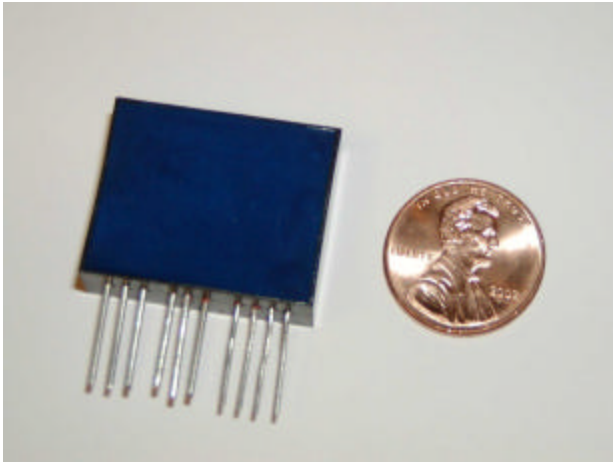


Technical Data
Datasheet: SPD-7D28, Rev. A



Solid State Power Controller Module

Description:

The Solid State Power Controller (SSPC) Module is a microcontroller based Solid State Relay designed to be used in Aircraft and/or other 28VDC applications.

Compliant Documents & Standards:

MIL-STD 704E	Aircraft Electric Power Characteristics	01 May 1991
MIL-STD 810E	Test Method Standard for Environmental Engineering Considerations and Laboratory Tests	14 July 1989
MIL-STD-883E	Test Method Standard Microcircuits	31 Dec 1996

Module Features:

- Plastic Mold Construction
- Solid State Reliability; Low Weight (12 grams) - High Power Density
- Very Small Package: 1.05"x0.85"x0.35"
- Very low control current: 25mA @ 5V
- Single-in-line 0.075" pitch connector for control interface and power terminals

Electrical Features:

- 28VDC Input: Capacity ranging from 1A to 7A
- True I²t Protection from 130% to 1500% of rated current
- Instant Trip Protection (300 μsec typ) for loads over 1500%
- High Overload Capability up to 140A
- Microcontroller based intelligent controller
- Transient voltage suppressor to handle Load Inductive Spike under Fault Trip
- Over-temperature Protection: 80 °C typ
- Internally generated isolated supply to drive the switch
- Opto Isolated ON/OFF Signal input and Switch Status output
- Low Power Dissipation; Comply with 250mV max Drop requirement: typ 120 mV @ 7A
- LED indicator, for visually indicating the operating status (option)
- Repetitive Fault handling capability
- Soft Turn-on to reduce EMC issues
- Module Reset with a Low Level Signal; Trip Reset Circuit is Trip-Free

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Electrical Characteristics

Input	
Input Voltage	MIL-STD-704E 28V DC nominal
Control Vcc	4.75V~5.25V, 5.0V Nominal
Control Current (from +5V)	25 mA max
Power Dissipation	< 1.5W @ 7A up to 70°C Ambient temperature
Status and ON/OFF	TTL

Output	
Current Input/Output Terminals (IN/OUT)	7A Continuous 140A for 300 µsec minimum
Max Voltage Drop (Input to Output)	120 mV typ @ Full Load, T _A = 25 °C 200 mV max T _A = -40 °C ~ 85 °C
Turn ON time (measured from Input Signal)	1 msec max
I ² t (Default value: 7A version)	40 A ² s for 130% < I < 1500%
Trip time 150% (min) of I _{RATED} 200% of I _{RATED} 400% of I _{RATED} 1000% of I _{RATED} 1500% of I _{RATED} above 1500% I _{RATED}	320 msec ~ 400msec 180 msec ~ 220msec 40 msec ~ 60 msec 6.4 msec ~ 10 msec 2.9 msec ~ 4.3 msec 300 µsec typ; 700 µsec max
Reset Time from Fault	100 msec min
Repetitive Fault current Rating	1000%
Output Rise Time (turn ON)	5 µsec typ
Output Fall Time under normal turn-off	50 µsec typ
Output Fall Time under Fault	300 nsec typ
Min Load Requirement	Nil

Protection	
Short Circuit Protection (All Models)	Up to 140A
Voltage Spikes	Built-in Transient Voltage Suppressor to handle short-circuit turn-off spike
OTP (Over Temperature Protection) threshold	typ. 80 °C, min. 75 °C, max 85 °C
OTP response time	typ. 1 sec

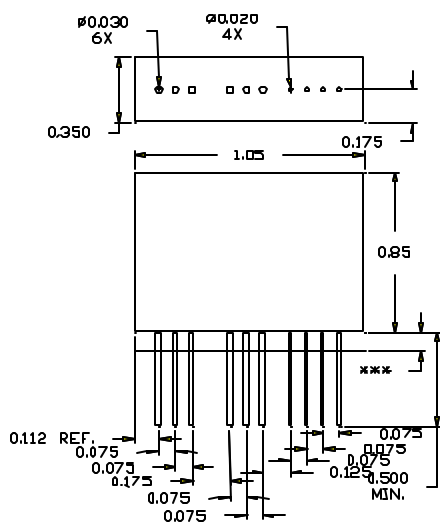
Control and Status	
ON/OFF Input	+5V or Open => Main Switch OFF TTL Low (Sink 1 mA) => Main Switch ON
Status Output	High (+5V max, can source 0.5mA) => Switch OFF Low (0.4V max, can sink 2mA) => Switch ON
Isolation	Between pin 1-6 and pin 7-10: 500V DC
LED status (option)	ON when main switch is ON; OFF when main switch is OFF; Blinking when main switch trips

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Physical Characteristics

Temperature	
Operating Temperature	$T_A = -40^{\circ}\text{C}$ to $+70^{\circ}\text{C}$
Storage Temperature	$T_A = -55^{\circ}\text{C}$ to $+85^{\circ}\text{C}$

Environmental	
Altitude	Up to 30,000 ft Can be installed in an unpressurized area
Case Dimensions	1.05"L x 0.85"W x 0.35"H
Operating Orientation	Any
Weight	12 grams typ
MTBF (Estimate: MIL STD 217F)	100,000 hrs at 55°C Full load



Mechanical
Dimensions (in Inches)

*** PIN POSITIONS ARE CONTROLLED WITHIN .01 INCH FROM CASE TOLERANCE
TOLERANCE XXXX = ± 0.01 , XXX = ± 0.02

Pin-Out Table

1, 2, 3	Round, 0.03"	Vout or Load
4, 5, 6	Round, 0.03"	28VDC
7	Round, 0.02"	+5V Return
8	Round, 0.02"	+5V Input
9	Round, 0.02"	Status Output
10	Round, 0.02"	ON/OFF Input

TECHNICAL DATA

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