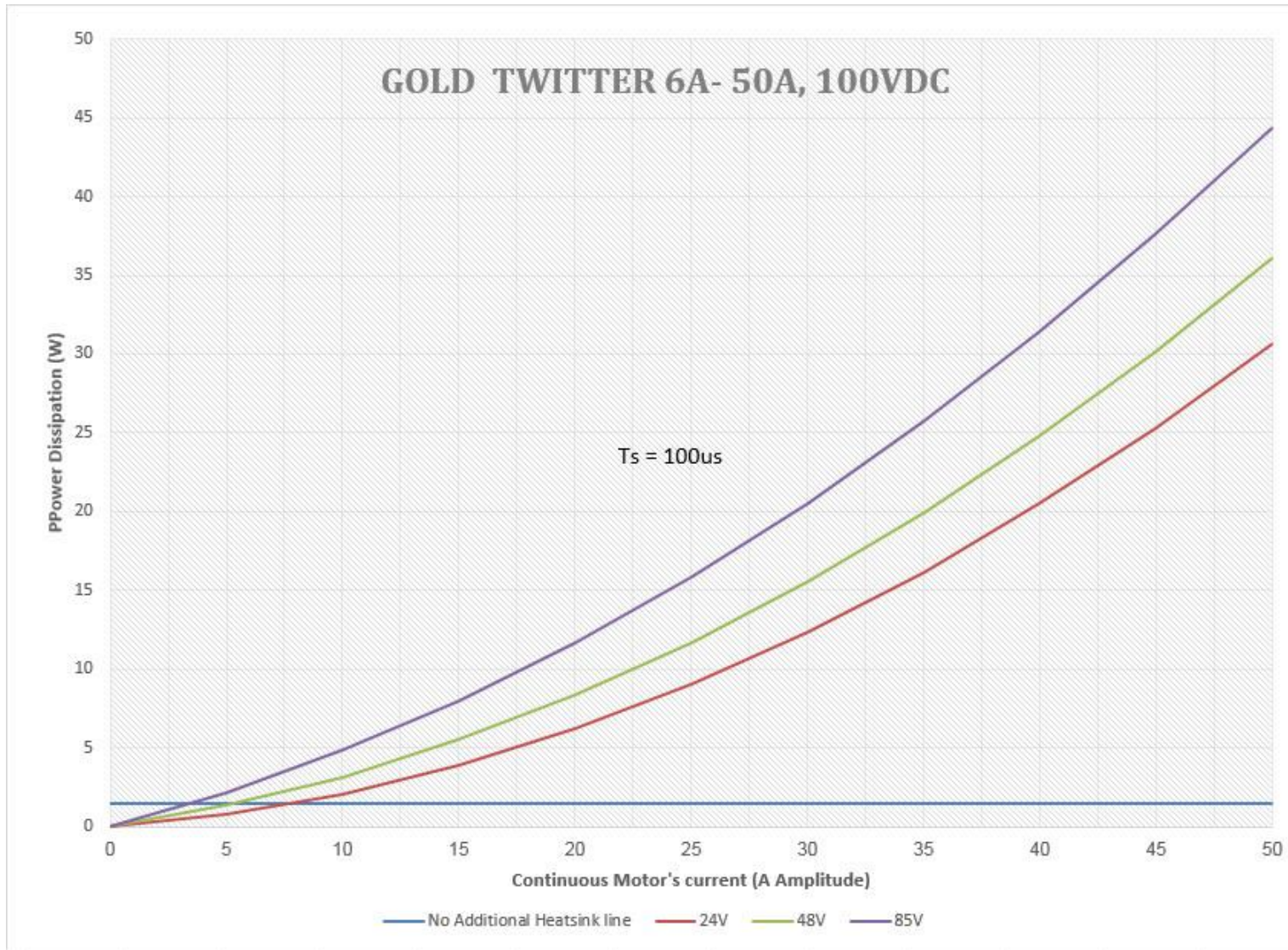
GTWI Power Dissipation Charts

Heat dissipation as a function of The DC bus, Motor's current and Ts



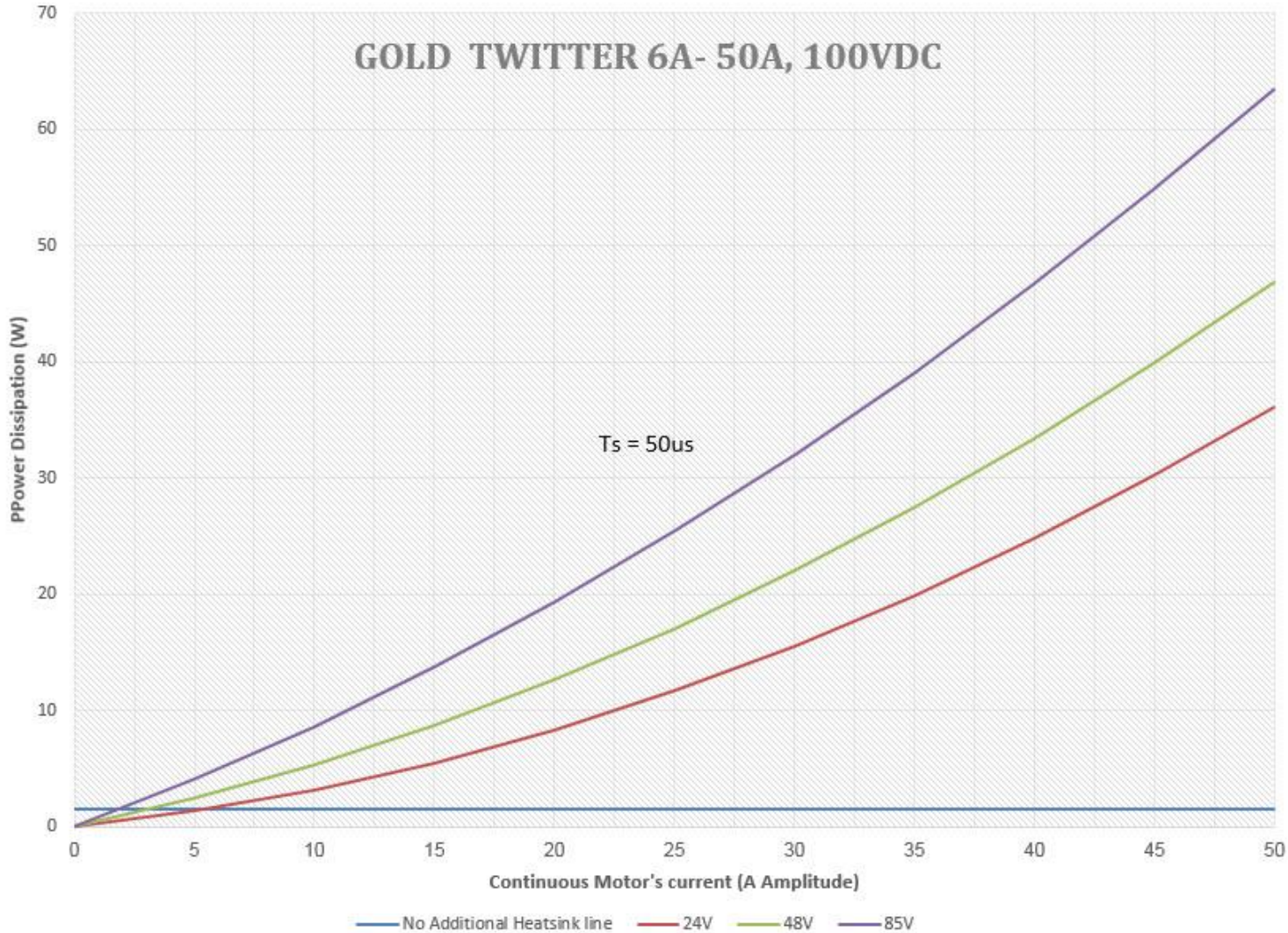
GTWI Power Dissipation Charts

Heat dissipation as a function of The DC bus, Motor's current and Ts



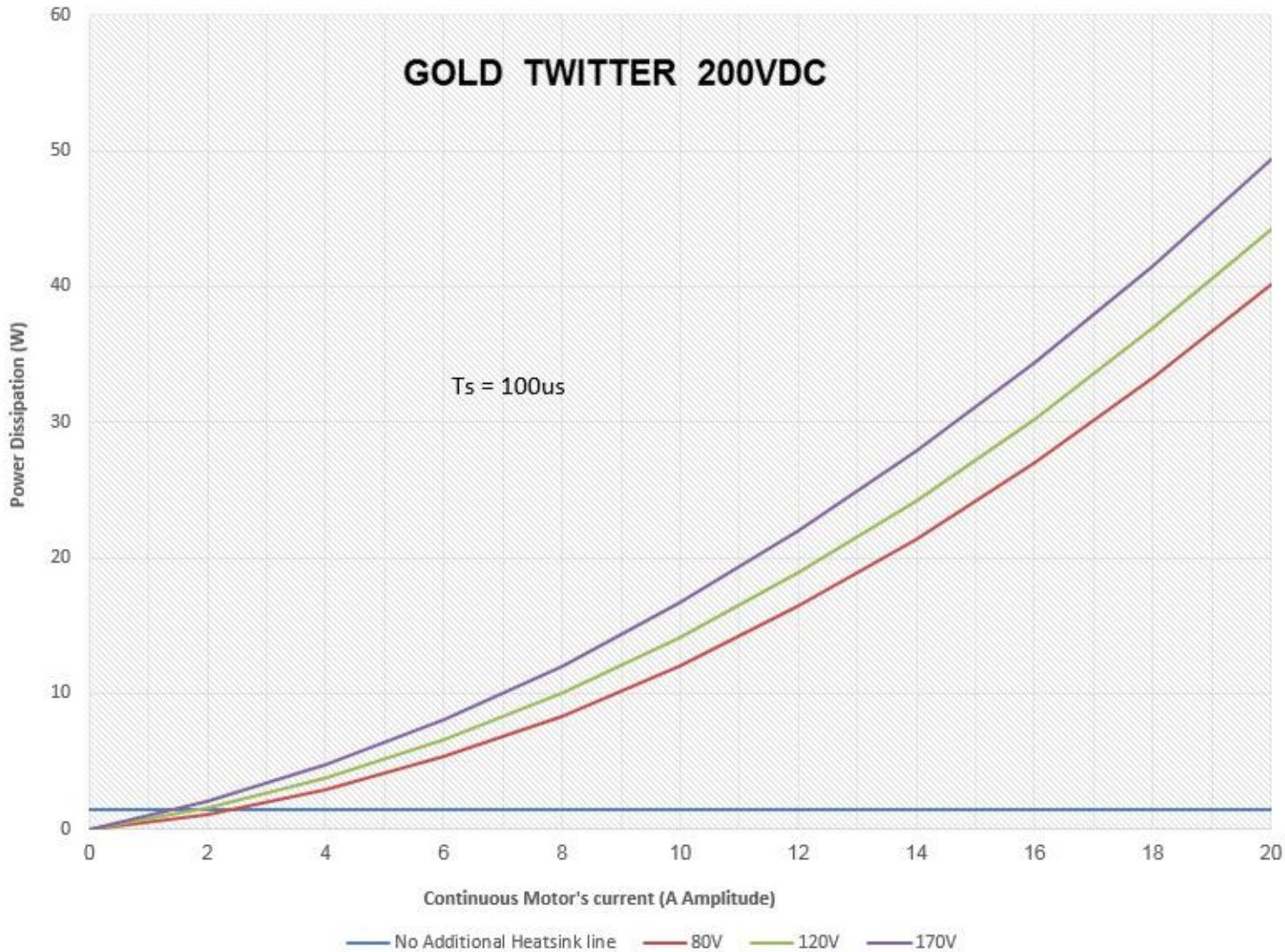
GTWI Power Dissipation Charts

Heat dissipation as a function of The DC bus, Motor's current and Ts



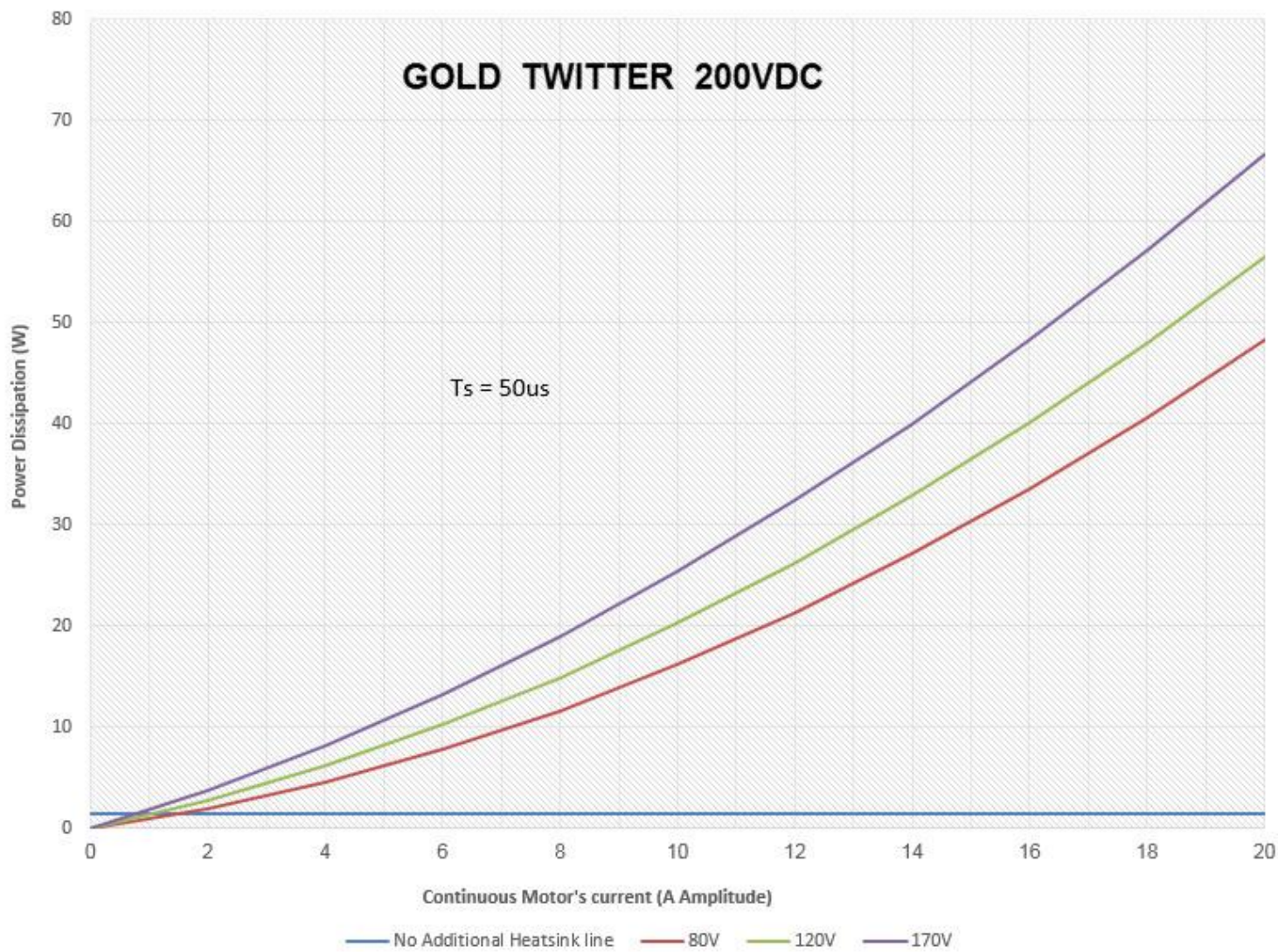
GTWI Power Dissipation Charts

Heat dissipation as a function of The DC bus, Motor's current and Ts



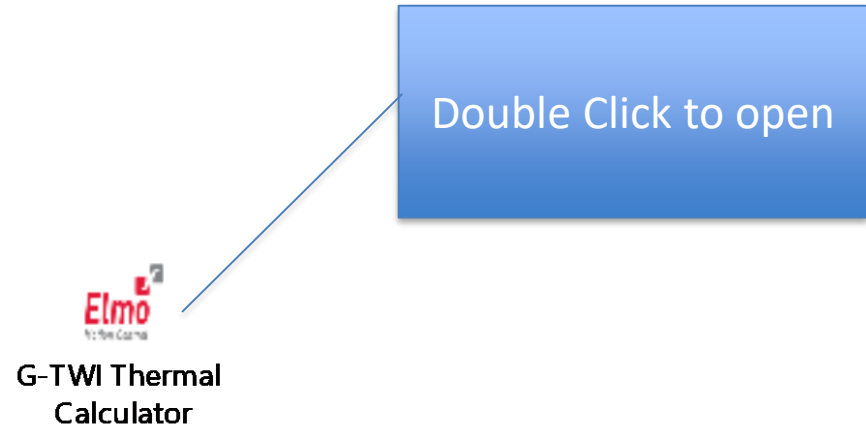
GTWI Power Dissipation Charts

Heat dissipation as a function of The DC bus, Motor's current and Ts



GTWI Power Dissipation

The Thermal Calculator



GTWI Power Dissipation Calc

How to use the Excel? Yellow cells are input data cells.

	A	B	C	D	E	F	G	H	I	J	K
1											
2	Data Input										
3	Results										
4											
5	DC Bus										
6			Ambient Temperature			Control W					Θ °C/W
7	Ambient Temp.	30			PWM Multiplier	1.2		HS Temp			3
8	GTWI 6A-50A, 100VDC	Vdc(bus)	Operating current (A) Amplitude (IQ)	Ts (us) Smaple Time	Xp[2]=0,X1 Xp[2]=1,X0.5 Xp[2]=2,X2 Xp[2]=3,X3 Xp[2]=4,,X4	Power Dissipation Watt	Interval Time seconds	No External HS	Flat HS	FINs HS	Custom Heat-sink
9	Interval 1	85	7	100	0	4.4	0.2	30	30	30	30
10	Interval 2	85	10	100	0	6.0	3.0	33	31	31	30
11	Interval 3	85	-50	100	0	45.6	0.2	34	32	31	30
12	Interval 4	85	3	100	0	2.4	10.0	32	31	30	30
13	Interval 5	85	50	100	0	45.6	0.2	33	31	31	30
14	Interval 6	85	10	100	0	6.0	5.0	33	31	31	30
15	Interval 7	85	-50	100	0	45.6	0.2	34	32	31	30
16	Interval 8	85	3	100	0	2.4	10.0	34	32	31	30
17	Interval 9	85	50	100	0	45.6	0.2	35	32	31	30
18	Interval 10	85	10	100	0	6.0	10.0	35	33	31	30
19		Ave Amp (Abs)	7.2		PWM multiplier	Total time (Seconds)	39.0				Thermal resistance of "another" Heat-sink
20											
21		Interval's current (Amplitude)		Ts, Sampling time (us)		Average Power Dissipation	5.0	Watts			

GTWI Power Dissipation Calc

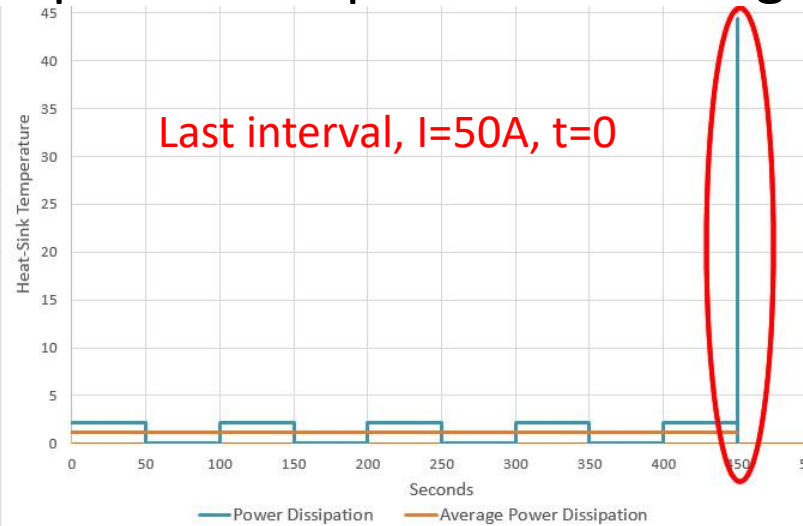
How to use the Excel?

- ❑ Control Dissipation? The control of the G-TWI consumes 2.5W to 4 W depending on the encoders loading and on the type of communication (Ethercat consumes more than CAN).
 - 1.2W of the Control losses is dissipated via the heat-sink.
 - Insert 0 or 1.2W
 - Zero? At low power applications the power conversion losses are lower than the Control's losses. Setting ZERO allows monitoring the "pure" power conversion losses.
 - For calculating the exact temperature of the heat-sink, especially the "No external Heat-sink", the Control losses (1.2) must be added

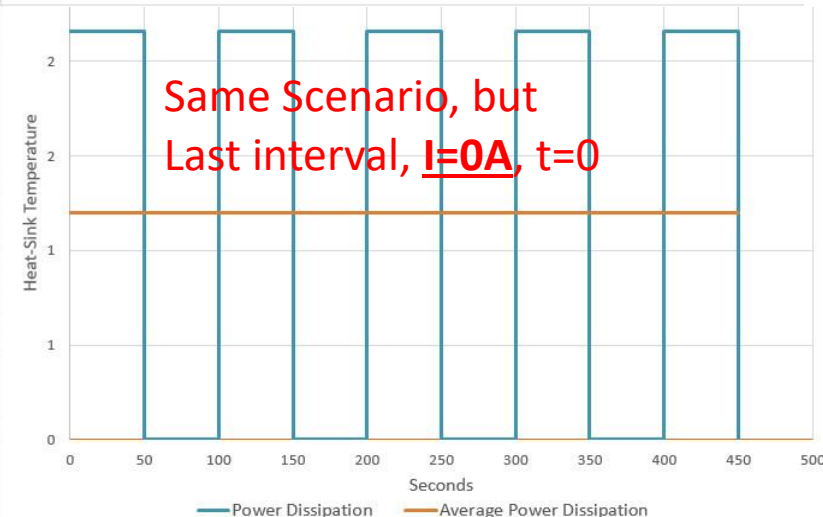
GTWI Power Dissipation Calc

Interval duration. When setting an interval to ZERO duration it is recommended to ZERO also the Interval's current. The chart presents also zero duration heat power dissipation and it might be

Operating current (A) Amplitude (IQ)	Ts (us) Sample Time	PWM Multiplier Xp[2]=0..X1 Xp[2]=1..X0.5 Xp[2]=2..X2 Xp[2]=3..X3 Xp[2]=4..X4	Power Dissipation Watt	Interval Time seconds	HS Temp			Custom Heat-sink
					No External HS	Flat HS	FINs HS	
5	100	0	2.2	50.0	48	39	34	30
0	100	0	0.0	50.0	41	36	33	30
5	100	0	2.2	50.0	56	43	36	31
0	100	0	0.0	50.0	48	39	35	31
5	100	0	2.2	50.0	61	46	38	31
0	100	0	0.0	50.0	51	42	36	31
5	100	0	2.2	50.0	64	48	39	31
0	100	0	0.0	50.0	54	43	37	31
5	100	0	2.2	50.0	66	49	40	32
50	100	0	44.4	0.0	66	49	40	32
2.8			Total time (Seconds)	450.0				
			Average Power Dissipation	1.2	Watts			



Operating current (A) Amplitude (IQ)	Ts (us) Sample Time	PWM Multiplier Xp[2]=0..X1 Xp[2]=1..X0.5 Xp[2]=2..X2 Xp[2]=3..X3 Xp[2]=4..X4	Power Dissipation Watt	Interval Time seconds	HS Temp			Custom Heat-sink
					No External HS	Flat HS	FINs HS	
5	100	0	2.2	50.0	48	39	34	30
0	100	0	0.0	50.0	41	36	33	30
5	100	0	2.2	50.0	56	43	36	31
0	100	0	0.0	50.0	48	39	35	31
5	100	0	2.2	50.0	61	46	38	31
0	100	0	0.0	50.0	51	42	36	31
5	100	0	2.2	50.0	64	48	39	31
0	100	0	0.0	50.0	54	43	37	31
5	100	0	2.2	50.0	66	49	40	32
0	100	0	0.0	0.0	66	49	40	32
2.8			Total time (Seconds)	450.0				
			Average Power Dissipation	1.2	Watts			



GTWI Power Dissipation Calc

The Results

	A	B		E	F	G	H	I	J	K	
1											
2	Data Input										
3	Results										
4											
5											
6					Control W					Θ °C/W	
7	Ambient Temp.	30		PWM Multiplier	1.2		HS Temp			3	
	GTWI 6A-50A, 100VDC	Vdc(bus)	Operating current (A) Amplitude (IQ)	Ts (us) Smaple Time	Xp[2]=0,X1 Xp[2]=1,X0.5 Xp[2]=2,X2 Xp[2]=3,X3 Xp[2]=4,,X4	Power Dissipation Watt	Interval Time seconds	No External HS	Flat HS	FINs HS	Custom Heat-sink
8											
9	Interval 1	85	7	100	0	4.4	0.2	30	30	30	30
10	Interval 2	85	10	100	0	6.0	3.0	33	31	31	30
11	Interval 3	85	-50	100	0	45.6	0.2	34	32	31	30
12	Interval 4	85	3	100	0	2.4	10.0	32	31	30	30
13	Interval 5	85	50	100	0	45.6	0.2	33	31	31	30
14	Interval 6	85	10	100	0	6.0	5.0	33	31	31	30
15	Interval 7	85	-50	100	0	45.6	0.2	34	32	31	30
16	Interval 8	85	3	100	0	2.4	10.0	34	32	31	30
17	Interval 9	85	50	100	0	45.6	0.2	35	32	31	30
18	Interval 10	85	10	100	0	6.0	10.0	35	33	31	30
19		Ave Amp (Abs)	7.2			Total time (Seconds)	39.0				
20											
21						Average Power Dissipation	5.0	Watts			

Interval's Heat dissipation

Temp. at the end of the Interval

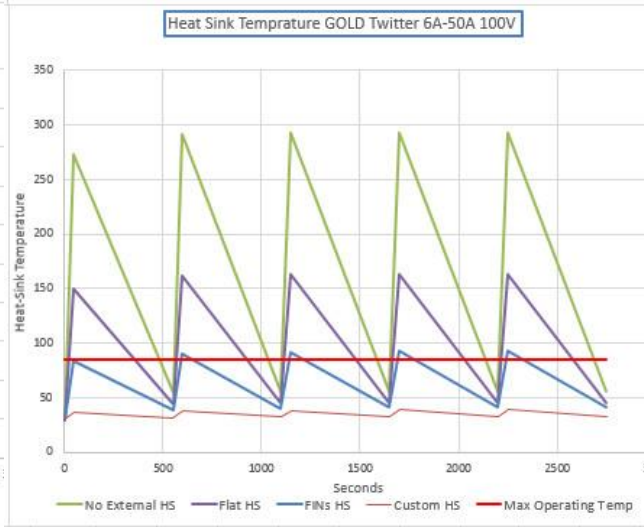
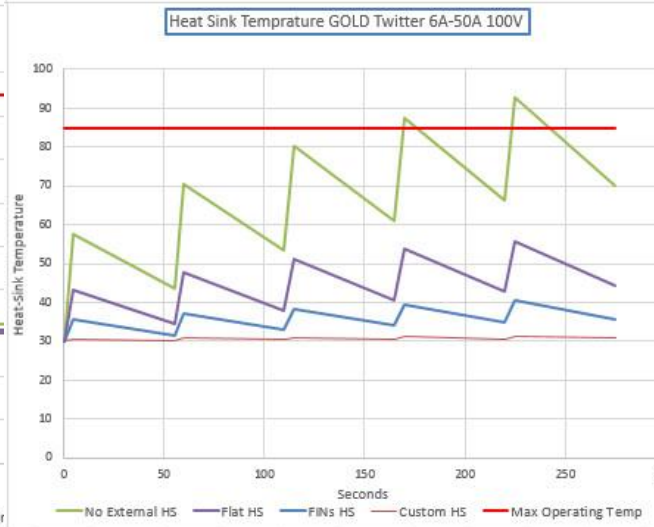
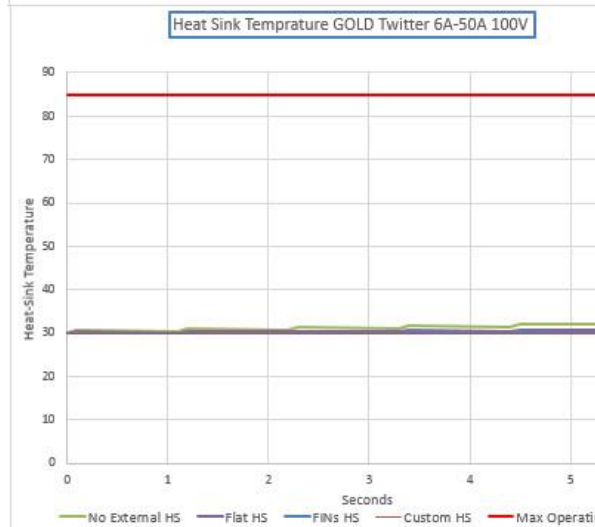
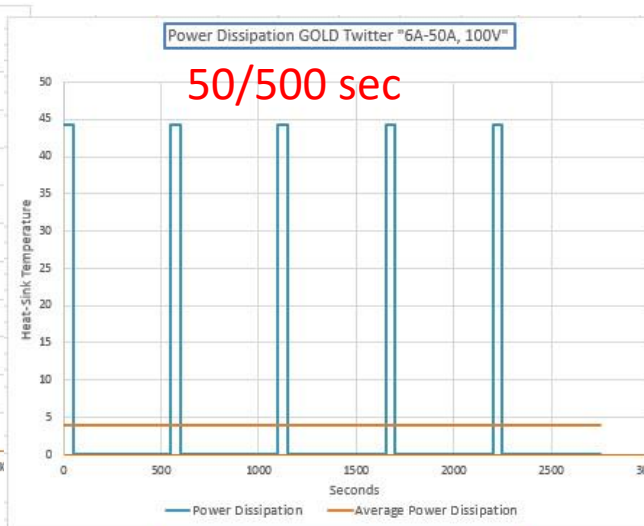
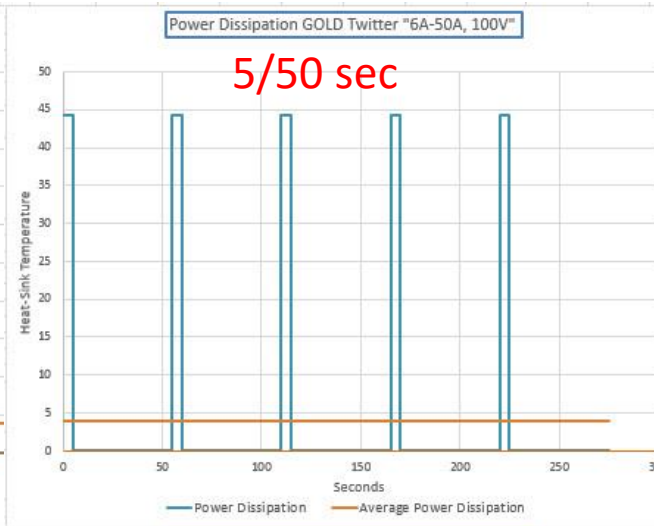
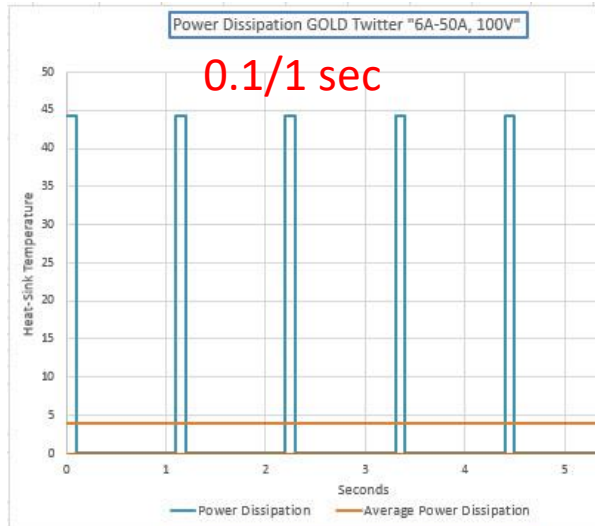
Current RMS (Average of Absolute value)

Total duration (St1+t2+..+t10)

Total duration Average Power Dissipation

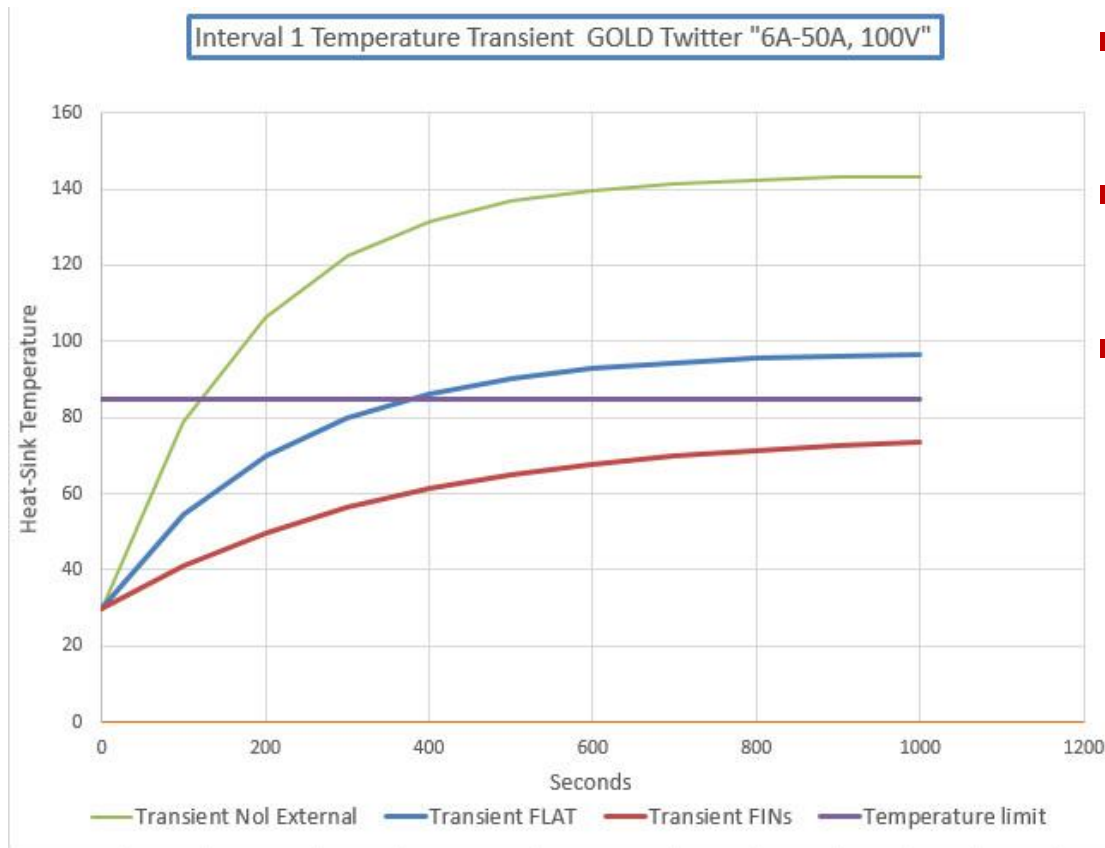
GTWI Power Dissipation Charts

Same 10% duty cycle, same 50A "on" current, same average losses



GTWI Power Dissipation Calc

How long can the GTWI operate at the same power dissipation?
Setting the average power dissipation to interval 1 can show the “long term” thermal transient behavior.



- Continuous operation with the FINs HS
- 400 seconds with the FLAT HS
- 120 seconds with “No HS”.

Records Printing & Saving

The Excel printing is set up for one page with all the info

For saving the data select the PDF printer

Print



Copies: 1

Printer

- Amal3_Lobby_Color on elm...
Toner/ink low
- Amal3_Lobby_Color on elmoprinters
Toner/ink low
- Adobe PDF
Ready
- Fax - HP Officejet Pro 8600
Ready

