

## BOARD MOUNTED ISOLATED DC/DC CONVERTER 0.3" LOW PROFILE

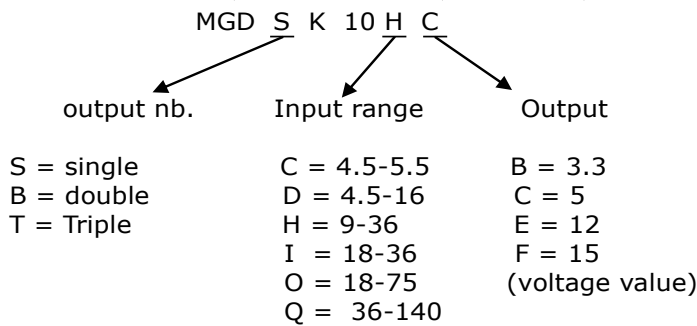
### Description

The MGDK10 series features a Quality Cost Effective range of 10W board mounted isolated dc/dc converters. With multiple selection of wide input voltage ranges, the MGDK10 is proposed with a **single, double, symmetrical or triple output channel**. The converter embeds an output overload protection, and comes encapsulated in a low profile fully potted **1.6"x0.3"x1" metallic case**.

### Fields of Application

General purpose application  
Transportation  
Telecom  
Renewable Energy

### Part-numbering



### Selection Guide

Part Number	Output Voltage (Vdc)	Output Power (Watt)	Output Current (Adc)	Part Number	Output Voltage (Vdc)	Output Power (Watt)	Output Current (Adc)
MGDSK10CE	+/-12	10	+/-0.4	MGDSK10HF	12	10	0.8
MGDSK10CF	15	10	0.66	MGDBK10HC	+/-5	10	+/-1
MGDBK10CE	+/-12	10	+/-0.4	MGDBK10HE	+/-12	10	+/-0.4
MGDBK10CF	+/-15	10	+/-0.33	MGDBK10HF	+/-15	10	+/-0.33
MGDSK10DC	5	10	2	MGDTK10H3E	+3,8 +/-12	10	+1 +/-0.2
MGDBK10DC	+/-5	10	+/-1	MGDTK10HCE	+5 +/-12	10	+1 +/-0.2
MGDBK10DF	5	10	2	MGDTK10HCF	+5 +/-15	10	+1 +/-0.17
MGDSK10HB	3.3	6.6	2	MGDTK10ICE	+5 +/-12	10	+1 +/-0.2
MGDSK10HC	5	10	2	MGDTK10ICF	+5 +/-15	10	+1 +/-0.17
MGDSK10H5.5	5.5	10	1.8	MGDSK10OC	5	10	2
MGDSK10HE	12	10	0.8	MGDBK10OF	+/-15	10	+/-0.33

for more information go to <https://www.gaia-converter.com>

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### Selection Guide (continued)

Part Number	Output Voltage (Vdc)	Output Power (Watt)	Output Current (A <sub>dc</sub> )	Part Number	Output Voltage (Vdc)	Output Power (Watt)	Output Current (A <sub>dc</sub> )
MGDSK10QB	3.3	6.6	2	MGDBK10QE	12	10	0.8
MGDSK10QC	5	10	2	MGDBK10QE/Y	12	10	0.8
MGDSK10QC/Y	5	10	2	MGDBK10QF	15	10	0.66
MGDBK10QC	+/-5	10	+/-1				

## 1-ELECTRICAL SPECIFICATIONS

Data are valid at +25°C, unless otherwise specified

### Specification

Parameter	Conditions	Limit	Units	C input	D input	H input	I input
<b>INPUT</b>							
Nominal Input Voltage (U <sub>i nom</sub> )	Full temperature range	Nominal	Vdc	5	9	20	24
Input Voltage Range	Full temperature range	Min.-Max.	Vdc	4.5-5.5	4.5-16	9-36	18-36
Transient Input Voltage	Full temperature range	Maximum	Vdc/s	/	/	36	36
Start-up input voltage Turn on -turn off	Full temperature range	Min.-Max.	Vdc	4-4.5	7-8.5	12-15.5	16-17.5
Start-up time	Full temperature range	Maximum	ms		50		
Power efficiency	U <sub>i</sub> Nominal 75% load	Typical	%		80		
Input current in short circuit mode (Average)	U <sub>i</sub> nominal (hic-up mode)	Maximum	mA	50	50	30	30

Parameter	Conditions	Limit	Units	O input	Qinput
<b>INPUT</b>					
Nominal Input Voltage (U <sub>i nom</sub> )	Full temperature range	Nominal	Vdc	48	72
Input Voltage Range	Full temperature range	Min.-Max.	Vdc	18-75	36-140
Transient Input Voltage	Full temperature range	Maximum	Vdc/s	75	175/0.1
Start-up input voltage Turn on -turn off	Full temperature range	Min.-Max.	Vdc	12-15	33-36
Start-up time	Full temperature range	Maximum	ms		50
Power efficiency	U <sub>i</sub> Nominal 75% load	Typical	%		80
Input current in short circuit mode (Average)	U <sub>i</sub> nominal (hic-up mode)	Maximum	mA	30	20

## 1-ELECTRICAL SPECIFICATIONS (Continued)

Data are valid at +25°C, unless otherwise specified

Specification

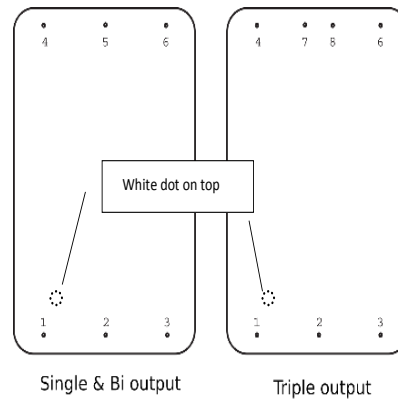
Parameter	Conditions	Limit	Units	All inputs
<b>OUTPUT</b>				
<b>Set Point accuracy</b>	Ui nom @75% load	Maximum	%	+/- 2.5
<b>Output regulation (Line)</b>	25% to full load	Maximum	%	+/- 1.5
<b>Output regulation (Load)</b>	Ui min. To Ui max 25% to full load 0% to 25% load	Maximum Typical	%	+/- 2.5 +20 to +/-2.5
Minimum 10% load is recommended, operation with no load during more than 1s may partially damage the converter output.				
<b>Output ripple voltage</b> B output (3V3) C output (5V) E output (12V) F output (15V)	Ui min. To Ui max	Maximum	mVpp	150 150 300 450
<b>Admissible capacitor</b> B output (3V3) C output (5V) E output (12V) F output (15V)	Ui min. Full load ( per output)	Maximum	µF	500 500 150 100
<b>MISCELLANEOUS</b>				
<b>Switching Frequency</b>		Typical	Khz	480
<b>Isolation Strength (Input output)</b>	Input output		Vdc	1500
<b>EMC Compliance</b>	With input capacitor With input filter			EN555032 class A EN555032 class B

## 2-THERMAL & MECHANICAL SPECIFICATIONS

Parameter	Conditions	Limit	Units	Parameter
Case temperature range		Mini.Max.	°C	-40 to 95
Storage temperature range	Not operating	Mini.Max.	°C	110
Case Material	Regular model			Metallic black anodized coated
Pin Material				Copper plated with pure matte tin over nickel underplate
Case to Air thermal resistance		Typical	°C/W	12

### Connections

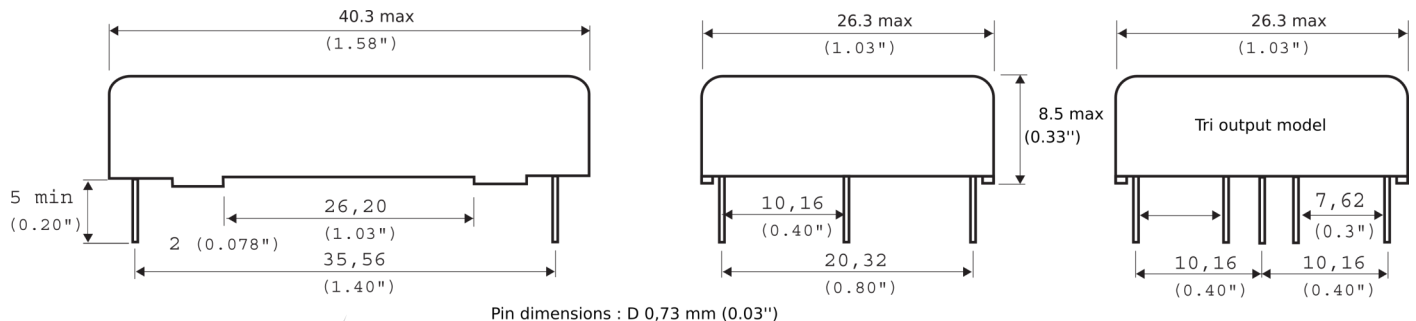
Pin#	MGDSK10 (Single)	MGDBK10 (Double)	MGDTK10 (Triple)
1	+Input (Vi)	+Input (Vi)	+Input (Vi)
2	Do Not Connect	Do Not Connect	Do Not Connect
3	-Input (Gi)	-Input (Gi)	-Input (Gi)
4	Output (Vo)	Output+ (Vo)	Output1 (Vo1)
5	/	Common (Go)	No pin
6	Common (Go)	Output- (-Vo)	Common (Go)
7	No pin	No pin	Output2+ (+V2)
8	No pin	No pin	Output2- (-V2)



Bottom view

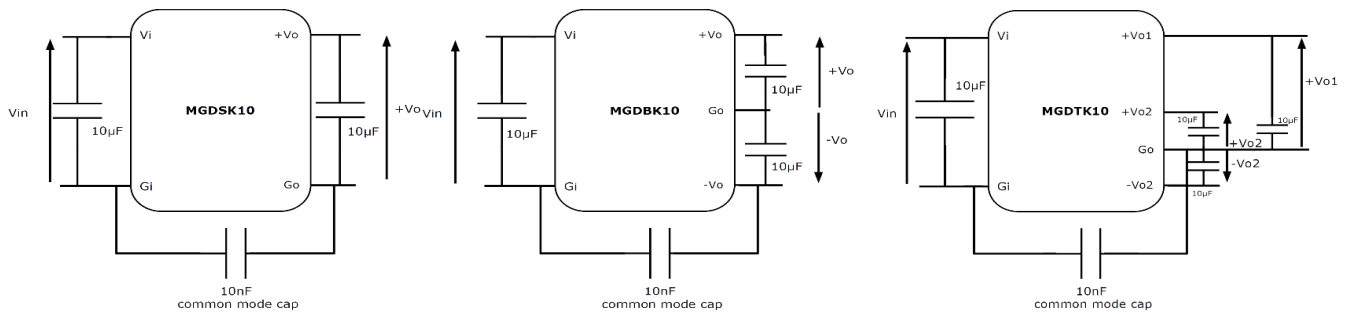
### Dimensions MGDK10

Dimensions are given in mm (inches) . Tolerance : +/-0.25mm (0.01") unless otherwise specified weight : < 15gr (0.5oz) max.



## 3-APPLICATION

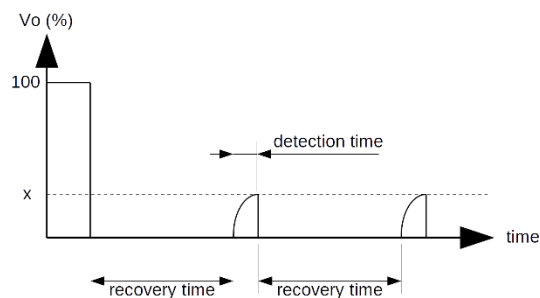
### Typical connections



Input and output capacitor values are given as suggestion

### OCP FUNCTION

The converter series incorporates an over current protection circuit. When the output current reaches a value above typically 200% of it's full-rated current, the converter falls into hiccup mode by testing periodically if an overload is applied. The module restarts automatically to normal operation when overcurrent is removed.



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