FAW SERIES

10W WIDE INPUT RANGE

DANUBE

FEATURES

- 10W DIL PACKAGE
- INDUSTRY STANDARD PACKAGE
- 9-18V,18-36V,36-72V,9-27V,18-54V, 9-36V,18V-72V WIDE INPUT RANGE
- SHORT CIRCUIT PROTECTION
- REGULATED OUTPUT
- 100% BURN IN
- UL 94V-0 PACKAGE MATERIAL
- CUSTOM SOLUTIONS AVAILABLE
- RoHS COMPLIANT
- 3 YEARS WARRANTY

OUTPUT SPECIFICATIONS	
Voltage Setpoint Accuracy	+/-2% max.
Temperature Coefficient	+/-0.05%/°C
Ripple & Noise(20MHz BW)[1]	100mVp-p max.
Line Regulation[2]	+/-0.5% max.
Load Regulation[3]	+/-0.5% max.
Minimum Load	10% of Full Load
Short Circuit Protection	Continuous
Short Circuit Restart	Automatic
Over Load Protection	180% typ.
Transient Response[5]	200uS max.

ENVIRONMENTAL SPECIFICATIONS	
Operating Temperature	-25°C to +71°C
Storage Temperature	-55°C to +125°C
Humidity	95% max
Cooling	Free-Air Convection

INPUT SPECIFICATIONS		
Input Voltage Range		2:1 3:1 4:1 Input Range
Input Filter		Pi Network
Protection		Fuse Recommended
Start up time (Nominal input) Vin: 12V & 24V		25ms max.
Start up time (Nominal input) Vin: 48V		1s max.

GENERAL SPECIFICATIONS		
Efficiency		70% min.
Isolation Voltage[4]	1500 VDC min	Standard Models
	3000 VDC min	Suffix "3K" Models
Isolation Resistance		10^9 ohms min.
Isolation Capacitance		500pF max.
Switching Frequency		200 KHz min.
MTBF[6]		>342,000 Hours
Weight		31.2g typ.
Case Material		Six-Side Shielded Case
Case Size		50.8mm*25.4mm*11.2mm
Potting Material		Epoxy(UL94-V0)
Conducted Emissions		EN55022 Class A
Radiated Emissions		EN55022 Class A

REMOTE CONTROL	Suffix "A" Models
ON	2.5 to 5.5Vdc or open circuit
OFF	0 to 0.8Vdc

ALL SPECIFICATIONS TYPICAL AT NOMINAL LINE, FULL LOAD , AND 25°C UNLESS OTHERWISE NOTED.

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[1] *Measured with 1uF ceramic capacitor connect to the output pins.*
[2] *High Line to Low Line.*
[3] *Load Regulation is for output load current change from 10% to 100%.*
[4] *1500VDC for 10 seconds,3000VDC for 3 seconds.*
[5] *25% Step Load Change.*
[6] *MIL-HDBK-217F @25°C , Ground Benign.*

● SELECTION GUIDE(1)
2:1 7W-10W OUTPUT

MODEL NUMBER	INPUT VOLTAGE (VDC)	OUTPUT VOLTAGE (VDC)	OUTPUT CURRENT (mA)	INPUT[7] CURRENT(mA)		EFF (%)[8]	CAPACITOR LOAD MAX.
				FULL LOAD	NO LOAD		
FAWS-1203.3(A)(-3K)	9-18	3.3	2400	891	30	74	2700uF
FAWS-1205(A)(-3K)	9-18	5	2000	1068	30	78	2700uF
FAWS-1209(A)(-3K)	9-18	9	1111	1046	30	80	2200uF
FAWS-1212(A)(-3K)	9-18	12	830	1040	28	80	1800uF
FAWS-1215(A)(-3K)	9-18	15	670	1020	28	81	1500uF
FAWS-1224(A)(-3K)	9-18	24	416	1020	28	82	1000uF
FAWD-1205(A)(-3K)	9-18	+/-5	+/-1000	1068	30	78	+/-1200uF
FAWD-1209(A)(-3K)	9-18	+/-9	+/-556	1046	30	80	+/-1000uF
FAWD-1212(A)(-3K)	9-18	+/-12	+/-416	1029	40	81	+/-820uF
FAWD-1215(A)(-3K)	9-18	+/-15	+/-333	1020	45	82	+/-680uF
FAWD-1224(A)(-3K)	9-18	+/-24	+/-208	1052	45	79	+/-560uF
FAWS-2403.3(A)(-3K)	18-36	3.3	2400	434	16	76	2700uF
FAWS-2405(A)(-3K)	18-36	5	2000	527	25	79	2700uF
FAWS-2409(A)(-3K)	18-36	9	1111	523	20	80	2200uF
FAWS-2412(A)(-3K)	18-36	12	830	508	22	82	1800uF
FAWS-2415(A)(-3K)	18-36	15	670	502	30	83	1500uF
FAWS-2424(A)(-3K)	18-36	24	416	515	28	81	1000uF
FAWD-2405(A)(-3K)	18-36	+/-5	+/-1000	527	23	79	+/-1200uF
FAWD-2409(A)(-3K)	18-36	+/-9	+/-556	523	18	80	+/-1000uF
FAWD-2412(A)(-3K)	18-36	+/-12	+/-416	508	30	82	+/-820uF
FAWD-2415(A)(-3K)	18-36	+/-15	+/-333	510	25	82	+/-680uF
FAWD-2424(A)(-3K)	18-36	+/-24	+/-208	520	20	80	+/-560uF

Note: Other input to output voltages may be available. Please contact factory.

ORDERING INFORMATION:

FOR EXAMPLE: ***FAW*-****A(PACKAGE "A" For* REMOTE CONTROL*)***

FAW*-**-3K(Isolation Voltage For 3000VDC)***

[7] *NOMINAL INPUT VOLTAGE.*
[8] *NOMINAL INPUT VOLTAGE,FULL LOAD.*

● SELECTION GUIDE(2)
2:1 8W-10W OUTPUT

MODEL NUMBER	INPUT VOLTAGE (VDC)	OUTPUT VOLTAGE (VDC)	OUTPUT CURRENT (mA)	INPUT[9] CURRENT(mA)		EFF (%)[10]	CAPACITOR LOAD MAX.
				FULL LOAD	NO LOAD		
FAWS-4803.3(A)(-3K)	36-72	3.3	2400	217	20	76	1000uF
FAWS-4805(A)(-3K)	36-72	5	2000	264	20	79	1000uF
FAWS-4809(A)(-3K)	36-72	9	1111	254	20	80	470uF
FAWS-4812(A)(-3K)	36-72	12	830	254	20	82	330uF
FAWS-4815(A)(-3K)	36-72	15	670	254	20	82	330uF
FAWS-4824(A)(-3K)	36-72	24	416	264	20	82	330uF
FAWD-4805(A)(-3K)	36-72	+/-5	+/-1000	262	20	79	+/-470uF
FAWD-4809(A)(-3K)	36-72	+/-9	+/-556	254	20	80	+/-220uF
FAWD-4812(A)(-3K)	36-72	+/-12	+/-416	254	20	82	+/-100uF
FAWD-4815(A)(-3K)	36-72	+/-15	+/-333	257	20	81	+/-100uF
FAWD-4824(A)(-3K)	36-72	+/-24	+/-208	254	20	82	+/-100uF

Note: Other input to output voltages may be available. Please contact factory.

ORDERING INFORMATION:

FOR EXAMPLE: ***FAW*-****A(PACKAGE "A" For* REMOTE CONTROL*)***

FAW*-**-3K(Isolation Voltage For 3000VDC)***

[9] *NOMINAL INPUT VOLTAGE.*
[10] *NOMINAL INPUT VOLTAGE,FULL LOAD.*

● SELECTION GUIDE(3)
3:1 8W-10W OUTPUT

MODEL NUMBER	INPUT VOLTAGE (VDC)	OUTPUT VOLTAGE (VDC)	OUTPUT CURRENT (mA)	INPUT[11] CURRENT(mA)		EFF (%)[12]	CAPACITOR LOAD MAX.
				FULL LOAD	NO LOAD		
FAWS-1203.3G(A)(-3K)	9-27	3.3	2400	880	40	76	2700uF
FAWS-1205G(A)(-3K)	9-27	5	2000	1082	40	77	2700uF
FAWS-1209G(A)(-3K)	9-27	9	1111	1065	40	78	2200uF
FAWS-1212G(A)(-3K)	9-27	12	830	1054	40	79	1800uF
FAWS-1215G(A)(-3K)	9-27	15	670	1041	40	80	1500uF
FAWS-1224G(A)(-3K)	9-27	24	417	1057	40	79	1000uF
FAWD-1205G(A)(-3K)	9-27	+/-5	+/-1000	1082	40	77	+/-1200uF
FAWD-1209G(A)(-3K)	9-27	+/-9	+/-556	1068	40	78	+/-1000uF
FAWD-1212G(A)(-3K)	9-27	+/-12	+/-416	1041	40	80	+/-820uF
FAWD-1215G(A)(-3K)	9-27	+/-15	+/-333	1028	40	81	+/-680uF
FAWS-2403.3G(A)(-3K)	18-54	3.3	2400	434	20	76	2700uF
FAWS-2405G(A)(-3K)	18-54	5	2000	527	20	79	2700uF
FAWS-2409G(A)(-3K)	18-54	9	1111	515	20	81	2200uF
FAWS-2412G(A)(-3K)	18-54	12	830	520	20	80	1800uF
FAWS-2415G(A)(-3K)	18-54	15	670	514	20	81	1500uF
FAWS-2424G(A)(-3K)	18-54	24	416	510	20	81	1000uF
FAWD-2405G(A)(-3K)	18-54	+/-5	+/-1000	527	20	79	+/-1200uF
FAWD-2409G(A)(-3K)	18-54	+/-9	+/-556	526	20	79	+/-1000uF
FAWD-2412G(A)(-3K)	18-54	+/-12	+/-416	520	20	80	+/-820uF
FAWD-2415G(A)(-3K)	18-54	+/-15	+/-333	514	20	81	+/-560uF

Note: Other input to output voltages may be available. Please contact factory.

ORDERING INFORMATION:

FOR EXAMPLE: *FAWS-1005A(PACKAGE "A1" For* REMOTE CONTROL*)*

FAW-****A(PACKAGE "A" For* REMOTE CONTROL*)*

FAW-*****-3K(Isolation Voltage For 3000VDC)*

[11] *NOMINAL INPUT VOLTAGE.*
[12] *NOMINAL INPUT VOLTAGE,FULL LOAD.*

● SELECTION GUIDE(4)
4:1 8W-10W OUTPUT

MODEL NUMBER	INPUT VOLTAGE (VDC)	OUTPUT VOLTAGE (VDC)	OUTPUT CURRENT (mA)	INPUT[13] CURRENT(mA)		EFF (%)[14]	CAPACITOR LOAD MAX.
				FULL LOAD	NO LOAD		
FAWS-1203.3T(A)(-3K)	9-36	3.3	2400	880	40	76	2700uF
FAWS-1205T(A)(-3K)	9-36	5	2000	1082	40	77	2700uF
FAWS-1209T(A)(-3K)	9-36	9	1111	1065	40	78	2200uF
FAWS-1212T(A)(-3K)	9-36	12	830	1054	40	79	1800uF
FAWS-1215T(A)(-3K)	9-36	15	670	1041	40	80	1500uF
FAWS-1224T(A)(-3K)	9-36	24	417	1057	40	79	1000uF
FAWD-1205T(A)(-3K)	9-36	+/-5	+/-1000	1082	40	77	+/-1200uF
FAWD-1209T(A)(-3K)	9-36	+/-9	+/-556	1063	40	78	+/-1000uF
FAWD-1212T(A)(-3K)	9-36	+/-12	+/-416	1041	40	80	+/-820uF
FAWD-1215T(A)(-3K)	9-36	+/-15	+/-333	1028	40	81	+/-680uF
FAWS-2403.3T(A)(-3K)	18-72	3.3	2400	434	20	76	2700uF
FAWS-2405T(A)(-3K)	18-72	5	2000	527	20	79	2700uF
FAWS-2409T(A)(-3K)	18-72	9	1111	515	20	81	2200uF
FAWS-2412T(A)(-3K)	18-72	12	830	520	20	80	1800uF
FAWS-2415T(A)(-3K)	18-72	15	670	514	20	81	1500uF
FAWS-2424T(A)(-3K)	18-72	24	417	510	20	81	1000uF
FAWD-2405T(A)(-3K)	18-72	+/-5	+/-1000	527	20	79	+/-1200uF
FAWD-2409T(A)(-3K)	18-72	+/-9	+/-556	525	20	79	+/-1000uF
FAWD-2412T(A)(-3K)	18-72	+/-12	+/-416	520	20	80	+/-820uF
FAWD-2415T(A)(-3K)	18-72	+/-15	+/-333	514	20	81	+/-680uF

Note: Other input to output voltages may be available. Please contact factory.

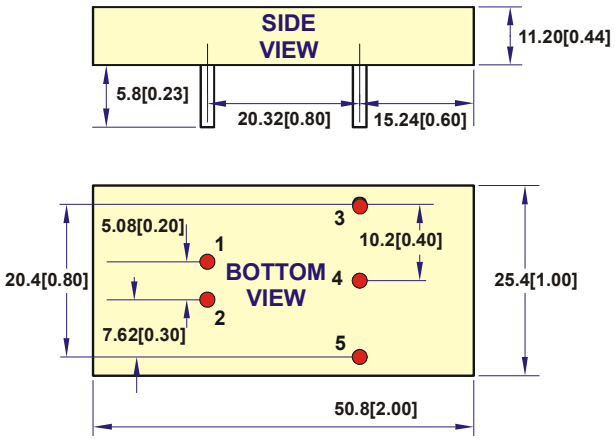
ORDERING INFORMATION:

FOR EXAMPLE: *FAW*-****A(PACKAGE "A" For* REMOTE CONTROL*)*

FAW-*****-3K(Isolation Voltage For 3000VDC)*

[13] *NOMINAL INPUT VOLTAGE.*
[14] *NOMINAL INPUT VOLTAGE,FULL LOAD.*

● MECHANICAL DIMENSIONS & RECOMMENDED FOOTPRINT DETAILS



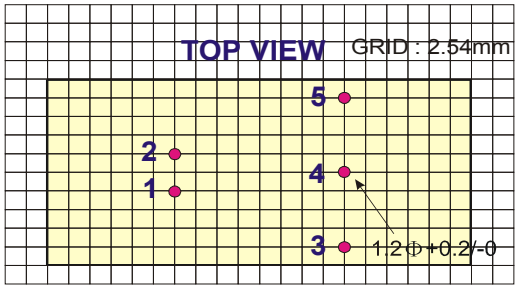
PIN	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
3	+Vout	+Vout
4	NO PIN	Common
5	-Vout	-Vout

NOTE:Pin Size is Tolerance 1.0Φ ±0.10mm

All Dimensions In mm(Inches)

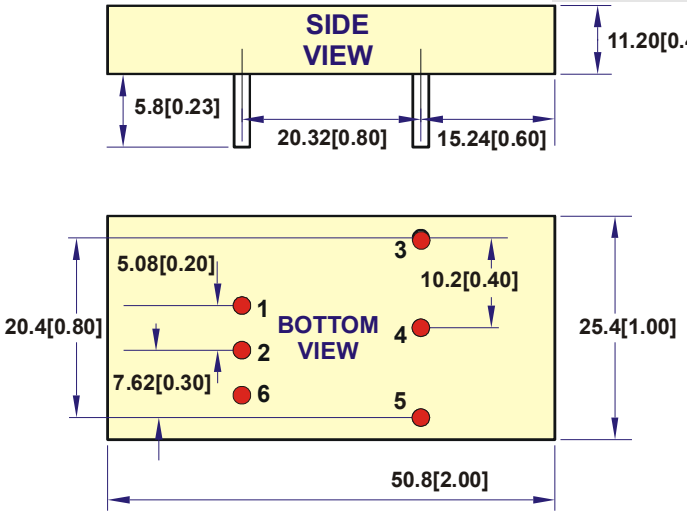
Tolerance .X or .XX= ±0.80mm

All dimensions are in millimeters[inches]



● MECHANICAL DIMENSIONS & RECOMMENDED FOOTPRINT DETAILS

REMOTE CONTROL (**Standard Models**) **PACKAGE "A"**



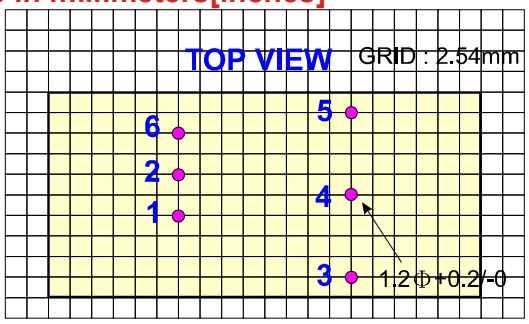
PIN	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
3	+Vout	+Vout
4	NO PIN	Common
5	-Vout	-Vout
6	Remote ON/OFF	

NOTE:Pin Size is Tolerance 1.00Φ ±0.10mm

All Dimensions In mm(Inches)

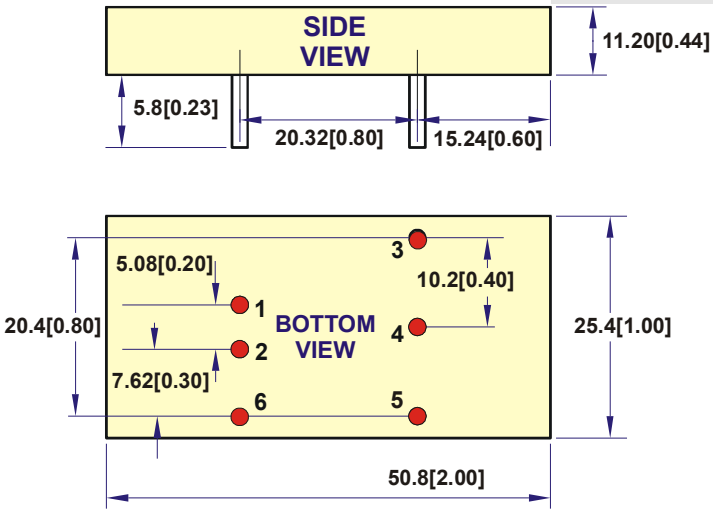
Tolerance .X or .XX= ±0.80mm

All dimensions are in millimeters[inches]



● MECHANICAL DIMENSIONS & RECOMMENDED FOOTPRINT DETAILS

REMOTE CONTROL (Specially Models) PACKAGE "A1"



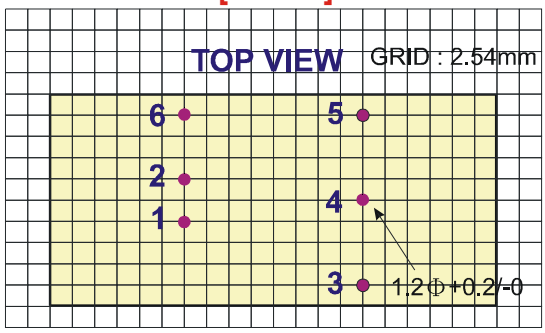
PIN	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
3	+Vout	+Vout
4	NO PIN	Common
5	-Vout	-Vout
6	Remote ON/OFF	

NOTE:Pin Size is Tolerance 1.00Φ ±0.10mm

All Dimensions In mm(Inches)

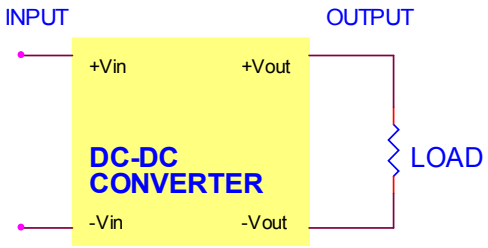
Tolerance .X or .XX= ±0.80mm

All dimensions are in millimeters[inches]

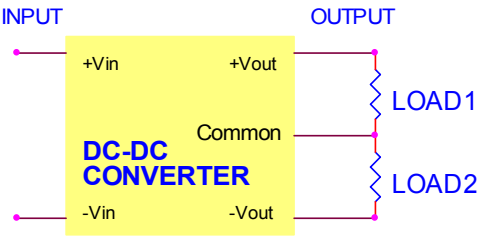


● TYPICAL APPLICATIONS

SINGLE OUTPUT

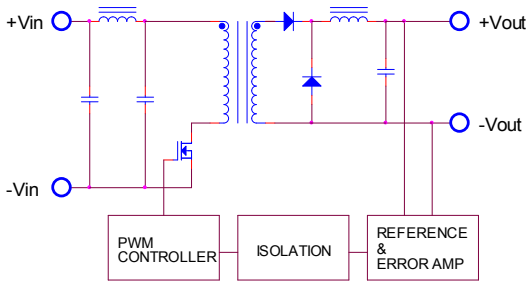


DUAL OUTPUT

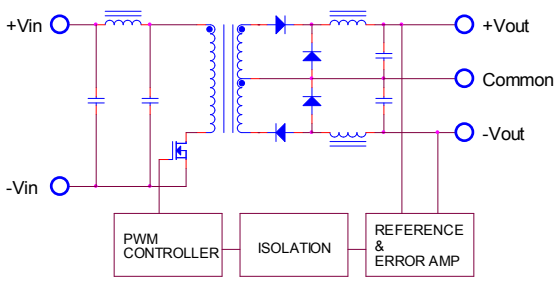


● SIMPLIFIED SCHEMATIC

SINGLE OUTPUT



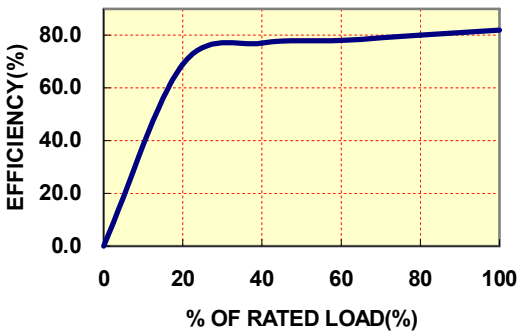
DUAL OUTPUT



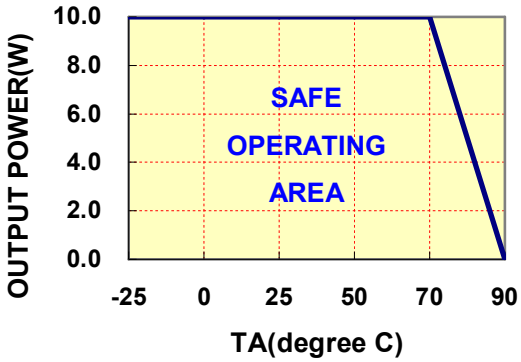
● TYPICAL PERFORMANCE CURVES

Specifications typical at Ta=25 °C, nominal input voltage , rated output current unless otherwise specified.

OUTPUT LOAD VS EFFICIENCY

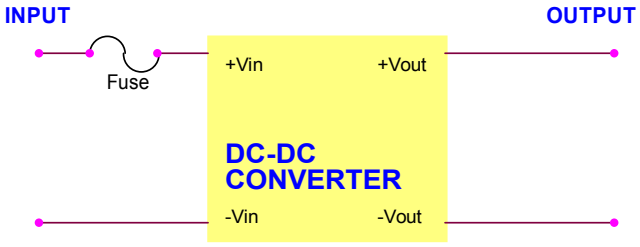


TEMPERATURE DERATING



● INPUT FUSE SELECTION GUIDE

4.7-7.25V INPUT VOLTAGE(VDC)	9-18V or 9-27V or 9-36V INPUT VOLTAGE(VDC)	18-36V or 18-54V or 18-72V INPUT VOLTAGE(VDC)	36-72V INPUT VOLTAGE(VDC)
3800mA Slow-Blow Type	2000mA Slow-Blow Type	900mA Slow-Blow Type	450mA Slow-Blow Type



Note: Certain applications may require the installation of external fuse in front of the input.

FAW SERIES APPLICATION NOTES:

EXTERNAL CAPACITANCE REQUIREMENTS:

No external capacitance is required for operation of the FAW series.

To meet the reflected ripple requirements of the converter, an input impedance of less than 0.5 ohm from DC to 220KHz is required.

External output capacitance is not required for operation, however it is recommended that 10uF tantalum and 0.1uF ceramic capacitance be selected for reduced system noise.

Additional output capacitance may be added for increased filtering, but should not exceed 1000uF.

We Can Offer EMC-Filter According To EN55011/22 Class B.

Negative Outputs:

A negative output voltage may be obtained by connecting the +OUT to circuit ground and connecting –OUT as the negative output.

FOR MORE INFORMATION CALL:

Danube Enterprise Co., Ltd.

Tel: 886-7-3755165 Fax: 886-7-3755330 E-mail: danube@ms10.hinet.net

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