

DESCRIPTION

The P600 Solid State Power Controller (SSPC) is a fully rated 80 Ampere device available for use in today's and tomorrow's Power Systems.

This LEACH SSPC features reliable trouble free switching together with real short circuit protection. Load current is sensed and shutdown initiated within microseconds. Two status signals, derived from the load current value and from the device gate, are reported via optical isolators.

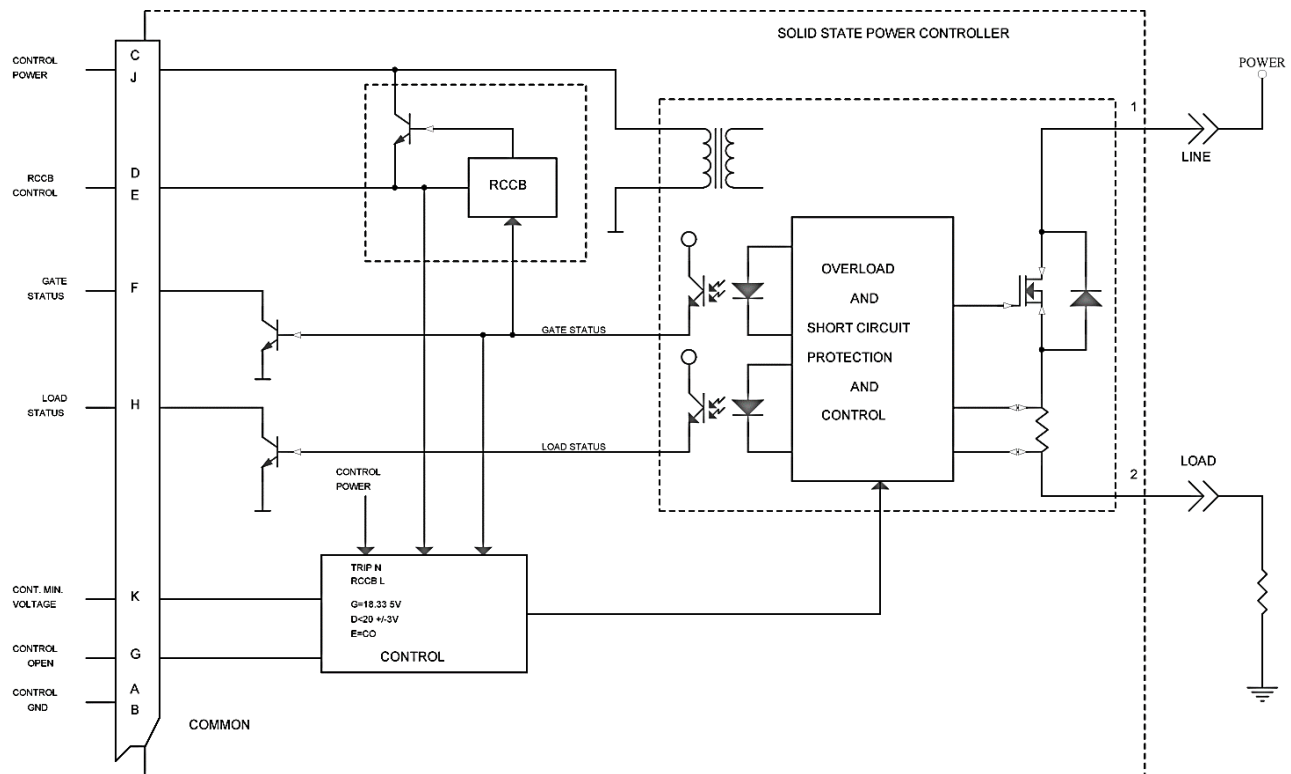
Employing a Power FET output stage, and by using thick film technology, this device offers low power dissipation, high off state impedance, low on state resistance and low on state voltage drop. Designed to operate in 28 VDC systems, this device does not require derating for any load type. These features, together with this high reliability, make it ideal for Power System applications.



FEATURES

- Power FET output
- Low voltage drop (150 mV)
- Built-in overload and short circuit protection
- Trip-free characteristics
- Status indicator
- Trip indicator
- Optically isolated (500 Vrms)
- Full rated current up to 71° C
- Fast response

BLOCK DIAGRAM



ELECTRICAL CHARACTERISTICS

INPUT						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
BIAS On Voltage	V_{IHB}	4.5		5.5	V	1,2
BIAS On Current	I_{IHB}			25	mA	3
CONTROL voltage on	V_{IHC}	2		32	V	4
CONTROL voltage off	V_{ILC}	-0.8		0.8	V	
CONTROL current on	I_{IHC}			50	μ A	5
CONTROL current off	I_{ILC}			-20	μ A	
Transients (BIAS Input)	V_{TB}			+50	V	6

NOTES

- BIAS voltage must be a step function.
- No reverse polarity protection.
- BIAS voltage at 5.5 V.
- Voltage shall not exceed BIAS voltage by 0.5 V.
- Max. at $V_{IHC} = 5$ V.
- Max. duration 50 ms, duty cycle : 1%, repetition rate 1 Hz

OUTPUT						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
LOAD current	I_L	0		100	%I rated	
On state voltage drop	V_{LD}			200	mV	1
Off state line voltage	V_L			32	V	2
STATUS high voltage	V_{OHS}	2			V	
STATUS high current	I_{OHS}			50	μ A	
STATUS low voltage	V_{OLS}			0.8	V	
STATUS low current	I_{OLS}			2	mA	
LDSTATUS pick up	I_{SON}			15	%I rated	
LDSTATUS drop out	I_{SOFF}	5			%I rated	
Leakage current	I_{LL}			80	mA	3
Transient voltage	V_T			+50	V	4
Spikes	V_S	-600		+600	V	5
Trip current	I_{TR}	110	130	145	%I rated	6
Case isolation		10			M Ω	7
Circuit Isolation		10		1000	M Ω	8

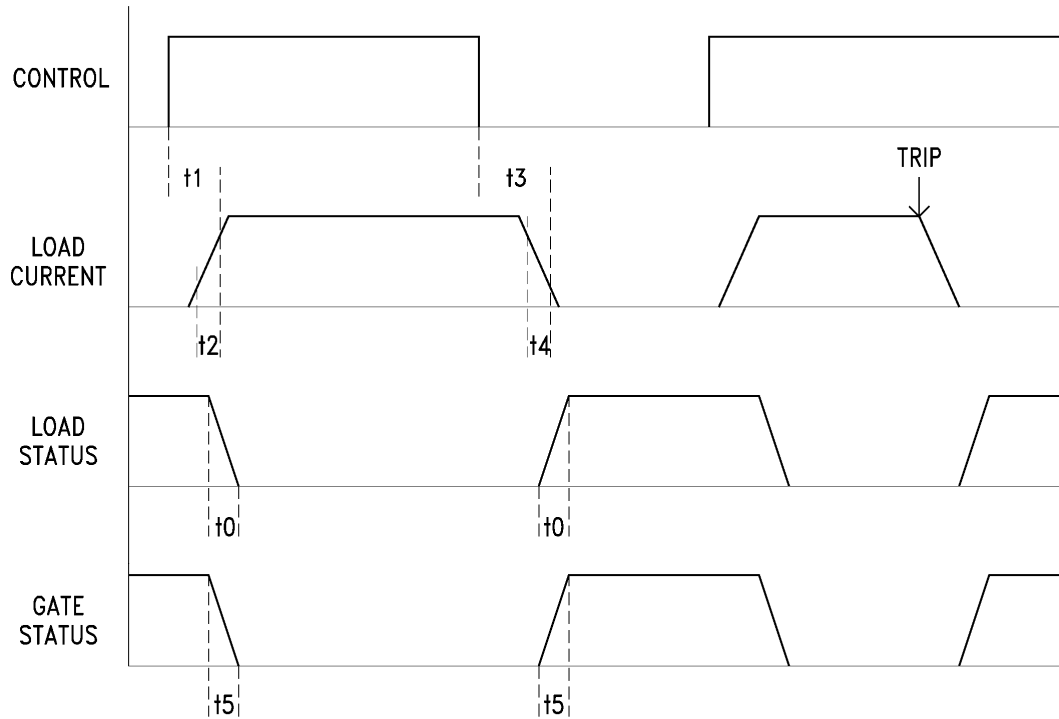
NOTES

- At load current $I_L = 100\%$ rated value.
- Reverse polarity is not blocked and may damage the SSPC. For reverse polarity protected units consult LEACH.
- At $V_L = 28$ V, Ambient temperature = 70° C.
- Duration 50 ms Max
- Time per MIL-STD-81653C.
- See Trip Characteristics.
- Tested with 100 VDC for 2 minutes, with all terminals tied together, against case.
- Tested with 30 VDC for 2 minutes, between all mutually isolated sections.

APPLICATIONS

- Manual and automated electrical aerospace power
- Load switching in high vibration and shock environments
- Combined load switching and wire protection
- High MTBF switching requirements

TIMING DIAGRAM



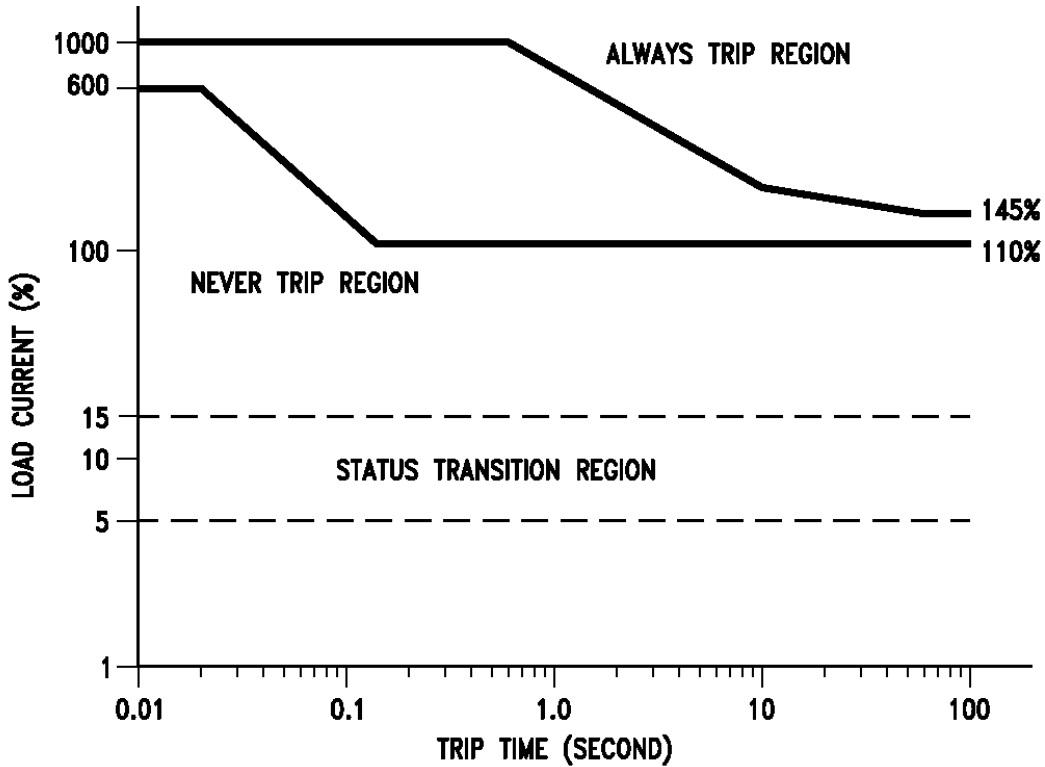
TIMING

Parameter	Symbol	Typ.	Max.	Unit	Notes
LSSTATUS Rise and Fall Time	t_0		20	μs	
Turn-on	t_1		1000	μs	
Load Current Rise Time	t_2		1000	μs	
Turn off	t_3		1000	μs	
Load Current Fall Time	t_4		200	μs	2
SWSTATUS Rise and Fall	t_5		20	μs	

NOTES

1. All timing measurements taken at 10% and 90% points into resistive rated load.
2. Load current fall time from trip event depends on overload conditions

TRIP CHARACTERISTIC



ENVIRONMENTAL DATA

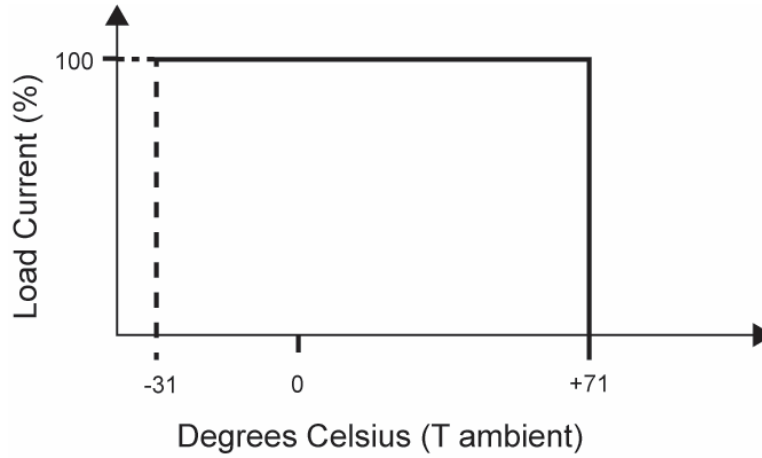
Parameter	Min.	Max.	Unit	Note
Operational Temp. Range	-31	71	°C	1
Storage Temp. Range	-55	125	°C	
Thermal Resistance, Junction Ambient		1	°C/W	
Max. Junction Temperature of Output Stage		150	°C	
Acceleration	10 g			2
Vibration	5 g, 5-500 Hz, Z axis			3
Shock (Basic)	30 g, 11 ms			4
MTBF	80000		h	5
Altitude	24000		m	

NOTES

1. See thermal derating curve
2. MIL-STD-810C, Method 513
3. MIL-STD-810C, Method 514

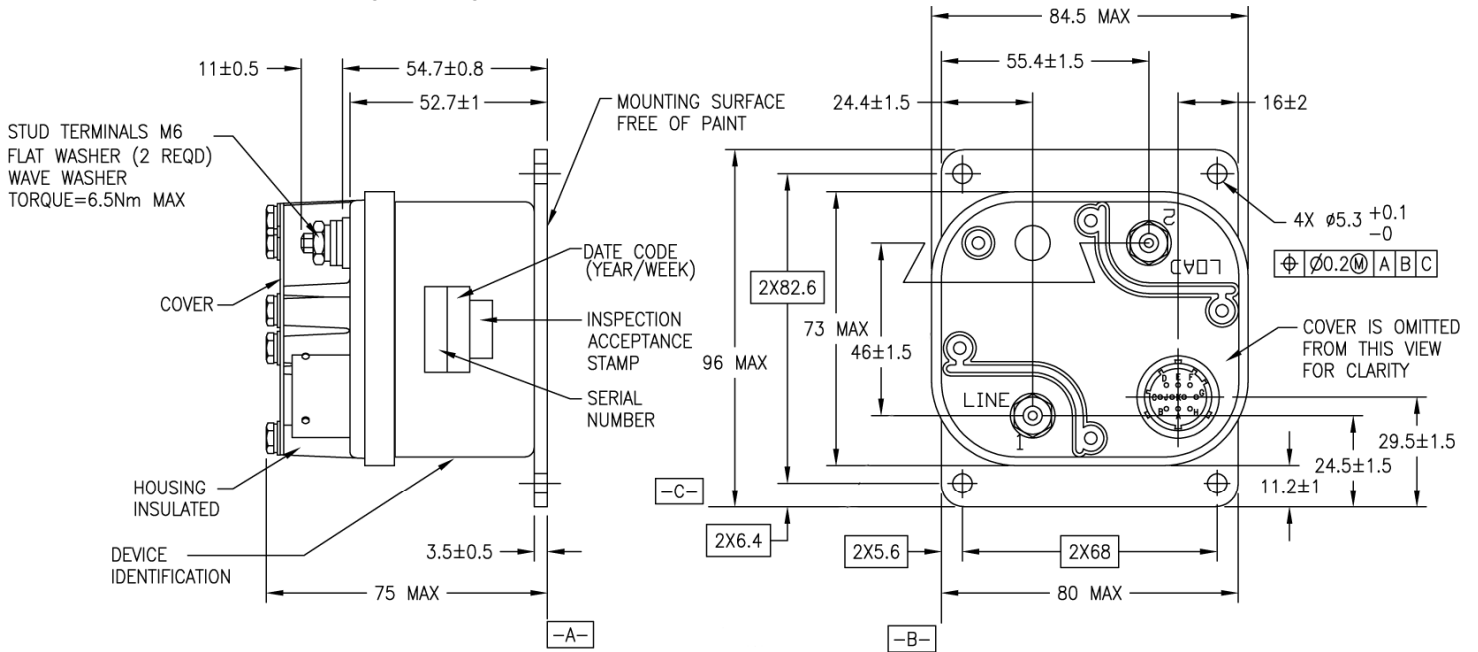
4. MIL-STD-810C, Method 516
5. Per MIL-HDBK-217E; AUT/ 25° C

THERMAL DERATING



PHYSICAL DATA (in mm)

Can :aluminum
Header : aluminum
Finish : flat black
Weight : 500 grams max.



TERMINAL LAYOUT – CONNECTOR



- A = CONT. GND
- B = CONT. GND
- C = CONT. POWER
- D = RCCB CONTROL
- E = RCCB CONTROL
- F = GATE STATUS
- G = CONT. OPEN
- H = LOAD STATUS
- J = CONT. POWER
- K = CONT. MIN. VOLT

NOTE:
PINS A AND B
PINS C AND J
PINS D AND E
SHALL BE CONNECTED
EXTERNALLY