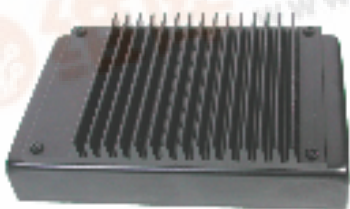


## HDD60 SERIES

DC-DC CONVERTER  
50 ~ 60W

HDD60 - 12 S 05 X



WATTAGE

12 : 9~18V IN

24 : 18~36V IN

48 : 36~72V IN

05: 5V OUT

12: 12V OUT

15: 15V OUT

24: 24V OUT

512: 5V/12V OUT

S : SINGLE OUTPUT

D : DOUBLE OUTPUT

T : TRIPLE OUTPUT

## MODEL LIST

| MODEL NO.            | INPUT VOLTAGE | OUTPUT WATTAGE | OUTPUT VOLTAGE | OUTPUT CURRENT | EFF. (MIN.) | CASE |
|----------------------|---------------|----------------|----------------|----------------|-------------|------|
| Single Output Models |               |                |                |                |             |      |
| HDD60 - 12S05-X      | 9~18 VDC      | 60 WATTS       | + 5 VDC        | 12000 mA       | 79%         | HH   |
| HDD60 - 12S12-X      | 9~18 VDC      | 60 WATTS       | + 12 VDC       | 5000 mA        | 82%         | HH   |
| HDD60 - 12S15-X      | 9~18 VDC      | 60 WATTS       | + 15 VDC       | 4000 mA        | 82%         | HH   |
| HDD60 - 12S24-X      | 9~18 VDC      | 60 WATTS       | + 24 VDC       | 2500 mA        | 84%         | HH   |
| HDD60 - 24S05-X      | 18~36 VDC     | 60 WATTS       | + 5 VDC        | 12000 mA       | 80%         | HH   |
| HDD60 - 24S12-X      | 18~36 VDC     | 60 WATTS       | + 12 VDC       | 5000 mA        | 84%         | HH   |
| HDD60 - 24S15-X      | 18~36 VDC     | 60 WATTS       | + 15 VDC       | 4000 mA        | 84%         | HH   |
| HDD60 - 24S24-X      | 18~36 VDC     | 60 WATTS       | + 24 VDC       | 2500 mA        | 85%         | HH   |
| HDD60 - 48S05-X      | 36~72 VDC     | 60 WATTS       | + 5 VDC        | 12000 mA       | 83%         | HH   |
| HDD60 - 48S12-X      | 36~72 VDC     | 60 WATTS       | + 12 VDC       | 5000 mA        | 85%         | HH   |
| HDD60 - 48S15-X      | 36~72 VDC     | 60 WATTS       | + 15 VDC       | 4000 mA        | 85%         | HH   |
| HDD60 - 48S24-X      | 36~72 VDC     | 60 WATTS       | + 24 VDC       | 2500 mA        | 86%         | HH   |

# HDD60 SERIES

## DC-DC CONVERTER 50 ~ 60W

| MODEL NO.                   | INPUT VOLTAGE | OUTPUT WATTAGE | OUTPUT VOLTAGE  | OUTPUT CURRENT    | EFF. (MIN.) | CASE |
|-----------------------------|---------------|----------------|-----------------|-------------------|-------------|------|
| <b>Double Output Models</b> |               |                |                 |                   |             |      |
| HDD50 - 12D05-X             | 9~18 VDC      | 50 WATTS       | 5V / 5V         | 5A / 5A           | 78%         | HH   |
| HDD60 - 12D12-X             | 9~18 VDC      | 60 WATTS       | 12V / 12V       | 2.5A / 2.5A       | 80%         | HH   |
| HDD60 - 12D15-X             | 9~18 VDC      | 60 WATTS       | 15V / 15V       | 2A / 2A           | 80%         | HH   |
| HDD60 - 12D512-X            | 9~18 VDC      | 55 WATTS       | 5V / 12V        | 5A / 2.5A         | 79%         | HH   |
| HDD50 - 24D05-X             | 18~36 VDC     | 50 WATTS       | 5V / 5V         | 5A / 5A           | 80%         | HH   |
| HDD60 - 24D12-X             | 18~36 VDC     | 60 WATTS       | 12V / 12V       | 2.5A / 2.5A       | 82%         | HH   |
| HDD60 - 24D15-X             | 18~36 VDC     | 60 WATTS       | 15V / 15V       | 2A / 2A           | 82%         | HH   |
| HDD60 - 24D512-X            | 18~36 VDC     | 60 WATTS       | 5V / 12V        | 6A / 2.5A         | 80%         | HH   |
| HDD50 - 48D12-X             | 36~72 VDC     | 50 WATTS       | 5V / 5V         | 5A / 5A           | 80%         | HH   |
| HDD60 - 48D12-X             | 36~72 VDC     | 60 WATTS       | 12V / 12V       | 2.5A / 2.5A       | 84%         | HH   |
| HDD60 - 48D15-X             | 36~72 VDC     | 60 WATTS       | 15V / 15V       | 2A / 2A           | 84%         | HH   |
| HDD60 - 48D512-X            | 36~72 VDC     | 60 WATTS       | 5V / 12V        | 6A / 2.5A         | 81%         | HH   |
| <b>Triple Output Models</b> |               |                |                 |                   |             |      |
| HDD55 - 12T512-X            | 9~18 VDC      | 55 WATTS       | +5V / $\pm$ 12V | +5A / $\pm$ 1.25A | 78%         | HH   |
| HDD55 - 24T512-X            | 18~36 VDC     | 55 WATTS       | +5V / $\pm$ 12V | +5A / $\pm$ 1.25A | 79%         | HH   |
| HDD55 - 48T512-X            | 36~72 VDC     | 55 WATTS       | +5V / $\pm$ 12V | +5A / $\pm$ 1.25A | 80%         | HH   |

--SUFFIX "X=P" : PCB MOUNTING TYPE, HEATSINK WILL BE ADDED ON MODULE.

--SUFFIX "X=T" : CHASSIS MOUNTING TYPE:(TERMINAL BLOCK), NO HEATSINK. USE CHASSIS AS HEATSINK OR FAN FORCE COOLING. INDICATE SUFFIX WHEN ORDER.

--SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICED.

## FEATURES

- \* 50W to 60W DC/DC CONVERTER
- \* 2:1 INPUT RANGE, PI INPUT FILTER
- \* ISOLATION INPUT AND OUTPUT
- \* HIGH PERFORMANCE UP TO 86%
- \* SHORT CIRCUIT PROTECTION
- \* 2 YEARS WARRANTY



# HDD60 SERIES

## DC-DC CONVERTER 50 ~ 60W

### SPECIFICATION

All Specifications Typical At Nominal Line, Full Load, 25°C Unless Otherwise Noticed

#### GENERAL SPECIFICATION

- \* Switching frequency: ..... >80KHz (typ.)
- \* Isolation voltage: ..... 1,500VDC
- \* Isolation resistance: ..... >1G  $\Omega$ (min.)
- \* Operating ambient temperature: ..... -25 to +71°C
- \* Storage temperature: ..... -25 to +100°C
- \* Max. Case temperature: ..... 95°C
- \* M.T.B.F.: ..... 122,500Hrs at @ GF40, according to MIL-HDBK-217F
- \* Cooling: ..... Free air convection
- \* Transient recovery time: ..... 500 $\mu$ S, 25% load step change
- \* Temperature coefficient: .....  $\pm 0.02\%$  / °C
- \* Dimension: ..... 88.9 X 140 X 22.4mm

#### INPUT SPECIFICATIONS

- \* Input voltage range / frequency: ..... 9 ~ 18VDC for 12V  
18 ~ 36VDC for 24V  
36 ~ 72VDC for 48V
- \* Input filter: ..... Pi type

#### OUTPUT SPECIFICATIONS

- \* Output voltage accuracy: .....  $\pm 1\%$  at Vo\_nom
- \* Minimum load: ..... No load for +5V, 20% for  $\pm 12$ V for triple
- \* Line regulation: .....  $\pm 1\%$  at Vo\_nom
- \* Load regulation: .....  $\pm 2\%$  at Vo\_nom for single output models  
 $\pm 2\%$  at Vo\_nom for dual output models
- \* Ripple & noise: .....  $\pm 1\%$  mV (max.)
- \* Efficiency: ..... Up to 86%, see model list
- \* Voltage trim range: .....  $\pm 10\%$  at Vo\_nom
- \* Derating: ..... See table 1
- \* Case material: ..... Metal

#### CONTROL AND PROTECTION

- \* Remote on/off: ..... ON : Open or +5.5VDC(Min.)  
OFF : +1.8VDC(Max.)
- \* Output short circuit: ..... Continuous

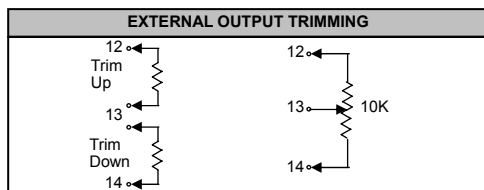


# HDD60 SERIES

## DC-DC CONVERTER 50 ~ 60W

### MECHANISM & PIN CONFIGURATION

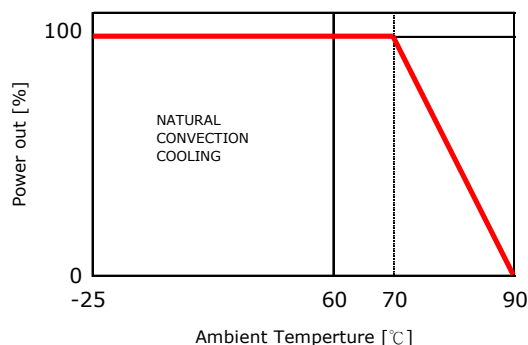
| REMOTE ON / OFF CONTROL                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TERMINAL 6 CONTROL<br>LOGIC COMPATIBILITY : .....OPEN COLLECTOR TTL<br>CONTROL VOLTAGE: ON +5.5V MIN. OR OPEN CIRCUIT.<br>OFF .....+1.8V MAX.<br>CONVERTER SHUTDOWN IDLE CURRENT .....10 mA<br>CONTROL COMMON .....INPUT TERMINAL 2 |



### PHYSICAL CHARACTERISTICS

|               |                                               |
|---------------|-----------------------------------------------|
| CASE SIZE     | 88.9 X 140 X 22.4mm<br>5.5 x 3.5 x 0.88inches |
| CASE MATERIAL | Metal                                         |
| WEIGHT        | 550 g                                         |

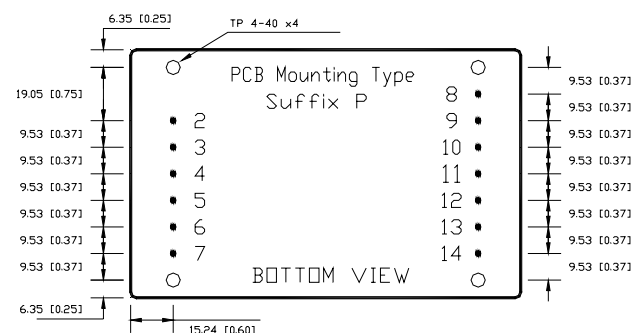
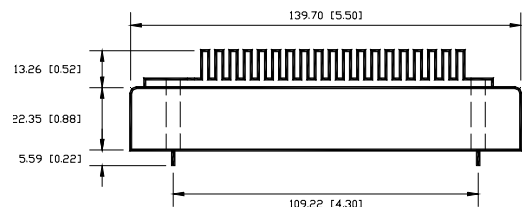
### Derating: [TABLE 1]



### PIN ASSIGNMENT

| PIN NO. | SINGLE                | DUAL     | TRIPLE   |
|---------|-----------------------|----------|----------|
| 1       | NO PIN                | NO PIN   | NO PIN   |
| 2 & 3   | Vi-                   | Vi-      | Vi-      |
| 4 & 5   | Vi+                   | Vi+      | Vi+      |
| 6       | REMOTE ON/OFF CONTROL |          |          |
| 7       | N.C.                  | N.C.     | N.C.     |
| 8       | Vo-                   | SENSE1 - | SENSE1 - |
| 9       | Vo-                   | Vo1 -    | Vo1 -    |
| 10      | Vo+                   | Vo1 +    | Vo1 +    |
| 11      | Vo+                   | SENSE1 + | SENSE1 + |
| 12      | SENSE-                | Vo2 -    | Vo2 -    |
| 13      | Trim                  | Trim     | Com2 & 3 |
| 14      | SENSE+                | Vo2 +    | Vo3 +    |

CASE: HH-P-60



CASE: HH-T

