SILICON GENERAL

LINEAR INTEGRATED CIRCUITS

SG7800A/SG7800AC
SG7800/SG7800C

POSITIVE FIXED VOLTAGE REGULATOR

DESCRIPTION

The SG7800A/SG7800 series of positive regulators offer self contained, fixed-voltage capability with up to 1.5A of load current and input voltage up to 50V (SG7800A series only). These units feature a unique on-chip trimming system to set the output voltages to within ±1.5% of nominal on the SG7800A series, ±2.0% on the SG7800 series, and ±4.0% on the SG7800C/340 series. The SG7800A versions also offer much improved line and load regulation characteristics. Utilizing an improved Bandgap reference design, problems have been eliminated that are normally associated with the Zener diode references, such as drift in output voltage and large changes in the line and load regulation.

All protective features of thermal shutdown, current limiting, and safe-area control have been designed into these units and since these regulators require only a small output capacitor for satisfactory performance, ease of application is assured.

Although designed as fixed-voltage regulators, the output voltage can be increased through the use of a simple voltage divider. The low quiescent drain current of the device insures good regulation when this method is used.

Product is available in hermetically sealed TO-257 (both isolated and non-isolated), TO-3, TO39 and TO-66 power packages.

FEATURES

- **Output voltage set internally to ±1.5% on SG7800A**
- **Input voltage range to 50V max. on SG7800A**
- **Two volt input-output differential**
- **Excellent line and load regulation**
- **Foldback current limiting**
- **Thermal overload protection**
- **Voltages available - 5V, 6V, 8V, 12V, 15V, 18V, 20V, 24V**

HIGH RELIABILITY FEATURES - SG7800A/7800

- **Available to MIL-STD - 883**
- **MIL-M38510/10702BXA - JAN7805T**
- **MIL-M38510/10703BXA - JAN7812T**
- **MIL-M38510/10704BXA - JAN7815T**
- **MIL-M38510/10706BYA - JAN7805K**
- **MIL-M38510/10707BYA - JAN7812K**
- **MIL-M38510/10708BYA - JAN7815K**
- **Radiation data available**
- **SG level "S" processing available**

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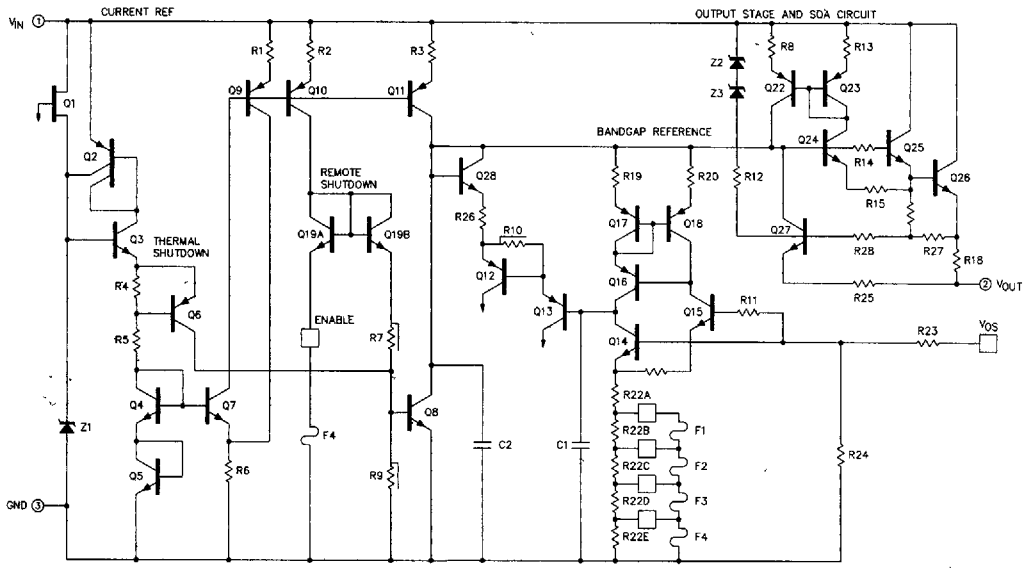
SCHEMATIC DIAGRAM



April 1990

ABSOLUTE MAXIMUM RATINGS (Note 1)

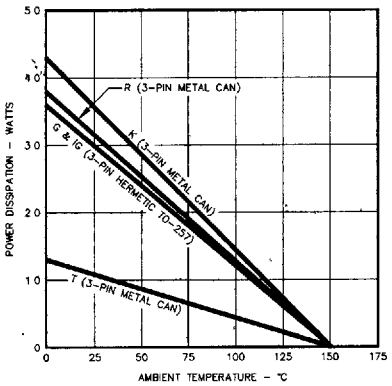
Device Output Voltage	Input Voltage	Input Voltage (transient) (Note 3)	Input Voltage Differential (Output shorted to ground)
5V	35V	50V	35V
6V	35V	50V	35V
8V	35V	50V	35V
12V	35V	50V	35V
15V	35V	50V	35V
18V	35V	50V	35V
20V	35V	50V	35V
24V	40V	50V	35V

Operating Junction Temperature
Hermetic (K, R, T, G, IG - Packages) ..... 150°C

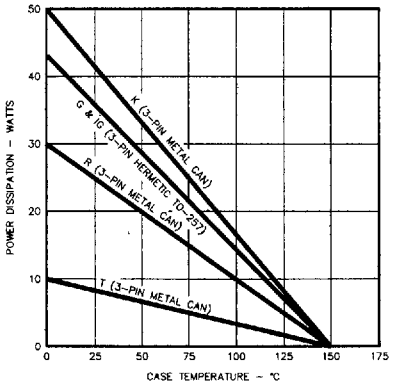
Storage Temperature Range ..... -65°C to 150°C
Lead Temperature (Soldering, 10 Seconds) ..... 300°C

Note 1. Values beyond which damage may occur.

THERMAL DERATING CURVES



MAXIMUM POWER DISSIPATION vs AMBIENT TEMPERATURE



MAXIMUM POWER DISSIPATION vs CASE TEMPERATURE

RECOMMENDED OPERATING CONDITIONS (Note 2)

Operating Junction Temperature Range:
SG7800 ..... -55°C to 150°C
SG7800C ..... 0°C to 125°C

Note 2. Range over which the device is functional.

CHARACTERISTIC CURVES

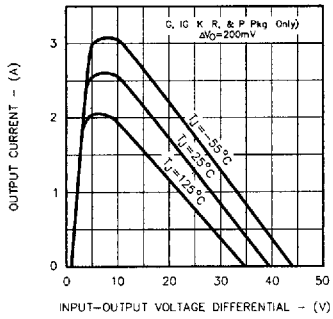


FIGURE 1
PEAK OUTPUT CURRENT
VS INPUT - OUTPUT DIFFERENTIAL

Note 3. Operation at high input voltages is dependent upon load current. When load current is less than 5mA, output will rise out of regulation as input-oiutput differential icreases beyond 30V. Note also from Figure 1, that maximum load current is reduced at high voltages. The 50V input rating of the SG140A series refers to ability to withstnd high line or transient conditions without damage. Since the regulator's maximum current capability is reduced, the output may fall out of regulation at high input voltages under nominal loading.

CHARACTERISTIC CURVES (continued)

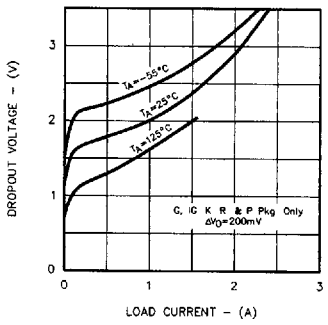


FIGURE 2.
MINIMUM INPUT - OUTPUT VOLTAGE VS LOAD CURRENT

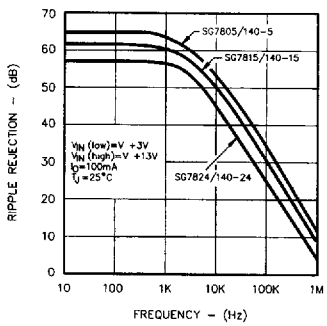


FIGURE 3
RIPPLE REJECTION VS. FREQUENCY

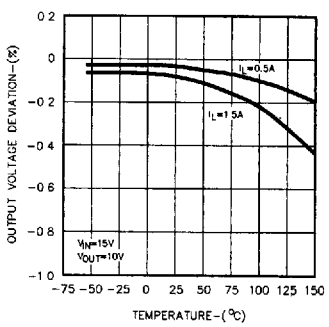
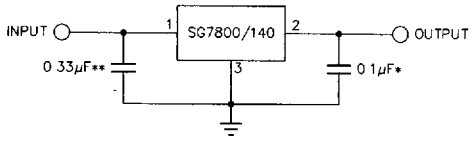


FIGURE 4.
TEMPERATURE COEFFICIENT OF OUTPUT VOLTAGE

APPLICATIONS



* INCREASING VALUE OF OUTPUT CAPACITOR IMPROVES SYSTEM TRANSIENT RESPONSE

** REQUIRED ONLY IF REGULATOR IS LOCATED AN APPRECIABLE DISTANCE FROM POWER SUPPLY FILTER

FIGURE 5 - FIXED OUITPUT REGULATOR

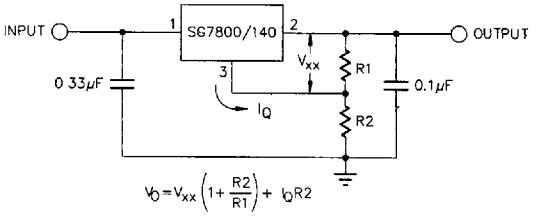


FIGURE 6 - CIRCUIT FOR INCREASING OUITPUT VOLTAGE

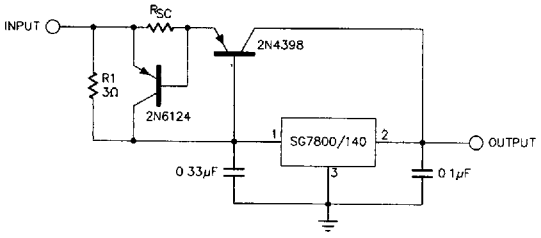


FIGURE 7 - HIGH OUTPUT CIRRENT, SHORT CIRCUIT PROTECTED

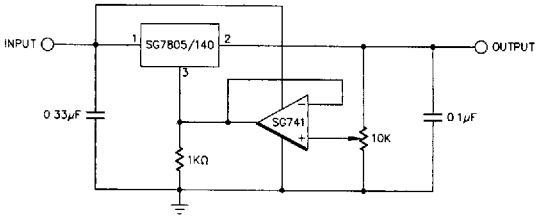


FIGURE 8 - ADJUTABLE OUITPUT REGULATOR, 7V to 30V

ELECTRICAL SPECIFICATIONS (Note 1)

(Unless otherwise specified, these specifications apply over the operating ambient temperatures for SG7805A/SG7805 with -55°C ≤ T_A ≤ 150°C, SG7805AC/SG7805C with 0°C ≤ T_A ≤ 125°C, V_{IN} = 10V, I_O = 500mA for the K, R, G and IG -Power Packages-, I_O = 100mA for the T package, C_{IN} = 0.33µF, and C_{OUT} = 0.1µF. Low duty cycle pulse testing techniques are used which maintains junction and case temperatures equal to the ambient temperatire.)

SG7805A/SG7805

Parameter	Test Conditions	SG7805A			SG7805			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
Output Voltage	**T_J = 25°C**	4.92	5.00	5.08	4.80	5.00	5.20	V
Line Regulation (Note 1)	V_{IN} = 7.5V to 20V, T_J = 25°C		5	25		5	50	mV
	V_{IN} = 8V to 12V, T_J = 25°C		2	12		2	25	mV
Load Regulation (Note 1)	Power Pkgs: I_O = 5mA to 1.5A, T_J = 25°C		15	50		15	50	mV
	I_O = 250mA to 750mA, T_J = 25°C		5	25		5	25	mV
	T - Pkg: I_O = 5mA to 500mA, T_J = 25°C		5	25		20	100	mV
Total Output Voltage	**V_{IN} =8V to 20V**							
Tolerance	Power Pkgs: I_O = 5mA to 1.0A, P ≤ 20W	4.85	5.00	5.15	4.65	5.00	5.35	V
	T - Pkg: I_O = 5mA to 500mA, P ≤ 2W	4.85	5.00	5.15	4.65	5.00	5.35	V
Quiescent Current	Over Temperature Range			7			7	mA
	T_J = 25°C		4	6		4	6	mA
Quiescent Current Change	With Line: V_{IN} = 8V to 25V			0.8			0.8	mA
	With Load: I_O = 5mA to 1.0A (Power Pkgs.)			0.5			0.5	mA
	I_O = 5mA to 500mA (T)			0.5			0.5	mA
Dropout Voltage	**ΔV_O = 100mV, T_J = 25°C**							
	Power Pkgs: I_O = 1.0A, T - Pkg: I_O = 500mA		2	2.5		2	2.5	V
Peak Output Current	**Power Pkgs: V_{IN} = 10V, T_J = 25°C**	1.5	2.0	3.3	1.5	2.0	3.3	A
	T - Pkg: V_{IN} = 10V, T_J = 25°C	0.5	1.0	2.0	0.5	1.0	2.0	A
Short Circuit Current	**Power Pkgs: V_{IN} = 35V, T_J = 25°C**			1.2			1.2	A
	T - Pkg: V_{IN} = 35V, T_J = 25°C			0.7			0.7	A
Ripple Rejection	**ΔV_{IN} = 10V, f = 120Hz, T_J = 25°C**	68			68			dB
Output Noise Voltage (rms)	f = 10Hz to 100KHz (Note 2)			40			40	µV/V
Long Term Stability	**1000hrs. at T_J = 125°C**		20			20		mV
Thermal Shutdown	I_O = 5mA		175			175		°C

SG7805AC/SG7805C

Parameter	Test Conditions	SG7805AC			SG7805C			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
Output Voltage	**T_J = 25°C**	4.92	5.00	5.08	4.80	5.00	5.20	V
Line Regulation (Note 1)	V_{IN} = 7.5V to 20V, T_J = 25°C		5	50		5	100	mV
	V_{IN} = 8V to 12V, T_J = 25°C		2	25		4	50	mV
Load Regulation (Note 1)	Power Pkgs: I_O = 5mA to 1.5A, T_J = 25°C			50			100	mV
	I_O = 250mA to 750mA, T_J = 25°C		5	25		10	50	mV
	T - Pkg: I_O = 5mA to 500mA, T_J = 25°C			25			100	mV
Total Output Voltage	**V_{IN} = 8V to 20V**							
Tolerance	Power Pkgs: I_O = 5mA to 1.0A, P ≤ 20W	4.85	5.00	5.15	4.75	5.00	5.25	V
	T - Pkg: I_O = 5mA to 500mA, P ≤ 2W	4.85	5.00	5.15	4.75	5.00	5.25	V
Quiescent Current	Over Temperature Range			7			8.5	mA
	T_J = 25°C		4	6		4	8	mA
Quiescent Current Change	With Line: V_{IN} = 8V to 25V			1.0			1.3	mA
	With Load: I_O = 5mA to 1.0A (Power Pkgs.)			0.5			0.5	mA
	I_O = 5mA to 500mA (T)			0.5			0.5	mA
Dropout Voltage	**ΔV_O = 100mV, T_J = 25°C**							
	Power Pkgs: I_O = 1.0A, T - Pkg: I_O = 500mA		2	2.5		2	2.5	V
Peak Output Current	**Power Pkgs: T_J = 25°C**	1.5	2.0	3.3	1.5	2.0	3.3	A
	T - Pkg: T_J = 25°C	0.5	1.0	2.0	0.5	1.0	2.0	A
Short Circuit Current	**Power Pkgs: V_{IN} = 35V, T_J = 25°C**			1.2			1.2	A
	T - Pkg: V_{IN} = 35V, T_J = 25°C			0.7			0.7	A
Ripple Rejection	**ΔV_{IN} = 10V, f = 120Hz, T_J = 25°C**	68			62			dB
Output Noise Voltage (rms)	f = 10Hz to 100KHz (Note 2)			40			40	µV/V
Long Term Stability	**1000hrs. at T_J = 125°C**		20			20		mV
Thermal Shutdown	I_O = 5mA		175			175		°C

Note 1. All regulation tests are made at constant junction temperature with low duty cycle testing.
2. This test is guaranteed but is not tested in production.

ELECTRICAL SPECIFICATIONS (Note 1)

(Unless otherwise specified, these specifications apply over the operating ambient temperatures for SG7806A/SG7806 with -55°C ≤ T_A ≤ 150°C, SG7806AC/SG7806C with 0°C ≤ T_A ≤ 125°C, V_{IN} = 11V, I_O = 500mA for the K, R, G and IG -Power Packages-, I_O = 100mA for the T package, C_{IN} = 0.33µF, and C_{OUT} = 0.1µF. Low duty cycle pulse testing techniques are used which maintains junction and case temperatures equal to the ambient temperature.)

SG7806A/SG7806

Parameter	Test Conditions	SG7606A			SG7806			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
Output Voltage	**T_J = 25°C**	5.9	6.0	6.1	5.75	6.00	6.25	V
Line Regulation (Note 1)	V_{IN} = 8.5V to 25V, T_J = 25°C		6	30		6	60	mV
	V_{IN} = 9V to 13V, T_J = 25°C		3	15		3	30	mV
Load Regulation (Note 1)	Power Pkgs: I_O = 5mA to 1.5A, T_J = 25°C		20	60		20	60	mV
	I_O = 250mA to 750mA, T_J = 25°C		6	30		6	30	mV
	T - Pkg: I_O = 5mA to 500mA, T_J = 25°C			30			30	mV
Total Output Voltage	**V_{IN} = 9V to 21V**							
Tolerance	Power Pkgs: I_O = 5mA to 1.0A, P ≤ 20W	5.82	6.00	6.18	5.65	6.00	6.35	V
	T - Pkg: I_O = 5mA to 500mA, P ≤ 2W	5.82	6.00	6.18	5.65	6.00	6.35	V
Quiescent Current	Over Temperature Range			7			7	mA
	T_J = 25°C		4	6		4	6	mA
Quiescent Current Change	With Line: V_{IN} = 8V to 25V			0.8			0.8	mA
	With Load: I_O = 5mA to 1.0A (Power Pkgs.)			0.5			0.5	mA
	I_O = 5mA to 500mA (T)			0.5			0.5	mA
Dropout Voltage	**ΔV_O = 100mV, T_J = 25°C**							
	Power Pkgs: I_O = 1.0A, T - Pkg: I_O = 500mA		2	2.5		2	2.5	V
Peak Output Current	**Power Pkgs: T_J = 25°C**	1.5	2.0	3.3	1.5	2.0	3.3	A
	T - Pkg: T_J = 25°C	0.5	1.0	1.7	0.5	1.0	1.7	A
Short Circuit Current	**Power Pkgs: V_{IN} = 35V, T_J = 25°C**			1.2			1.2	A
	T - Pkg: V_{IN} = 35V, T_J = 25°C			0.7			0.7	A
Ripple Rejection	**ΔV_{IN} = 10V, f = 120Hz, T_J = 25°C**	65			65			dB
Output Noise Voltage (rms)	f = 10Hz to 100KHz (Note 2)			40			40	µV/V
Long Term Stability	**1000hrs. at T_J = 125°C**		24			24		mV
Thermal Shutdown	I_O = 5mA		175			175		°C

SG7806AC/SG7806C

Parameter	Test Conditions	SG7806AC			SG7806C			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
Output Voltage	**T_J = 25°C**	5.9	6.0	6.1	5.75	6.00	6.25	V
Line Regulation (Note 1)	V_{IN} = 8.5V to 25V, T_J = 25°C		6	60		12	120	mV
	V_{IN} = 9V to 13V, T_J = 25°C		3	30		6	60	mV
Load Regulation (Note 1)	Power Pkgs: I_O = 5mA to 1.5A, T_J = 25°C		15	60		25	120	mV
	I_O = 250mA to 750mA, T_J = 25°C		5	30		10	60	mV
	T - Pkg: I_O = 5mA to 500mA, T_J = 25°C			30			60	mV
Total Output Voltage	**V_{IN} = 9V to 21V**							
Tolerance	Power Pkgs: I_O = 5mA to 1.0A, P ≤ 20W	5.82	6.00	6.18	5.7	6.0	6.3	V
	T - Pkg: I_O = 5mA to 500mA, P ≤ 2W	5.82	6.00	6.18	5.7	6.0	6.3	V
Quiescent Current	Over Temperature Range			7			8.5	mA
	T_J = 25°C		4	6		4	8	mA
Quiescent Current Change	With Line: V_{IN} = 8V to 25V			1.0			1.3	mA
	With Load: I_O = 5mA to 1.0A (Power Pkgs.)			0.5			0.5	mA
	I_O = 5mA to 500mA (T)			0.5			0.5	mA
Dropout Voltage	**ΔV_O = 100mV, T_J = 25°C**							
	Power Pkgs: I_O = 1.0A, T - Pkg: I_O = 500mA		2	2.5		2	2.5	V
Peak Output Current	**Power Pkgs: T_J = 25°C**	1.5	2.0	3.3	1.5	2.0	3.3	A
	T - Pkg: T_J = 25°C	0.5	1.0	1.7	0.5	1.0	1.7	A
Short Circuit Current	**Power Pkgs: V_{IN} = 35V, T_J = 25°C**			1.2			1.2	A
	T - Pkg: V_{IN} = 35V, T_J = 25°C			0.7			0.7	A
Ripple Rejection	**ΔV_{IN} = 10V, f = 120Hz, T_J = 25°C**	62			59			dB
Output Noise Voltage (rms)	f = 10Hz to 100KHz (Note 2)			40			40	µV/V
Long Term Stability	**1000hrs. at T_J = 125°C**		24			24		mV
Thermal Shutdown	I_O = 5mA		175			175		°C

Note 1. All regulation tests are made at constant junction temperature with low duty cycle testing.
2. This test is guaranteed but is not tested in production

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ELECTRICAL SPECIFICATIONS (Note 1)

(Unless otherwise specified, these specifications apply over the operating ambient temperatures for SG7808A/SG7808 with -55°C ≤ T_A ≤ 150°C, SG7808AC/SG7808C with 0°C ≤ T_A ≤ 125°C, V_{IN} = 14V, I_O = 500mA for the K, R, G and IG-Power Packages-, I_O = 100mA for the T package, C_{IN} = 0.33µF, and C_{OUT} = 0.1µF. Low duty cycle pulse testing techniques are used which maintains junction and case temperatures equal to the ambient temperatire.)

SG7808A/SG7808

Parameter	Test Conditions	SG7808A			SG7808			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
Output Voltage	**T_J = 25°C**	**7.88**	**8.00**	**8.12**	**7.7**	**8.00**	**8.3**	**V**
Line Regulation (Note 1)	V_{IN} = 10.5V to 25V, T_J = 25°C		8	40		8	80	mV
	V_{IN} = 11V to 17V, T_J = 25°C		**4**	**20**		**4**	**40**	**mV**
Load Regulation (Note 1)	Power Pkgs: I_O = 5mA to 1.5A, T_J = 25°C		24	70		24	80	mV
	I_O = 250mA to 750mA, T_J = 25°C		**8**	**35**		**8**	**40**	**mV**
	T - Pkg: I_O = 5mA to 500mA, T_J = 25°C		8	35		8	40	mV
Total Output Voltage	**V_{IN} = 11.5V to 23V**							
Tolerance	Power Pkgs: I_O = 5mA to 1.0A, P ≤ 20W	7.76	8.00	8.24	7.6	8	8.4	V
	T - Pkg: I_O = 5mA to 500mA, P ≤ 2W	**7.76**	**8.00**	**8.24**	**7.6**	**8**	**8.4**	**V**
Quiescent Current	Over Temperature Range			7			7	mA
	T_J = 25°C		**4**	**6**		**4**	**6**	**mA**
Quiescent Current Change	With Line: V_{IN} = 11.5V to 25V			0.8			0.8	mA
	With Load: I_O = 5mA to 1.0A (Power Pkgs.)			**0.5**			**0.5**	**mA**
	I_O = 5mA to 500mA (T)			0.5			0.5	mA
Dropout Voltage	**ΔV_O = 100mV, T_J = 25°C**							
	Power Pkgs: I_O = 1.0A, T - Pkg: I_O = 500mA		2	2.5		2	2.5	V
Peak Output Current	**Power Pkgs: T_J = 25°C**	**1.5**	**2.0**	**3.3**	**1.5**	**2.0**	**3.3**	**A**
	T - Pkg: T_J = 25°C	0.5	1.0	1.7	0.5	1.0	1.7	A
Short Circuit Current	**Power Pkgs: V_{IN} = 35V, T_J = 25°C**			**1.2**			**1.2**	**A**
	T - Pkg: V_{IN} = 10V, T_J = 25°C			0.7			0.7	A
Ripple Rejection	**ΔV_{IN} = 10V, f = 120Hz, T_J = 25°C**	**62**			**62**			**dB**
Output Noise Voltage (rms)	f = 10Hz to 100KHz (Note 2)							µV/V
Long Term Stability	**1000hrs. at T_J = 125°C**		**32**			**32**		**mV**
Thermal Shutdown	I_O = 5mA		175			175		°C

SG7808AC/SG7808C

Parameter	Test Conditions	SG7808AC			SG7808C			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
Output Voltage	**T_J = 25°C**	**7.88**	**8.00**	**8.12**	**7.7**	**8.0**	**8.3**	**V**
Line Regulation (Note 1)	V_{IN} = 10.5V to 25V, T_J = 25°C		8	80		16	160	mV
	V_{IN} = 11V to 17V, T_J = 25°C		**4**	**40**		**8**	**80**	**mV**
Load Regulation (Note 1)	Power Pkgs: I_O = 5mA to 1.5A, T_J = 25°C		24	80		40	160	mV
	I_O = 250mA to 750mA, T_J = 25°C		**8**	**40**		**16**	**80**	**mV**
	T - Pkg: I_O = 5mA to 500mA, T_J = 25°C		8	40		16	80	mV
Total Output Voltage	**V_{IN} = 11.5V to 23V**							
Tolerance	Power Pkgs: I_O = 5mA to 1.0A, P ≤ 20W	7.76	8.00	8.24	7.6	8.0	8.4	V
	T - Pkg: I_O = 5mA to 500mA, P ≤ 2W	**7.76**	**8.00**	**8.24**	**7.6**	**8.0**	**8.4**	**V**
Quiescent Current	Over Temperature Range			7			8.5	mA
	T_J = 25°C		**4**	**6**		**4**	**8**	**mA**
Quiescent Current Change	With Line: V_{IN} = 11.5V to 25V			1.0			1.0	mA
	With Load: I_O = 5mA to 1.0A (Power Pkgs.)			**0.5**			**0.5**	**mA**
	I_O = 5mA to 500mA (T)			0.5			0.5	mA
Dropout Voltage	**ΔV_O = 100mV, T_J = 25°C**							
	Power Pkgs: I_O = 1.0A, T - Pkg: I_O = 500mA		2	2.5		2	2.5	V
Peak Output Current	**Power Pkgs: T_J = 25°C**	**1.5**	**2.0**	**3.3**	**1.5**	**2.0**	**3.3**	**A**
	T - Pkg: T_J = 25°C	0.5	1.0	1.7	0.5	1.0	1.7	A
Short Circuit Current	**Power Pkgs: V_{IN} = 35V, T_J = 25°C**			**1.2**			**1.2**	**A**
	T - Pkg: V_{IN} = 35V, T_J = 25°C			0.7			0.7	A
Ripple Rejection	**ΔV_{IN} = 10V, f = 120Hz, T_J = 25°C**	**62**			**55**			**dB**
Output Noise Voltage (rms)	f = 10Hz to 100KHz (Note 2)			40			40	µV/V
Long Term Stability	**1000hrs. at T_J = 125°C**		**32**			**32**		**mV**
Thermal Shutdown	I_O = 5mA		175			175		°C

Note 1. All regulation tests are made at constant junction temperature with low duty cycle testing.
2. This test is guaranteed but is not tested in production.

ELECTRICAL SPECIFICATIONS (Note 1)

(Unless otherwise specified, these specifications apply over the operating ambient temperatures for SG7812A/SG7812 with -55°C ≤ T_A ≤ 150°C, SG7812AC/SG7812C with 0°C ≤ T_A ≤ 125°C, V_{IN} = 19V, I_O = 500mA for the K, R, G and IG -Power Packages-, I_O = 100mA for the T package, C_{IN} = 0.33µF, and C_{OUT} = 0.1µF. Low duty cycle pulse testing techniques are used which maintains junction and case temperatures equal to the ambient temperatire.)

SG7812A/SG7812

Parameter	Test Conditions	SG7812A			SG7812			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
Output Voltage	**T_J = 25°C**	**11.8**	**12.0**	**12.2**	**11.5**	**12.0**	**12.5**	**V**
Line Regulation (Note 1)	V_{IN} = 14.5V to 30V, T_J = 25°C		12	60		12	120	mV
	V_{IN} = 16V to 22V, T_J = 25°C		**6**	**30**		**6**	**60**	**mV**
Load Regulation (Note 1)	Power Pkgs: I_O = 5mA to 1.5A, T_J = 25°C		28	80		28	120	mV
	I_O = 250mA to 750mA, T_J = 25°C		**10**	**40**		**10**	**60**	**mV**
	T - Pkg: I_O = 5mA to 500mA, T_J = 25°C		10	40		10	60	mV
Total Output Voltage	**V_{IN} = 15.5V to 27V**							
Tolerance	Power Pkgs: I_O = 5mA to 1.0A, P ≤ 20W	11.7	12.0	12.3	11.4	12.0	12.6	V
	T - Pkg: I_O = 5mA to 500mA, P ≤ 2W	**11.7**	**12.0**	**12.3**	**11.4**	**12.0**	**12.6**	**V**
Quiescent Current	Over Temperature Range			7			7	mA
	T_J = 25°C		**4**	**6**		**4**	**6**	**mA**
Quiescent Current Change	With Line: V_{IN} = 15V to 30V			0.8			0.8	mA
	With Load: I_O = 5mA to 1.0A (Power Pkgs.)			**0.5**			**0.5**	**mA**
	I_O = 5mA to 500mA (T)			0.5			0.5	mA
Dropout Voltage	**ΔV_O = 100mV, T_J = 25°C**							
	Power Pkgs: I_O = 1.0A, T - Pkg: I_O = 500mA		2	2.5		2	2.5	V
Peak Output Current	**Power Pkgs: T_J = 25°C**	**1.5**	**2.0**	**3.3**	**1.5**	**2.0**	**3.3**	**A**
	T - Pkg: T_J = 25°C	0.5	1.0	1.7	0.5	1.0	1.7	A
Short Circuit Current	**Power Pkgs: V_{IN} = 35V, T_J = 25°C**			**1.2**			**1.2**	**A**
	T - Pkg: V_{IN} = 35V, T_J = 25°C			0.7			0.7	A
Ripple Rejection	**ΔV_{IN} = 10V, f = 120Hz, T_J = 25°C**	**61**			**61**			**dB**
Output Noise Voltage (rms)	f = 10Hz to 100KHz (Note 2)			40			40	µV/V
Long Term Stability	**1000hrs. at T_J = 125°C**		**48**			**48**		**mV**
Thermal Shutdown	I_O = 5mA		175			175		°C

SG7812AC/SG7812C

Parameter	Test Conditions	SG7812AC			SG7812C			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
Output Voltage	**T_J = 25°C**	**11.8**	**12.0**	**12.2**	**11.5**	**12.0**	**12.5**	**V**
Line Regulation (Note 1)	V_{IN} = 14.5V to 30V, T_J = 25°C		12	120		240	240	mV
	V_{IN} = 16V to 22V, T_J = 25°C		**6**	**60**		**12**	**120**	**mV**
Load Regulation (Note1)	Power Pkgs: I_O = 5mA to 1.5A, T_J = 25°C		28	120		80	240	mV
	I_O = 250mA to 750mA, T_J = 25°C		**10**	**60**		**24**	**120**	**mV**
	T - Pkg: I_O = 5mA to 500mA, T_J = 25°C		10	60		24	120	mV
Total Output Voltage	**V_{IN} = 15.5V to 27V**							
Tolerance	Power Pkgs: I_O = 5mA to 1.0A, P ≤ 20W	11.7	12.0	12.3	11.4	12.0	12.6	V
	T - Pkg: I_O = 5mA to 500mA, P ≤ 2W	**11.7**	**12.0**	**12.3**	**11.4**	**12.0**	**12.6**	**V**
Quiescent Current	Over Temperature Range			7			8.5	mA
	T_J = 25°C		**4**	**6**		**4**	**8**	**mA**
Quiescent Current Change	With Line: V_{IN} = 15V to 30V			1.0			1.0	mA
	With Load: I_O = 5mA to 1.0A (Power Pkgs.)			**0.5**			**0.5**	**mA**
	I_O = 5mA to 500mA (T)			0.5			0.5	mA
Dropout Voltage	**ΔV_O = 100mV, T_J = 25°C**							
	Power Pkgs: I_O = 1.0A, T - Pkg: I_O = 500mA		2	2.5		2	2.5	V
Peak Output Current	**Power Pkgs: T_J = 25°C**	**1.5**	**2.0**	**3.3**	**1.5**	**2.0**	**3.3**	**A**
	T - Pkg: T_J = 25°C	0.5	1.0	1.7	0.5	1.0	1.7	A
Short Circuit Current	**Power Pkgs: V_{IN} = 35V, T_J = 25°C**			**1.2**			**1.2**	**A**
	T - Pkg: V_{IN} = 35V, T_J = 25°C			0.7			0.7	A
Ripple Rejection	**ΔV_{IN} = 10V, f = 120Hz, T_J = 25°C**	**61**			**55**			**dB**
Output Noise Voltage (rms)	f = 10Hz to 100KHz (Note 2)			40			40	µV/V
Long Term Stability	**1000hrs. at T_J = 125°C**		**48**			**48**		**mV**
Thermal Shutdown	I_O = 5mA		175			175		°C

Note 1. All regulation tests are made at constant junction temperature with low duty cycle testing.
2. This test is guaranteed but is not tested in production.

ELECTRICAL SPECIFICATIONS (Note 1)

(Unless otherwise specified, these specifications apply over the operating ambient temperatures for SG7815A/SG7815 with -55°C ≤ T_A ≤ 150°C, SG7815AC/SG7815C with 0°C ≤ T_A ≤ 125°C, V_{IN} = 23V, I_O = 500mA for the K, R, G and IG -Power Packages-, I_O = 100mA for the T package, C_{IN} = 0.33µF, and C_{OUT} = 0.1µF. Low duty cycle pulse testing techniques are used which maintains junction and case temperatures equal to the ambient temperature.)

SG7815A/SG7815

Parameter	Test Conditions	SG7815A			SG7815			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
Output Voltage	**T_J = 25°C**	**14.8**	**15.0**	**15.2**	**14.4**	**15.0**	**15.6**	**V**
Line Regulation (Note 1)	V_{IN} = 17.5V to 30V, T_J = 25°C		15	75		15	150	mV
	V_{IN} = 20V to 26V, T_J = 25°C		**8**	**40**		**8**	**75**	**mV**
Load Regulation (Note 1)	Power Pkgs: I_O = 5mA to 1.5A, T_J = 25°C		30	100		30	150	mV
	I_O = 250mA to 750mA, T_J = 25°C		**12**	**50**		**12**	**75**	**mV**
	T - Pkg: I_O = 5mA to 500mA, T_J = 25°C		12	50		12	75	mV
Total Output Voltage	**V_{IN} = 18.5V to 30V**							
Tolerance	Power Pkgs: I_O = 5mA to 1.0A, P ≤ 20W	14.6	15.0	15.4	14.3	15.0	15.7	V
	T - Pkg: I_O = 5mA to 500mA, P ≤ 2W	**14.6**	**15.0**	**15.4**	**14.3**	**15.0**	**15.7**	**V**
Quiescent Current	Over Temperature Range			7			7	mA
	T_J = 25°C		**4**	**6**		**4**	**6**	**mA**
Quiescent Current Change	With Line: V_{IN} = 18.5V to 30V			0.8			0.8	mA
	With Load: I_O = 5mA to 1.0A (Power Pkgs.)			**0.5**			**0.5**	**mA**
	I_O = 5mA to 500mA (T)			0.5			0.5	mA
Dropout Voltage	**ΔV_O = 100mV, T_J = 25°C**							
	Power Pkgs: I_O = 1.0A, T - Pkg: I_O = 500mA		2	2.5		2	2.5	V
Peak Output Current	**Power Pkgs: T_J = 25°C**	**1.5**	**2.2**	**3.3**	**1.5**	**2.2**	**3.3**	**A**
	T - Pkg: T_J = 25°C	0.5	0.9	1.7	0.5	0.9	1.7	A
Short Circuit Current	**Power Pkgs: V_{IN} = 35V, T_J = 25°C**			**1.2**			**1.2**	**A**
	T - Pkg: V_{IN} = 35V, T_J = 25°C			0.7			0.7	A
Ripple Rejection	**ΔV_{IN} = 10V, f = 120Hz, T_J = 25°C**	**60**			**60**			**dB**
Output Noise Voltage (rms)	f = 10Hz to 100KHz (Note 2)			40			40	µV/V
Long Term Stability	**1000hrs. at T_J = 125°C**		**60**			**60**		**mV**
Thermal Shutdown	I_O = 5mA		175			175		°C

SG7815AC/SG7815C

Parameter	Test Conditions	SG7815AC			SG7815C			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
Output Voltage	**T_J = 25°C**	**14.8**	**15.0**	**15.2**	**14.4**	**15.0**	**15.6**	**V**
Line Regulation (Note 1)	V_{IN} = 17.5V to 30V, T_J = 25°C		15	150		30	300	mV
	V_{IN} = 20V to 26V, T_J = 25°C		**8**	**75**		**15**	**150**	**mV**
Load Regulation (Note 1)	Power Pkgs: I_O = 5mA to 1.5A, T_J = 25°C		30	150		100	300	mV
	I_O = 250mA to 750mA, T_J = 25°C		**12**	**75**		**30**	**150**	**mV**
	T - Pkg: I_O = 5mA to 500mA, T_J = 25°C		12	75		30	150	mV
Total Output Voltage	**V_{IN} = 13.5V to 30V**							
Tolerance	Power Pkgs: I_O = 5mA to 1.0A, P ≤ 20W	14.6	15.0	15.4	14.3	15.0	15.7	V
	T - Pkg: I_O = 5mA to 500mA, P ≤ 2W	**14.6**	**15.0**	**15.4**	**14.3**	**15.0**	**15.7**	**V**
Quiescent Current	Over Temperature Range			7			8.5	mA
	T_J = 25°C		**4**	**6**		**4**	**8**	**mA**
Quiescent Current Change	With Line: V_{IN} = 18.5V to 30V			1.0			1.0	mA
	With Load: I_O = 5mA to 1.0A (Power Pkgs.)			**0.5**			**0.5**	**mA**
	I_O = 5mA to 500mA (T)			0.5			0.5	mA
Dropout Voltage	**ΔV_O = 100mV, T_J = 25°C**							
	Power Pkgs: I_O = 1.0A, T - Pkg: I_O = 500mA		2	2.5		2	2.5	V
Peak Output Current	**Power Pkgs: T_J = 25°C**	**1.5**	**2.2**	**3.3**	**1.5**	**2.2**	**3.3**	**A**
	T - Pkg: T_J = 25°C	0.5	0.9	1.7	0.5	0.9	1.7	A
Short Circuit Current	**Power Pkgs: V_{IN} = 35V, T_J = 25°C**			**1.2**			**1.2**	**A**
	T - Pkg: V_{IN} = 35V, T_J = 25°C			0.7			0.7	A
Ripple Rejection	**ΔV_{IN} = 10V, f = 120Hz, T_J = 25°C**	**60**			**60**			**dB**
Output Noise Voltage (rms)	f = 10Hz to 100KHz (Note 2)			40			40	µV/V
Long Term Stability	**1000hrs. at T_J = 125°C**		**60**			**60**		**mV**
Thermal Shutdown	I_O = 5mA		175			175		°C

Note 1. All regulation tests are made at constant junction temperature with low duty cycle testing.
2 This test is guaranteed but is not tested in production.

ELECTRICAL SPECIFICATIONS (Note 1)

(Unless otherwise specified, these specifications apply over the operating ambient temperatures for SG7818A/SG7818 with -55°C ≤ T_A ≤ 150°C, SG7818AC/SG7818C with 0°C ≤ T_A ≤ 125°C, V_{IN} = 27V, I_O = 500mA for the K, R, G and IG -Power Packages-, I_O = 100mA for the T package, C_{IN} = 0.33µF, and C_{OUT} = 0.1µF. Low duty cycle pulse testing techniques are used which maintains junction and case temperatures equal to the ambient temperatire.)

SG7818A/SG7818

Parameter	Test Conditions	SG7818A			SG7818			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
Output Voltage	**T_J = 25°C**	**17.7**	**18.0**	**18.3**	**17.3**	**18.0**	**18.7**	**V**
Line Regulation (Note 1)	V_{IN} = 21V to 33V, T_J = 25°C		20	90		20	180	mV
	V_{IN} = 24V to 30V, T_J = 25°C		**10**	**45**		**10**	**90**	**mV**
Load Regulation (Note 1)	Power Pkgs: I_O = 5mA to 1.5A, T_J = 25°C		40	120		40	180	mV
	I_O = 250mA to 750mA, T_J = 25°C		**15**	**60**		**15**	**90**	**mV**
	T - Pkg: I_O = 5mA to 500mA, T_J = 25°C		15	60		15	90	mV
Total Output Voltage	**V_{IN} = 22V to 33V**							
Tolerance	Power Pkgs: I_O = 5mA to 1.0A, P ≤ 20W	17.5	18.0	18.5	17.1	18.0	18.9	V
	T - Pkg: I_O = 5mA to 500mA, P ≤ 2W	**17.5**	**18.0**	**18.5**	**17.1**	**18.0**	**18.9**	**V**
Quiescent Current	Over Temperature Range			7			7	mA
	T_J = 25°C		**4**	**6**		**4**	**6**	**mA**
Quiescent Current Change	With Line: V_{IN} = 28V to 38V			0.8			0.8	mA
	With Load: I_O = 5mA to 1.0A (Power Pkgs.)			**0.5**			**0.5**	**mA**
	I_O = 5mA to 500mA (T)			0.5			0.5	mA
Dropout Voltage	**ΔV_O = 100mV, T_J = 25°C**							
	Power Pkgs: I_O = 1.0A, T - Pkg: I_O = 500mA		2	2.5		2	2.5	V
Peak Output Current	**Power Pkgs: T_J = 25°C**	**1.5**	**2.2**	**3.3**	**1.5**	**2.2**	**3.3**	**A**
	T - Pkg: T_J = 25°C	0.5	0.9	1.7	0.5	0.9	1.7	A
Short Circuit Current	**Power Pkgs: V_{IN} = 35V, T_J = 25°C**			**1.2**			**1.2**	**A**
	T - Pkg: V_{IN} = 35V, T_J = 25°C			0.7			0.7	A
Ripple Rejection	**ΔV_{IN} = 10V, f = 120Hz, T_J = 25°C**	**59**			**59**			**dB**
Output Noise Voltage (rms)	f = 10Hz to 100KHz (Note 2)			40			40	µV/V
Long Term Stability	**1000hrs. at T_J = 125°C**		**72**			**72**		**mV**
Thermal Shutdown	I_O = 5mA		175			175		°C

SG7818AC/SG7818C

Parameter	Test Conditions	SG7818AC			SG7818C			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
Output Voltage	**T_J = 25°C**	**17.7**	**18.0**	**18.3**	**17.3**	**18.0**	**18.7**	**V**
Line Regulation (Note 1)	V_{IN} = 21V to 33V, T_J = 25°C		20	180		40	360	mV
	V_{IN} = 24V to 30V, T_J = 25°C		**10**	**90**		**20**	**180**	**mV**
Load Regulation (Note 1)	Power Pkgs: I_O = 5mA to 1.5A, T_J = 25°C		40	180		120	360	mV
	I_O = 250mA to 750mA, T_J = 25°C		**15**	**90**		**40**	**180**	**mV**
	T - Pkg: I_O = 5mA to 500mA, T_J = 25°C		15	90		40	180	mV
Total Output Voltage	**V_{IN} = 22V to 33V**							
Tolerance	Power Pkgs: I_O = 5mA to 1.0A, P ≤ 20W	17.5	18.0	18.5	17.1	18.0	18.9	V
	T - Pkg: I_O = 5mA to 500mA, P ≤ 2W	**17.5**	**18.0**	**18.5**	**17.1**	**18.0**	**18.9**	**V**
Quiescent Current	Over Temperature Range			7			8.5	mA
	T_J = 25°C		**4**	**6**		**4**	**8**	**mA**
Quiescent Current Change	With Line: V_{IN} = 28V to 38V			1.0			1.0	mA
	With Load: I_O = 5mA to 1.0A (Power Pkgs.)			**0.5**			**0.5**	**mA**
	I_O = 5mA to 500mA (T)			0.5			0.5	mA
Dropout Voltage	**ΔV_O = 100mV, T_J = 25°C**							
	Power Pkgs: I_O = 1.0A, T - Pkg: I_O = 500mA		2	2.5		2	2.5	V
Peak Output Current	**Power Pkgs: T_J = 25°C**	**1.5**	**2.2**	**3.3**	**1.5**	**2.2**	**3.3**	**A**
	T - Pkg: T_J = 25°C	0.5	0.9	1.7	0.5	0.9	1.7	A
Short Circuit Current	**Power Pkgs: V_{IN} = 35V, T_J = 25°C**			**1.2**			**1.2**	**A**
	T - Pkg: V_{IN} = 35V, T_J = 25°C			0.7			0.7	A
Ripple Rejection	**ΔV_{IN} = 10V, f = 120Hz, T_J = 25°C**	**59**			**59**			**dB**
Output Noise Voltage (rms)	f = 10Hz to 100KHz (Note 2)							µV/V
Long Term Stability	**1000hrs. at T_J = 125°C**		**72**			**72**		**mV**
Thermal Shutdown	I_O = 5mA		175			175		°C

Note 1. All regulation tests are made at constant junction temperature with low duty cycle testing.
2. This test is guaranteed but is not tested in production.

ELECTRICAL SPECIFICATIONS (Note 1)

(Unless otherwise specified, these specifications apply over the operating ambient temperatures for SG7820A/SG7820 with -55°C ≤ T_A ≤ 150°C, SG7820AC/SG7820C with 0°C ≤ T_A ≤ 125°C, V_{IN} = 29V, I_O = 500mA for the K, R, G and IG -Power Packages-, I_O = 100mA for the T package, C_{IN} = 0.33µF, and C_{OUT} = 0.1µF. Low duty cycle pulse testing techniques are used which maintains junction and case temperatures equal to the ambient temperatire.)

SG7820A/SG7820

Parameter	Test Conditions	SG7820A			SG7820			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
Output Voltage	**T_J = 25°C**	**19.7**	**20.0**	**20.3**	**19.2**	**20.0**	**20.8**	**V**
Line Regulation (Note 1)	V_{IN} = 27V to 35V, T_J = 25°C		22	100		22	200	mV
	V_{IN} = 26V to 32V, T_J = 25°C		**12**	**50**		**12**	**100**	**mV**
Load Regulation (Note 1)	Power Pkgs: I_O = 5mA to 1.5A, T_J = 25°C		45	140		45	200	mV
	I_O = 250mA to 750mA, T_J = 25°C		**20**	**70**		**20**	**100**	**mV**
	T - Pkg: I_O = 5mA to 500mA, T_J = 25°C		20	70		20	100	mV
Total Output Voltage	**V_{IN} = 24V to 35V**							
Tolerance	Power Pkgs: I_O = 5mA to 1.0A, P ≤ 20W	19.4	20.0	20.6	19.0	20.0	21.0	V
	T - Pkg: I_O = 5mA to 500mA, P ≤ 2W	**19.4**	**20.0**	**20.6**	**19.0**	**20.0**	**21.0**	**V**
Quiescent Current	Over Temperature Range			7			7	mA
	T_J = 25°C		**4**	**6**		**4**	**6**	**mA**
Quiescent Current Change	With Line: V_{IN} = 24V to 35V			0.8			0.8	mA
	With Load: I_O = 5mA to 1.0A (Power Pkgs.)			**0.5**			**0.5**	**mA**
	I_O = 5mA to 500mA (T)			0.5			0.5	mA
Dropout Voltage	**ΔV_O = 100mV, T_J = 25°C**							
	Power Pkgs: I_O = 1.0A, T - Pkg: I_O = 500mA		2	2.5		2	2.5	V
Peak Output Current	**Power Pkgs: T_J = 25°C**	**1.5**	**2.2**	**3.3**	**1.5**	**2.2**	**3.3**	**A**
	T - Pkg: T_J = 25°C	0.5	0.9	1.7	0.5	0.9	1.7	A
Short Circuit Current	**Power Pkgs: V_{IN} = 35V, T_J = 25°C**			**1.2**			**1.2**	**A**
	T - Pkg: V_{IN} = 35V, T_J = 25°C			0.7			0.7	A
Ripple Rejection	**ΔV_{IN} = 10V, f = 120Hz, T_J = 25°C**	**58**			**58**			**dB**
Output Noise Voltage (rms)	f = 10Hz to 100KHz (Note 2)			40			40	µV/V
Long Term Stability	**1000hrs. at T_J = 125°C**		**96**			**96**		**mV**
Thermal Shutdown	I_O = 5mA		175			175		°C

SG7820AC/SG7820C

Parameter	Test Conditions	SG7820AC			SG7820C			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
Output Voltage	**T_J = 25°C**	**19.7**	**20.0**	**20.3**	**19.2**	**20.0**	**20.8**	**V**
Line Regulation (Note 1)	V_{IN} = 27V to 35V, T_J = 25°C		22	200		44	400	mV
	V_{IN} = 26V to 32V, T_J = 25°C		**12**	**100**		**24**	**200**	**mV**
Load Regulation (Note 1)	Power Pkgs: I_O = 5mA to 1.5A, T_J = 25°C		45	200		150	400	mV
	I_O = 250mA to 750mA, T_J = 25°C		**20**	**100**		**50**	**200**	**mV**
	T - Pkg: I_O = 5mA to 500mA, T_J = 25°C		20	100		50	200	mV
Total Output Voltage	**V_{IN} = 24V to 35V**							
Tolerance	Power Pkgs: I_O = 5mA to 1.0A, P ≤ 20W	19.4	20.0	20.6	19.0	20.0	21.0	V
	T - Pkg: I_O = 5mA to 500mA, P ≤ 2W	**19.4**	**20.0**	**20.6**	**19.0**	**20.0**	**21.0**	**V**
Quiescent Current	Over Temperature Range			7			8.5	mA
	T_J = 25°C		**4**	**6**		**4**	**8**	**mA**
Quiescent Current Change	With Line: V_{IN} = 24V to 35V			1.0			1.0	mA
	With Load: I_O = 5mA to 1.0A (Power Pkgs.)			**0.5**			**0.5**	**mA**
	I_O = 5mA to 500mA (T)			0.5			0.5	mA
Dropout Voltage	**ΔV_O = 100mV, T_J = 25°C**							
	Power Pkgs: I_O = 1.0A, T - Pkg: I_O = 500mA		2	2.5		2	2.5	V
Peak Output Current	**Power Pkgs: T_J = 25°C**	**1.5**	**2.2**	**3.3**	**1.5**	**2.2**	**3.3**	**A**
	T - Pkg: T_J = 25°C	0.5	0.9	1.7	0.5	0.9	1.7	A
Short Circuit Current	**Power Pkgs: V_{IN} = 35V, T_J = 25°C**			**1.2**			**1.2**	**A**
	T - Pkg: V_{IN} = 35V, T_J = 25°C			0.7			0.7	A
Ripple Rejection	**ΔV_{IN} = 10V, f = 120Hz, T_J = 25°C**	**58**			**58**			**dB**
Output Noise Voltage (rms)	f = 10Hz to 100KHz (Note 2)			40			40	µV/V
Long Term Stability	**1000hrs. at T_J = 125°C**		**96**			**96**		**mV**
Thermal Shutdown	I_O = 5mA		175			175		°C

Note 1. All regulation tests are made at constant junction temperature with low duty cycle testing.
2. This test is guaranteed but is not tested in production.

ELECTRICAL SPECIFICATIONS (Note 1)

(Unless otherwise specified, these specifications apply over the operating ambient temperatures for SG7824A/SG7824 with -55°C ≤ T_A ≤ 150°C, SG7824AC/SG7824C with 0°C ≤ T_A ≤ 125°C, V_{IN} = 32V, I_O = 500mA for the K, R, G and IG -Power Packages-, I_O = 100mA for the T package, C_{IN} = 0.33µF, and C_{OUT} = 0.1µF. Low duty cycle pulse testing techniques are used which maintains junction and case temperatures equal to the ambient temperature.)

SG7824A/SG7824

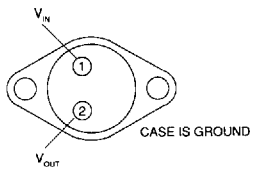
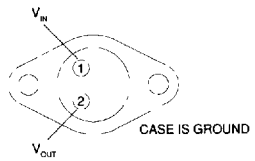
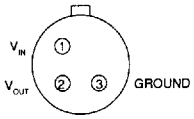
Parameter	Test Conditions	SG7824A			SG7824			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
Output Voltage	**T_J = 25°C**	**23.6**	**24.0**	**24.4**	**23.0**	**24.0**	**25.0**	**V**
Line Regulation (Note 1)	V_{IN} = 27V to 38V, T_J = 25°C		25	120		50	240	mV
	V_{IN} = 30V to 36V, T_J = 25°C		**14**	**60**		**28**	**120**	**mV**
Load Regulation (Note 1)	Power Pkgs: I_O = 5mA to 1.5A, T_J = 25°C		50	160		180	240	mV
	I_O = 250mA to 750mA, T_J = 25°C		**25**	**80**		**70**	**120**	**mV**
	T - Pkg: I_O = 5mA to 500mA, T_J = 25°C		25	80		25	120	mV
Total Output Voltage	**V_{IN} = 28V to 38V**							
Tolerance	Power Pkgs: I_O = 5mA to 1.0A, P ≤ 20W	23.3	24.0	24.7	22.8	24.0	25.2	V
	T - Pkg: I_O = 5mA to 500mA, P ≤ 2W	**23.3**	**24.0**	**24.7**	**22.8**	**24.0**	**25.2**	**V**
Quiescent Current	Over Temperature Range			7			7	mA
	T_J = 25°C		**4**	**6**		**4**	**6**	**mA**
Quiescent Current Change	With Line: V_{IN} = 28V to 38V			0.8			0.8	mA
	With Load: I_O = 5mA to 1.0A (Power Pkgs.)			**0.5**			**0.5**	**mA**
	I_O = 5mA to 500mA (T)			0.5			0.5	mA
Dropout Voltage	**ΔV_O = 100mV, T_J = 25°C**							
	Power Pkgs: I_O = 1.0A, T - Pkg: I_O = 500mA		2	2.5		2	2.5	V
Peak Output Current	**Power Pkgs: T_J = 25°C**	**1.5**	**2.2**	**3.3**	**1.5**	**2.2**	**3.3**	**A**
	T - Pkg: T_J = 25°C	0.5	0.9	1.7	0.5	0.9	1.7	A
Short Circuit Current	**Power Pkgs: V_{IN} = 35V, T_J = 25°C**			**1.2**			**1.2**	**A**
	T - Pkg: V_{IN} = 35V, T_J = 25°C			0.7			0.7	A
Ripple Rejection	**ΔV_{IN} = 10V, f = 120Hz, T_J = 25°C**	**56**			**56**			**dB**
Output Noise Voltage (rms)	f = 10Hz to 100KHz (Note 2)			40			40	µV/V
Long Term Stability	**1000hrs. at T_J = 125°C**		**96**			**96**		**mV**
Thermal Shutdown	I_O = 5mA		175			175		°C

SG7824AC/SG7824C

Parameter	Test Conditions	SG7824AC			SG7824C			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
Output Voltage	**T_J = 25°C**	**23.6**	**24.0**	**24.4**	**23.0**	**24.0**	**25.0**	**V**
Line Regulation (Note 1)	V_{IN} = 27V to 38V, T_J = 25°C		25	240		50	480	mV
	V_{IN} = 30V to 36V, T_J = 25°C		**14**	**120**		**28**	**240**	**mV**
Load Regulation (Note 1)	Power Pkgs: I_O = 5mA to 1.5A, T_J = 25°C		50	240		180	480	mV
	I_O = 250mA to 750mA, T_J = 25°C		**25**	**120**		**70**	**240**	**mV**
	T - Pkg: I_O = 5mA to 500mA, T_J = 25°C		25	120		25	240	mV
Total Output Voltage	**V_{IN} = 28V to 38V**							
Tolerance	Power Pkgs: I_O = 5mA to 1.0A, P ≤ 20W	23.3	24.0	24.7	22.8	24.0	25.2	V
	T - Pkg: I_O = 5mA to 500mA, P ≤ 2W	**23.3**	**24.0**	**24.7**	**22.8**	**24.0**	**25.2**	**V**
Quiescent Current	Over Temperature Range			7			8.5	mA
	T_J = 25°C		**4**	**6**		**4**	**8**	**mA**
Quiescent Current Change	With Line: V_{IN} = 28V to 38V			1.0			1.0	mA
	With Load: I_O = 5mA to 1.0A (Power Pkgs.)			**0.5**			**0.5**	**mA**
	I_O = 5mA to 500mA (T)			0.5			0.5	mA
Dropout Voltage	**ΔV_O = 100mV, T_J = 25°C**							
	Power Pkgs: I_O = 1.0A, T - Pkg: I_O = 500mA		2	2.5		2	2.5	V
Peak Output Current	**Power Pkgs: T_J = 25°C**	**1.5**	**2.2**	**3.3**	**1.5**	**2.2**	**3.3**	**A**
	T - Pkg: T_J = 25°C	0.7	0.9	1.7	0.7	0.9	1.7	A
Short Circuit Current	**Power Pkgs: V_{IN} = 35V, T_J = 25°C**			**1.2**			**1.2**	**A**
	T - Pkg: V_{IN} = 35V, T_J = 25°C			0.7			0.7	A
Ripple Rejection	**ΔV_{IN} = 10V, f = 120Hz, T_J = 25°C**	**56**			**56**			**dB**
Output Noise Voltage (rms)	f = 10Hz to 100KHz (Note 2)			40			40	µV/V
Long Term Stability	**1000hrs. at T_J = 125°C**		**96**			**96**		**mV**
Thermal Shutdown	I_O = 5mA		175			175		°C

Note 1. All regulation tests are made at constant junction temperature with low duty cycle testing.
2. This test is guaranteed but is not tested in production.

CONNECTION DIAGRAMS & ORDERING INFORMATION (See Notes Below)

Package	Part No.	Ambient Temperature Range	Connection Diagram
3-TERMINAL TO-3 METAL CAN K-PACKAGE	SG78XXAK/883B SG78XXAK SG78XXACK SG78XXK/883B SG78XXK SG78XXK	-55°C to 125°C -55°C to 125°C 0°C to 70C -55°C to 125°C -55°C to 125°C 0°C to 70°C	
3-TERMINAL TO-66 METAL CAN R-PACKAGE	SG78XXAR/883B SG78XXAR SG78XXACR SG78XXR/883B SG78XXR SG78XXCR	-55°C to 125°C -55°C to 125°C 0°C to 70°C -55°C to 125°C -55°C to 125°C 0°C to 70°C	
3-PIN TO-39 METAL CAN T-PACKAGE	SG78XXAT/883B SG78XXAT SG78XXACT SG78XXT/883B SG78XXT SG78XXCT	-55°C to 125°C -55°C to 125°C 0°C to 70°C -55°C to 125°C -55°C to 125°C 0°C to 70°C	
3-PIN HERMETIC TO-257 G-PACKAGE (Non-Isolated) 3-PIN HERMETIC TO-257 IG-PACKAGE (Isolated)	SG78XXAG/883B SG78XXAG SG78XXG/883B SG78XXG SG78XXAIG/883B SG78XXAIG SG78XXIG/883B SG78XXIG	-55°C to 125°C -55°C to 125°C -55°C to 125°C -55°C to 125°C -55°C to 125°C -55°C to 125°C -55°C to 125°C -55°C to 125°C	

Note 1. Contact factory for JAN and DESC product availability.
2. All parts are viewed from the top.
3. "XX" to be replaced by output voltage of specific fixed regulator.
4. Some products will be available in leadless chip carrier (LCC) and hermetic flat pack (F). Consult factory for price and availability

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