CA-DD1-1W Series

1W Unregulated Dual output

Features

- DIP8 Package
- 1000 VDC Isolation, Up to 3000 VDC
- Efficiency up to 84%
- Operation Temperature Range -40 ~ 90°C max.
- Non-Conductive Black Plastic Case
- EMI Complies With EN55032 Class B

PART NUMBER STRUCTURE

CA - 12 05 DD1 H

(1) (2) (3) (4) (5)

(1) Series

(2) Input Voltage Range

- **3R3 -** 2.97-3.63 V
- **05 -** 4.5-5.5 V
- **12 -** 10.8-13.2 V
- **15 -** 13.5-16.5 V
- **24 -** 21.6-26.4 V

(3) Output Voltage

- **3R3 -** 3.3 V
- **05 -** 5.0 V
- **7R2 -** 7.2 V
- **09 -** 9.0 V
- **12 -** 12 V
- **15 -** 15 V
- **18 -** 18 V
- **24 -** 24 V

(4) Case & Output Type

- **DD1 -** DIP ,Dual Output

(5) Isolation Voltage (Optional)

- **Blank -** 1 KVDC
- **H -** 3 KVDC

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ALL SPECIFICATIONS ARE TYPICAL AT 25°C, NOMINAL INPUT AND FULL LOAD UNLESS OTHERWISE NOTED

Model Number	Input Voltage Range (VDC)	Input Current		Output Voltage (VDC)	Output Current Full Load (mA)	Efficiency @FL (%, typ.)	Capacitive Load @ FL (µF, max.)
		No-Load (mA, max.)	Full Load (mA, typ.)				
CA-3R33R3DD1	2.97-3.63	30	489	±3.3	±152	62	±100
CA-3R305DD1	2.97-3.63	35	481	±5	±100	63	±100
CA-3R37R2DD1	2.97-3.63	30	481	±7.2	±69	63	±100
CA-3R309DD1	2.97-3.63	30	466	±9	±56	65	±100
CA-3R312DD1	2.97-3.63	32	543	±12	±50	67	±100
CA-3R315DD1	2.97-3.63	32	452	±15	±33	67	±100
CA-3R318DD1	2.97-3.63	32	439	±18	±28	69	±100
CA-3R324DD1	2.97-3.63	32	439	±24	±25	69	±100
CA-053R3DD1	4.5-5.5	23	299	±3.3	±152	67	±100
CA-0505DD1	4.5-5.5	22	270	±5	±100	74	±100
CA-057R2DD1	4.5-5.5	22	260	±7.2	±69	80	±100
CA-0509DD1	4.5-5.5	20	260	±9	±56	81	±100
CA-0512DD1	4.5-5.5	25	300	±12	±50	80	±100
CA-0515DD1	4.5-5.5	25	247	±15	±33	84	±100
CA-0518DD1	4.5-5.5	25	244	±18	±28	82	±100
CA-0524DD1	4.5-5.5	30	300	±24	±25	84	±100
CA-123R3DD1	10.8-13.2	15	121	±3.3	±152	69	±100
CA-1205DD1	10.8-13.2	15	110	±5	±100	75	±100
CA-127R2DD1	10.8-13.2	15	109	±7.2	±69	76	±100
CA-1209DD1	10.8-13.2	15	109	±9	±56	81	±100
CA-1212DD1	10.8-13.2	15	123	±12	±50	81	±100
CA-1215DD1	10.8-13.2	15	102	±15	±33	82	±100
CA-1218DD1	10.8-13.2	18	103	±18	±28	79	±100
CA-1224DD1	10.8-13.2	25	125	±24	±25	80	±100
CA-153R3DD1	13.5-16.5	10	93	±3.3	±152	72	±100
CA-1505DD1	13.5-16.5	10	89	±5	±100	75	±100
CA-157R2DD1	13.5-16.5	15	89	±7.2	±69	75	±100
CA-1509DD1	13.5-16.5	15	87	±9	±56	77	±100
CA-1512DD1	13.5-16.5	5	103	±12	±50	78	±100
CA-1515DD1	13.5-16.5	10	80	±15	±33	82	±100
CA-1518DD1	13.5-16.5	10	85	±18	±28	78	±100
CA-1524DD1	13.5-16.5	10	103	±24	±25	78	±100
CA-243R3DD1	21.6-26.4	10	60	±3.3	±152	69	±100
CA-2405DD1	21.6-26.4	8	56	±5	±100	74	±100
CA-247R2DD1	21.6-26.4	10	55	±7.2	±69	78	±100
CA-2409DD1	21.6-26.4	7	56	±9	±56	75	±100
CA-2412DD1	21.6-26.4	8	62	±12	±50	81	±100
CA-2415DD1	21.6-26.4	8	51	±15	±33	81	±100
CA-2418DD1	21.6-26.4	12	53	±18	±28	78	±100
CA-2424DD1	21.6-26.4	12	64	±24	±25	80	±100

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INPUT SPECIFICATIONS					
Parameter	**Conditions**	**Min.**	**Typ.**	**Max.**	**Unit**
Input Voltage Range	3.3 V Input	2.97	3.3	3.63	VDC
	5 V Input	4.5	5	5.5	
	12 V Input	10.8	12	13.2	
	15 V Input	13.5	15	16.5	
	24 V Input	21.6	24	26.4	
Input Filter		Capacitor			
Input Reflected Ripple Current (1)			20		mApk-pk
Start up Time	Nominal Vin and constant resistive load		20		ms
Recommended input fuse (slow blow)	3.3 V Input	0.63			A
	5 V Input	0.4			
	12 V & 15 V Input	0.16			
	24 V Input	0.1			
Note： 1. Measured with a simulated source inductance of 12μH and a source capacitor Cin (47μF, ESR<1.0Ω at 100kHz).					

OUTPUT SPECIFICATIONS						
Parameter	**Conditions**		**Min.**	**Typ.**	**Max.**	**Unit**
Output Voltage Accuracy			-3		+3	%
Line Regulation	For 1% Vin Change	3.3 V Output	-1.3		+1.3	%
		Other Output	-1.2		+1.2	
Load Regulation	From 20% to 100% Load	CA-3R33R3DD1 CA-053R3DD1			18	%
		Other Output			8	
Ripple & Noise	20MHz bandwidth				100	mVpk-pk
Short Circuit Protection			Short Term (1sec)			
Temperature Coefficient			-0.02		+0.02	%/°C
Maximum Capacitive Load	Minimum Vin and constant resistive load		See Table			

ABSOLUTE MAXIMUM RATINGS					
Parameter	**Conditions**	**Min.**	**Typ.**	**Max.**	**Unit**
Input Surge Voltage (100 ms)	3.3 V Input			5	VDC
	5 V Input			7	
	12 V Input			15	
	15 V Input			18	
	24 V Input			28	
Soldering Temperature	1.5mm from case 10sec max.			260	°C
Note：These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.					

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GENERAL SPECIFICATIONS						
Parameter	**Conditions**		**Min.**	**Typ.**	**Max.**	**Unit**
Isolation Voltage	Input-output, and rated for 60sec	Standard Type	1000			VDC
		Suffix “H”	3000			
Isolation Resistance	Input-output		1000			MΩ
Isolation Capacitance	Input-output			60		pF
Switching Frequency				80		kHz
MTBF	MIL-HDBK-217 F @ 25°C		1121			k hours
Safety Standard	IEC / EN / UL 62368-1		Designed to meet			
Environmental compliance			RoHS			

ENVIRONMENT SPECIFICATIONS					
Parameter	**Conditions**	**Min.**	**Typ.**	**Max.**	**Unit**
Operating Ambient Temperature	See the Derating Curve	-40		90	°C
Maximum Case Temperature				100	°C
Thermal Impedance		55			°C/W
Storage Humidity				95	% rel. H
Storage Temperature		-55		125	°C
Cooling	Natural Convection	30-65 LFM			

EMC SPECIFICATIONS			
Parameter	**Standard**	**Condition**	Criterion
Conducted Emissions	EN55032	with external components	B
Radiated Emissions	EN55032		B
ESD	IEC 61000-4-2	Air: ±8kV / Indirect: ±6kV	A
RS	IEC 61000-4-3	10V/m	A
EFT	IEC 61000-4-4	±2.0kV with external components	A
Surge	IEC 61000-4-5	±0.5kV with external components	A
CS	IEC 61000-4-6	10Vrms	A
PFMF	IEC 61000-4-8	1A/m	A

PHYSICAL SPECIFICATIONS	
Parameter	**Value**
Case Material	Nonconductive Black Plastic (UL94V-0 rated)
Pin Material	Ø0.5mm Brass Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	1.8 g, typ.
Dimensions	0.50" x 0.40" x 0.27"

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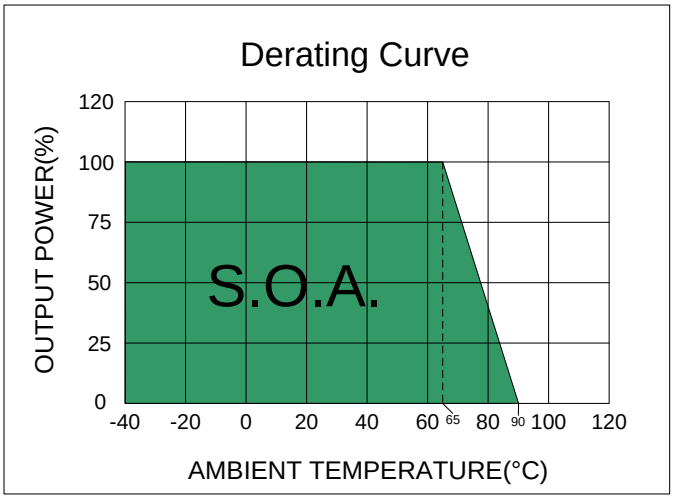
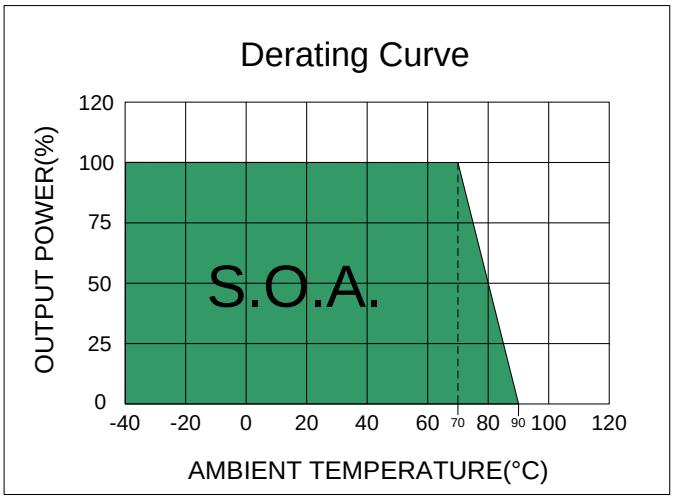
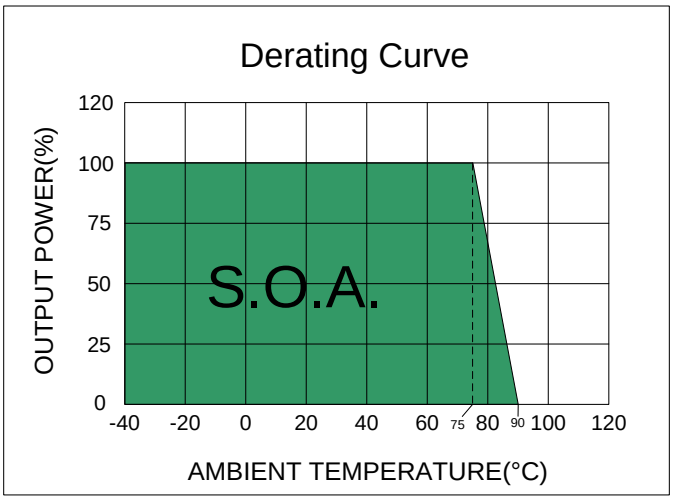
ELECTRICAL CHARACTERISTIC CURVES



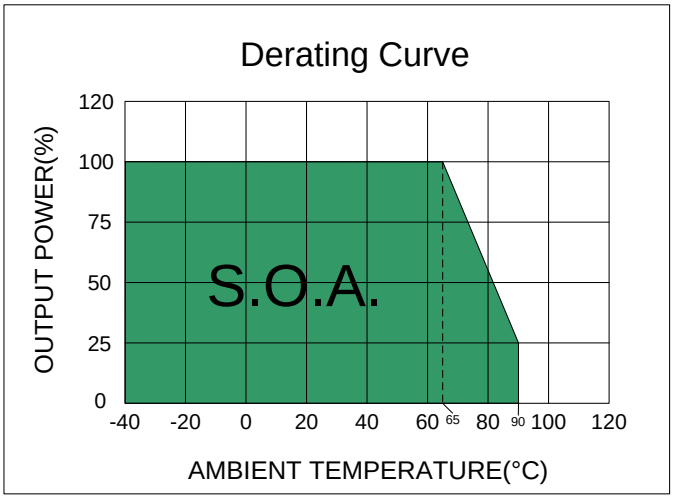
3.3V, 5V Output & 62 ~ 66% Models



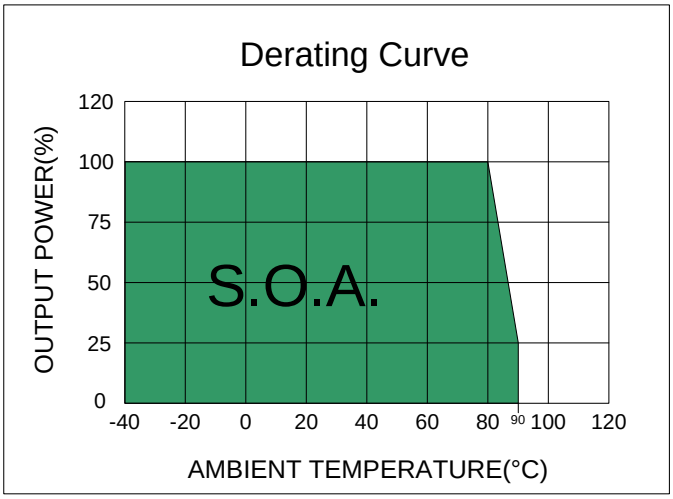
3.3V, 5V Output & 67 ~ 71% Models



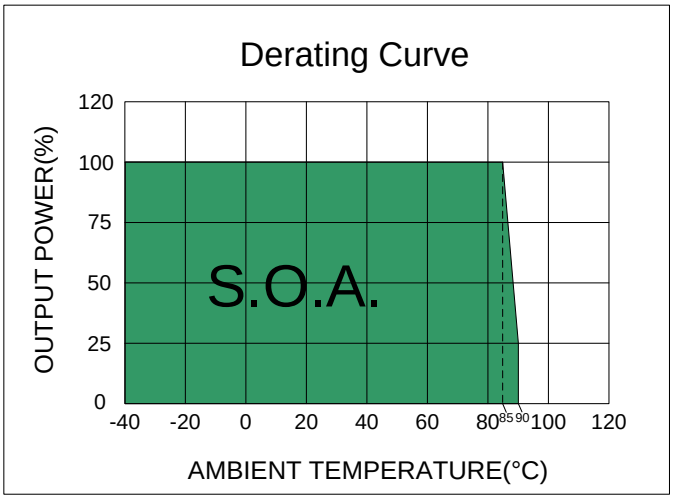
3.3V, 5V Output & 72 ~ 76% Models



7.2V, 9V, 12V Output & 63 ~ 67% Models



7.2V, 9V, 12V Output & 75 ~ 78% Models



7.2V, 9V, 12V Output & 80 ~ 81% Models

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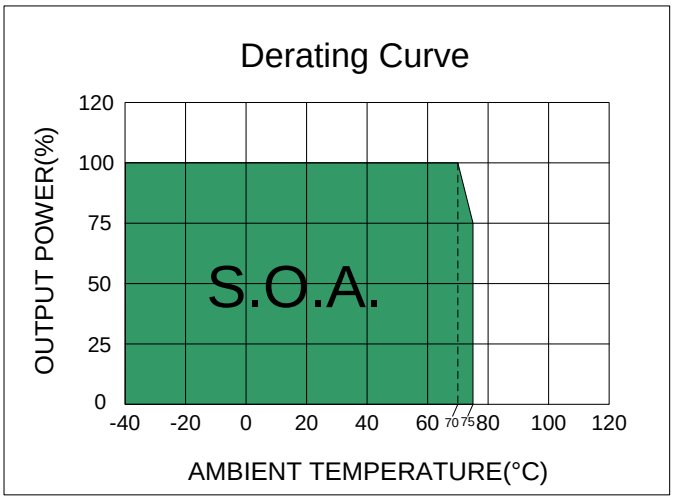
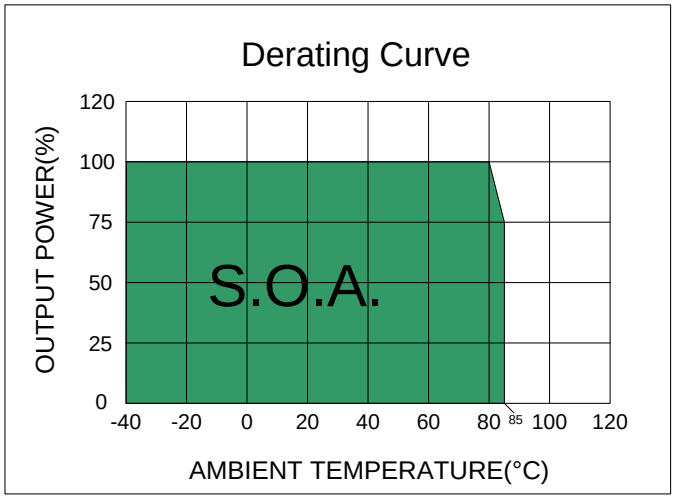
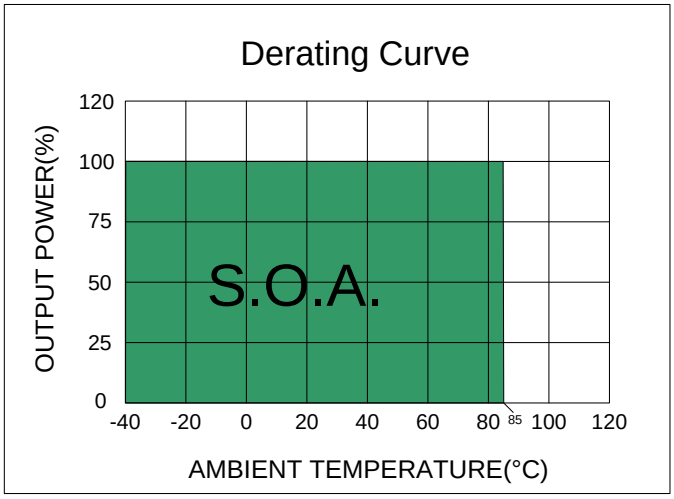
ELECTRICAL CHARACTERISTIC CURVES



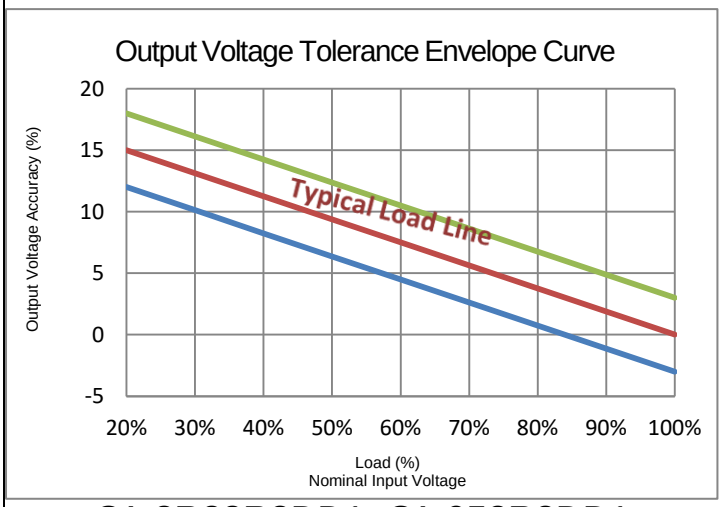
15V, 18V, 24V Output & 67 ~ 69% Models



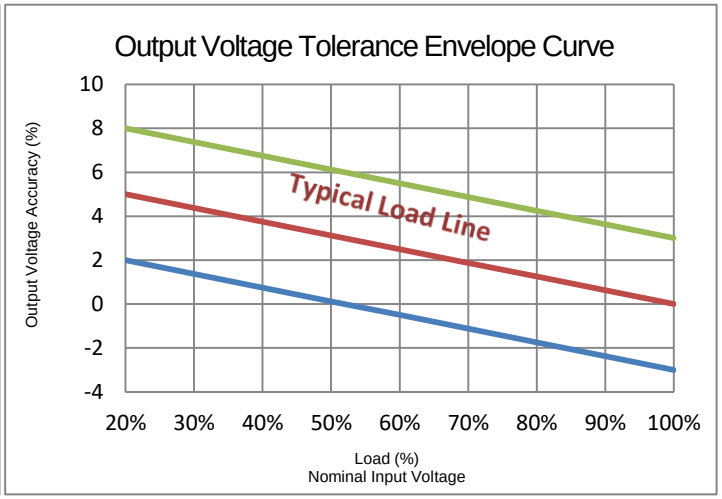
15V, 18V, 24V Output & 78 ~ 81% Models



15V, 18V, 24V Output & 82 ~ 84% Models



CA-3R33R3DD1, CA-053R3DD1



Other Models

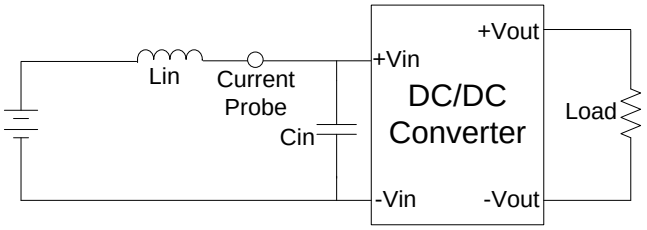
CA-DD1-1W Series

1W Unregulated Dual output

TEST CONFIGURATIONS

Input Reflected Ripple Current Test Step

Input reflected ripple current is measured with a source inductor Lin (12μH) and a source capacitor Cin (47μF, ESR<1.0Ω at 100kHz) at nominal input and full load.



DESIGN & FEATURE CONFIGURATIONS

Isolation Voltage

This series is designed to meet the functional insulation of UL, both input and output should be maintained within SELV limits (less than 42.4V peak, or 60VDC).

The isolation test voltage represents a measure of immunity to transient voltages and the part should never be used as an element of a safety isolation system. The part could be expected to function correctly with hundreds of volts offset applied continuously across the isolation barrier; but then the circuitry on both sides of the barrier must be regarded as operating at an unsafe voltage and further isolation/insulation systems must form a barrier between these circuits and any user-accessible circuitry according to safety standard requirements.

Repeated High-Voltage Isolation Testing

Repeated high-voltage isolation testing of a barrier component can actually degrade isolation capability, to a lesser or greater degree depending on materials, construction and environment.

This series has isolation transformers without additional insulation between primary and secondary windings of enameled wire.

While parts can be expected to withstand several times the stated test voltage, the isolation capability does depend on the wire insulation.

Any material including the enamel (typically polyurethane) is susceptible to eventual chemical degradation when subject to very high applied voltage, thus implying that the number of tests should be strictly limited.

We strongly advise against repeated high voltage isolation testing, but if it is absolutely required, the isolation test voltage should be reduced by 20% from specified test voltage.

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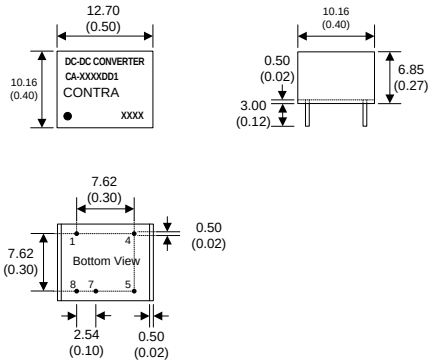
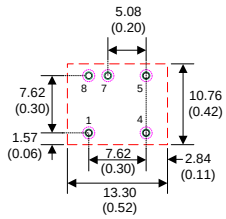
MECHANICAL SPECIFICATIONS



PIN CONNECTIONS	
PIN NUMBER	SINGLE
1	-Vin
4	+Vin
5	+Vout
7	COM
8	-Vout

Notes : All dimensions are typical in millimeters (inches).
1. Pin diameter: 0.5±0.05 (0.02±0.002)
2. Pin pitch and length tolerance: ±0.35 (±0.014)
3. Pin to case tolerance: ±0.5 (±0.02)
4. Case Tolerance: ±0.5 (±0.02)

RECOMMENDED FOOTPRINT DETAILS



Notes：1. All dimensions are typical in millimeters (inches).
Through hole (black) 1~8:Ø0.80 (0.031)
Top view pad (green) 1~8:Ø1.00 (0.039)
Bottom view pad (pink) 1~8:Ø1.60 (0.063)