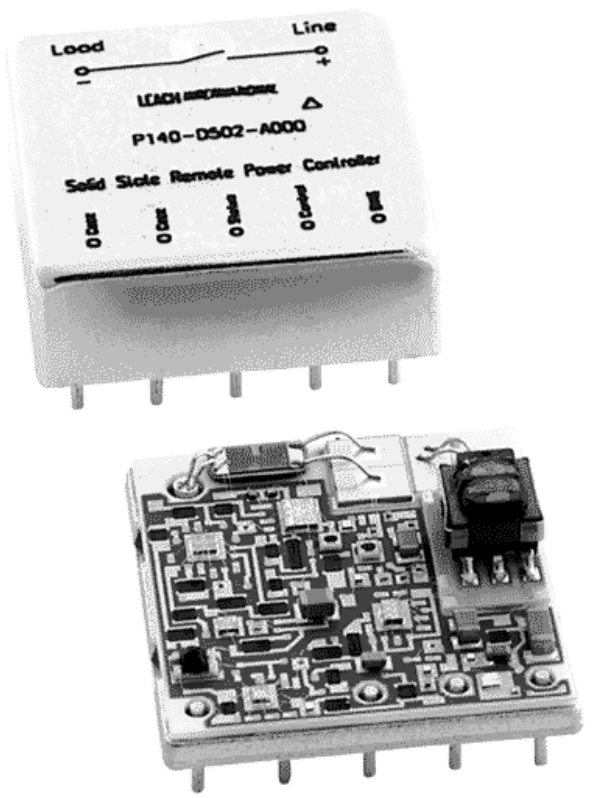
ENGINEERING DATA SHEET

P140 SERIES

SOLID STATE POWER CONTROLLER
28 VDC, 1PNO-WITH CURRENT OR VOLTAGE STATUS OUTPUT
1, 2, 4, 5, 7, 7.5 AND 10 AMP RATINGS



SIZE: 25.7 x 25.7 x 9.7 mm

DESCRIPTION

This LEACH Solid State Power Controller features reliable, trouble free switching together with real short circuit and overload protection. Load current is sensed and shutdown initiated within microseconds. A status signal is derived from the load current value or load voltage value and is reported via an optically isolated status output.

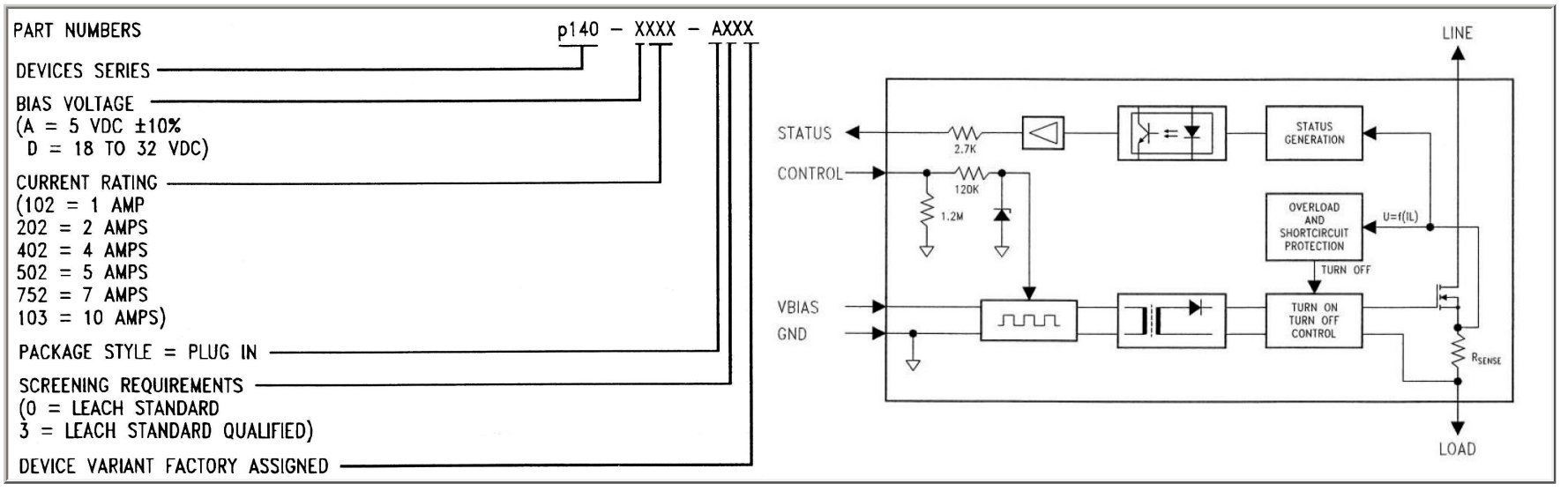
Designed to operate in 28VDC systems, these devices do not require derating for any load type.

They are hermetically sealed, in a metal package.
For other ratings and operating voltages, please consult LEACH.

FEATURES

- No derating for all types of loads up to 85° C
- Very low voltage drop
- No heat sink required
- Extremely small size
- Fast acting
- Built-in overload and short circuit protection
- Trip free
- Wide BIAS Voltage range
- Fully isolated bias, control and status
- Real load current status
- Exceeds MIL-P-81653 requirements

BLOCK DIAGRAM



Esterline Power Systems

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Typical values are at 25 ± 5°C INPUT	**5 VOLT BIAS**			**28 VOLT BIAS**				
Specification	Min.	Typ.	Max.	Min.	Typ.	Max.	Unit	Note
BIAS On Voltage	4.5		5.5	18		32	V	1,2
BIAS On Current			20			13	mA	3
BIAS Off Current			1			3	mA	3
CONTROL voltage "on"	2.4		32	2.4		32	V	
CONTROL voltage "off"	-0.3		0.8	-0.3		0.8	V	
CONTROL current "on"			0.3			0.3	mA	4
CONTROL current "off"			-20			-20	µA	
Transients (BIAS Input)			15			50	V	5

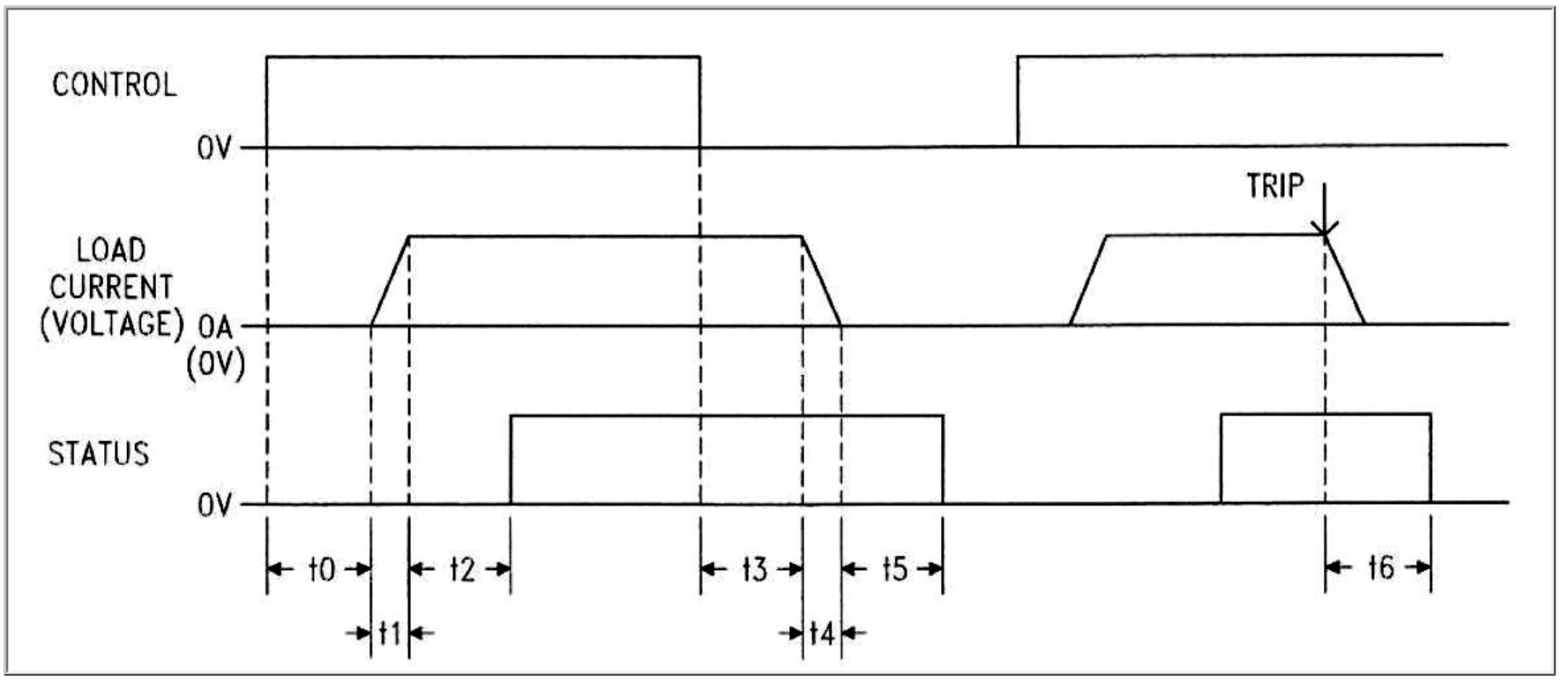
Notes:
1. Bias voltage must be a step function.
2. No reverse polarity protection.
3. BIAS voltage is 5.0 V or 28 V respectively.
4. At 32 V, typical at 5 V.
5. Maximum duration 50 ms, duty cycle =1%, repetition rate 1 Hz.

POWER OUTPUT					
Specification	Min.	Typ.	Max.	Unit	Note
Load current	0		100	% Irated	1
"ON" state voltage drop		100	200	mV	2
"OFF" state line voltage			32	V	3
Leakage current			100	µA	4
Transients			+50	V	5
Isolat Voltage	500			Vrms	8
Insulation Resistance	100	1000		MΩ	9
Spikes	-600		+600	V	6
Trip current	107	110	120	% Irated	7

Notes:
1. Observe thermal derating cure. Available ratings see front page.
2. For 4 amp and higher current versions maximum voltage drop is 300 mV. Load current is 100% rated current.
3. Reverse polarity is not blocked and may damage the SSPC.
4. At 100° C and 28V.
5. Maximum duration 50 ms, duty cycle =1%, repetition rate 1 Hz.
6. Time per MIL-P-81653.
7. See "Trip characteristics".
8. 60 Hz, 10.5 BIAS, CONTROL, STATUS and GND tied together; LINE and Load tied together. Tested between GND, LINE and CASE at sea level.
9. At ±500VDC ±10% between GND, LINE, and CASE.

STATUS OUTPUT					
Specification	Min.	Typ.	Max.	Unit	Note
STATUS voltage "high"	3.5		5.5	V	
STATUS voltage "low"			0.3	V	
STATUS Pick-up current			25	%	1
STATUS Drop-out current	15			%	1
STATUS Pick-up voltage	99			%	2, 3
STATUS Drop-out voltage			1	%	2, 4
STATUS output impedance	2.5	2.7	3.0	K Ω	

Notes:
1. Current sensed. Percentage of rated current.
2. Voltage sensed. Percentage of applied line voltage across the load.
3. Normal "on" condition.
4. Normal "off" or "tripped off" condition.

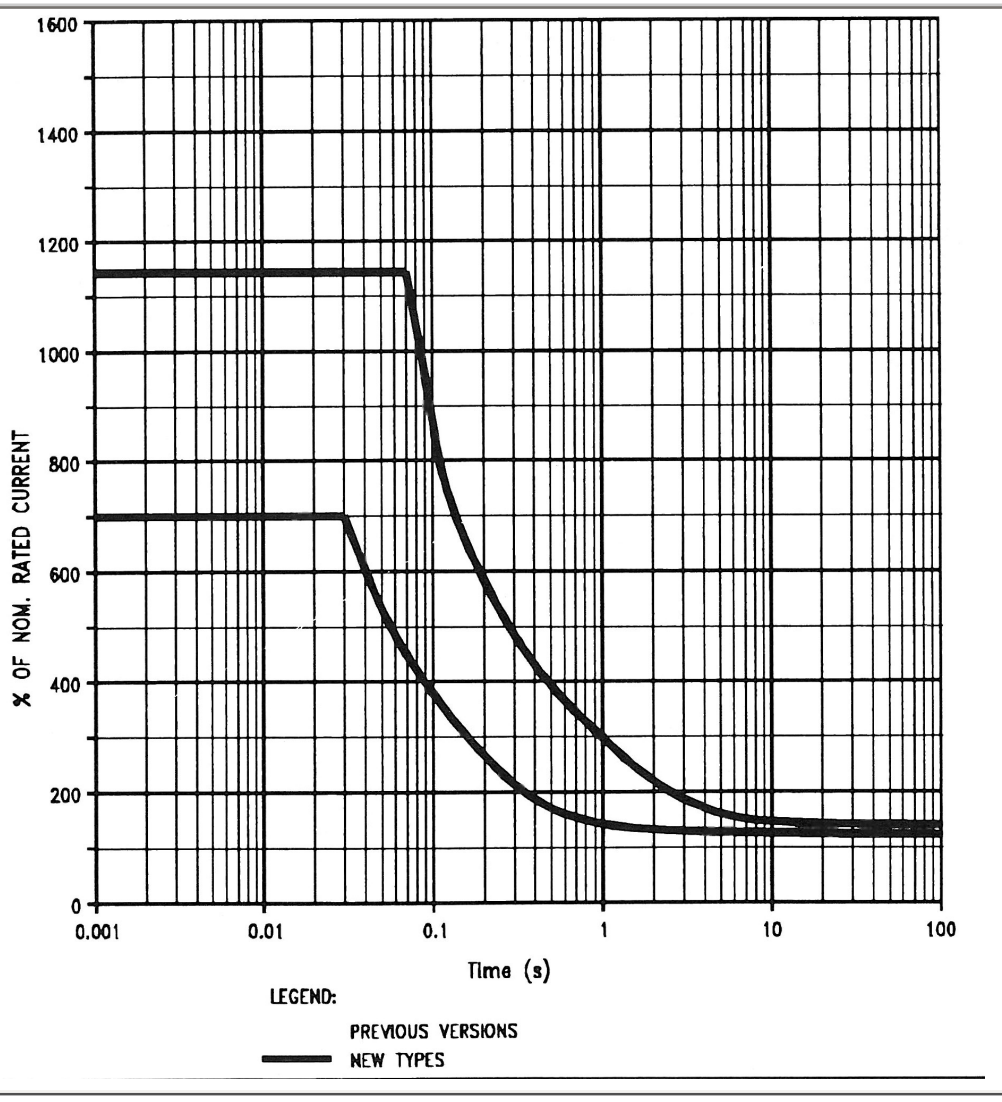


Parameter	Symbol	Max	Unit	Note
Turn on delay	t0	200	µs	2
Load current rise time	t1	50	µs	2
Load to STATUS on delay	t2	100	µs	2
Turn off delay	t3	200	µs	2
Load current fall time	t4	50	µs	2
Load to STATUS off delay	t5	100	µs	2
Overload STATUS response	t6	100	µs	3

Notes:
1. All timing measurements are taken from/to 10% and/or 90% terminated with a resistive rated load.
2. At 100% rated current
3. At 250% rated current

"STATUS" is active high. V_{BIAS} is 5.0 V or 28 V respectively. Rated resistive load; measurements taken between 10% and 90% points.

TRIP CHARACTERISTIC



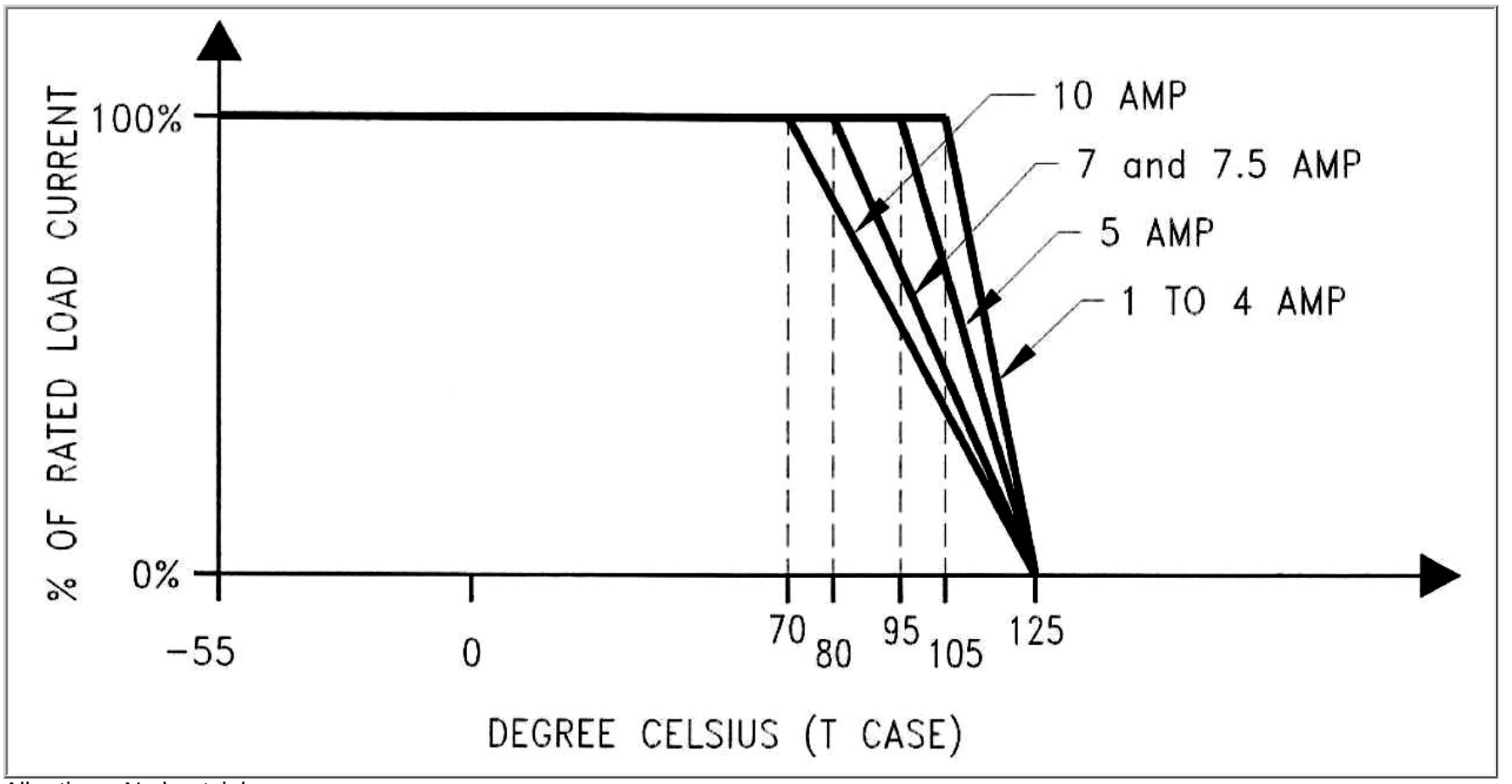
ENVIRONMENTAL DATA

P140 SERIES

Specification	Min.	Max.	Unit	Note
Operational Temp. Range	-55	105	° C	1, 2
Storage Temp. Range	-55	125	° C	
Thermal Resistance, Junction to case		20	° C/W	
Max. Junction Temperature of Output Stage		150	° C	
Vibration	30 g, 96....2000 hz			3
Acceleration	27 g			4
Shock	20 g, 6...9 ms			5
MTBF	880000		h	6
Altitude	80000		ft	

Notes:
1. See thermal derating curve
2. Case temperature
3. MIL-STD-883, Method 2007, 20-2000 Hz
4. MIL-STD-883, Method 2001
5. MIL-STD-883, Method 2002, 0.5 ms
6. Per MIL-HDBK-217E, Quality level B-1, AUT environmental at ±25°C

THERMAL DERATING



All ratings: No heatsink

PHYSICAL DATA (in mm)

. Case Finish: 1 and 2 amp versions Tin Plated. 4 amp version and above matte black painted
. Terminals: Tin Plated
. Mass: 20 grams max. (all ratings)