



# SOLID STATE DEVICES, INC.

14830 Valley View Blvd \* La Mirada, Ca 90638  
 Phone: (562) 404-7855 \* Fax: (562) 404-1773  
 ssdi@ssdi-power.com \* www.ssdi-power.com

## Designer's Data Sheet

**Part Number /Ordering Information** <sup>1/</sup>

**SVR1086 - 12 M DB H -- Screening** <sup>2/</sup>: \_ = Not Screened  
 H = High Rel Level  
 K = Space Level  
 R = Radiation Tolerant

**Lead Bend:** <sup>3/</sup> \_ = Straight  
 DB = Down Bend  
 UB = Up Bend

**Package:** <sup>3/</sup> M = TO-254  
 Z = TO-254Z  
 -20 = LCC20

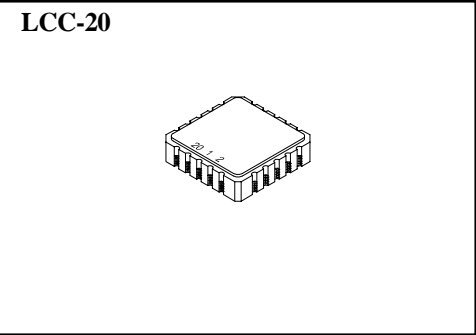
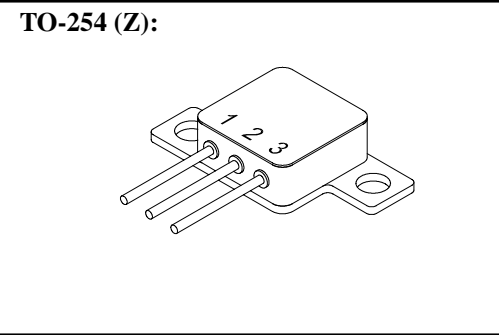
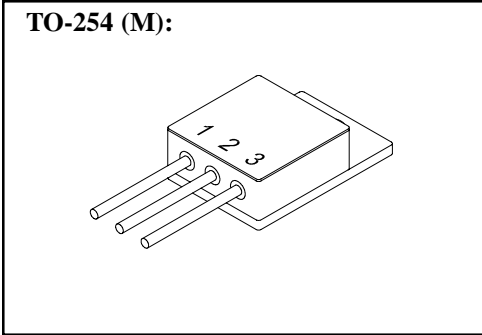
**Voltage:** \_ = Variable Voltage  
 2.85 = 2.85V  
 3.3 = 3.3V  
 3.6 = 3.6V  
 5 = 5V  
 12 = 12V

**SVR1086-2.85M, Z, & -20  
 thru  
 SVR1086-12M, Z, & -20**

**1.5 Amps  
 2.85 thru 12Volts  
 LOW DROPOUT  
 POSITIVE LINEAR  
 VOLTAGE REGULATOR**

- FEATURES:**
- Eutectic Die Attach
  - Superior to LM117 Types
  - Complimentary Use with SVR1085 Types
  - Fast Switching
  - Isolated Hermetically Sealed Power Package
  - 150°C Operating Temperature
  - Custom Lead Forming Available
  - Ceramic Seal Package Available
  - Class H or K (Space) Screening Available
  - Radiation Tolerant Devices are Available

MAXIMUM RATINGS	SYMBOL	VALUE	UNITS
Power Dissipation	P <sub>D</sub>	Internally Limited	
Input Voltage <sup>4/</sup>	V <sub>IN</sub>	30	V
Operating Input Voltage	V <sub>IN(Op)</sub>	SVR1086-_ SVR1086-2.85 SVR1086-3.3, -3.6, & -5 SVR1086-12	15 18 20 25 V
Operating Junction Temperature	T <sub>J</sub>	Control Section Power Transistor	-55 TO +150 -55 TO +200 °C
Storage Temperature	T <sub>STG</sub>		-65 TO +150 °C



**NOTE:** All specifications are subject to change without notification. SCD's for these devices should be reviewed by SSDI prior to release.

**DATA SHEET #: SVR001B**

**SVR1086-2.85M, Z, & -20  
thru  
SVR1086-12M, Z, & -20**



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Electrical Characteristics			t°	SYMBOL	MIN	TYP	MAX	UNITS
Reference Voltage <sup>6/</sup>	SVR1086 -_	(10mA ≤ I <sub>OUT</sub> ≤ 1.5A, 1.5V ≤ ΔV ≤ 15V)	*	V <sub>REF</sub>	1.225	1.250	1.270	V V
Output Voltage <sup>6/</sup> (10mA ≤ I <sub>OUT</sub> ≤ 1.5A)	SVR1086 -2.85	(4.35V ≤ V <sub>IN</sub> ≤ 18V)	*	V <sub>OUT</sub>	2.790	2.850	2.910	V
	SVR1086 -3.3	(4.75V ≤ V <sub>IN</sub> ≤ 15V)	*		3.235	3.300	3.365	V
	SVR1086 -3.6	(5V ≤ V <sub>IN</sub> ≤ 18V)	*		3.500	3.600	3.672	V
	SVR1086 -5	(6.5V ≤ V <sub>IN</sub> ≤ 20V)	*		4.900	5.000	5.100	V
	SVR1086 -12	(13.5V ≤ V <sub>IN</sub> ≤ 25V)	*		11.76	12.00	12.24	V
Line Regulation (I <sub>OUT</sub> = 0A)	SVR1086 -_	(1.5V ≤ ΔV ≤ 5V, I <sub>Load</sub> = 10mA)	25 *	$\frac{\Delta V_{OUT}}{\Delta V_{IN}}$	--	0.015	0.20	%
	SVR1086 -2.85	(4.35V ≤ V <sub>IN</sub> ≤ 18V)	25 *		--	0.035	0.20	%
	SVR1086 -3.3	(4.5V ≤ V <sub>IN</sub> ≤ 18V)	25 *		--	0.3	6.00	mV
	SVR1086 -3.6	(4.75V ≤ V <sub>IN</sub> ≤ 18V)	25 *		--	0.6	6.00	mV
	SVR1086 -5	(6.5V ≤ V <sub>IN</sub> ≤ 20V)	25 *		--	0.5	10.0	mV
	SVR1086 -12	(13.5V ≤ V <sub>IN</sub> ≤ 25V)	25 *		--	1.0	10.0	mV
	SVR1086 -12	(13.5V ≤ V <sub>IN</sub> ≤ 25V)	25 *		--	1.0	10.0	mV
Load Regulation <sup>5/, 6/</sup> (0 ≤ I <sub>OUT</sub> ≤ 1.5A)	SVR1086 -_	(ΔV = 3V, 10mA ≤ I <sub>OUT</sub> ≤ 1.5A)	25 *	$\frac{\Delta V_{OUT}}{\Delta I_{OUT}}$	--	0.1	0.3	%
	SVR1086 -2.85	(V <sub>IN</sub> = 5V)	25 *		--	0.2	0.4	%
	SVR1086 -3.3	(V <sub>IN</sub> = 5V)	25 *		--	3	12	mV
	SVR1086 -3.6	(V <sub>IN</sub> = 5.25V)	25 *		--	6	20	mV
	SVR1086 -5	(V <sub>IN</sub> = 8V)	25 *		--	3	15	mV
	SVR1086 -12	(V <sub>IN</sub> = 15V)	25 *		--	7	25	mV
	SVR1086 -12	(V <sub>IN</sub> = 15V)	25 *		--	3	15	mV
	SVR1086 -12	(V <sub>IN</sub> = 15V)	25 *		--	6	25	mV
Dropout Voltage <sup>7/</sup>		(See Note )	*	ΔV	--	1.3	1.5	V
Current Limit		ΔV = 5V	*	I <sub>LIMIT</sub>	1.50	2.00	2.80	A
		ΔV = 25V	*		0.05	0.15	--	A
Min. Load Current <sup>8/</sup>	SVR1086 -_	(ΔV = 25V)	*	I <sub>LOAD</sub>	--	5	10	A
Quiescent Current	SVR1086 -2.85	(V <sub>IN</sub> ≤ 18V)	*	I <sub>Q</sub>	--	5	10	mA
	SVR1086 -3.3	(V <sub>IN</sub> ≤ 18V)	*		--	5	10	mA
	SVR1086 -3.6	(V <sub>IN</sub> ≤ 18V)	*		--	5	10	mA
	SVR1086 -5	(V <sub>IN</sub> ≤ 20V)	*		--	5	10	mA
	SVR1086 -12	(V <sub>IN</sub> ≤ 25V)	*		--	5	10	mA

**NOTE:**

\* Full Temperature Range



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**SVR1086-2.85M, Z, & -20  
 thru  
 SVR1086-12M, Z, & -20**

Electrical Characteristics (Continue)			t <sup>o</sup>	SYMBOL	MIN	TYP	MAX	UNITS
Thermal Regulation (30 msec Pulse)			25		--	0.008	0.04	%/W
Ripple Rejection (f = 120Hz, C <sub>OUT</sub> = 25μF, I <sub>OUT</sub> = 1.5A)	SVR1086 -_ (ΔV=25V, C <sub>ADJ</sub> =25μF)		*		60	75	--	dB
	SVR1086 -2.85 (V <sub>IN</sub> = 6V)		*		60	72	--	dB
	SVR1086 -3.3 (V <sub>IN</sub> = 6.3V)		*		60	72	--	dB
	SVR1086 -3.6 (V <sub>IN</sub> = 6.6V)		*		60	72	--	dB
	SVR1086 -5 (V <sub>IN</sub> = 8V)		*		60	68	--	dB
	SVR1086 -12 (V <sub>IN</sub> = 15V)		*		54	60	--	dB
Adjust Pin Current	SVR1086 -_		25 *	I <sub>ADJ</sub>	-- --	55 --	-- 120	μA μA
Adjust Pin Current Change	SVR1086 -_ (1.5V ≤ ΔV ≤ 15V)		*	ΔI <sub>ADJ</sub>	--	0.2	5.0	μA
Temperature Stability			*	$\frac{\Delta V_{OUT}}{\Delta T}$	--	0.5	--	%
Long Term Strability				$\frac{\Delta V_{OUT}}{\Delta V_{time}}$	--	0.3	1.0	%
RMS Output Noise	(10Hz ≤ f ≤ 10kHz)		25	e <sub>n</sub>	--	0.003	--	%
Thermal Resistance Junction to Case	(M) & (Z) Packages	Control Circuitry/ Power Transistor		R <sub>θJC</sub>	--	--	1.7	°C/W
			--		--	4.0	°C/W	
	-20 Package	Control Circuitry/ Power Transistor			--	--	10	°C/W
			--		--	15	°C/W	

- NOTES:**
- \* Full Temperature Range
  - 1/ For Ordering Information, Price, and Availability Contact Factory.
  - 2/ Screening per MIL-PRF-19500.
  - 3/ For Package Outlines and Lead Bend Options Contact Factory
  - 4/ Devices are guaranteed to withstand transient Input Voltage up to 30V. For Input Voltages greater then the maximum operating Input Voltage some degradation of specifications will occur. For 5V and 12V devices operating at Input/Output differentials greater then 15V, a minimum external load of 5mA is required to maintain regulation.
  - 5/ See Thermal Regulation specifications for changes in Output Voltage due to the heating effects. Line and Load Regulations are measured at a constant Junction Temperature by low duty cycle pulse testing. Load Regulation is measured at the Output Lead at approx. 1/8" from the package.
  - 6/ Line and Load Regulation are guaranteed up to the maximum power dissipation of 15W. Power Dissipation is determined by the Input/Output differential and the Output Current. Guaranteed maximum power dissipation will not be available over the full Input/Output range.
  - 7/ Dropout Voltage is specified over the full Output Current range of the Device.
  - 8/ Minimum Load Current is defined as the minimum current required to maintain regulation. At 25V Input/Output differential the device is guaranteed to regulate if the Output Current is greater than 10mA.

PIN ASSIGNMENT				
PACKAGE	V <sub>adj</sub>	V <sub>in</sub>	V <sub>out</sub>	V <sub>out_sen</sub>
TO-254 (M)	Pin 1	Pin 2	Pin 3	Pin 3
TO-254Z (Z)	Pin 1	Pin 2	Pin 3	Pin 3
LCC 20 (-20)	Pin 7	2, 17	10, 12	15

FOR PACKAGE OUTLINE REQUEST THE FOLLOWING DOCUMENTS	
PACKAGE	DOCUMENT
TO-254 (M, MUB, MDB)	60-0149-503
TO-254Z (Z, ZUB, ZDB)	60-0149-501
LCC20 (-20)	60-0149-315