



Shenzhen Hanlunda Industrial Co., Ltd.

## HDD69-28T8D5AN

Input Range	Output Voltage	Output Current	Output Ripple & Noise	Input Current <sup>(1)</sup>	Eff <sup>(2)</sup> (%)	Capacitor Load max <sup>(3)</sup>
25 – 32 VDC	+8 VDC	8000mA	75mVp-p	2832mA	91	6000 $\mu$ F
	+5 VDC	700mA	50mVp-p			1000 $\mu$ F
	-5 VDC	-300mA	50mVp-p			470 $\mu$ F

### TECHNICAL SPECIFICATION

All specifications are typical at nominal input, full load and 25°C otherwise noted

OUTPUT SPECIFICATIONS				GENERAL SPECIFICATIONS	
Output power	69 Watts max.			Efficiency	91%
Output voltage	+8VDC +5VDC -5VDC			Isolation voltage	None
Voltage adjustability (Note 4)	+8VDC	+7.5~+9VDC		Switching frequency	+8VDC 400KHz,typ. +5VDC 600KHz,typ. -5VDC 600KHz,typ.
Remote sense range (Note 5)	+8VDC	0.5V,max.		Design meet safety standard	IEC60950-1, UL60950-1, EN60950-1
Sequence delay time (figure 3)	Apply remote on/off Full load Without external Cout	10msec,min.		Dimensions	2.05 X 1.38 X 0.22 Inch (52.0 X 35.0 X 5.6 mm)
Output current (Note 6)	+8VDC +5VDC -5VDC	8000mA 700mA 300mA		Weight	14.5 g (0.51 oz)
Voltage accuracy	Full load and nominal Vin	± 2%			
Minimum load	0%				
Line regulation	LL to HL at Full Load	± 0.2%			
Load regulation	0% to 100% FL	± 0.5%			
Ripple and noise	20MHz bandwidth	+8VDC +5VDC -5VDC	75mVp-p 50mVp-p 50mVp-p		
Temperature coefficient	± 0.02% / °C, max.				
Transient response recovery time	50% load step change	250 $\mu$ S			
Over load protection	% of FL at nominal input	150%, typ.			
Short circuit protection	Hiccup, automatics recovery				
INPUT SPECIFICATIONS				ENVIRONMENTAL SPECIFICATIONS	
Input voltage range	28V nominal input		25 – 32VDC	Operating ambient temperature	-45°C ~ +85°C (with derating)
Input filter (Note 7)	C type			Over temperature protection (see figure 5 for Tref)	140°C, typ.
Start up time	Nominal Vin and constant resistive load	Power up Remote ON/OFF	50mS, typ. 50mS, typ.	Storage temperature range	-55°C ~ +125°C
Remote ON/OFF (Note 8)	Positive logic			Thermal shock	MIL-STD-810F
		ON= Open or 3V < Vr < 12V OFF= Short or 0V < Vr < 1.2V		Vibration	MIL-STD-810F
Input current of remote control pin	Nominal Vin	-0.5mA~+1mA		Relative humidity	5% to 95% RH
Remote off state input current	Nominal Vin	8mA			

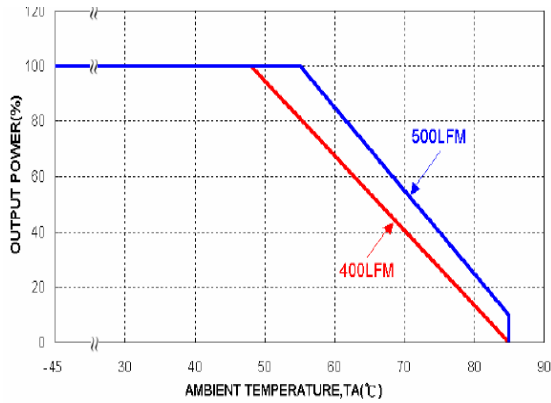
**Note**

1. Maximum value at nominal input voltage and full load.
2. Typical value at nominal input voltage and full load (+8VOUT constant load).
3. Test by minimum Vin and constant resistive load.
4. +8VDC Output voltage programmable from 7.5V to 9.0V by connecting a single resistor (shown as figure 2). To calculate the value of the resistor for a particular output voltage Vo, use the following equation:

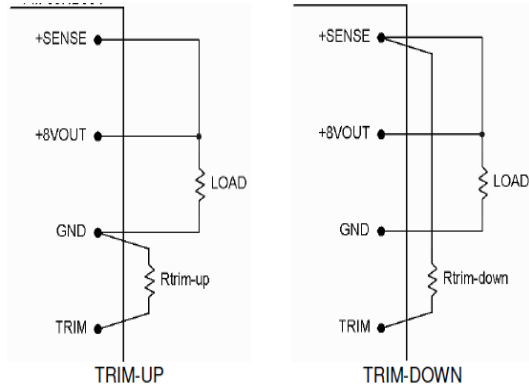
$$R_{trim-up} = \frac{154}{V_o - 8} - 10 \text{ (K}\Omega\text{)} \quad R_{trim-down} = \frac{220 \times (V_o - 0.7)}{8 - V_o} - 10 \text{ (K}\Omega\text{)}$$

5. Maximum output deviation is 0.5V inclusive of remote sense. If remote sense is not being used, the PIN\_+SENSE should be connected to PIN\_+8VOUT.
- 6.
7. A 20A/6ms 40% duty pulse output current (see figure 3) flows through +8V output. The output should not shutdown, and voltage deviation should be less than 5% of Vout.
8. Please connect a 10 μF/ 50V MLCC as close as possible to the input terminals of the module for good EMI characteristic.
9. The pin voltage is referenced to negative input.
10. Force cooling or heat-sink should always be used, that prevents the module from over heating or damaged.

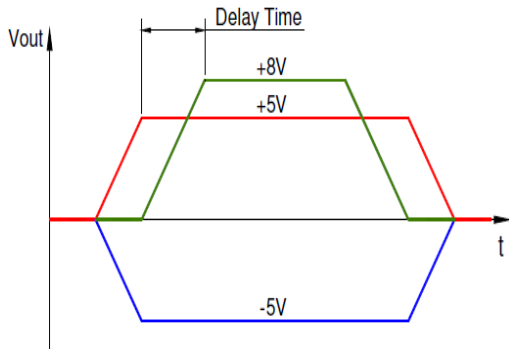
**CAUTION:** This power module is not internally fused. An input line fuse must always be used.



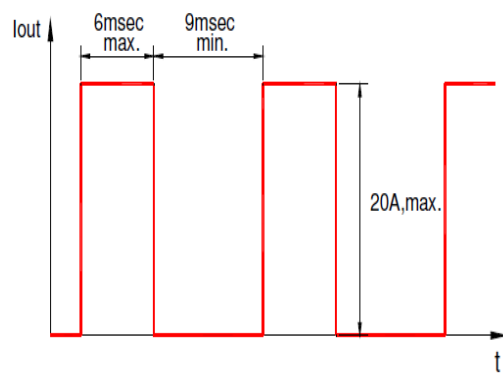
Derating Curve  
Figure 1



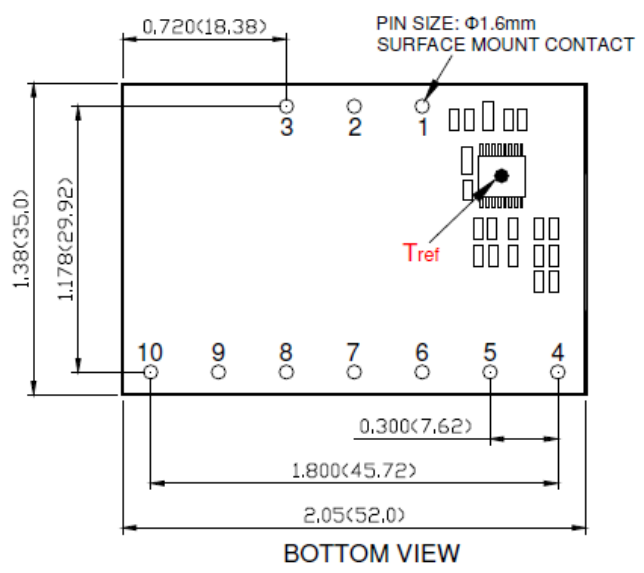
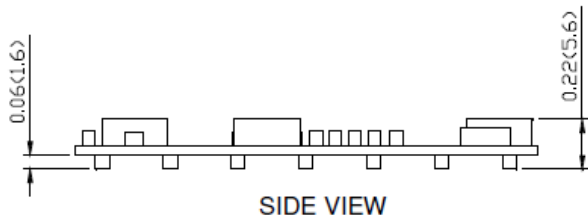
+8V output voltage TRIM configuration  
Figure 2



Start-up sequence  
Figure 3



+8V output dynamic load  
Figure 4



PIN CONNECTION	
PIN	HDD69-28T8D5AN
1	+VIN
2	GND
3	ON/OFF
4	+SENSE
5	+8VOUT
6	GND
7	TRIM
8	+5VOUT
9	GND
10	-5VOUT

1. All dimensions in Inches (mm)  
Tolerance: X.XX±0.02 (X.X±0.5)  
              X.XXX±0.01 (X.XX±0.25)
2. Pin pitch tolerance ±0.01(0.25)
3. Pin dimension tolerance ±0.004 (0.1)