



Test Report: GST280A20-C6P

280W AC-DC High Reliability Industrial Adaptor

■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

Component Stress Test

■ SAFETY & E.M.C. TEST

Safety Test

E.M.C. Test

■ RELIABILITY TEST

ENVIRONMENT TEST

DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1 : 150 mVp-p	I/P : 230VAC O/P : FULL LOAD Ta : 25°C	V1 : 27.2mVp-p (Max)	P
2	OUTPUT VOLTAGE TOLERANCE	V1 : 4 %~ -4 %	I/P : 100 VAC / 264 VAC O/P : FULL/ MIN LOAD Ta : 25°C	V1 : 1.5%~-1.5%	P
3	LINE REGULATION	V1 : 1 %~ -1 %	I/P : 100VAC ~ 264 VAC O/P : FULL LOAD Ta : 25°C	V1 : 0.16%~-0.16%	P
4	LOAD REGULATION	V1 : 4 %~ -4 %	I/P : 230 VAC O/P : FULL ~MIN LOAD Ta : 25°C	V1 : 1.5%~-1.5%	P
5	SET UP TIME	230VAC : 2000ms 115VAC : 2000ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 600ms 115VAC/ 1210ms	P
6	RISE TIME	230VAC : 20ms 115VAC : 20ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 15ms 115VAC/ 15ms	P
7	HOLD UP TIME	230VAC : 16ms 115VAC : 16ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 26ms 115VAC/ 26ms	P
8	OVER/UNDERSHOOT TEST	< ±5%	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	TEST : <5 %	P
9	DYNAMIC LOAD	V1 : 2000 mVp-p	I/P : 230 VAC (1).O/P : FULL /Min LOAD 90%DUTY/ 1KHZ (2).O/P : FULL /Min LOAD 90%DUTY/ 3KHZ (3).O/P : FULL /Min LOAD 90%DUTY/ 5KHZ (4).O/P : FULL /Min LOAD 50%DUTY/ 120HZ Ta : 25°C	(1)850 mVp-p (2)870 mVp-p (3)840 mVp-p (4)1090 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	100VAC~264 VAC	I/P : TESTING O/P : FULL LOAD Ta : 25°C	65 V~264V	P
			I/P : LOW-LINE-3V= 97V HIGH-LINE+15%=300 V O/P : FULL/MIN LOAD ON : 30 Sec . OFF : 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE)	TEST : OK	
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P : 100VAC ~ 264 VAC O/P : FULL~MIN LOAD Ta : 25°C	TEST : OK	P
3	POWER FACTOR	0.95/ 230 VAC 0.98/ 115 VAC	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	PF=0.970/ 230 VAC PF=0.998/ 115 VAC	P
4	EFFICIENCY	92%	I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	92.22 %	P
5	INPUT CURRENT	230V/ 1.5A 115V/ 3A	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I=1.25A/ 230 VAC I=2.5A/ 115 VAC	P
6	INRUSH CURRENT	230VAC/120A 115VAC/60A COLD START	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I=110A/ 230 VAC I=56A/ 115 VAC	P
7	LEAKAGE CURRENT	<1.5mA / 240 VAC	I/P : 264 VAC O/P : Min LOAD Ta : 25°C	L-FG : 0.70mA N-FG : 0.66mA	P
8	NO LOAD CONSUMPTION	<0.5W	I/P : 115VAC I/P : 230VAC O/P : NO LOAD Ta : 25°C	< 0.22 W < 0.30 W	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105% ~ 135 %	I/P : 230 VAC I/P : 115 VAC O/P : TESTING Ta : 25°C	117%/ 230 VAC 117%/ 115 VAC Hiccup mode, recovers automatically after fault condition is removed.	P
2	OVER VOLTAGE PROTECTION	CH1 : 21V~27V rated output voltage	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	24.14V/ 230 VAC 24.14V/ 115 VAC Shunt down o/p voltage, re-power on to recovers	P
3	OVER TEMPERATURE PROTECTION	NO DAMAGE	I/P : 230 VAC O/P : FULL LOAD	O.T.P. Active Shunt down o/p voltage, re-power on to recovers	P
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P : 264 VAC O/P : FULL LOAD Ta : 25°C	NO DAMAGE Hiccup mode, recovers automatically after fault condition is removed.	P

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q 5 Rated : 16A/600V	I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on (2) Output Short (3)Full load continue Ta : 25°C	(1)444V (2)446V (3)428V	P
2	Diode Peak Voltage	Q102 Rated : 80A/75V	I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on (2)Output Short (3)Full load continue Ta : 25°C	(1)57.6V (2)18.8V (3)56.4V	P
4	Input Capacitor Voltage	C 5 Rated : 220u/450V 105°C	I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta : 25°C	(1)428V (2)430V (3)434V	P
5	Control IC Voltage Test	U900 Rated : 8.85V 16V(MIN)	I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta : 25°C	(1)15.4V (2)13V (3)14.1V	P
6	Power Transistor (D to S) or (C to E) Peak Voltage	Q2 Rated : 20A/600V	I/P : High-Line +3V = 267 V O/P : (1)Full Load Turn on (2) Output Short (3)Full load continue Ta : 25°C	(1)496V (2)484V (3)482V	P

■ SAFETY & E.M.C. TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P : 3 KVAC/min	I/P-O/P : 3.6 KVAC/min Ta : 25°C	I/P-O/P : 10.69mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P : 500VDC>100MΩ	I/P-O/P : 500 VDC Ta : 25°C /70%RH	I/P-O/P : 9999MΩ NO DAMAGE	P

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A	I/P:230VAC/50HZ O/P:FULL LOAD Ta:25°C	PASS	P
2	CONDUCTION	EN55022 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS Test by certified Lab	P
3	RADIATION	EN55022 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	PASS Test by certified Lab	P
4	E.S.D	EN61000-4-2 LIGHT INDUSTRY AIR : 8KV / Contact : 4KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A	P
5	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT : 1KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A	P
6	SURGE	IEC61000-4-5 LIGHT INDUSTRY L-N : 1KV L,N-PE : 2KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A	P
7	Test by certified Lab & Test Report Prepare				

RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																																																																	
1	TEMPERATURE RISE TEST	<div>MODEL : GST280A15-C6P</div> <div>1. ROOM AMBIENT BURN-IN : 1HRS</div> <div>I/P : 230VAC O/P : FULL LOAD Ta=17.8 °C</div> <div>2. HIGH AMBIENT BURN-IN : 1HRS</div> <div>I/P : 230VAC O/P : FULL LOAD Ta=38.4 °C</div> <table><thead><tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta= 17.8 °C</th><th>HIGH AMBIENT Ta= 38.4 °C</th></tr></thead><tbody><tr><td>1</td><td>LF2</td><td>60.0°C</td><td>79.1°C</td></tr><tr><td>2</td><td>Q2</td><td>66.1°C</td><td>85.1°C</td></tr><tr><td>3</td><td>Q1</td><td>64.3°C</td><td>83.3°C</td></tr><tr><td>4</td><td>BD1</td><td>63.5°C</td><td>82.2°C</td></tr><tr><td>5</td><td>D2</td><td>66.3°C</td><td>85.2°C</td></tr><tr><td>6</td><td>Q5</td><td>66.0°C</td><td>85.3°C</td></tr><tr><td>7</td><td>Q6</td><td>65.7°C</td><td>85.0°C</td></tr><tr><td>8</td><td>L1</td><td>66.1°C</td><td>84.9°C</td></tr><tr><td>9</td><td>C5</td><td>67.2°C</td><td>86.2°C</td></tr><tr><td>10</td><td>RTH2</td><td>62.4°C</td><td>81.4°C</td></tr><tr><td>11</td><td>TI Coil</td><td>73.6°C</td><td>93.3°C</td></tr><tr><td>12</td><td>Q102</td><td>73.2°C</td><td>93.0°C</td></tr><tr><td>13</td><td>C101</td><td>74.2°C</td><td>94.4°C</td></tr><tr><td>14</td><td>LF101</td><td>78.5°C</td><td>99.5°C</td></tr><tr><td>15</td><td>U1</td><td>62.8°C</td><td>81.8°C</td></tr><tr><td>16</td><td>U900</td><td>65.6°C</td><td>84.9°C</td></tr><tr><td>17</td><td>U201</td><td>69.1°C</td><td>88.9°C</td></tr><tr><td>18</td><td>T1core</td><td>80.5°C</td><td>101.9°C</td></tr><tr><td>19</td><td>CASE</td><td>49.0°C</td><td>67.6°C</td></tr></tbody></table>			NO	Position	ROOM AMBIENT Ta= 17.8 °C	HIGH AMBIENT Ta= 38.4 °C	1	LF2	60.0°C	79.1°C	2	Q2	66.1°C	85.1°C	3	Q1	64.3°C	83.3°C	4	BD1	63.5°C	82.2°C	5	D2	66.3°C	85.2°C	6	Q5	66.0°C	85.3°C	7	Q6	65.7°C	85.0°C	8	L1	66.1°C	84.9°C	9	C5	67.2°C	86.2°C	10	RTH2	62.4°C	81.4°C	11	TI Coil	73.6°C	93.3°C	12	Q102	73.2°C	93.0°C	13	C101	74.2°C	94.4°C	14	LF101	78.5°C	99.5°C	15	U1	62.8°C	81.8°C	16	U900	65.6°C	84.9°C	17	U201	69.1°C	88.9°C	18	T1core	80.5°C	101.9°C	19	CASE	49.0°C	67.6°C		P
NO	Position	ROOM AMBIENT Ta= 17.8 °C	HIGH AMBIENT Ta= 38.4 °C																																																																																			
1	LF2	60.0°C	79.1°C																																																																																			
2	Q2	66.1°C	85.1°C																																																																																			
3	Q1	64.3°C	83.3°C																																																																																			
4	BD1	63.5°C	82.2°C																																																																																			
5	D2	66.3°C	85.2°C																																																																																			
6	Q5	66.0°C	85.3°C																																																																																			
7	Q6	65.7°C	85.0°C																																																																																			
8	L1	66.1°C	84.9°C																																																																																			
9	C5	67.2°C	86.2°C																																																																																			
10	RTH2	62.4°C	81.4°C																																																																																			
11	TI Coil	73.6°C	93.3°C																																																																																			
12	Q102	73.2°C	93.0°C																																																																																			
13	C101	74.2°C	94.4°C																																																																																			
14	LF101	78.5°C	99.5°C																																																																																			
15	U1	62.8°C	81.8°C																																																																																			
16	U900	65.6°C	84.9°C																																																																																			
17	U201	69.1°C	88.9°C																																																																																			
18	T1core	80.5°C	101.9°C																																																																																			
19	CASE	49.0°C	67.6°C																																																																																			
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 120 % LOAD Ta : 25°C	TEST : OK	P																																																																																	
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 264VAC/100VAC O/P : 100 % LOAD Ta= -35 °C	TEST : OK	P																																																																																	
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 40 °C NO DAMAGE	I/P : 272 VAC O/P : FULL LOAD Ta= 40.6 °C HUMIDITY= 95 %R.H	TEST : OK	P																																																																																	
5	TEMPERATURE COEFFICIENT	± 0.03 %/°C (0~40°C)	I/P : 230 VAC O/P : FULL LOAD	± 0.013 %/°C (0~40°C)	P																																																																																	
6	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature : -40°C ~ +85°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 5 CYCLE 5. Input/Output condition : STATIC		OK	P																																																																																	

7	THERMAL SHOCK TEST	1. Thermal shock Temperature : -30℃~ +70℃ 2. Temperature change rate : 25℃ / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 10 CYCLE 5. Input/Output condition : 230VAC/Full Load AC ON/OFF TEST turn on 58sec ; turn off 2sec	OK	P
8	VIBRATION TEST	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 12min/sweep cycle (4) Acceleration : 2G (5) Test Time : 60min in each axis (X.Y.Z) (6) Ta : 25℃	TEST : OK	P
9	CAPACITOR LIFE CYCLE	SUPPOSE C 101 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Ta= 25 ℃ LIFE TIME (2) I/P : 230VAC O/P : FULL LOAD Ta= 40 ℃ LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta= 40 ℃ LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta= 40℃ LIFE TIME	(1) 62893HRS (2) 22926HRS (3) 80180HRS (4) 271681HRS	P
10	MTBF	MIL-HDBK-217F TOTAL FAILURE RATE : 181.24 KHRs		P
11	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure (Expected Life): Above 50,000 hours @ TA 50℃		P

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	FRANK	GESG	WANGDZ