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ELECTRONICS

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Jameco Part Number 2078320


Features :

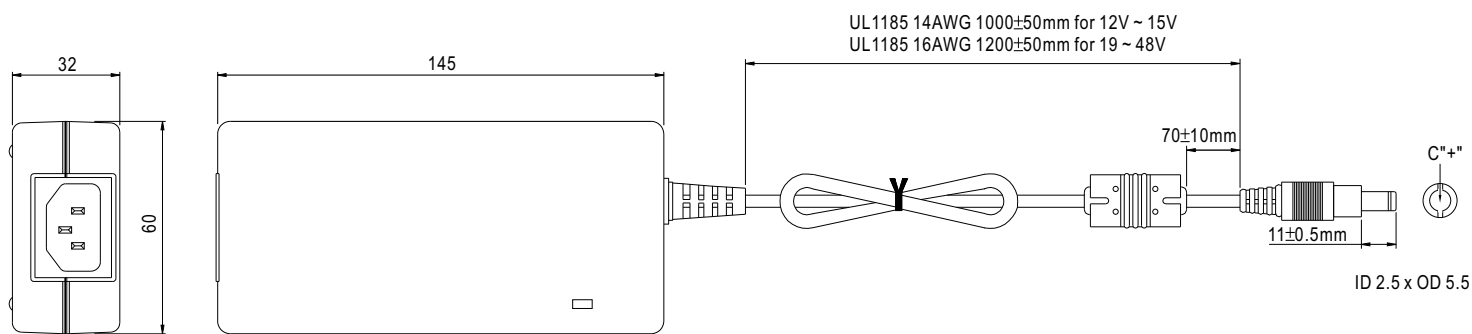
- Universal AC input / Full range
- Built-in active PFC function, PF>0.91
- No load power consumption<0.5W
- Energy star(CEC) level IV compliant
- Meet energy star (CEC) draft V2.0 level V
- Meet EISA 2007(Energy Independence and Security Act)
- 3 pole AC inlet IEC320-C14
- Class I power (with earth pin)
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Pass LPS
- Fully enclosed plastic case
- LED indicator for power on
- Approvals: UL / CUL / TUV / BSMI / CCC / CB / FCC / CE
- 2 years warranty


SPECIFICATION

ORDER NO.		GS90A12-P1M	GS90A15-P1M	GS90A19-P1M	GS90A24-P1M	GS90A48-P1M
OUTPUT	SAFETY MODEL NO.	GS90A12	GS90A15	GS90A19	GS90A24	GS90A48
	DC VOLTAGE Note.2	12V	15V	19V	24V	48V
	RATED CURRENT	6.67A	6A	4.74A	3.75A	1.87A
	CURRENT RANGE	0 ~ 6.67A	0 ~ 6A	0 ~ 4.74A	0 ~ 3.75A	0 ~ 1.87A
	RATED POWER (max.)	80W	90W	90W	90W	90W
	RIPPLE & NOISE (max.) Note.3	80mVp-p	100mVp-p	150mVp-p	180mVp-p	240mVp-p
	VOLTAGE TOLERANCE Note.4	±5.0%	±5.0%	±4.0%	±3.0%	±2.0%
	LINE REGULATION Note.5	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%
	LOAD REGULATION Note.6	±5.0%	±5.0%	±4.0%	±3.0%	±2.0%
	SETUP, RISE TIME Note.8	1000ms, 20ms / 230VAC 1000ms, 20ms / 115VAC at full load				
	HOLD UP TIME (Typ.)	20ms / 230VAC 20ms / 115VAC at full load				
INPUT	VOLTAGE RANGE Note.9	90 ~ 264VAC 135 ~ 370VDC				
	FREQUENCY RANGE	47 ~ 63Hz				
	POWER FACTOR (Typ.)	PF>0.91 / 230VAC PF>0.95 / 115VAC at full load				
	EFFICIENCY (Typ.)	88%	89%	89%	89.5%	91%
	AC CURRENT	2A / 115VAC 1A / 230VAC				
	INRUSH CURRENT (max.)	70A / 230VAC				
	LEAKAGE CURRENT(max.)	1mA / 240VAC				
PROTECTION	OVERLOAD	110 ~ 150% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed				
	OVER VOLTAGE	105 ~ 135% rated output voltage Protection type : Shut down o/p voltage, re-power on to recover				
	OVER TEMPERATURE	RTH30 > 100℃ Protection type : Shut down o/p voltage, re-power on to recover				
	WORKING TEMP.	0 ~ +50℃ (Refer to output load derating curve)				
	WORKING HUMIDITY	20% ~ 90% RH non-condensing				
ENVIRONMENT	STORAGE TEMP., HUMIDITY	-20 ~ +85℃, 10 ~ 95% RH				
	TEMP. COEFFICIENT	±0.03% / °C (0~50℃)				
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes				
	SAFETY STANDARDS	UL60950-1, TUV EN60950-1, BSMI CNS14336, CCC GB4943 approved				
	WITHSTAND VOLTAGE	I/P-O/P: 3KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC				
SAFETY & EMC (Note. 7)	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25℃ / 70% RH				
	EMI CONDUCTION & RADIATION	Compliance to EN55022 class B, FCC PART 15 / CISPR22 class B, CNS13438 class B, GB9254 class B				
	HARMONIC CURRENT	Compliance to EN61000-3-2,3, GB17625.1				
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11, light industry level, criteria A				
	MTBF	348.7Khrs min. MIL-HDBK-217F(25℃)				
OTHERS	DIMENSION	145*60*32mm (L*W*H)				
	PACKING	0.45Kg; 30pcs/14.5Kg/0.85CUFT				
	PLUG	Standard type P1M: 2.5φ * 5.5φ * 11mm, tuning fork type, center positive for stock ; Other type available by customer requested				
CONNECTOR	CABLE	See page 2 ; Other type available by customer requested				
NOTE	1.All parameters are specified at 230VAC input, rated load, 25℃ 70% RH ambient. 2.DC voltage: The output voltage set at point measure by plug terminal & 50% load. 3.Ripple & noise are measured at 20MHz by using a 12" twisted pair terminated with a 0.1uf & 47uf capacitor. 4.Tolerance: includes set up tolerance, line regulation, load regulation. 5.Line regulation is measured from low line to high line at rated load. 6.Load regulation is measured from 10% to 100% rated load 7.The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives. 8. Length of set up time is measured at first cold start. Turning ON/OFF the power supply may lead to increase of the set up time. 9. Derating may be needed under low input voltages. Pleas check the derating curve for more details.					

Mechanical Specification

Case No. 978A Unit:mm

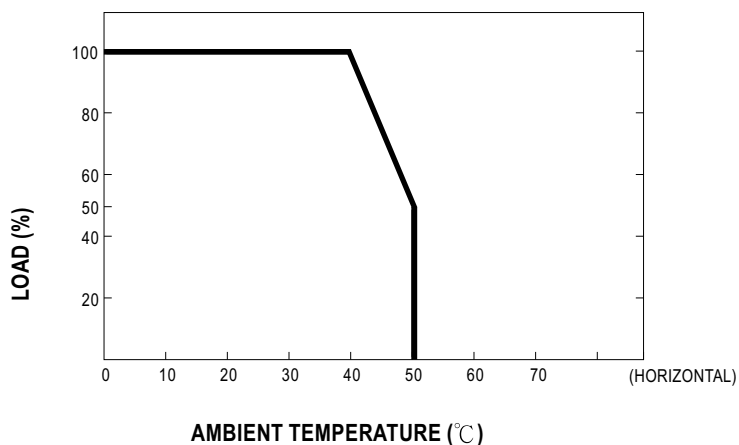


Plug Assignment

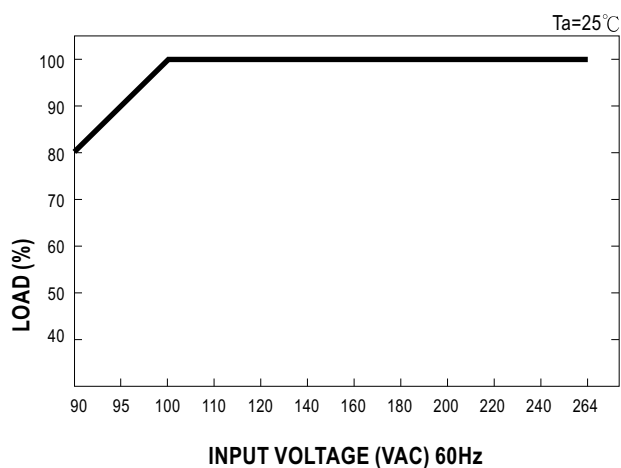
Standard plug: P1M (option)

P1M	
P/N	OUTPUT
CENTER	+

Derating Curve



Static Characteristics



MODEL : GS90A15-P1J

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1:100 mVp-p (Max)	I/P: 230VAC O/P:FULL LOAD Ta:25°C	V1: 60 mVp-p (Max)	P
2	OUTPUT VOLTAGE TOLERANCE	V1:5%~ -5 % (Max)	I/P: 100 VAC / 264 VAC O/P:FULL/ MIN LOAD Ta:25°C	V1: 0.84 %~ -0.84 %	P
3	LINE REGULATION	V1: 1 %~ -1 % (Max)	I/P: 100 VAC ~ 264 VAC O/P:FULL LOAD Ta:25°C	V1: 0.04 %~ -0.04 %	P
4	LOAD REGULATION	V1: 5 %~ -5% (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: 0.84 %~ -0.84 %	P
5	SET UP TIME	230VAC: 1000 ms (Max) 115 VAC: 1000 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 465 ms 115VAC/ 465 ms	P
6	RISE TIME	230VAC: 20 ms (Max) 115VAC: 20 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 7.1 ms 115VAC/ 8.3 ms	P
7	HOLD UP TIME	230VAC: 20 ms (TYP) 115VAC: 20 ms (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 75 ms 115VAC/ 29.9 ms	P
8	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	TEST: <5 %	P
9	DYNAMIC LOAD	V1: 1500 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25°C	563 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	90VAC~264 VAC	I/P:TESTING O/P:FULL LOAD Ta:25°C	66V~264V	P
			I/P: LOW-LINE-3V= 87 V 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 OSC	I/P: 100 VAC ~ 264 VAC O/P:FULL~MIN LOAD Ta:25°C	TEST: OK	P
3	POWER FACTOR	0.91 / 230 VAC(TYP) 0.95 / 115 VAC(TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	PF= 0.927 / 230VAC PF= 0.987 / 115VAC	P
4	EFFICIENCY	89 % (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	89.9 %	P
5	INPUT CURRENT	230V/ 1 A (TYP) 115V/ 2 A (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25°C	I = 0.45 A/ 230 VAC I = 0.86 A/ 115 VAC	P
6	INRUSH CURRENT	230V/ 70 A (TYP) COLD START	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	I = 60 A/ 230 VAC	P
7	LEAKAGE CURRENT	< 1 mA / 240 VAC	I/P: 264 VAC O/P:Min LOAD Ta:25°C	L-FG: 0.24 mA N-FG: 0.24 mA	P
8	NO LOAD CONSUMPTION	< 0.5 W/240VAC	I/P: 240 VAC O/P:NO LOAD Ta:25°C	0.30 W	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	110%~ 150 %	I/P: 230 VAC I/P: 115 VAC O/P:TESTING Ta:25°C	125 %/ 230 VAC 119 %/ 115 VAC Hiccup Mode	P
2	OVER VOLTAGE PROTECTION	CH1:15.75 V~ 20.25 V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25°C	17.16 V/ 230 VAC 17.16 V/ 115 VAC Shunt down Re- power ON	P
3	OVER TEMPERATURE PROTECTION	SPEC: RTH30>100°C O.T.P. NO DAMAGE	I/P: 230 VAC O/P:FULL LOAD	O.T.P. Active Shunt down Re-power ON	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	P

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																																																																															
1	TEMPERATURE RISE TEST	MODEL : GS90A12-P1J 1. ROOM AMBIENT BURN-IN : 2 HRS I/P: 230VAC O/P: FULL LOAD Ta=33℃ 2. HIGH AMBIENT BURN-IN : 13HRS I/P: 230VAC O/P: FULL LOAD Ta=46.9℃ <table><tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 33 ℃</th><th>HIGH AMBIENT Ta=46.9℃</th></tr><tr><td>1</td><td>U2</td><td>TEA1751</td><td>78.6℃</td><td>92.6℃</td></tr><tr><td>2</td><td>LF2</td><td>TR781</td><td>66.2℃</td><td>79.9℃</td></tr><tr><td>3</td><td>BD1</td><td>4A/800V US4KB80R-7000</td><td>76.1℃</td><td>90.5℃</td></tr><tr><td>4</td><td>L2</td><td>TF1814</td><td>77.9℃</td><td>92.4℃</td></tr><tr><td>5</td><td>Q31</td><td>2SK3683-01MR 19A/500V</td><td>80.6℃</td><td>94.7℃</td></tr><tr><td>6</td><td>D30</td><td>2A/800V GP20K</td><td>98.8℃</td><td>112.8℃</td></tr><tr><td>7</td><td>Q32</td><td>SPA07N60C3 7.3A/600V</td><td>78.2℃</td><td>86.6℃</td></tr><tr><td>8</td><td>C5</td><td>100U/400V 105℃ KMG</td><td>77.7℃</td><td>91.9℃</td></tr><tr><td>9</td><td>C11</td><td>474/450V 10% P=10 MMX</td><td>76.2℃</td><td>90.5℃</td></tr><tr><td>10</td><td>T1 COIL</td><td>TF1839</td><td>79.4℃</td><td>93.3℃</td></tr><tr><td>11</td><td>C52</td><td>47u/50V UL10Kh YXM</td><td>76.0℃</td><td>90.2℃</td></tr><tr><td>12</td><td>Q101</td><td>STP75NF75 80A/75V</td><td>72.4℃</td><td>86.3℃</td></tr><tr><td>13</td><td>C102</td><td>1500u/16V UL10Kh ZLH</td><td>72.4℃</td><td>86.8℃</td></tr><tr><td>14</td><td>D1</td><td>MUR460 4A/600V</td><td>86.9℃</td><td>101.8℃</td></tr><tr><td>15</td><td>J100</td><td>□ type jnmp</td><td>84.8℃</td><td>99.0℃</td></tr><tr><td>16</td><td>CASE</td><td>Lower CASE</td><td>66.2℃</td><td>79.8℃</td></tr><tr><td>17</td><td>RTH30</td><td>100K 1%</td><td>74.7℃</td><td>88.7℃</td></tr><tr><td>18</td><td>TA</td><td></td><td>33.0℃</td><td>46.9℃</td></tr></table>			NO	Position	P/N	ROOM AMBIENT Ta= 33 ℃	HIGH AMBIENT Ta=46.9℃	1	U2	TEA1751	78.6℃	92.6℃	2	LF2	TR781	66.2℃	79.9℃	3	BD1	4A/800V US4KB80R-7000	76.1℃	90.5℃	4	L2	TF1814	77.9℃	92.4℃	5	Q31	2SK3683-01MR 19A/500V	80.6℃	94.7℃	6	D30	2A/800V GP20K	98.8℃	112.8℃	7	Q32	SPA07N60C3 7.3A/600V	78.2℃	86.6℃	8	C5	100U/400V 105℃ KMG	77.7℃	91.9℃	9	C11	474/450V 10% P=10 MMX	76.2℃	90.5℃	10	T1 COIL	TF1839	79.4℃	93.3℃	11	C52	47u/50V UL10Kh YXM	76.0℃	90.2℃	12	Q101	STP75NF75 80A/75V	72.4℃	86.3℃	13	C102	1500u/16V UL10Kh ZLH	72.4℃	86.8℃	14	D1	MUR460 4A/600V	86.9℃	101.8℃	15	J100	□ type jnmp	84.8℃	99.0℃	16	CASE	Lower CASE	66.2℃	79.8℃	17	RTH30	100K 1%	74.7℃	88.7℃	18	TA		33.0℃	46.9℃	P
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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P: 230 VAC O/P:136 % LOAD Ta:30.7℃	TEST : OK	P																																																																																															
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P:264 VAC O/P:100% LOAD Ta=-5℃	TEST : OK	P																																																																																															
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 40 ℃ NO DAMAGE	I/P: 272 VAC O/P:FULL LOAD Ta=40 ℃ HUMIDITY= 95 %R.H	TEST : OK	P																																																																																															
5	TEMPERATURE COEFFICIENT	±0.03 %(0-50℃)	I/P: 230 VAC O/P:FULL LOAD	± 0.006 %(0-50℃)	P																																																																																															
6	VIBRATION TEST	1 Carton & 1 Set (1) Waveform: Sine Wave (2) Frequency:10~500Hz (3) Sweep Time:10min/sweep cycle (4) Acceleration:2G (5) Test Time:1 hour in each axis (X.Y.Z) (6) Ta:25℃		TEST : OK	P																																																																																															

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 3 KVAC/min I/P-FG: 1.5 KVAC/min O/P-FG: 0.5 KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 1.8 KVAC/min O/P-FG: 0.6 KVAC/min Ta:25°C	I/P-O/P: 2.744 mA I/P-FG: 2.024 mA O/P-FG: 0.509 mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ I/P-FG: 500VDC>100MΩ O/P-FG:500VDC>100MΩ	I/P-O/P: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta:25°C / 70%RH	I/P-O/P: 28.5 GΩ I/P-FG: 1.71 GΩ O/P-FG: 7.45 GΩ NO DAMAGE	P
3	APPROVAL	TUV: Certificate NO : S50132045 UL: File NO : E183223			P

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A CLASS D	I/P: 220VAC/230VAC/240VAC/ 50HZ O/P:100%/75%/50%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				

M.T.B.F & LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	GS90A12-PJ1 : SUPPOSE C102 I/P: 230VAC O/P:FULL LOAD Ta=25 °C LIFE TIME=142447 HRS I/P: 230VAC O/P:FULL LOAD Ta=40 °C LIFE TIME=48678 HRS	IS THE MOST CRITICAL COMPONENT		P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 348.7K HRS			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 32Rated SPA07N60C3 7.3A/600V	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Output Short Ta:25°C	(1) 592 V (2) 490 V	P
2	Diode Peak Voltage	Q 101 Rated STP40NF10L 40A/100V	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2)Output Short Ta:25°C	(1) 81 V (2) 63 V	P
3	Clamp Diode Peak Voltage	D 30 Rated GP20K : 800 V 2 A	I/P:High-Line +3V = 267 V O/P: (1) Dynamic Load 90%Duty/1KHz Ta:25°C	(1) 528 V	P
4	Input Capacitor Voltage	C 5 Rated 120u/400V 105°C KMG	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) 398 V (2) 390 V (3) 398 V	P
5	Control IC Voltage Test	U 2Rated TEA1751T : 38 V	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) 25.28 V (2) 16.65 V (3) 25.26 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2008/5/16	RD SAMPLE	PASS	SANFORD SU	VINCENT TSENG
2008/8/7	PRODUCT SAMPLE W0806B60	PASS	SANFORD SU	VINCENT TSENG
2008/9/16	PRODUCT SAMPLE W0808C62	PASS	SANFORD SU	VINCENT TSENG

2003/12/12 A50-F023