

LEACH ENGINEERING DATA SHEET

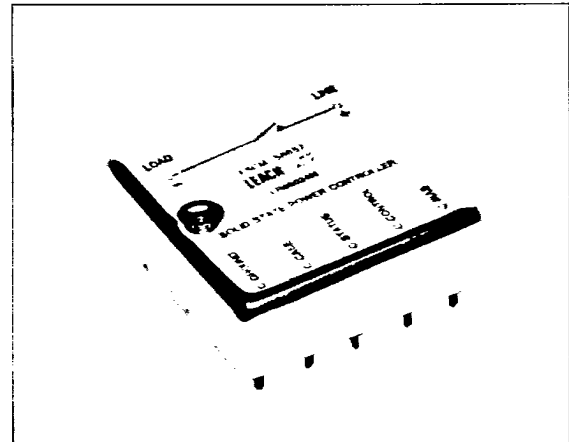
INTELLIGENT SWITCHING DEVICE (ISD) SSPC (DC-SPST-NO)

DESCRIPTION

This LEACH Solid State Power Controller (SSPC) features reliable, troublefree switching together with short circuit and overload protection. Load current is continuously monitored, and the device will shutdown within microseconds reacting to an overload condition. The status signal derived from the load current is reported via an optically isolated status output.

The SSPC is designed for operation in 28 VDC power systems with ratings from 1 to 4 amperes.

The assembly is enclosed in a hermetically sealed metal package.



FEATURES

- Power FET output
- Low voltage drop
- Built-in overload and short circuit protection
- Trip-free characteristics
- Discrete status
- Optically isolated (500 VRMS)
- High MTBF
- Full rate current up to 85°C
- Fast response

APPLICATIONS

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

PHYSICAL DATA

- CASE FINISH: Tin plated
- TERMINALS: Tin plated
- MASS: 20 grams max. (0.7 oz.) all ratings

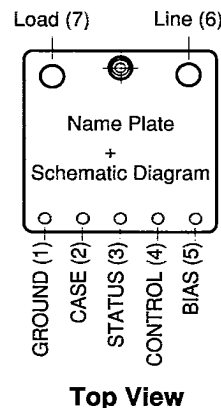
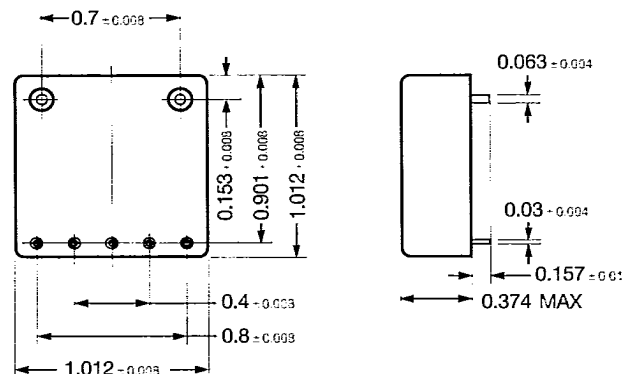
PART NUMBERS:

5 VDC BIAS

- LR06014N 1 amp device
- LR06024N 2 amp device
- LR06044N 4 amp device

28 VDC BIAS

- LR06014P 1 amp device
- LR06024P 2 amp device
- LR06044P 4 amp device



For applications inquiries, contact:

LEACH® CORPORATION

P.O. Box 5032, 6900 Orangethorpe Avenue

Buena Park, California 90622-5032

(714) 739-0770 ■ FAX: (714) 739-1713 ■ TWX: 910-596-2867

3-3

ELECTRICAL CHARACTERISTICS

(−55°C to +85°C Ambient Temperature Unless Otherwise Noted)

INPUT (CONTROL) CHARACTERISTICS					OUTPUT (LOAD) CHARACTERISTICS				
PARAMETER	MIN.	TYP.	MAX.	UNITS	PARAMETER	MIN.	TYP.	MAX.	UNITS
(5 VDC Bias)					LOAD CURRENT [4]	0		100	%
BIAS "ON" VOLTAGE [1]	4.5		5.5	VDC	"ON" STATE VOLTAGE DROP [5]		100	200	mV
BIAS CURRENT			20	mA	"OFF" STATE LINE VOLTAGE [6]			32	VDC
CONTROL VOLTAGE "HIGH"	2.4		32	VDC	LEAKAGE CURRENT [7]			100	μA
CONTROL VOLTAGE "LOW"	−0.3		0.8	VDC	TRANSIENTS [8]			+50	VDC
CONTROL CURRENT "HIGH" [2]		0.03	3.5	mA	SPIKES [9]	−600		+600	VDC
CONTROL CURRENT "LOW"	−20			μA	TRIP CURRENT [10]	100	110	120	%
TRANSIENTS (BIAS INPUT) [3]			35	VDC	STATUS VOLTAGE "HIGH"	3.5		5.5	VDC
(28 VDC BIAS)					STATUS VOLTAGE "LOW"			0.3	VDC
BIAS "ON" VOLTAGE [1]	18		32	VDC	STATUS PICK-UP CURRENT [15]			25	%
BIAS CURRENT			13	mA	STATUS DROP-OUT CURRENT [15]	15			%
CONTROL VOLTAGE "HIGH"	2.4		32	VDC	STATUS OUTPUT IMPEDANCE	2.5	3	3.5	kΩ
CONTROL VOLTAGE "LOW"	−0.3		0.8	VDC	(SEE FIGURE 2 FOR ALL TIMING WAVEFORMS)				
CONTROL CURRENT "HIGH" [2]		0.03	3.5	mA	TURN-ON DELAY (T ₀ -T ₁) [11] [13] [14]	50		100	μs
CONTROL CURRENT "LOW"	−20			μA	CURRENT RISE-TIME (T ₁ -T ₂) [11] [13] [14]	10		25	μs
TRANSIENTS (BIAS INPUT) [3]			50	VDC	STATUS ON DELAY (T ₁ -T ₃) [11] [13] [14]	10		60	μs
					STATUS RISE TIME (T ₃ -T ₄) [11] [13] [14]			5	μs
					TURN-OFF DELAY (T ₅ -T ₆) [11] [13] [14]	80		180	μs
					CURRENT FALL TIME (T ₆ -T ₇) [11] [13] [14]			5	μs
					STATUS OFF DELAY (T ₇ -T ₈) [11] [13] [14]	5		20	μs
					STATUS FALL TIME (T ₈ -T ₉) [11] [13] [14]			10	μs
					OVERLOAD STATUS RESPONSE (T ₁₀ -T ₁₁) [12] [13] [14]			60	μs
					OVERLOAD STATUS FALL TIME (T ₁₁ -T ₁₂) [12] [13] [14]			10	μs

NOTES:

- | | |
|---|--|
| <p>[1] NO REVERSE POLARITY PROTECTION.</p> <p>[2] MAXIMUM AT 32 VDC; TYPICAL AT 5 VDC.</p> <p>[3] MAXIMUM DURATION 50 MS.</p> <p>[4] REFER TO THERMAL DERATING CURVE.</p> <p>[5] FOR 4 AMP VERSION, VOLTAGE DROP IS 300 MV. LOAD CURRENT IS 100% RATED CURRENT.</p> <p>[6] REVERSE POLARITY MAY DAMAGE THE RPC.</p> <p>[7] AT 85°C AND 28 VDC.</p> <p>[8] MAXIMUM DURATION 50 MS.</p> <p>[9] TRANSIENT DURATIONS IN ACCORDANCE WITH MIL-STD-704D.</p> <p>[10] SEE FIGURE 4.</p> | <p>[11] AT 100% RATED CURRENT.</p> <p>[12] AT 250% RATED CURRENT.</p> <p>[13] "STATUS" IS ACTIVE HIGH. V_{BIAS} IS 5.0 VDC OR 28 VDC RESPECTIVELY.</p> <p>[14] RATED RESISTIVE LOAD; MEASUREMENTS TAKEN BETWEEN 10% AND 90% POINTS.</p> <p>[15] PERCENT OF RATED CURRENT.</p> <p>[16] SEE THERMAL DERATING CURVE.</p> <p>[17] PER MIL-P-81653 AND MIL-STD-810, PROCEDURE I, METHOD 514.</p> <p>[18] PER MIL-P-81653 AND MIL-STD-810, PROCEDURE II, METHOD 513.</p> <p>[19] PER MIL-P-81653 AND MIL-STD-810, PROCEDURE IV, METHOD 516.</p> <p>[20] PER MIL-HDBK-217E; AIF/60°C.</p> |
|---|--|

324

CONFIGURATION

BLOCK DIAGRAM

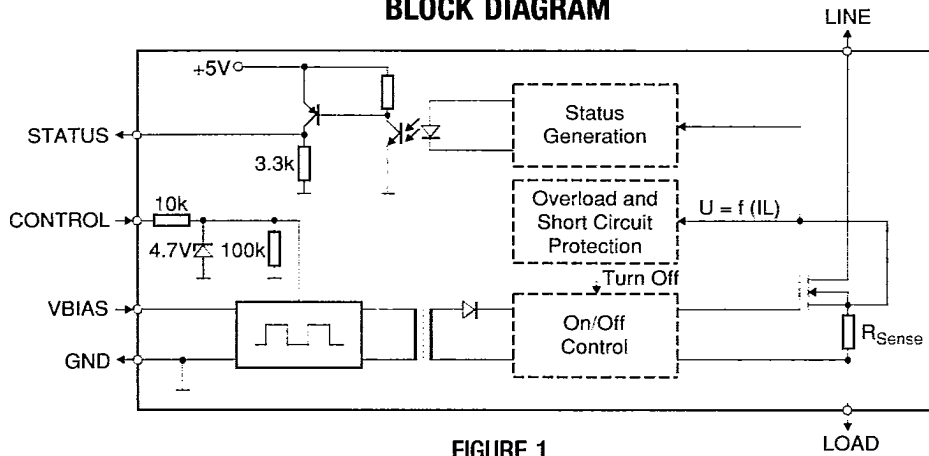


FIGURE 1

TIMING WAVEFORMS

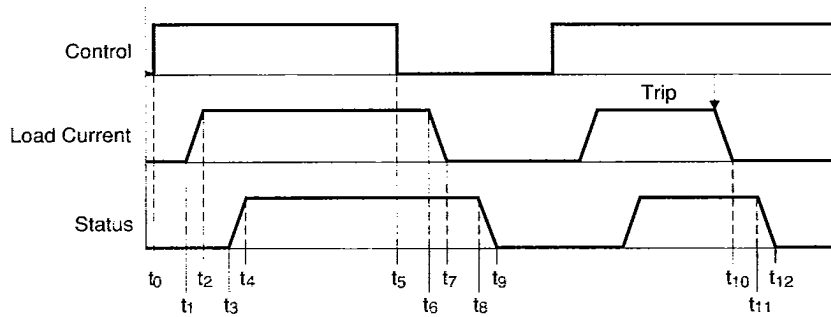


FIGURE 2

TEMPERATURE DERATING CURVE (MAXIMUM LOAD CURRENT VS. AMBIENT TEMPERATURE)

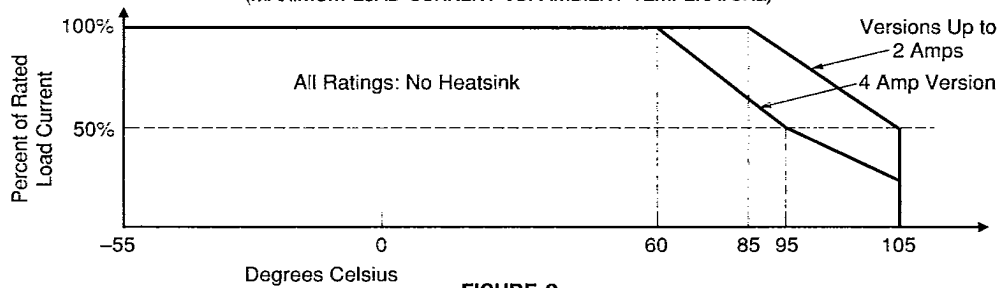


FIGURE 3

TYPICAL CURRENT TRIP LEVELS

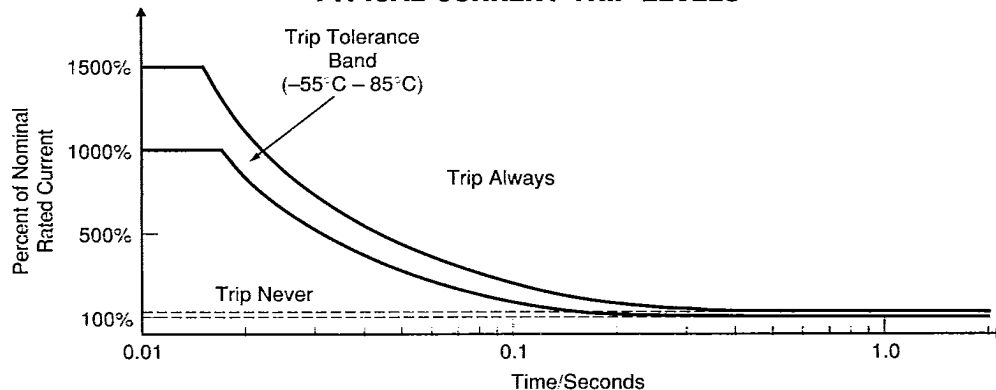


FIGURE 4

325

ENVIRONMENTAL DATA

■ TEMPERATURE RANGE:	
Operating ⁽¹⁶⁾	–55°C to +105°C
Storage	–55°C to +125°C
■ THERMAL RESISTANCE JUNCTION AMBIENT	20°C/W
■ MAXIMUM JUNCTION TEMPERATURE OF OUTPUT STAGE	150°C
■ VIBRATION ⁽¹⁷⁾	30 g, 10 to 3000 Hz
■ ACCELERATION ⁽¹⁸⁾	100 g
■ SHOCK ⁽¹⁹⁾	50 g, 11 mSec
■ MTBF ⁽²⁰⁾	880,000 h
■ ALTITUDE	80,000 ft

All specifications subject to change without notice.

For Additional Information:

LEACH[®] CORPORATION

P.O. BOX 5032
6900 ORANGETHORPE AVE., BUENA PARK, CA 90622-5032
(714) 739-0770 ■ TWX 910-596-2867 ■ FAX (714) 739-1713

© 1991 LEACH Printed in U.S.A. 3/91/2.5K

326