

SG3525

DATASHEET

Specification Revision History:

Version	Date	Description
V1.0	2019/12	New
V1.1	2021/04	Modify Ordering Information
V1.2	2025/02	Modify Ordering Information
V1.3	2025/03	Add application precautions and overall typesetting.

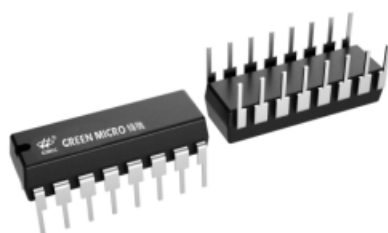
General Description

The SG3525 is a monolithic integrated circuit that includes all of the control circuits necessary for a pulse width modulating regulator. There are a voltage reference, an error amplifier, a pulse width modulator, an oscillator, an under voltage lockout, a soft start circuit, and the output driver in the chip.

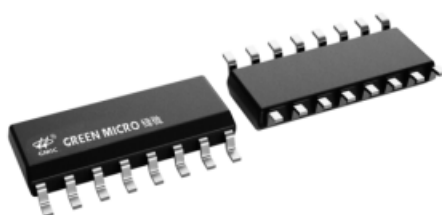
SG3525 is available in DIP16 package.

Features

- 5V $\pm$ 1%Reference
- Oscillator Sync Terminal
- Internal Soft Start
- Dead Time Control
- Under Voltage Lockout



DIP-16



SOP-16

Ordering Information

Product Model	Package Type	Marking	Packing	Packing Qty
SG3525AAN(GMIC)	DIP-16	SG3525 100	TUBE	1000PCS/BOX
SG3525AADR(GMIC)	SOP-16	SG3525 100	REEL	2500PCS/REEL

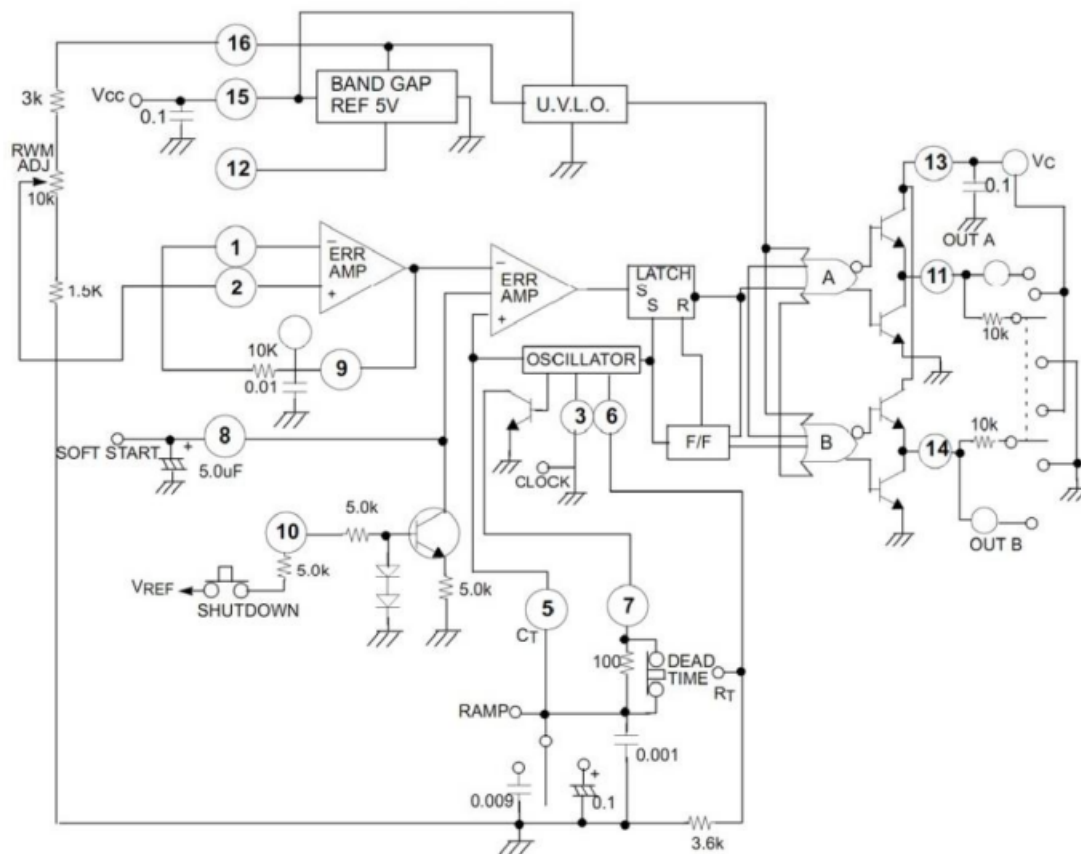
Electrical Characteristics($V_{CC}=20V, T_A=0$ to $70^{\circ}C$, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
REFERENCE SECTION						
Reference Output Voltage	V_{REF}	$T_J=25^{\circ}C$	5.0	5.1	5.2	V
Line Regulation	ΔV_{REF}	$V_{CC}=8$ to $35V$		9	20	mV
Load Regulation	ΔV_{REF}	$I_{REF}=0$ to $20mA$		20	50	mV
Short Circuit Output Current	I_{SC}	$V_{REF}=0, T_J=25^{\circ}C$		80	120	mA
Total Output Variation*1	ΔV_{REF}	Line, Load and Temperature	4.95		5.25	V
Temperature Stability*1	ST_T			20	50	mV
Long Term Stability*1	ST	$T_J=125^{\circ}C, 1KHS$		20	50	mV
OSCILLATOR SECTION						
Initial Accuracy*1,2	$ACCUR$	$T_J=25^{\circ}C$		± 3	± 6	%
Frequency Change with Voltage	$\Delta f / \Delta V_{CC}$	$V_{CC}=8$ to $35V$ *1,2		± 0.8	± 2	%
Maximum Frequency	$f_{(MAX)}$	$R_T=2k\Omega, C_T=470pF$	380	430		kHz
Minimum Frequency	$f_{(MIN)}$	$R_T=200k\Omega, C_T=0.1\mu F$		60	120	Hz
Clock Amplitude*1,2	$V_{(CLK)}$		3	4		V
Clock Width*1,2	$t_{W(CLK)}$	$T_J=25^{\circ}C$	0.3	0.6	1	μS
Sync Threshold	$V_{TH(SYNC)}$		1.2	2	2.8	V
Sync Input Current	$I_{(SYNC)}$	Sync=3.5V		1.3	2.5	mA
ERROR AMPLIFIER SECTION($V_{CM}=5.1V$)						
Input Offset Voltage	V_{IO}			1.5	10	mV
Input Bias Current	I_{BIAS}			1	10	μA
Input Offset Current	I_{IO}			0.1	1	μA
Open Loop Voltage Gain	G_{VO}	$R_L \geq 10M\Omega$	60	80		dB
Common Mode Rejection Ratio	$CMRR$	$V_{CM}=1.5$ to $5.2V$	60	90		dB
Power Supply Rejection Ratio	$PSRR$	$V_{CC}=8$ to $3.5V$	50	60		dB
PWM COMPARATOR SECTION						
Minimum Duty Cycle	$D_{(MIN)}$				0	%
Maximum Duty Cycle	$D_{(MAX)}$		45	49		%
Input Threshold Voltage*2	V_{TH1}	Zero Duty Cycle	0.7	0.9		V
Input Threshold Voltage*2	V_{TH2}	Max Duty Cycle		3.2	3.6	V
SOFT-START SECTION						
Soft Start Current	I_{SOFT}	$V_{SD}=0V, V_{SS}=0V$	25	51	80	μA
Soft Start Low Level Voltage	V_{SL}	$V_{SD}=25V$		0.3	0.7	V
Shutdown Threshold Voltage	$V_{TH(SD)}$		0.9	1.3	1.7	V
Shutdown Input Current	$I_{N(SD)}$	$V_{SD}=2.5V$		03	1	mA
OUTPUT SECTION						
Low Output Voltage 1	V_{OL1}	$I_{SINK}=20mA$		0.1	0.4	V
Low Output Voltage 2	V_{OL2}	$I_{SINK}=100mA$		0.5	2	V
High Output Voltage 1	V_{CH1}	$I_{SOURCE}=20mA$	18	19		V
High Output Voltage 2	V_{CH2}	$I_{SOURCE}=100mA$	17	18		V
Under Voltage Lockout	V_{UV}	V8 and V9=High	6	7	8.5	V
Collector Leakage Current	I_{LKG}	$V_{CC}=35V$		80	200	μA
Rise Time*1	t_R	$C_L=1\mu F, T_J=25^{\circ}C$		80	600	ns
Fall Time*1	t_F	$C_L=1\mu F, T_J=25^{\circ}C$		70	300	ns
Standby current						
Supply Current	I_{CC}	$V_{CC}=35V$		12	20	mA

*1. These parameters, although guaranteed over the recommended operating conditions, are not 100% tested in production

*2. Tested at $f_{osc}=40\text{kHz}$ ($R_T=3.6\text{K}$, $C_T=0.01\mu\text{F}$, $R_i=0\Omega$)

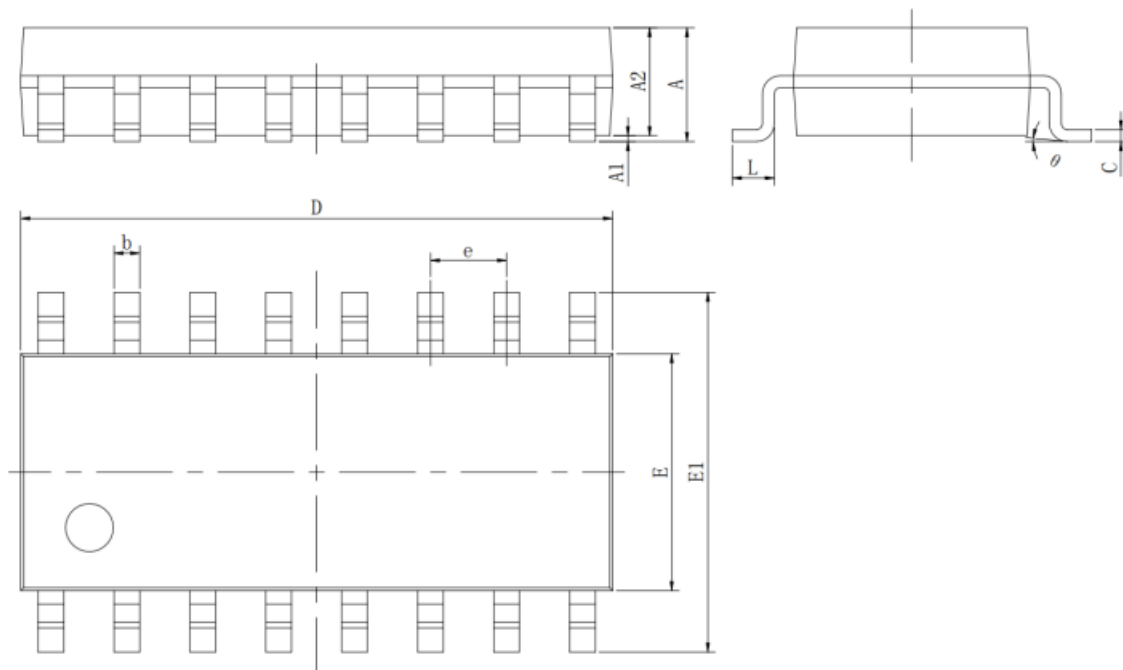
Test Circuit



Outline Dimensions

SOP16

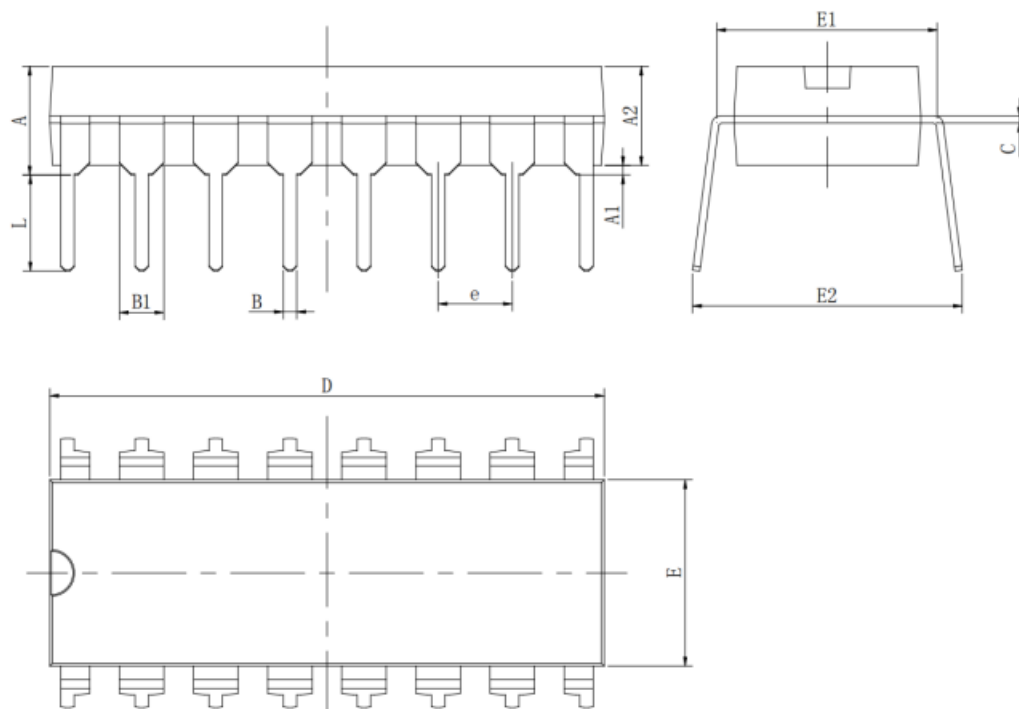
Unit:mm



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	9.800	10.200	0.386	0.402
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

DIP-16:

Unit:mm



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	3.710	4.310	0.146	0.170
A1	0.510		0.020	
A2	3.200	3.600	0.126	0.142
B	0.380	0.570	0.015	0.022
B1	1.524(BSC)		0.060(BSC)	
C	0.204	0.360	0.008	0.014
D	18.800	19.200	0.740	0.756
E	6.200	6.600	0.244	0.260
E1	7.320	7.920	0.288	0.312
e	2.540(BSC)		0.100(BSC)	
L	3.000	3.600	0.118	0.142
E2	8.400	9.000	0.331	0.354

Important Notice:

- Green Micro chip reserves the right to change products and documents without notice. Customers should obtain and verify the completeness of the latest technical information before placing orders. Meanwhile, Green Micro chip shall not assume any responsibility or obligation for non-officially revised documents.
- Any parameters in the entire product specification are for reference only, and actual application testing shall prevail. When customers use the products for system design, they must comply with safety regulations and independently assume the following responsibilities: selecting suitable Green Micro chip products according to application requirements; completing design verification and full-link testing of the application; and ensuring that the application complies with safety regulations or other requirements of the target market. Customers shall bear all personal or property losses caused by design defects or illegal operations, which shall have no relation to Green Micro chip.
- Green Micro chip products are prohibited from being used in scenarios such as life support, military equipment, and key aerospace applications. All accidents and legal liabilities arising from out-of-scope use shall be borne by the user, and Green Micro chip shall not be held responsible.
- All technical resources of Green Micro chip (including data sheets and reference designs) are provided "as is", without guarantee of no defects or universality, and without any express or implied warranties. The documents are only authorized for product development and research described in this document. Unauthorized use of intellectual property, public reproduction, and reverse engineering are strictly prohibited. All claims and losses caused by illegal use shall be borne by the user, and Green Micro chip shall not be liable.