Solitron Devices, Inc.
3301 Electronics Way, West Palm Beach, FL 33407
Tel: (561) 848-4311 Fax: (561) 863-5946
http://www.solitrondevices.com

SDP7805AU SDP7815AU
SDP7805AT SDP7815AT

ISOLATED HERMETIC TO-257AA FIXED VOLTAGE REGULATORS APPROVED TO DSCC DRAWINGS

Three Terminal, Fixed Voltage, 1.5 Amp Precision Positive Regulators In Hermetic JEDEC TO-257AA Package

FEATURES

- Isolated Hermetic Package, JEDEC TO-257AA Outline Output Voltages: 5V, 15V
- Output Voltages Set Internally to ±1%
- Built-In Thermal Overload Protection
- Short Circuit Current Limiting
- Product Is Also Available In Non-Isolated Package Similar To Industry Standards 7805, 7815

DESCRIPTION

These three terminal positive regulators are supplied in a hermetically sealed metal package whose outline is similar to the industry standard TO-220 plastic package. All protective features are designed into the circuit, including thermal shutdown, current limiting and safe-area control. With heat sinking, they can deliver over 1.5 amps of output current. These units feature internally trimmed output voltages ±1% of nominal voltage. These units are ideally suited for Military applications where a hermetically sealed package is required.

EQUIVALENCY PART NUMBER DESIGNATOR

Standard Military Drawing Number		Solitron Part Number
MIL-PRF-38534	MIL-PRF-38535	
5962-9864301UA	5962-8778201 UX	SDP7805AU
5962-9864301TA	5962-8778201 TX	SDP7805AT
5962-9864001UA	5962-8855301 UX	SDP7815AU
5962-9864001TA	5962-8855301 TX	SDP7815AT

"U" = Isolated

"T" = Non-Isolated

ABSOLUTE MAXIMUM RATINGS @ 25°C

Input Voltage . . . . . +35 V
Operating Junction Temperature Range . . . . . - 55°C to + 150°C
Storage Temperature Range . . . . . - 65°C to + 150°C
Typical Power/Thermal Charateristics:
Rated Power @ 25° C T_C 15W
T_A 3W
Thermal Resistance θ_{JC} Case U. . . . . 4.2°C/W
θ_{JC} Case T . . . . . 3.5°C/W
θ_{JA} Case T . . . . . 42°C/W

ELECTRICAL CHARACTERISTICS 5 Volt V_{IN} = 10V, I_o = 500mA, -55°C T_A 125°C (unless otherwise specified)

Parameter	Symbol	Test Conditions		Min.	Max.	Unit
Output Voltage	V_{OUT}	T_A = 25°C		4.92	5.08	V
		V_{IN} = 7.5V to 20V I_O = 5mA to 1.0 A, P ≤ 15W	•	4.85	5.15	V
Line Regulation	V_{RLINE}	V_{IN} = 7.5V to 20V			5	mV
(Note 1)			•		12	mV
(Note 4)		V_{IN} = 8.0V to 12V			4	mV
			•		10	mV
Load Regulation	V_{RLOAD}	I_O = 5mA to 1.5 Amp			12	mV
(Note 1)		I_O = 5mA to 1.0 Amp	•		25	mV
		I_O = 250mA to 750 mA			6	mV
			•		15	mV
Standby Current Drain	I_{SCD}				6	mA
			•		6.5	mA
Standby Current Drain Change With Line	ΔI_{SCD} (Line)	V_{IN} = 7.5V to 20V	•		0.8	mA
Standby Current Drain Change With Load	ΔI_{SCD} (Load)	I_O = 5mA to 1000mA	•		0.5	mA
Dropout Voltage	V_{DO}	T_A = 25°C, ΔV_{OUT} = 100mV, I_O = 1.0A			2.5	V
Peak Output Current	$I_{O(pk)}$	T_A = 25°C		1.5	3.3	A
Short Circuit Current	I_{DS}	V_{IN} = 35V			1.2	A
(Note 2)			•		2.8	A
Ripple Rejection	$\frac{\Delta V_{IN}}{\Delta V_{OUT}}$	f =120 Hz, ΔV_{IN} = 10V		68		dB
		(Note 3)	•	60		dB
Output Noise Voltage	N_O	T_A = 25°C, f =10 Hz to 100KHz			40	μV/V
(Note 3)						RMS
Long Term Stability	$\frac{\Delta V_{OUT}}{\Delta t}$	T_A = 25°C, t = 1000 hrs.			75	mV
(Note 3)						

Notes:

1. Load and Line Regulation are specified at a constant junction temperature. Pulse testing with low duty cycle is used. Changes in output voltage due to heating effects must be taken into account separately.
2. Short Circuit protection is only assured up to V_{IN} = 35V.
3. If not tested, shall be guaranteed to the specified limits.
   The • denotes the specifications which apply over the full operating temperature range.
4. Minimum load current for full line regulation = 5.0 mA.

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ELECTRICAL CHARACTERISTICS 15 Volt V_{IN} = 23V, I_o = 500mA, -55°C T_A 125°C (unless otherwise specified)

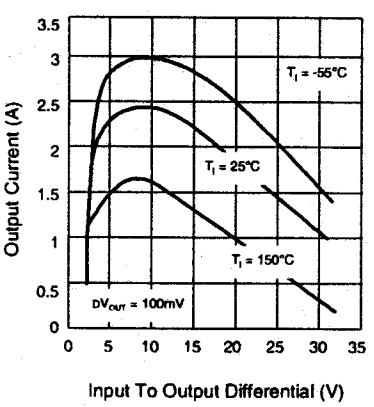
Parameter	Symbol	Test Conditions		Min.	Max.	Unit
Output Voltage	V_{OUT}	T_A = 25°C		14.8	15.2	V
		V_{IN} = 18.5V to 30V I_O = 5mA to 1.0 A, P ≤ 15W	•	14.6	15.4	V
Line Regulation (Note 1) (Note 4)	V_{RLINE}	V_{IN} = 17.5V to 30V			20	mV
			•		50	mV
		V_{IN} = 20V to 26V			15	mV
			•		25	mV
Load Regulation (Note 1)	V_{RLOAD}	I_O = 5mA to 1.5 Amp			35	mV
		I_O = 5mA to 1.0 Amp	•		75	mV
		I_O = 250mA to 750 mA			21	mV
			•		45	mV
Standby Current Drain	I_{SCD}				6.0	mA
			•		6.5	mA
Standby Current Drain Change With Line	DI_{SCD} (Line)	V_{IN} = 18.5V to 30V	•		0.8	mA
Standby Current Drain Change With Load	DI_{SCD} (Load)	I_O = 5mA to 1000mA	•		0.5	mA
Dropout Voltage	V_{DO}	T_A = 25°C, DV_{OUT} = 100mV, I_O = 1.0A			2.5	V
Peak Output Current	$I_{O(pk)}$	T_A = 25°C		1.5	3.3	A
Short Circuit Current (Note 2)	I_{DS}	V_{IN} = 35V			1.2	A
			•		2.8	A
Ripple Rejection	$\frac{DV_{IN}}{DV_{OUT}}$	f =120 Hz, DV_{IN} = 10V		54		dB
		(Note 3)	•	52		dB
Output Noise Voltage (Note 3)	N_O	T_A = 25°C, f =10 Hz to 100KHz			40	μV/V RMS
Long Term Stability (Note 3)	$\frac{DV_{OUT}}{Dt}$	T_A = 25°C, t = 1000 hrs.			150	mV

Notes:

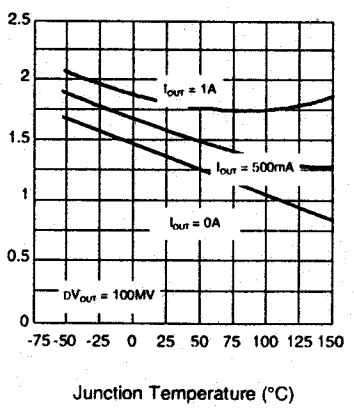
1. Load and Line Regulation are specified at a constant junction temperature. Pulse testing with low duty cycle is used. Changes in output voltage due to heating effects must be taken into account separately.
2. Short Circuit protection is only assured up to V_{IN} = 35V.
3. If not tested, shall be guaranteed to the specified limits.
   The • denotes the specifications which apply over the full operating temperature range.
4. Minimum load current for full line regulation = 5.0 mA.

TYPICAL PERFORMANCE CHARACTERISTICS

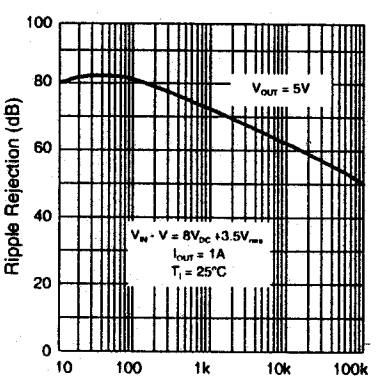
PEAK OUTPUT



DROPOUT VOLTAGE



RIPPLE REJECTION



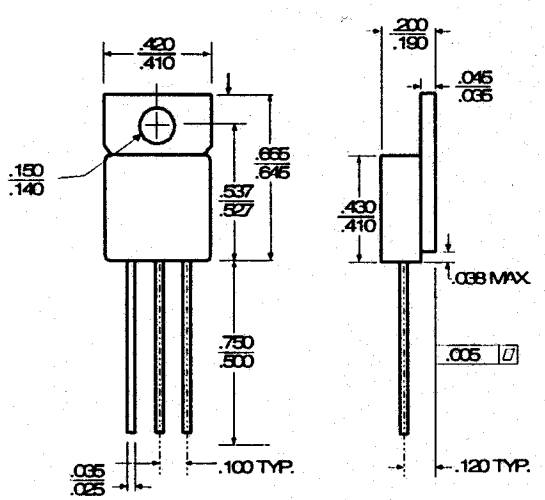
ELECTRICAL CHARACTERISTICS 12 Volt V_{IN} = 19V, I_O = 500mA, -55°C T_A 125°C (unless otherwise specified)

Parameter	Symbol	Test Conditions		Min.	Max.	Unit
Output Voltage	V_{OUT}	T_A = 25°C		11.88	12.12	V
		V_{IN} = 14.5V to 27V I_O = 5mA to 1.0 A, P ≤ 15W	•	11.64	12.36	V
Line Regulation (Note 1) (Note 4)	V_{RLINE}	V_{IN} = 14.5V to 27V	 •		18 50	mV mV
		V_{IN} = 16V to 22V	 •		9 30	mV mV
Load Regulation (Note 1)	V_{RLOAD}	I_O = 5mA to 1.5 Amp I_O = 5mA to 1.0 Amp	 •		32 60	mV mV
		I_O = 250mA to 750 mA	 •		20 40	mV mV
Standby Current Drain	I_{SCD}		 •		6.0 6.5	mA mA
Standby Current Drain Change With Line	ΔI_{SCD} (Line)	V_{IN} = 15V to 30V	•		0.8	mA
Standby Current Drain Change With Load	ΔI_{SCD} (Load)	I_O = 5mA to 1000mA	•		0.5	mA
Dropout Voltage	V_{DO}	ΔV_{OUT} = 100mV, I_O = 1.0A	•		2.5	V
Peak Output Current	$I_{O(pk)}$	T_A = 25°C		1.5	3.3	A
Short Circuit Current (Note 2)	I_{OS}	V_{IN} = 35V	 •		1.2 2.8	A A
Ripple Rejection	$\frac{\Delta V_{IN}}{\Delta V_{OUT}}$	f =120 Hz, ΔV_{IN} = 10V	 •	61 54		dB dB
		(Note 3)				
Output Noise Voltage (Note 3)	N_O	T_A = 25°C, f =10 Hz to 100KHz			40	µV/V RMS
Long Term Stability (Note 3)	$\frac{\Delta V_{OUT}}{\Delta t}$	T_A = 25°C, t = 1000 hrs.			120	mV

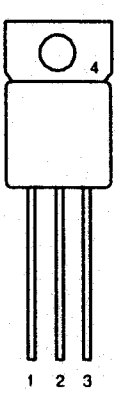
Notes:

1. Load and Line Regulation are specified at a constant junction temperature. Pulse testing with low duty cycle is used. Changes in output voltage due to heating effects must be taken into account separately.
2. Short Circuit protection is only assured up to V_{IN} = 35V.
3. If not tested, shall be guaranteed to the specified limits. 4. Minimum load current for full line regulation = 5.0 mA. The • denotes the specifications which apply over the full operating temperature range.
4. Minimum load current for full line regulation = 5.0 mA.

MECHANICAL OUTLINE



CONNECTION DIAGRAM



Case T
1 Input
2 Ground
3 Output
4 Ground

Case U
1 Input
2 Ground
3 Output
4 No Connection