ABSOLUTE MAXIMUM RATINGS

Device Output Voltage	Input Voltage	Input Voltage Differential (Output Shorted to Ground)
-5V	-35V	35V
-12V	-35V	35V
-15V	-40V	35V

Operating Junction Temperature ..... 150°C
Storage Temperature Range ..... -65°C to 150°C
Lead Temperature (Soldering 10 seconds) ..... 300°C

Note: Exceeding these ratings could cause damage to the device. All voltages are with respect to Ground. Currents are positive into, negative out of specified terminal.

THERMAL DATA

K TO-3 3-Pin Metal Can

THERMAL RESISTANCE-JUNCTION TO CASE, θ_{JC}	3.0°C/W
THERMAL RESISTANCE-JUNCTION TO AMBIENT, θ_{JA}	35°C/W

T TO-39 3-Pin Metal Can

THERMAL RESISTANCE-JUNCTION TO CASE, θ_{JC}	15°C/W
THERMAL RESISTANCE-JUNCTION TO AMBIENT, θ_{JA}	120°C/W

G TO-257 3-Pin Hermetic

THERMAL RESISTANCE-JUNCTION TO CASE, θ_{JC}	3.5°C/W
THERMAL RESISTANCE-JUNCTION TO AMBIENT, θ_{JA}	42°C/W

IG TO-257 3-Pin Hermetic (Isolated)

THERMAL RESISTANCE-JUNCTION TO CASE, θ_{JC}	4.0°C/W
THERMAL RESISTANCE-JUNCTION TO AMBIENT, θ_{JA}	42°C/W

L Leadless Chip Carrier 20-Pin Ceramic

THERMAL RESISTANCE-JUNCTION TO CASE, θ_{JC}	35°C/W
THERMAL RESISTANCE-JUNCTION TO AMBIENT, θ_{JA}	120°C/W

Junction Temperature Calculation: $T_J = T_A + (P_D \times \theta_{JA})$.
The θ_{JA} numbers are guidelines for the thermal performance of the device/pc-board system. All of the above assume no ambient airflow.

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CHARACTERISTIC CURVES

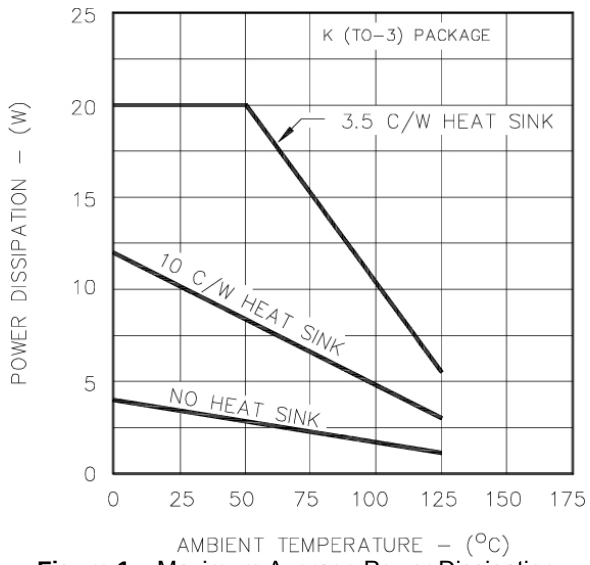

Figure 1 – Maximum Average Power Dissipation

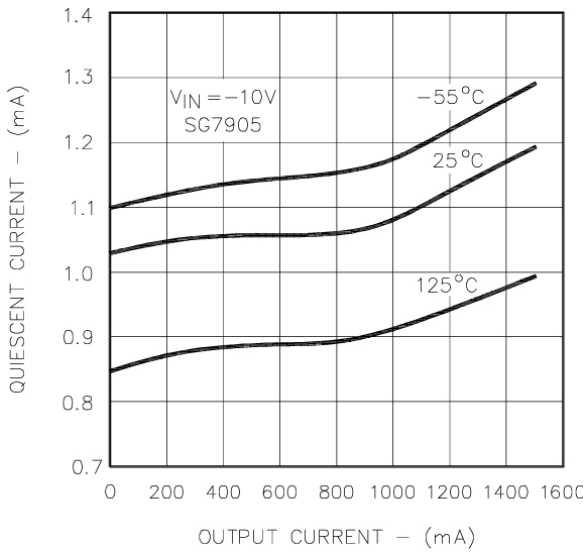

Figure 2 – Quiescent Current vs. Load

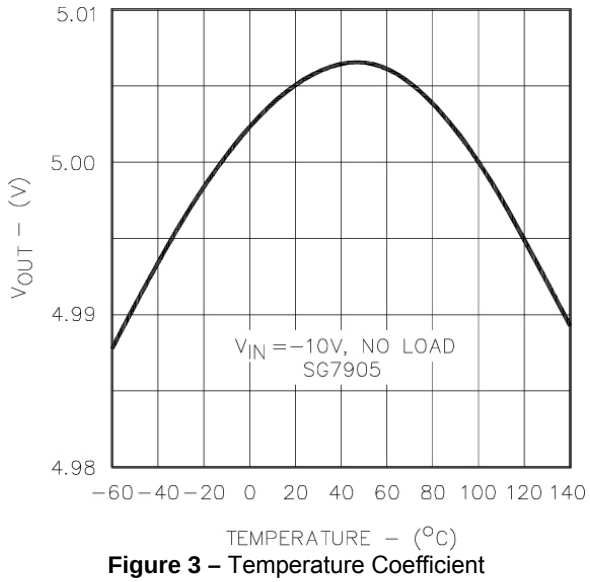

Figure 3 – Temperature Coefficient

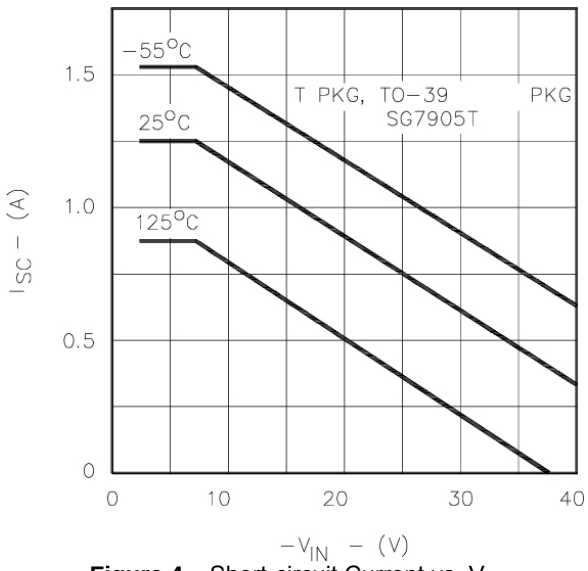

Figure 4 – Short-circuit Current vs. V_{IN}

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CHARACTERISTIC CURVES

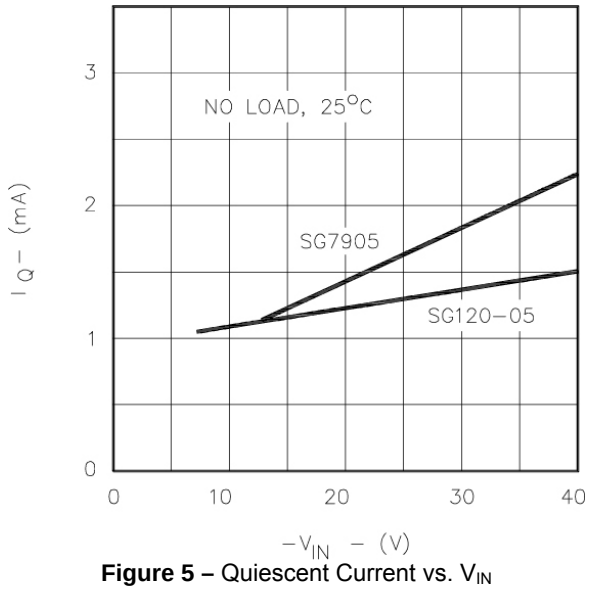

Figure 5 – Quiescent Current vs. V_{IN}

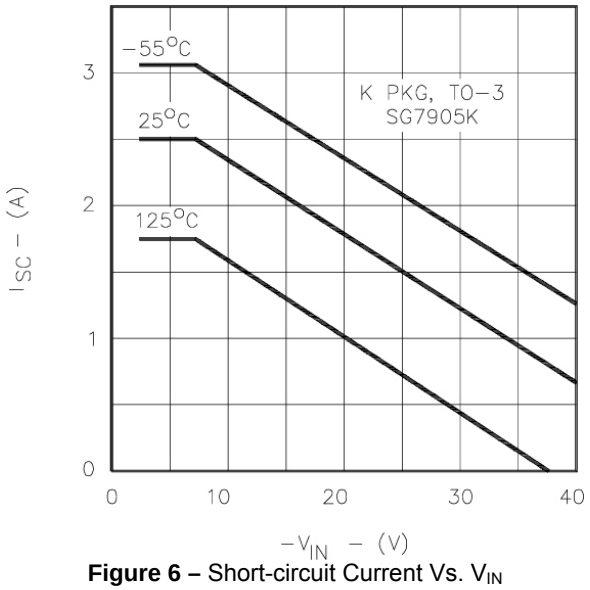

Figure 6 – Short-circuit Current Vs. V_{IN}

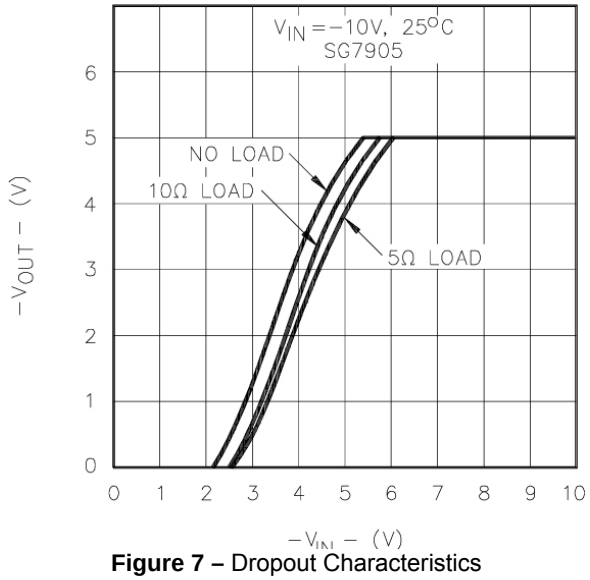

Figure 7 – Dropout Characteristics

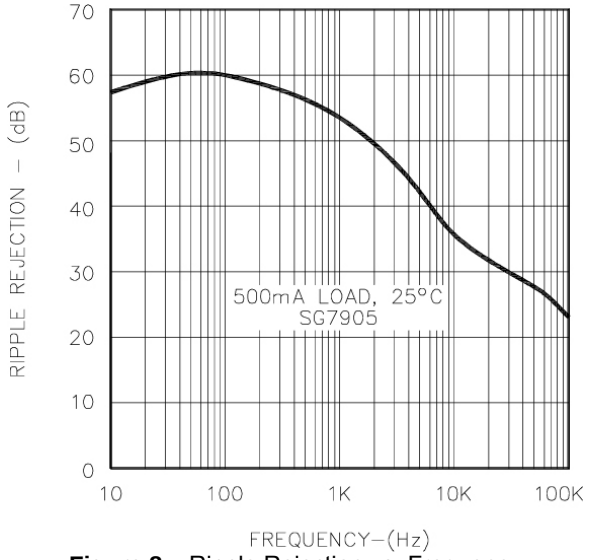

Figure 8 – Ripple Rejection vs. Frequency

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APPLICATIONS

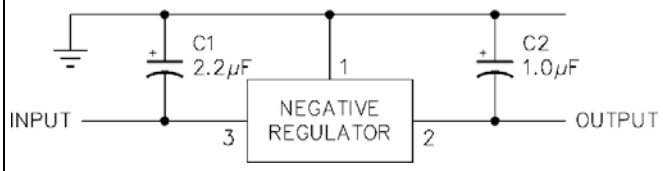

Figure 9 – Fixed Output Regulator

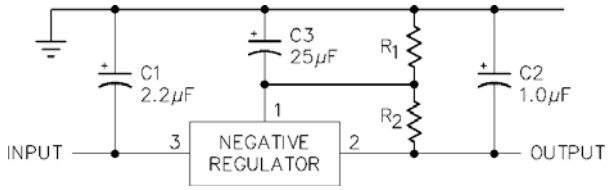

Figure 10 – Circuit for Increasing Output Voltage

Note: 1. C1 is required only if regulator is separated from rectifier filter.
2. Both C1 and C2 should be low E.S.R. types such as solid tantalum. If aluminum electrolytic capacitors are used, at least 10 times values shown should be selected.
3. If large output capacities are used, the regulators must be protected from momentary input shorts. A high current diode.

Note: C3 optional for improved transient response and ripple rejection.

$$V_{OUT} = V(\text{REGULATOR})\frac{R_1 + R_2}{R_1}$$

$$R_2 = \frac{V(\text{REG})}{15\text{mA}}$$

RECOMMENDED OPERATING CONDITIONS

Parameter	SG79xx / 79xxA			Units
	Min	Typ	Max	
Operating Junction Temperature Range (Note 2)	-55		150	°C

Note 2: Range over which the device is functional.

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ELECTRICAL CHARACTERISTICS

Unless otherwise specified, these specifications apply over the operating ambient temperatures for SG7905A / SG7905 with -55°C ≤ T_A ≤ 125°C, V_{IN} = -10V, I_O = 500mA for the K, G, and IG – Power Packages, I_O = 100mA for the T and L packages, C_{IN} = 2µF, and C_{OUT} = 1µF. Low duty cycle pulse testing techniques are used which maintains junction and case temperatures equal to the ambient temperature.

Parameter	Test Conditions	SG7905A			SG7905			Units
		Min	Typ	Max	Min	Typ	Max	
Output Voltage	T_J = 25°C	-4.95	-5.00	-5.08	-4.80	-5.00	-5.20	V
Line Regulation (Note 1)	V_{IN} = -7.5V to -25V, T_J = 25°C		5	25		3	50	mV
	V_{IN} = -8V to -12V, T_J = 25°C		3	12		1	25	mV
Load Regulation (Note 1)	Power Pkgs: I_O = 5mA to 1.5A, T_J = 25°C		15	75		15	100	mV
	I_O = 250mA to 750mA, T_J = 25°C		15	25		15	25	mV
	T – Pkg: I_O = 5mA to 500mA, T_J = 250°C		5	30		5	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	-4.70	-5.00	-5.30	V
	T – Pkg: I_O =5mA to 500mA, P ≤ 20W	-4.85	-5.00	-5.15	-4.70	-5.00	-5.30	V
Quiescent Current	Over Temperature Range			2.5			2.5	mA
	T_J = 25°C			2.0			2.0	mA
Quiescent Current Change	With Line: V_{IN} = -8V to -25V			1.3			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		1.1	2.3		1.1	2.3	V
Peak Output Current	Power Pkgs: T_J = 25°C	1.5		3.3	1.5		3.3	A
	T – Pkg: T_J = 25°C	0.5		1.4	0.5		1.4	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			0.6			0.6	A
Ripple Rejection	ΔV_{IN} = 10V, f = 120Hz, T_J = 25°C	54			54			dB
Output Noise Voltage (rms)	f = 10Hz to 100kHz (Note 2)		25	80		25	80	µV/V
Long Term Stability	1000 hours @ 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.

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ELECTRICAL CHARACTERISTICS

Unless otherwise specified, these specifications apply over the operating ambient temperatures for SG7912A / SG7912 with -55°C ≤ T_A ≤ 125°C, V_{IN} = -19V, I_O = 500mA for the K, G, and IG – Power Packages, I_O = 100mA for the T and L packages, C_{IN} = 2µF, and C_{OUT} = 1µF. Low duty cycle pulse testing techniques are used which maintains junction and case temperatures equal to the ambient temperature.

Parameter	Test Conditions	SG7912A			SG7912			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		4	60		10	120	mV
	V_{IN} = -16V to -22V, T_J = 25°C		3	30		3	60	mV
Load Regulation (Note 1)	Power Pkgs: I_O = 5mA to 1.5A, T_J = 25°C		20	90		12	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	240	mV
Total Output Voltage	V_{IN} = -14.5V 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			4			4	mA
	T_J = 25°C			3			3	mA
Quiescent Current Change	With Line: V_{IN} = -14.5V 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, TJ = 25°C							
	Power Pkgs: I_O = 1.0A, T – Pkg: I_O = 500mA		1.1	2.3		1.1	2.3	V
Peak Output Current	Power Pkgs: T_J = 25°C	1.5		3.3	1.5		3.3	A
	T – Pkg: T_J = 25°C	0.5		1.4	0.5		1.4	A
Short Circuit Current	Power Pkgs: V_{IN} = -35V, T_J = 25°C			1.2			0.2	A
	T – Pkg: V_{IN} = -35V, T_J = 25°C			0.6			0.6	A
Ripple Rejection	ΔV_{IN} = 10V, f = 120Hz, T_J = 25°C	54			54			dB
Output Noise Voltage (rms)	f = 10Hz to 100kHz (note 2)		25	80		25	80	µV/V
Long Term Stability	1000 hours @ 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.

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ELECTRICAL CHARACTERISTICS

Unless otherwise specified, these specifications apply over the operating ambient temperatures for SG7915A / SG7915 with -55°C ≤ T_A ≤ 125°C, V_{IN} = -23V, I_O = 500mA for the K, G, and IG – Power Packages, I_O = 100mA for the T and L packages, C_{IN} = 2µF, and C_{OUT} = 1µF. Low duty cycle pulse testing techniques are used which maintains junction and case temperatures equal to the ambient temperature.

Parameter	Test Conditions	SG7915A			SG7915			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		5	75		11	150	mV
	V_{IN} = -20V to -25V, T_J = 25°C		3	40		3	75	mV
Load Regulation (Note 1)	Power Pkgs: I_O = 5mA to 1.5A, T_J = 25°C		30	100		12	150	mV
	I_O = 250mA to 750mA, T_J = 25°C		4	50		4	75	mV
	T – Pkg: I_O = 5mA to 500mA, T_J = 25°C		10	50		10	240	
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	-14.25	-15.00	-15.75	V
	T – Pkg: I_O = 5mA to 500mA, P ≤ 2W	-14.6	-15.0	-15.4	-14.25	-15.00	-15.75	V
Quiescent Current	Over Temperature Range			4			4	mA
	T_J = 25°C			3			3	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		1.1	2.3		1.1	2.3	V
Peak Output Current	Power Pkgs: T_J = 25°C	1.5		3.3	1.5		3.3	A
	T – Pkg: T_J = 25°C	0.5		1.4	0.5		1.4	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			0.6			0.6	A
Ripple Rejection	ΔV_{IN} = 10V, f = 120Hz, T_J = 25°C	54			54			dB
Output Noise Voltage (rms)	f = 10Hz to 100kHz (note 2)		25	80		25	80	µV/V
Long Term Stability	1000 hours @ TJ = 125°C		60			60		mV
Thermal Shutdown	I_O = 5mA		175			175		

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.

NOTES

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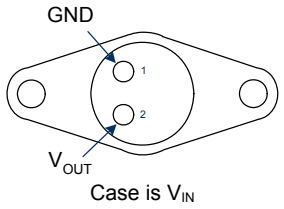
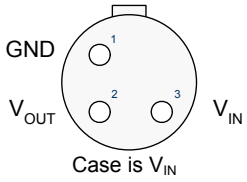
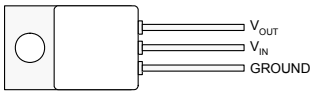
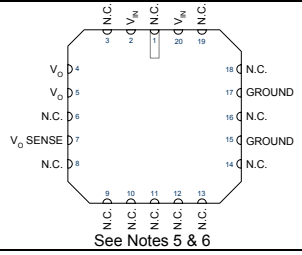
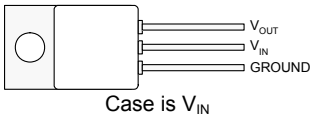
CONNECTION DIAGRAMS & ORDERING INFORMATION (SEE NOTES BELOW)

Package	Part No.	Ambient Temperature Range	Connection Diagram
3-Terminal TO-3 Metal Can K – Package	SG79xxAK/883B	-55°C to 125°C	
	SG7905AK/DESC	-55°C to 125°C	
	SG7912AK/DESC	-55°C to 125°C	
	SG7915AK/DESC	-55°C to 125°C	
	SG79xxAK	-55°C to 125°C	
	SG79xxK/883B	-55°C to 125°C	
	JAN7905K	-55°C to 125°C	
	JAN7912K	-55°C to 125°C	
	JAN7915K	-55°C to 125°C	
	SG79xxK	-55°C to 125°C	
3-Pin TO-39 Metal Can T – Package	SG79xxAT/883B	-55°C to 125°C	
	SG7905AT/DESC	-55°C to 125°C	
	SG7912AT/DESC	-55°C to 125°C	
	SG7915AT/DESC	-55°C to 125°C	
	SG79xxAT	-55°C to 125°C	
	SG79xxT/883B	-55°C to 125°C	
	JAN7905T	-55°C to 125°C	
	JAN7912T	-55°C to 125°C	
	JAN7915T	-55°C to 125°C	
	SG79xxT	-55°C to 125°C	
3-Pin Hermetic TO-257 IG – Package (Isolated)	SG79xxAIG/883B	-55°C to 125°C	
	SG7905AIG/DESC	-55°C to 125°C	
	SG7912AIG/DESC	-55°C to 125°C	
	SG7915AIG/DESC	-55°C to 125°C	
	SG79xxAIG	-55°C to 125°C	
	SG79xxIG/883B	-55°C to 125°C	
	SG79xxIG	-55°C to 125°C	
20-Pin Ceramic Leadless Chip Carrier L – Package	SG79xxL/883B	-55°C to 125°C	
	SG79xxL	-55°C to 125°C	
	SG7905AL/DESC	-55°C to 125°C	
	SG7912AL/DESC	-55°C to 125°C	
	SG7912AL/DESC	-55°C to 125°C	
3-Pin Hermetic TO-257 G – Package (Case is V_{IN})	SG79xxAG/883B	-55°C to 125°C	
	SG7905AG/DESC	-55°C to 125°C	
	SG7912AG/DESC	-55°C to 125°C	
	SG7915AG/DESC	-55°C to 125°C	
	SG79xxAG	-55°C to 125°C	
	SG79xxG/883B	-55°C to 125°C	
	SG79xxG	-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 hermetic flat pack (F). Consult factory for price and availability.
5: Both inputs and outputs must be externally connected together at the device terminals.
6: For normal operation, the V_O SENSE pin must be externally connected to the load.

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