

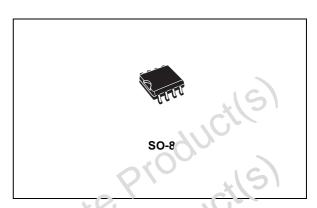


SOLENOID CONTROLLER IC

- WIDE SUPPLY VOLTAGE RANGE: 8 TO 35V DC
- BUILD-IN GATE DRIVE VOLTAGE CLAMP TYP. 11V
- LOGIC CONTROLLED ENABLING CIRCUIT
- DIGITAL IN-RUSH TIMER
- BUILT-IN POWER-ON RESET
- INTERNALLY TRIMMED TIMING OSCILLATOR
- NO EXTERNALLY TIMING CAPACITORS NEEDED
- FIXED IN-RUSH/HOLD CURRENT RATIO
- LOW DROP CURRENT SENSING RESISTOR
- INTEGRATED FILTER IN THE FEEDBACK LOOP (TIME COSTANT OF 2µs TYP.)
- SO-8 PACKAGE



This circuit is basically switch mode current regulator with 2 modes (In-rush and Holding). In-rush current occurs in the first 64 ms of each



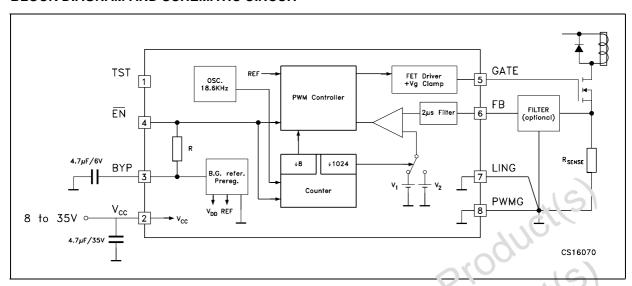
on/off cycle with the rise tine dependent on the coil's resistance and inductance. The Hold-current is a partition of the In-rish current fixed by the ratio between V_1 and V_2 . A control pin is provided for enabling and disabling the gate control output for the external power MOS. The MOS transistor must be thesen according to the supply voltage range and the current flowing through the solution.

ORDERING CODES

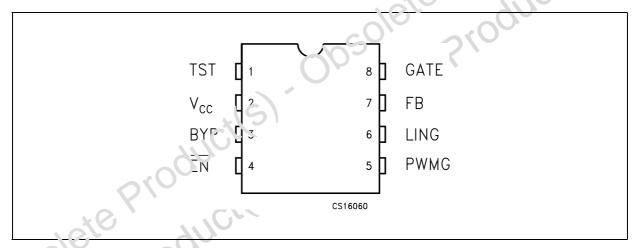
	Туре	Tomperature Range	Package	Comments
5	STM202PD	-40 to 85 °C	SO-8 (Tube)	100 parts per tube / 20 parts per box
S	TI 18023DR	-40 to (5)C	SO-8 (Tape & Reel)	2500 parts per reel
O _D	oleite	2		
Op	5			

October 2003 1/8

BLOCK DIAGRAM AND SCHEMATIC CIRCUIT



PIN CONFIGURATION



PINDESCRIPTION

PIN N°	SYMBOL	NAME AND FUNCTION		
(1)	TST (Note 1)	Test Input		
2	V _{CC}	Supply Voltage		
3	BYP	Bypass capacitor		
4	EN	Enable Input		
5	PWMG	Switch Ground		
6	LING	Linear Ground		
7	FB	FeedBack		
8	GATE	Gate Control Output		

Note 1: The TST pin is for testing purpose only. Must be left FLOATING for normal operation.

TRUTH TABLES FOR ENABLE PIN

EN	DEVICE
LOW	ENABLED
HIGH	DISABLED
FLOAT	DISABLED

Note 1: The TST pin is for testing purpose only. Must be left FLOATING for normal operation.

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V _{CC}	Supply Voltage	-0.5 to 40	V
VI	DC Input Voltage of EN, FB	-0.5 to 7	V
I _{IK}	DC Input Diode Current	± 20	ınA
I _{OK}	DC Output Diode Current	-20/+5	mA
P _D	Maximum Power Dissipation	FOL	mW
T _L	Lead Temperature (10sec)	:)00	°C
T _{STG}	Storage Temperature Range	-65 to 150	⊃ ° C

Absolute Maximum Ratings are those values beyond which damage to the device may occu . Functional operation under these condition is not implied.

ELECTRICAL CHARACTERISTICS OVER RECOMMEND'EL OPERATING CONDITIONS

(Unless otherwise noted. Typical values are at $T_A = 25$ °C)

Symbol	Parameter	Test Conditions	Min.	Тур.	Max.	Unit
V _{CC}	Operative Supply Voltage Range	DC only	8		35	V
V _{IL}	Low Level Input Thresholds of Enable	20/2	0		0.8	V
V _{IH}	High Level Input Thresholds of Enable	-105	2		5	V
V _{HYST}	Hysteresis of Enable Input	()		0.3		V
I _{IN}	Input Leakage Current or Enable	EN = GND	-100	-60	-30	μΑ
	010	$\overline{\text{EN}} = 5.5 \text{V}, \text{V}_{\text{CC}} = 0 \text{ to } 35 \text{V}$		0.1	1	μΑ
IQ	Quiescen' Supply Current	$\overline{\text{EN}} = 5.5 \text{V}, \text{V}_{\text{CC}} = 9 \text{V}, \text{V}_{\text{FB}} = 0 \text{V}$		0.4	0.9	mΑ
I _{CC}	S יף יין Current	$\overline{\text{EN}} = \text{GND}, V_{\text{CC}} = 9V, V_{\text{FB}} = 0V$		0.7	1.2	mA
	2/10	$C_{LOAD} = 1000pF$				
V _{CL\M} F	Gate drive voltage clamp	V _{CC} > 20V	9	11	13	٧
V	Voltage reference for Inrush current		314	345	380	mV
V ₂	Voltage reference for Hold current		70	77	86	mV
I _{INR} /I _{HOLD}	Inrush current to hold current ratio			4.5		
T _{INR}	Time duration of Inrush interval		56	64	72	ms
I _{GH}	Gate control output source current	$V_G = 0V$, $V_{CC} = 13V$		-1.6	-1	mΑ
I_{GL}	Gate control output sink current	$V_{G} = 8V, V_{CC} = 13V$	2.5	4.5		mΑ
V _{BYP}	Internal Pre-regulator output voltage	I _{BYP} = 1mA		4		V
T _C	Time constant of feedback filter			2		μs
T _{OP}	Operative Temperature Range		-40		85	°C

TYPICAL CHARACTERISTICS

Figure 1: Power on Cycle ($\overline{EN} = Low$)

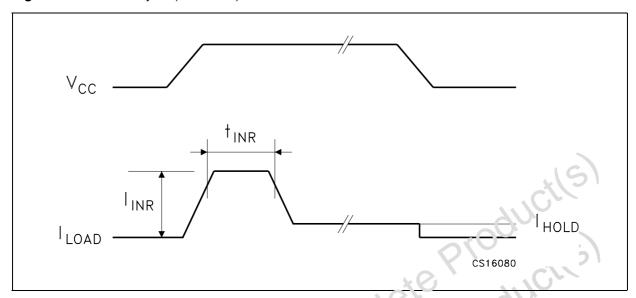


Figure 2 : Controlled by Enable (V_{CC} = ON)

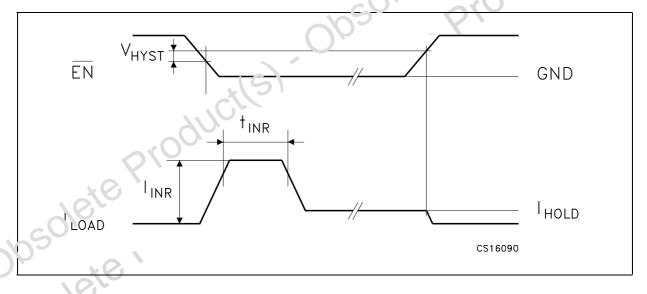
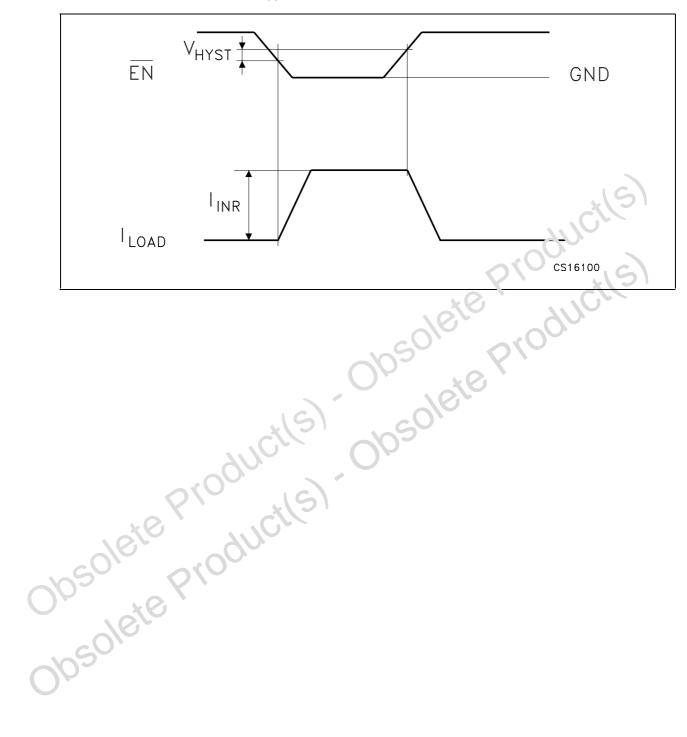
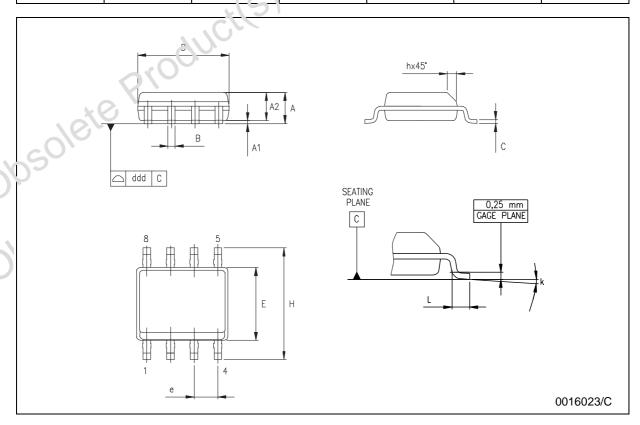


Figure 3 : Controlled by Enable $(V_{CC} = ON)$



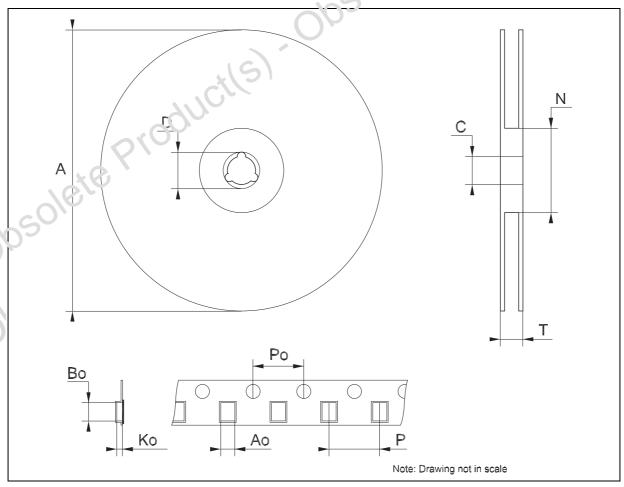
SO-8 MECHANICAL DATA

DIM	mm.			inch		
DIM.	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
А	1.35		1.75	0.053		0.069
A1	0.10		0.25	0.04		0.010
A2	1.10		1.65	0.043		0.065
В	0.33		0.51	0.013		0.020
С	0.19		0.25	0.007		0.016
D	4.80		5.00	0.189	(0.197
Е	3.80		4.00	0.150	100,0	0.157
е		1.27			0.050	
Н	5.80		6.20	0.223		0.244
h	0.25		0.50	1510		0.020
L	0.40		1.27	0.016		0.050
k	8° (max.)					
ddd			0.1			0.04



Tape & Reel SO-8 MECHANICAL DATA

DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
А			330			12.992
С	12.8		13.2	0.504		0.519
D	20.2			0.795		
N	60			2.362		16
Т			22.4			0.382
Ao	8.1		8.5	0.319	AU!	0.335
Во	5.5		5.9	0.216	100	0.232
Ko	2.1		2.3	0.082		0.090
Ро	3.9		4.1	0 173		0.161
Р	7.9		8.1	0.311		0.319





Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics All other names are the property of their respective owners

© 2003 STMicroelectronics - All Rights Reserved STMicroelectronics GROUP OF COMPANIES

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States.

http://www.st.com

A7/