

fiXtress® BQR , Ver.9.300

Stress Derating and Thermal Analysis - Detailed Report

Block Stress Source (P, V, I)			
WUC	Path	RefDes	Stress Source
1		System	-
1_1	System	2	-

Block#	Block Name	Higher Ass	Assy Manufacturer Part Number	Assy Catalog Number	Description	Temperature	AirFlow
a	b	c	d	e	f	g	h
2	2	---	2	-	-	55	0

#	Family	RefDes	Manufacturer Part Number	Catalog Number	Description	SDTA	DT	Oja	Ojc	PwStress	Parameter name	Maximum Rating	Applied Value	Derated factor[%]	Derated Limit	% of DerLimit	% of MaxRating	Status
i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	aa
1	Capacitor	C10	CL03A104K03NNNC	RLC_CB_001261	Ceramic capacitor - 0201 - X5R - 100nF/16V - 10%	Mil	0			0	V	16	3,3	50	8	41,3	20,6	
											Temp	85	55	100	85	64,7	64,7	
2	Capacitor	C11	CL03A104K03NNNC	RLC_CB_001261	Ceramic capacitor - 0201 - X5R - 100nF/16V - 10%	Mil	0			0	V	16	3,3	50	8	41,3	20,6	
											Temp	85	55	100	85	64,7	64,7	
3	Capacitor	C12	CL03A104K03NNNC	RLC_CB_001261	Ceramic capacitor - 0201 - X5R - 100nF/16V - 10%	Mil	0			0	V	16	3,3	50	8	41,3	20,6	
											Temp	85	55	100	85	64,7	64,7	
4	Capacitor	C13	CL03A104K03NNNC	RLC_CB_001261	Ceramic capacitor - 0201 - X5R - 100nF/16V - 10%	Mil	0			0	V	16	3,3	50	8	41,3	20,6	
											Temp	85	55	100	85	64,7	64,7	
5	Capacitor	C14	CL10B475KQ8NQNC	RLC_000551_CB	Ceramic capacitor - 0603 - X7R - 4.7µF/6.3V - 10%	Mil	0			0	V	6,3	3,3	50	3,15	104,8	52,4	*
											Temp	125	55	100	125	44	44	
6	Capacitor	C15	CL03A104K03NNNC	RLC_CB_001261	Ceramic capacitor - 0201 - X5R - 100nF/16V - 10%	Mil	0			0	V	16	3,3	50	8	41,3	20,6	
											Temp	85	55	100	85	64,7	64,7	
7	Capacitor	C17	CL10B475KQ8NQNC	RLC_000551_CB	Ceramic capacitor - 0603 - X7R - 4.7µF/6.3V - 10%	Mil	0			0	V	6,3	3,3	50	3,15			M
											Temp	125	55	100	125	44	44	
8	Capacitor	C3	C0603C105K3RACTU	RLC_000009	Ceramic capacitor - 0603 - X7R - 1µF/25V - 10%	Mil	0			0	V	25		50	12,5			M
											Temp	125	55	100	125	44	44	
9	Capacitor	C4	C0603C225K8RACTU	RLC_000878_FO	Ceramic capacitor - 0603 - X7R - 2.2µF/10V - 10%	Mil	0			0	V	10	3,3	50	5	66	33	
											Temp	125	55	100	125	44	44	
10	Capacitor	C5	C0201C103K4PACTU	RLC_CB_001262	Ceramic capacitor - 0201 - X5R - 10nF/16V - 10%	Mil	0			0	V	16		50	8			M
											Temp	85	55	100	85	64,7	64,7	
11	Capacitor	C6	04023C103KAT2A	RLC_000014	Ceramic capacitor - 0402 - X7R - 10nF/25V - 10%	Mil	0			0	V	25		50	12,5			M
											Temp	125	55	100	125	44	44	
12	Capacitor	C7	C0201C103K4PACTU	RLC_CB_001262	Ceramic capacitor - 0201 - X5R - 10nF/16V - 10%	Mil	0			0	V	16	5	50	8	62,5	31,3	
											Temp	85	55	100	85	64,7	64,7	
13	Capacitor	C8	C0201C103K4PACTU	RLC_CB_001262	Ceramic capacitor - 0201 - X5R - 10nF/16V - 10%	Mil	0			0	V	16		50	8			M
											Temp	85	55	100	85	64,7	64,7	
14	Capacitor	C9	CL03A104K03NNNC	RLC_CB_001261	Ceramic capacitor - 0201 - X5R - 100nF/16V - 10%	Mil	0			0	V	16	3,3	50	8	41,3	20,6	
											Temp	85	55	100	85	64,7	64,7	
15	Connector	J1	53398-0871	CON_000001	1.25mm Pitch PicoBlade® Header - Surface Mount - Vertical - Lead-fr	Mil	0			0	Vdiel	250		70	175			M
											lcn	1		70	0,7			M
											Temp	105,2	55	95,2	100	55	52,4	
16	OptoDevice	LED2	APHHS1005LZGCK-V	SEM_DISC_000094_FO	Top Emitting Green Led - 2mA - 4.95mcd - Vf = 1.8V - 570nm	Mil	0	N/A	350	0,051	If	0,025		65	0,0163			M
											Tj	95		110,5	105			M
17	OptoDevice	LED3	598-8391-117F	SEM_DISC_CB_0000225	Side Emitting MicroLED® SMD LED - Blue Color - Right Angle - Vf = 3.	Mil	0	N/A	450	0,035	If	0,02		65	0,0413			M
											Tj	105		100	105			M
18	Transistor	Q1	PMZB290UNE2YL	SEM_DISC_000074_CB	20 V - 1.2A - N-channel Trench MOSFET	Mil	0	360	23	2,7	PW	5,3217		54,7	2,913			M
											Vds	20		70	14			M
											Tj	150		80	120			M
19	Resistor	R10	RC0402FR-07383KL	RLC_CB_001234	SMD resistor - 383k& - 1% - 0402 - 63mW	Mil	0			0,032	PWavg	0,063		70	0,0441			M
											V	50		50	25			M
											PWpeak	0,252		70	0,1764			M
											Temp	155	55	83,9	130	42,3	35,5	

20	Resistor	R11	RC0402FR-07383KL	RLC_CB_001234	SMD resistor - 383k& - 1% - 0402 - 63mW	Mil	0		0,032	PWavg	0,063		70	0,0441			M
										V	50		50	25			M
										PWpeak	0,252		70	0,1764			M
										Temp	155	55	83,9	130	42,3	35,5	
21	Resistor	R12	CRCW0402100KFED	RLC_000213_CB	SMD resistor - 100k - 1% - 0402 - 63mW - AEC-Q200	Mil	0		0,032	PWavg	0,063		70	0,0441			M
										V	50		50	25			M
										PWpeak	0,252		70	0,1764			M
										Temp	155	55	83,9	130	42,3	35,5	
22	Resistor	R13	CRCW0402100KFED	RLC_000213_CB	SMD resistor - 100k - 1% - 0402 - 63mW - AEC-Q200	Mil	0		0,032	PWavg	0,063		70	0,0441			M
										V	50		50	25			M
										PWpeak	0,252		70	0,1764			M
										Temp	155	55	83,9	130	42,3	35,5	
23	Resistor	R14	CRCW0402100KFED	RLC_000213_CB	SMD resistor - 100k - 1% - 0402 - 63mW - AEC-Q200	Mil	0		0,032	PWavg	0,063		70	0,0441			M
										V	50		50	25			M
										PWpeak	0,252		70	0,1764			M
										Temp	155	55	83,9	130	42,3	35,5	
24	Resistor	R15	CRCW0402100KFED	RLC_000213_CB	SMD resistor - 100k - 1% - 0402 - 63mW - AEC-Q200	Mil	0		0,032	PWavg	0,063		70	0,0441			M
										V	50		50	25			M
										PWpeak	0,252		70	0,1764			M
										Temp	155	55	83,9	130	42,3	35,5	
25	Resistor	R16	RC0402FR-076K81L	RLC_CB_001235	SMD resistor - 6.81k& - 1% - 0402 - 63mW	Mil	0		0,032	PWavg	0,063		70	0,0441			M
										V	20,713		50	10,3565			M
										PWpeak	0,252		70	0,1764			M
										Temp	155	55	83,9	130	42,3	35,5	
26	Resistor	R17	RC0402FR-076K81L	RLC_CB_001235	SMD resistor - 6.81k& - 1% - 0402 - 63mW	Mil	0		0,032	PWavg	0,063		70	0,0441			M
										V	20,713		50	10,3565			M
										PWpeak	0,252		70	0,1764			M
										Temp	155	55	83,9	130	42,3	35,5	
27	Resistor	R18	RC0402FR-076K81L	RLC_CB_001235	SMD resistor - 6.81k& - 1% - 0402 - 63mW	Mil	0		0,032	PWavg	0,063		70	0,0441			M
										V	20,713		50	10,3565			M
										PWpeak	0,252		70	0,1764			M
										Temp	155	55	83,9	130	42,3	35,5	
28	Resistor	R19	RC0402FR-076K81L	RLC_CB_001235	SMD resistor - 6.81k& - 1% - 0402 - 63mW	Mil	0		0,032	PWavg	0,063		70	0,0441			M
										V	20,713		50	10,3565			M
										PWpeak	0,252		70	0,1764			M
										Temp	155	55	83,9	130	42,3	35,5	
29	Resistor	R20	RC0402FR-0730K9L	RLC_000740_CB	SMD resistor - 30.9k& - 1% - 0402 - 63mW	Mil	0		0,032	PWavg	0,063		70	0,0441			M
										V	44,1214		50	22,0607			M
										PWpeak	0,252		70	0,1764			M
										Temp	155	55	83,9	130	42,3	35,5	
30	Resistor	R21	RC0402FR-0730K9L	RLC_000740_CB	SMD resistor - 30.9k& - 1% - 0402 - 63mW	Mil	0		0,032	PWavg	0,063		70	0,0441			M
										V	44,1214		50	22,0607			M
										PWpeak	0,252		70	0,1764			M
										Temp	155	55	83,9	130	42,3	35,5	
31	Resistor	R22	RC0402FR-0730K9L	RLC_000740_CB	SMD resistor - 30.9k& - 1% - 0402 - 63mW	Mil	0		0,032	PWavg	0,063		70	0,0441			M
										V	44,1214		50	22,0607			M
										PWpeak	0,252		70	0,1764			M
										Temp	155	55	83,9	130	42,3	35,5	
32	Resistor	R23	RC0402FR-0730K9L	RLC_000740_CB	SMD resistor - 30.9k& - 1% - 0402 - 63mW	Mil	0		0,032	PWavg	0,063		70	0,0441			M
										V	44,1214		50	22,0607			M
										PWpeak	0,252		70	0,1764			M
										Temp	155	55	83,9	130	42,3	35,5	
33	Resistor	R24	RC0603FR-0722RL	RLC_000135_CB	SMD resistor - 22& - 1% - 0603 - 100mW	Mil	0		0,032	PWavg	0,063		70	0,0441			M
										V	1,1773		50	0,5886			M
										PWpeak	0,252		70	0,1764			M
										Temp	155	55	83,9	130	42,3	35,5	
34	Resistor	R25	RC0402FR-0722RL	RLC_000225_CB	SMD resistor - 22& - 1% - 0402 - 63mW	Mil	0		0,032	PWavg	0,063		70	0,0441			M
										V	1,1773		50	0,5886			M
										PWpeak	0,252		70	0,1764			M
										Temp	155	55	83,9	130	42,3	35,5	
35	Resistor	R26	RC0402FR-0722RL	RLC_000225_CB	SMD resistor - 22& - 1% - 0402 - 63mW	Mil	0		0,032	PWavg	0,063		70	0,0441			M

											V	1,1773			50	0,5886				M
											PWpeak	0,252			70	0,1764				M
											Temp	155	55	83,9	130	42,3	35,5			
36	Resistor	R27	RC0402FR-0722RL	RLC_000225_CB	SMD resistor - 22k - 1% - 0402 - 63mW	Mil		0		0,032	PWavg	0,063			70	0,0441				M
											V	1,1773			50	0,5886				M
											PWpeak	0,252			70	0,1764				M
											Temp	155	55	83,9	130	42,3	35,5			
37	Resistor	R28	RC0402FR-0722RL	RLC_000225_CB	SMD resistor - 22k - 1% - 0402 - 63mW	Mil		0		0,032	PWavg	0,063			70	0,0441				M
											V	1,1773			50	0,5886				M
											PWpeak	0,252			70	0,1764				M
											Temp	155	55	83,9	130	42,3	35,5			
38	Resistor	R29	RC0402FR-0710KL	RLC_000063	SMD resistor - 10k - 1% - 0402 - 63mW	Mil		0		0,032	PWavg	0,063			70	0,0441				M
											V	25,0998			50	12,5499				M
											PWpeak	0,252			70	0,1764				M
											Temp	155	55	83,9	130	42,3	35,5			
39	Resistor	R30	CRCW0402470RFKEDC	RLC_000819_FO	SMD resistor - 470k - 1% - 0402 - 63mW	Mil		0		0,032	PWavg	0,063			70	0,0441				M
											V	5,4415			50	2,7208				M
											PWpeak	0,252			70	0,1764				M
											Temp	155	55	83,9	130	42,3	35,5			
40	Resistor	R31	RC0402FR-0710KL	RLC_000063	SMD resistor - 10k - 1% - 0402 - 63mW	Mil		0		0,032	PWavg	0,063			70	0,0441				M
											V	25,0998			50	12,5499				M
											PWpeak	0,252			70	0,1764				M
											Temp	155	55	83,9	130	42,3	35,5			
41	Resistor	R32	RC0402FR-0710KL	RLC_000063	SMD resistor - 10k - 1% - 0402 - 63mW	Mil		0		0,032	PWavg	0,063			70	0,0441				M
											V	25,0998			50	12,5499				M
											PWpeak	0,252			70	0,1764				M
											Temp	155	55	83,9	130	42,3	35,5			
42	Resistor	R33	RC0402FR-0710KL	RLC_000063	SMD resistor - 10k - 1% - 0402 - 63mW	Mil		0		0,032	PWavg	0,063			70	0,0441				M
											V	25,0998			50	12,5499				M
											PWpeak	0,252			70	0,1764				M
											Temp	155	55	83,9	130	42,3	35,5			
43	Resistor	R7	CRCW0402330RFKEDC	RLC_000498_FO	SMD resistor - 330k - 1% - 0402 - 63mW	Mil		0		0,032	PWavg	0,063			70	0,0441				M
											V	4,5596			50	2,2798				M
											PWpeak	0,252			70	0,1764				M
											Temp	155	55	83,9	130	42,3	35,5			
44	Resistor	R8	RC0402FR-07383KL	RLC_CB_001234	SMD resistor - 383k - 1% - 0402 - 63mW	Mil		0		0,032	PWavg	0,063			70	0,0441				M
											V	50			50	25				M
											PWpeak	0,252			70	0,1764				M
											Temp	155	55	83,9	130	42,3	35,5			
45	Resistor	R9	CRCW0402976KFKED	RLC_CB_001236	SMD resistor - 976k - 1% - 0402 - 63mW - AEC-Q200	Mil		0		0,032	PWavg	0,063			70	0,0441				M
											V	50			50	25				M
											PWpeak	0,252			70	0,1764				M
											Temp	155	55	83,9	130	42,3	35,5			
46	IC	U13	TLV76733DRVT	SEM_IC_0000239_FO	3.3V/1A - Small Size - Low-Dropout Linear Voltage Regulator - Voltage	Mil		0	N/A	18,9	0,8	Vspl	18		50	9				M
											Iout	1			75	0,75				M
											Tj	150			63,3	95				M
47	IC	U14	TPS3701DDCR	SEM_IC_CCA_000361	Open-Drain window voltage supervisor - Operating Supply voltage Ra	Mil		0	N/A	47,8	0,43	Vinp	40		100	40				M
											Vspl	40			80	32				M
											Iout	0,04			75	0,03				M
											Tj	150			63,3	95				M
48	IC	U15	TPS3701DDCR	SEM_IC_CCA_000361	Open-Drain window voltage supervisor - Operating Supply voltage Ra	Mil		0	N/A	47,8	0,43	Vinp	40		100	40				M
											Vspl	40			80	32				M
											Iout	0,04			75	0,03				M
											Tj	150			63,3	95				M
49	IC	U16	TPS3701DDCR	SEM_IC_CCA_000361	Open-Drain window voltage supervisor - Operating Supply voltage Ra	Mil		0	N/A	47,8	0,43	Vinp	40		100	40				M
											Vspl	40			80	32				M
											Iout	0,04			75	0,03				M
											Tj	150			63,3	95				M
50	IC	U17	TPS3701DDCR	SEM_IC_CCA_000361	Open-Drain window voltage supervisor - Operating Supply voltage Ra	Mil		0	N/A	47,8	0,43	Vinp	40		100	40				M
											Vspl	40			80	32				M
											Iout	0,04			75	0,03				M

51	IC	U18	STM32F401RET6	SEM_IC_000110_CCA	Microcontrôleurs ARM - MCU STM32, ARM Cortex-M4 core with DSP	Mil	0	N/A	100	0,22	Tj	150		63,3	95			M
											Vspl	4	0,1	5	0,2	50	2,5	M
											lout	0,025		85	0,0213			M
											Tj	125		80	100			M
52	IC	U19	TPS3808G33DRVR	SEM_IC_CB_000370	Low-Quiescent-Current - Programmable-Delay Supervisory Circuit - C	Mil	0	N/A	7,3	0,49	Vspl	7		100	7			M
											lout	0,005		85	0,0043			M
											Tj	150		66,7	100			M

**Block Components Power Dissipation : 6.843 watt.**

**Total Power Dissipation : 6.843 watt.**

Titles of Stress Derating and Thermal Analysis - Detailed Report (SD)

- a Block/PCB unique serial number
- b Block/PCB short name
- c Next Higher Assembly (N.H.A)
- d Block/PCB Manufacturer Part Number
- e Block/PCB Catalog Number, company internal Part Number
- f Block/PCB long description
- g Block/PCB environmental temperature
- h Block/PCB Air flow above the block/PCB in Cubic Feet per Minute (CFM)
- i Component unique serial number
- j Component Family ( such as: IC, resistor, transistor, etc)
- k Component unique Reference Designator
- l Component Manufacturer Part Number
- m Component Catalog Number, company internal Part Number
- n Component long description
- o Component Stress derating profile
- p Component Difference to the parent block/assembly temperature
- q Component Junction to Ambient Thermal Resistance (Oja)
- r Component Junction to Case Thermal Resistance (Ojc)
- s Component Actual/Applied Power Dissipation in Watts (W)
- t Component Actual/Applied derating parameters for each component family, such as: Power, Volt, current, etc.
- u Component parameter maximal rating values taken from components library
- v Component Actual/Applied stress value, such as: power, volt, current, etc, taken from fixTress on manually from BOM
- w Component maximal allowed derated factor taken from stress derating curves with component temperature (in %)
- x Component derated stress value, such as: power, volt, current, etc.  
 $x = (u * w) / 100$
- y Component applied parameter divided by derated parameter (in %)  
 $y = v/x$
- z Component applied parameter divided by maximal Rated parameter (in %)  
 $z = v/u$
- aa Status:
  - \* Applied Value is above Derated Limit
  - \*\* Applied Value is above Maximum Rating

F	Error in Input Data/Calculation
D	Stress is missing in the BOM, default was taken
M	Stress is missing in the BOM
NoLic	Calculation Method not purchased
NoLibr	Component not found in library or not completed
NoComp	Component not found in Components Library
NoReq	Stress Derating is not required
Error	Calculation Error

End of Report