

MODEL: ETSA120150U-P13P-SZ-C1 | **DESCRIPTION:** 100 V MTBF TEST REPORT

<i>TYPE : MTBF</i>		<i>REV : 01</i>	
<i>TEST CONDITION</i>			
<i>AC INPUT : 100V</i>		<i>ROOM TEMPERATURE : 25 °C</i>	
<i>DC OUTPUT : 12V 1.5A</i>			
<i>TYPE</i>		<i>πp</i>	
RESISTOR		0.145016121	
CERAMIC		0.033302379	
PLASTIC CAPACITOR		0.001802475	
CAPACITOR(ALUMINUM)		3.896744221	
DIODE		1.911711531	
ZENER		0.030566578	
MOSFET		0.67959792	
IC		0.159048882	
CHOKE		0.072019992	
TRANSFORMER		0.704747351	
FUSE NTC		0.02	
PCB		0.32	
LED PHOTO		0.072099494	
CONNECTOR		0.002625568	
TOTAL πp	=	8.049282511	
MTBF	=	124235 Hours	

TYPE : MOSFET						SPECIFICATION:						
TEST CONDITION						ROOM TEMPERATURE : 25 °C						
AC INPUT : 100V												
DC OUTPUT : 12V 1.5A												
P / N	Item	V	V _{op}	S	T	π b	π T	π A	π Q	π E	π P	
STP4N60ZFP	Q1	600	320	0.533333	76.1	0.012	2.57423	4	5.5	1	0.679598	DIP
Total π P =		0.67959792										
V _m :Max Voltage						π Q : Quality Factor						
T : Component Temperature						π E : Environment Factor						
π b : Base Failure Rate						π p = AbPTPAPQPE Failures / 10 ⁶ Hours						
π T : Temperature Facto =exp(-1925((1/(T+273))-(1/298)))												
π A : Application Factor												

TYPE : IC						SPECIFICATION:						
TEST CONDITION												
AC INPUT : 100V						ROOM TEMPERATURE : 25 ° C						
DC OUTPUT : 12V 1.5A												
P / N	Item	Part type	pin	S	T	C1	C2	πT	πE	πQ	πL	πP
GR8835	U1		6		66.7	0.02	0.0030	2.236	2	2	1	0.101
KA431	IC1		3		56.7	0.02	0.0030	1.14	2	2	1	0.058
Total $\pi P =$		0.159048882										
T : Component Temperature						πE : Environment Factor						
C1 : Die Complexity Failure Rates						πQ : Quality Factor						
C2 : Package Failure Rate for all Microcircuits						πL : Learning Factor						
πT : Temperature Factor						$\pi p = (C1PT + C2PE)PLPQ$ Failures / 10 ⁶ Hours						

<p>TYPE : Choke TEST CONDITION AC INPUT : 100V DC OUTPUT : 12V 1.5A</p>	<p>SPECIFICATION: ROOM TEMPERATURE : 25 ° C</p>
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P / N	Item	Spec	P _m	S	T	π _b	π _c	π _Q	π _E	π _P	
NF00030	NF1				72.3	0.0006	1	30	4	0.072	DIP

Total π_P = 0.072019992

T : Component Temperature
 π_b : Base Failure Rate
 (Ab = 0.000319exp(((T+273)/364)^8.7)
 π_c : Construction Factor
 π_Q : Quality Factor
 π_E : Environment Factor
 π_p : AbPCPQPE Failures / 10⁶ Hours

TYPE : Transformer					SPECIFICATION:					
TEST CONDITION					ROOM TEMPERATURE : 25 ° C					
AC INPUT : 100V										
DC OUTPUT : 12V 1.5A										
P / N	Item	Spec	π_m	S	T	π_b	π_Q	π_E	π_P	
XF00578	T1				80.6	0.003915	30	6	0.7047474	DIP
Total $\pi_P =$		0.704747351								
<p>T : Component Temperature π_b : Base Failure Rate π_Q : Quality Factor π_E : Environment Factor π_p : AbPQPE Failures / 10⁶ Hours</p>										

TYPE : Fuse TEST CONDITION AC INPUT : 100V DC OUTPUT : 12V 1.5A					SPECIFICATION: ROOM TEMPERATURE : 25 ° C					
P / N	Item	V	A	π_m	S	π_Q	π_b	π_E	π_P	
MST	F1	250	1				0.01	2	0.02	DIP
Total $\pi_P =$					0.02					
T : Component Temperature π_b : Base Failure Rate π_E : Environment Factor π_p : AbPE Failures / 10 ⁶ Hours										

TYPE : PCB						SPECIFICATION:					
TEST CONDITION						ROOM TEMPERATURE : 25 °C					
AC INPUT : 100V											
DC OUTPUT : 12V 1.5A											
P / N	Item	Spec	T	π_b	N1	N2	π_c	π_Q	π_E	π_P	
181806	PCB	94-V0	70	0.0008	200	0	1	2	1	0.32	
Total $\pi_P =$						0.32					
π_b : Base Failure Rate N1,N2 : Number of PTHS Factor π_c : Complexity Factor π_Q : Quality Factor π_E : Environment Factor $\pi_p = \pi_b((N1XPC+N2(PC+13))PQPE \text{ Failures} / 10^6 \text{ Hours}$											

TYPE : LED PHOTO					SPECIFICATION:					
TEST CONDITION					ROOM TEMPERATURE : 25 ° C					
AC INPUT : 100V										
DC OUTPUT: 12V 1.5A										
P / N	Item	Spec	T	π_b	π_T	π_Q	π_E	π_P		
EL817-B	PC1		59.2	0.0025	2.6218	5.5	2	0.0721	DIP	
Total $\pi_P =$		0.072099494								
π_b : Base Failure Rate π_T : Complexity Factor π_Q : Quality Factor π_E : Environment Factor $\pi_p = \pi_b * \pi_T * \pi_Q * \pi_E * \pi_P$ Failures / 10 ⁶ Hours										

TYPE : CONNECTOR
TEST CONDITION
AC INPUT : 100V
DC OUTPUT : 12V 1.5A

SPECIFICATION:
ROOM TEMPERATURE : 25 ° C

P / N	Item	parts type	PIN	π_b	N1	N2	π_k	π_p	π_E	π_P
	AC Inlet	3 PIN	3	0.0001352			2	1.1075	3	0.0009
	AC PIN	3	3	0.0001352			2	1.1075	3	0.0009
	DC Outlet	2 wire	2	0.0001313			2	1.0524	3	0.0008

Total $\pi_P =$ 0.002625568

π_b : Base Failure Rate
 N1,N2 : Number of PTHS Factor
 π_c : Complexity Factor
 π_Q : Quality Factor
 π_E : Environment Factor
 $\pi_p = \pi_b((N1XPC+N2(PC+13))PQPE \text{ Failures} / 10^6 \text{ Hours}$

Headquarters
 20050 SW 112th Ave.
 Tualatin, OR 97062
800.275.4899

Fax 503.612.2383
 cui.com
 techsupport@cui.com

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