

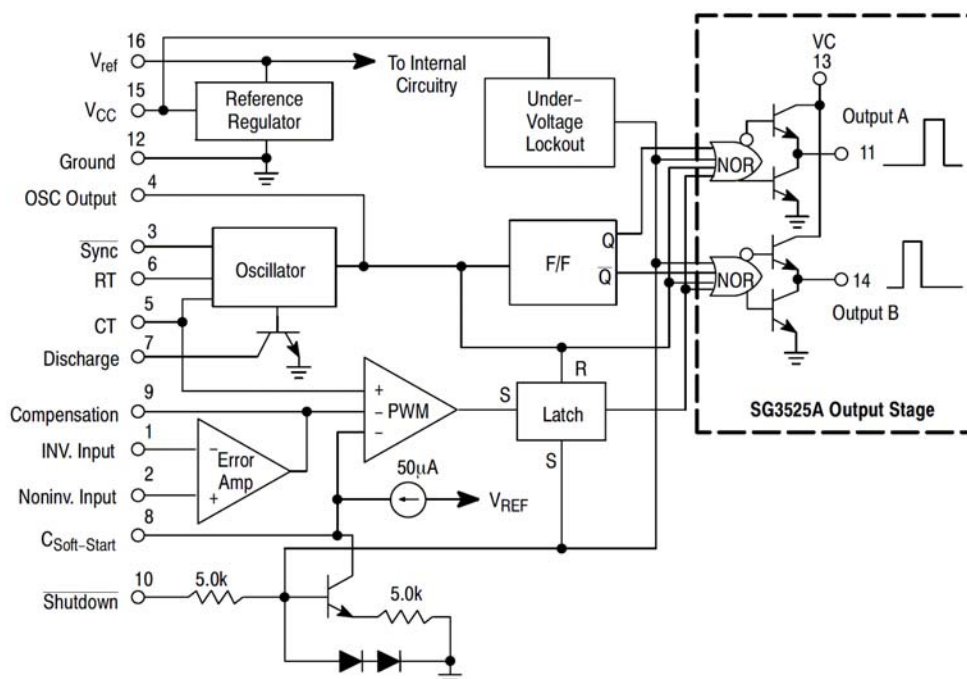
description

The accuracy of the chip +5.1V reference voltage is 1%. Because the reference voltage is within the input common-mode range of the error amplifier, there is no need for an external resistor. 3525 can work in masterslave mode and can also be synchronized with external clock. The dead time can be adjusted by the resistance between CT and discharge terminal. Other functional circuits inside the chip also include: soft start circuit, turnoff circuit and under- voltage circuit.

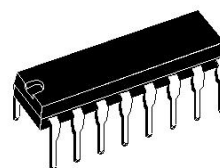
3525 The output stage of the control chip is a high- power totem- pole output, and its source current and sink current exceed 150mA, which gives a logic level of "NOR" and a low level when it is in the "off" state. trait

- The working voltage range is 8~35V;
- 5.1V reference voltage with accuracy of 1%;
- The oscillation frequency range is 100Hz~500KHz;
- The oscillator synchronization signal input end;
- Dead time is adjustable;
- Built-in soft start circuit;
- Step- by- step pulse shutdown;
- Input undervoltage locking with hysteresis voltage;
- PWM locking function, prohibiting multi- pulse;

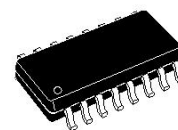
Internal block diagram



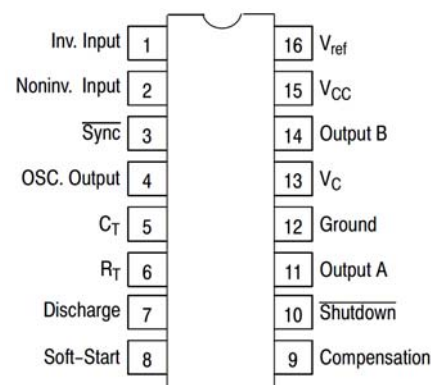
Package



DIP16



SOP16



Limit operating parameters

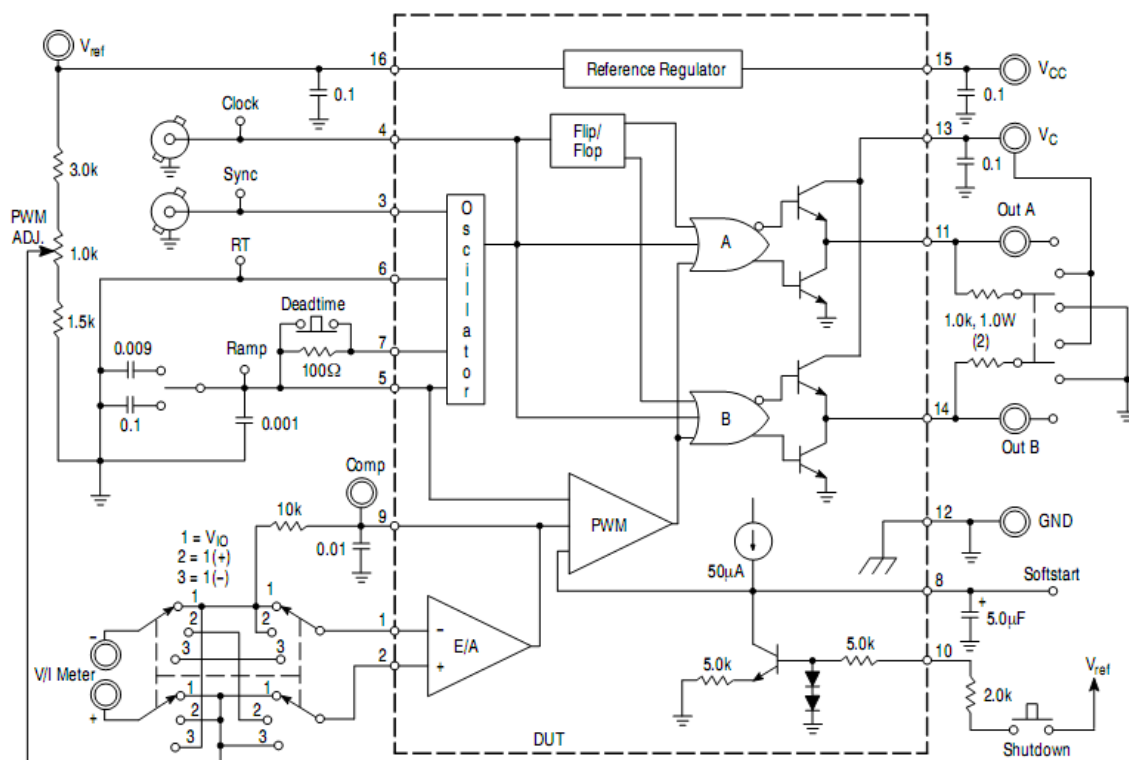
symbol	parameter	value	unit
V_i	Power supply voltage	40	V
V_C	Collector supply voltage	40	V
IOSC	Oscillator charging current	5	mA
I_o	Output source current,	400	mA
IR	Reference output current	50	mA
Ptot	Power consumption Tamb= 70°C	1000	mW
Top	Working temperature	0 to 70	°C
Tj	Junction temperature range	- 55 to 150	°C
Tstg	Storage temperature range	- 65 to 150	°C

Electrical parameters (Vcc=20V)

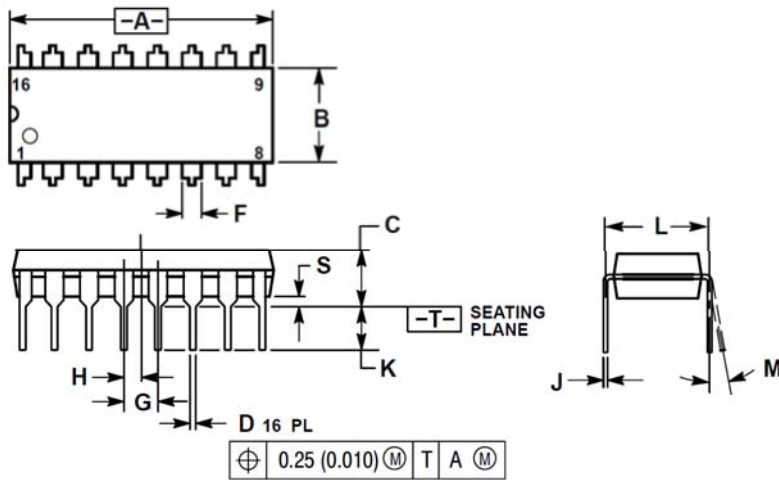
parameter	symbol	condition	minimum value	typical value	maximum	unit
Reference source						
Reference output voltage	V_{REF}	$T_J = 25^\circ C$	5.0	5.1	5.2	V
Line rule	ΔV_{REF}	$V_{CC} = 8 \text{ to } 35V$	-	9	20	mV
Load regulation	ΔV_{REF}	$I_{REF} = 0 \text{ to } 20mA$	-	20	50	mV
Short circuit output current	ISC	$V_{REF} = 0, T_J = 25^\circ C$	-	80	100	mA
Total output change	ΔV_{REF}	Line, load and temperature	4.95	-	5.25	V
temperature stability	STT		-	20	50	mV
long term stability	ST	$T_J = 125^\circ C, 1 \text{ KHRS}$	-	20	50	mV
Oscillating part						
Initial accuracy	ACCUR	$T_J = 25^\circ C$	-	3	6	%
Frequency varies with voltage	$\Delta f / \Delta V_{CC}$	$V_{CC} = 8 \text{ to } 35V$	-	0.8	2	%
highest frequency	f (MAX)	$R_T = 2K\Omega, C_T = 470pF$	400	430	-	KHz
Lowest frequency	f (MIN)	$R_T = 200K\Omega, C_T = 0.1\mu F$	-	60	120	Hz
Clock amplitude	V (CLK)		3	4	-	V
Clock width	tW (CLK)	$T_J = 25^\circ C$	0.3	0.6	1	us
Synchronization threshold	$V_{TH(SYNC)}$		1.2	2	2.8	V
Synchronous input current	$I_I(SYNC)$	$Sync = 3.5V$	-	1.3	2.5	mA
Error amplifier section (VCM = 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	GVO	$R_L \geq 10M\Omega$	60	80	-	dB
common mode rejection ratio	CMRR	$V_{CM} = 1.5 \text{ to } 5.2V$	60	90	-	dB
Power supply rejectionratio	PSRR	$V_{CC} = 8 \text{ to } 3.5V$	50	60	-	dB

PWM comparator part						
Minimum duty cycle	D(MIN)		-	-	0	%
parameter	symbol	condition	minimum value	typical value	maximum	unit
Maximum duty cycle	D(MAX)		45	49	-	%
Input threshold voltage	VTH1	Zero duty cycle	0.7	0.9	-	V
Input threshold voltage	VTH2	Maximum duty cycle	-	3.2	3.6	V
Soft start part						
Soft start current	I SOFT	VSD = 0V, VSS = 0V	25	51	80	μA
Soft start low voltage	VSL	VSD = 25V	-	0.3	0.7	V
Turn off threshold voltage	V TH(SD)		0.6	0.8	1	V
Turn off the input current	I N(SD)	VSD = 2.5V	-	0.3	1	mA
Output part						
Low output voltage I	VOLI	I SINK = 20mA	-	0.1	0.4	V
Low output voltage II	VOL II	I SINK = 100mA	-	0.05	2	V
High output voltage I	VOHI	I SOURCE = 20mA	18	19	-	V
High output voltage II	VOHII	I SOURCE = 100mA	17	18	-	V
under voltage lock out	VUV	V8 and V9 = High	6	7	8	V
Collector leakage current	I LKG	VCC = 35V	-	80	200	μA
risetime	t R	CL = 1uF, Tj = 25	-	80	600	ns
Descending time	t F	CL = 1uF, Tj = 25	-	70	300	ns
Standby current						
supply current	I CC	VCC = 35V	-	12	20	mA

Test line

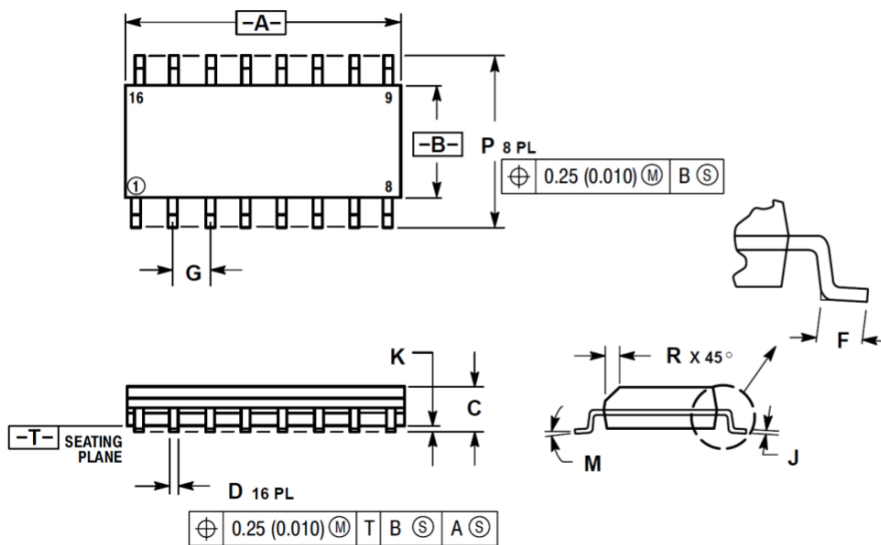


DIP16



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.740	0.770	18.80	19.55
B	0.250	0.270	6.35	6.85
C	0.145	0.175	3.69	4.44
D	0.015	0.021	0.39	0.53
F	0.040	0.70	1.02	1.77
G	0.100 BSC		2.54 BSC	
H	0.050 BSC		1.27 BSC	
J	0.008	0.015	0.21	0.38
K	0.110	0.130	2.80	3.30
L	0.295	0.305	7.50	7.74
M	0°	10°	0°	10°
S	0.020	0.040	0.51	1.01

SOP16



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	9.80	10.00	0.386	0.393
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.054	0.068
D	0.35	0.49	0.014	0.019
F	0.40	1.25	0.016	0.049
G	1.27 BSC		0.050 BSC	
J	0.19	0.25	0.008	0.009
K	0.10	0.25	0.004	0.009
M	0°	7°	0°	7°
P	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019