

HIGH TEMPERATURE OPERATING LIFE TEST REPORT

Company : SYNC POWER CORP.

Model Name : SP6013AS8TG

Date Received : FEB.04. 2008

Date Tested : MAR.26. 2008

TESTING LABORATORY IS ACCREDITED BY:

IEC/IECQ 17025 certificate of independent test laboratory approval

Certificate No. : T1091

ISO 17025 accredited in respect of laboratory is approved by TAF

Certificate No. : L0835-060321

ISO 9001 certificate is approved by TUV CERT certification body of TUV NORD Cert GmbH

WE HEREBY CERTIFY THAT:

The test(s) shown in the attachment were conducted according to the indicating procedures. We assume full responsibility for the accuracy and completeness of these tests and vouch for the qualifications of all personnel performing them.

	Name	Signature	Date
Test Engineer	Samh Chang	<i>Samh Chang</i>	2008/04/03
Section Manager	Allan Tseng	<i>Allan Tseng</i>	2008/04/03

Note :

1. This report will be invalid if reproduced in whole or in part.
2. This report refers only to the specimen(s) submitted to test, and is invalid if used separately.
3. This report is ONLY valid with the examination seal and signature of this institute.
4. The tested specimen(s) will only be preserved for thirty days from the date issued, if not collected by the applicant.

TABLE OF CONTENTS

1. GENERAL INFORMATION

1.1 DESCRIPTION OF UNIT	2
-------------------------------	---

2. OPERATING LIFE TEST

2.1 DESCRIPTION OF TEST EQUIPMENT	3
2.2 LABORATORY AMBIENCE CONDITION	3
2.3 REFERENCE DOCUMENT	3
2.4 TEST CONDITION	3
2.5 SUMMARY OF TEST	3

3. MTTF CALCULATION

3.1 CALCULATION	4
-----------------------	---



1. GENERAL INFORMATION

1.1 DESCRIPTION OF UNIT

Manufacturer	:SYNC POWER CORP.
Model Name	:SP6013AS8TG
Package Type	:SOP8
Sample Quantity	:77ea

2. HIGH TEMPERATURE OPERATING LIFE

2.1 DESCRIPTION OF TEST EQUIPMENT

Test Equipment	Serial Number	Calibration Trace Code
SIGNALITY B1120M	TE-P101	A96-04-463-02

2.2 LABORATORY AMBIENCE CONDITION

Verification area temperature : $25 \pm 5^{\circ}\text{C}$

Verification area relative humidity : $55\% \pm 10\%$

Laboratory area temperature : $30 \pm 5^{\circ}\text{C}$

Laboratory area relative humidity : $45\% \pm 10\%$

2.3 REFERENCE DOCUMENT

The test refers to JESD22-A108C Test Method

2.4 TEST CONDITION

Temperature : 125°C
Bias Setting : PS1:12V
VIH : 5V
Test Time : 1000hours
Test Pattern : SP6013A.BTP

2.5 SUMMARY OF TEST

Observe surface of samples by visual, no abnormal phenomenon was found.
Function tested by client resulted in 77ea samples passed.

3. MTTF CALCULATE

3.1 MTTF CALCULATE

SP6013AS8TG HTOL test MTTF & FIT calculation

Device Name	SP6013AS8TG	
Test Hours(T.H.)	1000	Hours
Sample Size(S.S.)	77	ea
Normal Operation Temperature	55	°C
Experimental Stress Temperature	125	°C
Normal Operation Voltage	12	V
Experimental Stress Voltage	12	V
Activation Energy	0.70	eV
β	1.0	1/V

$$AF_T = \exp^{(Ea/k)(1/T_{use}-1/T_{stress})}$$

$$AF_V = \exp^{\beta(V_{stress}-V_{use})}$$

Parametric	Value	Unit
k	8.62E-05	eV/K
Ea	0.70	eV
T _{use}	55	°C
T _{stress}	125	°C
T _{use}	328	K
T _{stress}	398	K

Parametric	Value	Unit
β	1.0	1/V
V _{use}	12	V
V _{stress}	12	V

$AF_T =$	77.94098
$AF_V =$	1
$AF = AF_T * AF_V =$	77.94098

Confidence Level(%)=	90%
Total Rejects(r)=	0
$X^2(\%CL, 2r+2) =$	2.30

Confidence Level(%)=	60%
Total Rejects(r)=	0
$X^2(\%CL, 2r+2) =$	0.92

$$\lambda = \frac{X^2(\%CL, 2r+2) * 10^9}{AF * T.H. * S.S.}$$

$$MTTF = 1/\lambda * 10^9$$

60% Confidence Level Result

$\lambda =$	152.68	FITs
MTTF=	6,549,728	Hours

90% Confidence Level Result

$\lambda =$	383.67	FITs
MTTF=	2,606,399	Hours

$$\text{Life Time} = (\text{Test Hours} * AF) / (365 * 24)$$

Calculated Life Time

Life Time=	8.90	Years
------------	------	-------