

Device Reliability Prediction

Case 1 - Black Box Estimates (50% Stress, Temp. = 55 Deg. C,
 No Device burn-in)

Date: 9/7/2018	Page: 1 of 2
Unit: PTH08T231WAD	Manufacturer: Texas Instruments Inc., Warrenville, IL

<i>Device Type</i>	<i>Part Number</i>	<i>Circuit Ref Symbol</i>	<i>Qty</i>	<i>Failure Rate</i>	<i>Quality Factor</i>	<i>Total Device Failure Rate</i>
	088-00057	X3	1		1	
	088-00049	X501	1		1	
	088-00041		0		1	
	077-00067	PIN1-PIN10	10		1	
	076-00350		0.028		1	
	076-00232		0.028		1	
	074-00962		1		1	
	072-00029	S1,S2	0.002		1	
	072-00005		0.001		1	
Resistor, Comp < 1MOhm	057-24100	R19	1	0.6	1	0.6
Resistor, Comp < 1MOhm	055-29000	R26	1	0.6	1	0.6
Resistor, Comp < 1MOhm	051-25200	R11	1	0.6	1	0.6
Resistor, Comp < 1MOhm	051-25174	R7	1	0.6	1	0.6
Resistor, Comp < 1MOhm	051-25100	R6	1	0.6	1	0.6
Resistor, Comp < 1MOhm	051-24806	R8	1	0.6	1	0.6
Resistor, Comp < 1MOhm	051-24562	R520	1	0.6	1	0.6
Resistor, Comp < 1MOhm	051-24499	R2	1	0.6	1	0.6
Resistor, Comp < 1MOhm	051-24402	R29	1	0.6	1	0.6
Resistor, Comp < 1MOhm	051-24316	R9	1	0.6	1	0.6
Resistor, Comp < 1MOhm	051-24274	R3	1	0.6	1	0.6
Resistor, Comp < 1MOhm	051-24200	R14	1	0.6	1	0.6
Resistor, Comp < 1MOhm	051-24100	R16,R27,R30,R31	4	0.6	1	2.4
Resistor, Comp < 1MOhm	051-23499	R15	1	0.6	1	0.6
Resistor, Comp < 1MOhm	051-23499	R532	1	0.6	1	0.6
Resistor, Comp < 1MOhm	051-23249	R12	1	0.6	1	0.6
Resistor, Comp < 1MOhm	051-23143	R22	1	0.6	1	0.6
Resistor, Comp < 1MOhm	051-23100	R1,R5	2	0.6	1	1.2
Resistor, Comp < 1MOhm	051-22825	R10	1	0.6	1	0.6
Resistor, Comp < 1MOhm	051-22100	R13	1	0.6	1	0.6
Resistor, Comp < 1MOhm	051-22100	R518	1	0.6	1	0.6
Resistor, Comp < 1MOhm	051-21100	R24	1	0.6	1	0.6
Resistor, Comp < 1MOhm	051-21100	R505	1	0.6	1	0.6
Capacitor, Fixed, Ceramic	047-64701	C504	1	1.0	1	1.0
Capacitor, Fixed, Ceramic	047-61004	C501	1	1.0	1	1.0
Capacitor, Fixed, Ceramic	047-61003	C2	1	1.0	1	1.0
Capacitor, Fixed, Ceramic	047-51007	C505	1	1.0	1	1.0
Capacitor, Fixed, Ceramic	047-51007	C7,C15,C22	3	1.0	1	3.0
Capacitor, Fixed, Ceramic	047-51005	C512	1	1.0	1	1.0
Capacitor, Fixed, Ceramic	047-41032	C3,C4,C11,C12,C19,C20	6	1.0	1	6.0
Capacitor, Fixed, Ceramic	047-41011	C1,C6	2	1.0	1	2.0
Capacitor, Fixed, Ceramic	047-31024	C21	1	1.0	1	1.0
Capacitor, Fixed, Ceramic	047-25621	C503	1	1.0	1	1.0
Capacitor, Fixed, Ceramic	047-24700	C8	1	1.0	1	1.0
Capacitor, Fixed, Ceramic	047-22200	C10	1	1.0	1	1.0
Capacitor, Fixed, Ceramic	047-21522	C25	1	1.0	1	1.0
Capacitor, Fixed, Ceramic	047-21000	C16, C17	2	1.0	1	2.0
Capacitor, Fixed, Ceramic	047-16822	C5	1	1.0	1	1.0
Capacitor, Fixed, Ceramic	047-13322	C14	1	1.0	1	1.0
Capacitor, Fixed, Ceramic	047-04700	C9	1	1.0	1	1.0

Reliability Prediction
 TR-NWT-332
 Issue 6

Device Reliability Prediction

Case 1 - Black Box Estimates (50% Stress, Temp. = 55 Deg. C,
 No Device burn-in)

Date: 9/7/2018	Page: 2 of 2
Unit: PTH08T231WAD	Manufacturer: Texas Instruments Inc., Warrenville, IL

<i>Device Type</i>	<i>Part Number</i>	<i>Circuit Ref Symbol</i>	<i>Qty</i>	<i>Failure Rate</i>	<i>Quality Factor</i>	<i>Total Device Failure Rate</i>
Inductor, Power Filter	030-00142	L501	1	22.8	1	22.8
Diode, Silicon, GP 1-20A	027-81012	D1	1	8.4	1	8.4
Diode, Silicon, GP < 1A	027-50003	D2	1	4.2	1	4.2
Diode, Volt Reg > 1.5W	027-01621	D503	1	10.8	1	10.8
FET, Silicon, Switch	025-20018	Q501,Q502	2	28.0	1	56.0
Trans. Silicon, NPN < 0.6W	025-00012	Q1,Q2	2	5.6	1	11.2
SN74AHCT1G125 - TI	023-00014	U4	1	2.1	1	2.1
IC, Analog	021-50017	U2	1	5.5	1	5.5
PWM TPS40190	021-00091	U1	1	1.8	1	1.8
IC, Analog	021-00053	U3	1	49.4	1	49.4

Total FIT Rate: 214.4

Equivalent MTBF (hrs): 4,663,744