



# STABP01

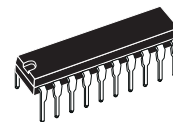
## BASH® DIGITAL FIDELITY DIGITAL PROCESSOR

### ■ BASH® LICENCE REQUIRED

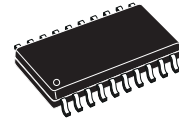
#### DESCRIPTION

The STABP01 processor is used to control the BASH® Digital Converter. When used in conjunction with BASH® amplifiers a fully integrated high efficiency power amplifier is realized.

By analyzing the audio input, the Processor determines the appropriate on/off events and generates a digital pulse for the Digital Converter. The converter turns this pulse into a power signal that feeds the power amplifier. The feedback system allows the processor to constantly adapt to the audio signal and regenerate the digital pulse thereby maintaining a constant voltage across the output devices.



DIP20



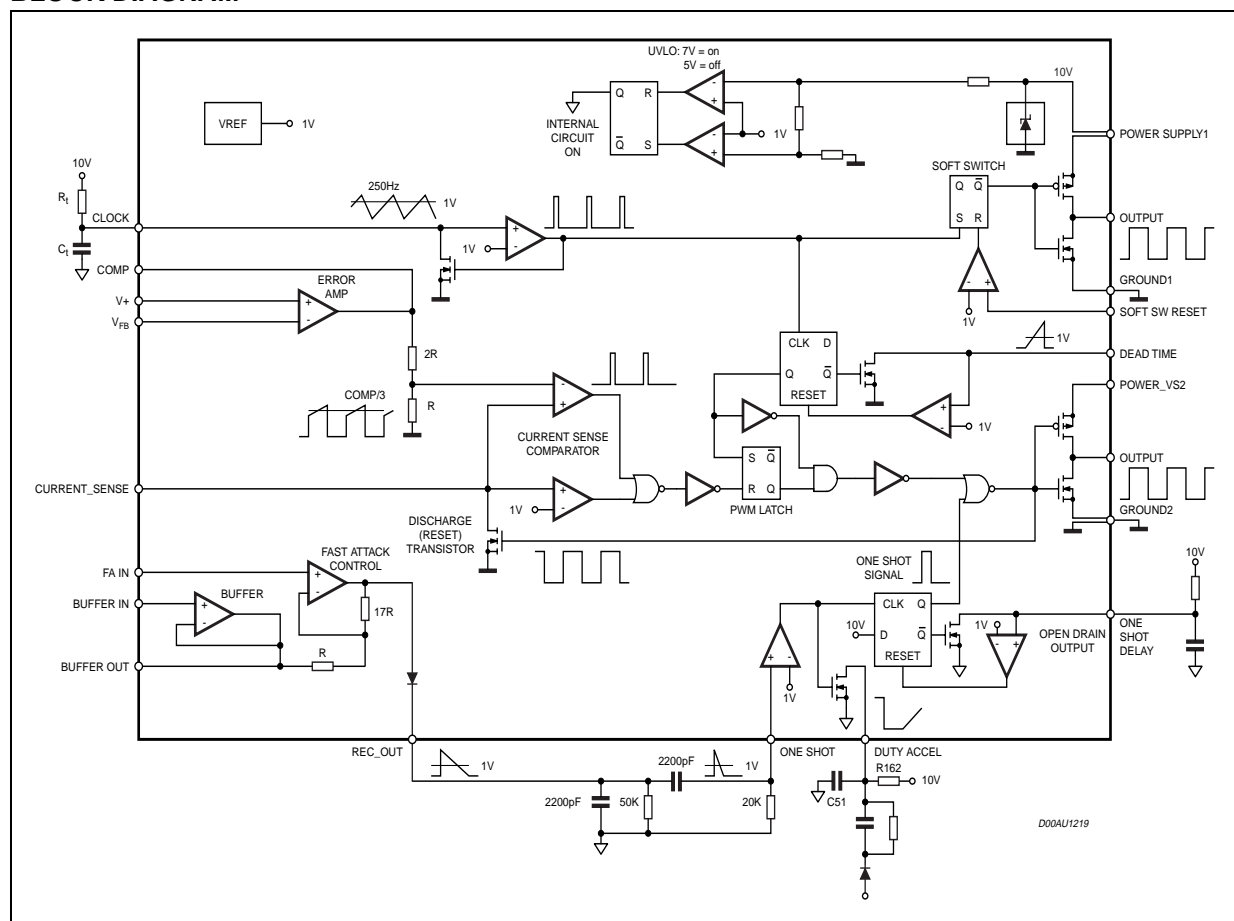
SO20

#### ORDERING NUMBERS:

STABP01 (DIP20)

STABP01D (SO20)

#### BLOCK DIAGRAM



# STABP01

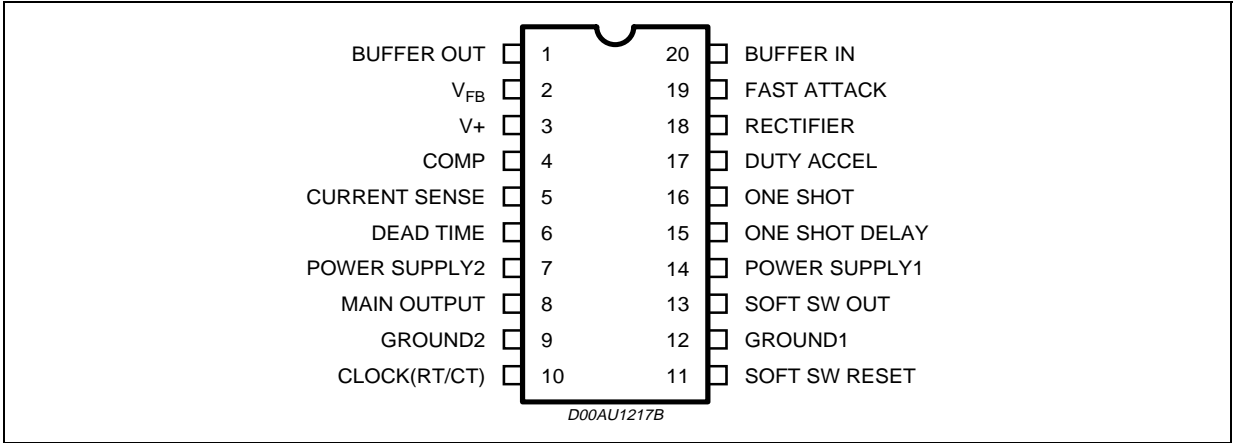
## ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
Vs	Supply Voltage	10.5	V
Io	Output Current	±0.6	A
Eo	Output Energy(capacitive load)	5	μJ
Vi	Analog Input Voltage	-0.3 to 8	V
Io	Error Amplifier Output Sink Current	10	mA
P <sub>tot</sub>	Power Dissipation at Tamb	500	mW
T <sub>stg</sub>	Storage Ambient Temperature	-65 to 150	°C
T <sub>L</sub>	Lead Temperature (soldering 10s)	300	°C
T <sub>op</sub>	Operating Temperature Range	-25 to 85	°C

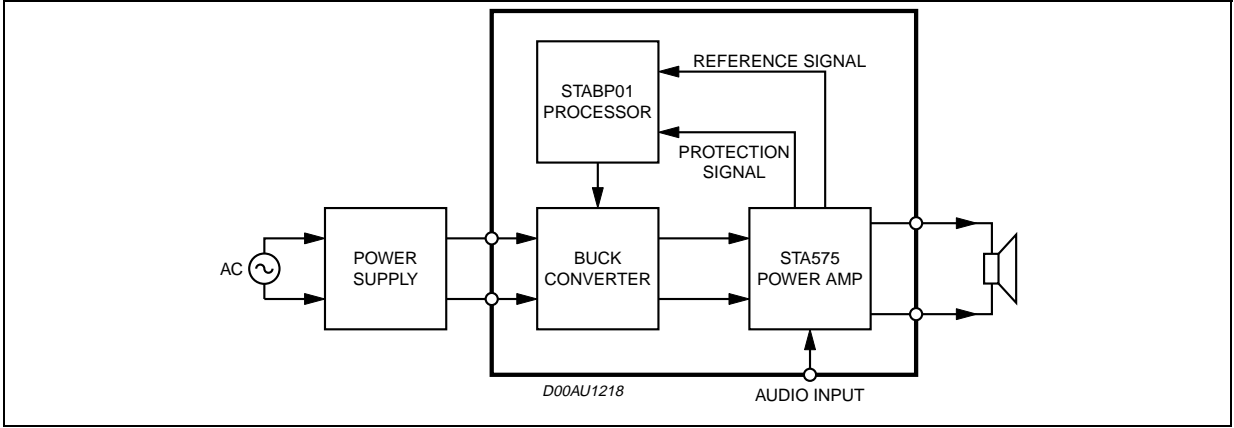
## THERMAL DATA

Symbol	Parameter	SO20	DIP20	Unit
R <sub>th j-amb</sub>	Thermal Resistance junction-ambient soldered on PCB	95	90	°C/W

## PIN CONNECTION



## TYPICAL APPLICATION CIRCUIT



**ELECTRICAL CHARACTERISTICS** ( $V_s = 10V$ ;  $R_t = 22k\Omega$ ;  $C_t = 2.2nF$ ;  $t = 25^\circ C$  unless otherwise specified)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
<b>OSCILLATOR SECTION</b>						
$f_s$	Initial Accuracy (*)	$T_j = 25^\circ C$ , SW Out Off	225	250	300	kHz
$T_s$	Temperature Stability	$T_{min} < T_{amb} < T_{max}$		5		%
	Amplitude	$V_{pin10}$ Peak to Peak		0.5		V
<b>ERROR AMP SECTION</b>						
$I_b$	Input Bias Current				1	$\mu A$
$A_{VOL}$	Open loop Gain		65	90		dB
B	Unity Gain Bandwidth		0.7	1		MHz
SVR	Supply Voltage Rejection	$6 < V_s < 10V$	60	70		dB
$I_{CMR}$	Input Common Mode Range		0		8	V
$C_{MRR}$	Common Mode Rejection Ratio			90		dB
$O_R$	Output Voltage Range	$I = 1mA$	0.5		8.5	V
<b>CURRENT SENSE SECTION</b>						
$G_v$	Gain	$V_4/V_5$ , $V_5 < 1V$ , Duty Cycle = 80%	2.7	3	3.3	V/V
$V_5$	Maximum Input Signal	$V_4 = 5V$	0.9	1	1.1	V
$I_b$	Input Bias Current	$V_5 < 0.9V$ ,			1	$\mu A$
$O_{dt}$	Delay to Output (minimum output pulse)			150	300	ns
<b>OUTPUT SECTION</b>						
$V_{OL}$	Output Low Level	$I_{sink} = 20mA$ $I_{sink} = 200mA$		0.1 1.5	0.4 2.2	V V
$V_{OH}$	Output High Level	$I_{source} = 20mA$ $I_{source} = 200mA$	9.6 7.8	9.9 8.5		V V
$t_r$	Rise Time	$T_j = 25^\circ C$ $C_L = 1nF$		50	150	ns
$t_f$	Fall Time	$T_j = 25^\circ C$ $C_L = 1nF$		50	150	ns
<b>UNDER-VOLTAGE LOCKOUT SECTION</b>						
$UV_{start}$	Start Threshold		6.3	7	7.7	V
$UV_{stop}$	Min Operating Voltage After Turn-on		4.5	5	5.5	V
<b>TOTAL STANDBY CURRENT</b>						
$I_{st}$	Start-up Current			0.5	1	mA
$I_s$	Operating Supply Current			10	20	mA

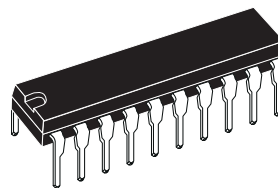
**ELECTRICAL CHARACTERISTICS** (continued)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
<b>BUFFER SECTION</b>						
I <sub>b</sub>	Input Bias Current				1	μA
B	Unity Gain Bandwidth		0.7	1		MHz
SVR	Supply Voltage Rejection	6<V <sub>s</sub> <10V	60	70		dB
I <sub>CMR</sub>	Input Common Mode Range		0		9	V
O <sub>R</sub>	Output Range	I = 1mA	0.5		8.5	V
<b>SOFT SWITCH SECTION</b>						
V <sub>OL</sub>	Output Low Level	I <sub>sink</sub> =20mA I <sub>sink</sub> =200mA		0.1 1.5	0.4 2.2	V V
V <sub>OH</sub>	Output High Level	I <sub>source</sub> =20mA I <sub>source</sub> =200mA	9.6 7.8	9.9 8.5		V V
t <sub>r</sub>	Rise Time	T <sub>j</sub> =25°C CL=1nF		50	150	ns
t <sub>f</sub>	Fall Time	T <sub>j</sub> =25°C CL=1nF		50	150	ns
V <sub>reset</sub>	Reset Level			1		V
<b>FAST ATTACK CONTROL SECTION</b>						
G <sub>diff</sub>	Differential Gain		16	18	20	V/V
OS <sub>th</sub>	Level for one shot		0.9	1	1.1	V
OSD <sub>th</sub>	Level for one shot delay		0.9	1	1.1	V
I <sub>15leak</sub>	Leakage pin 15	V <sub>15</sub> = 0.8V			0.2	μA
I <sub>17leak</sub>	Leakage pin 17	V <sub>17</sub> = 10V, V <sub>16</sub> = 0V			0.2	μA

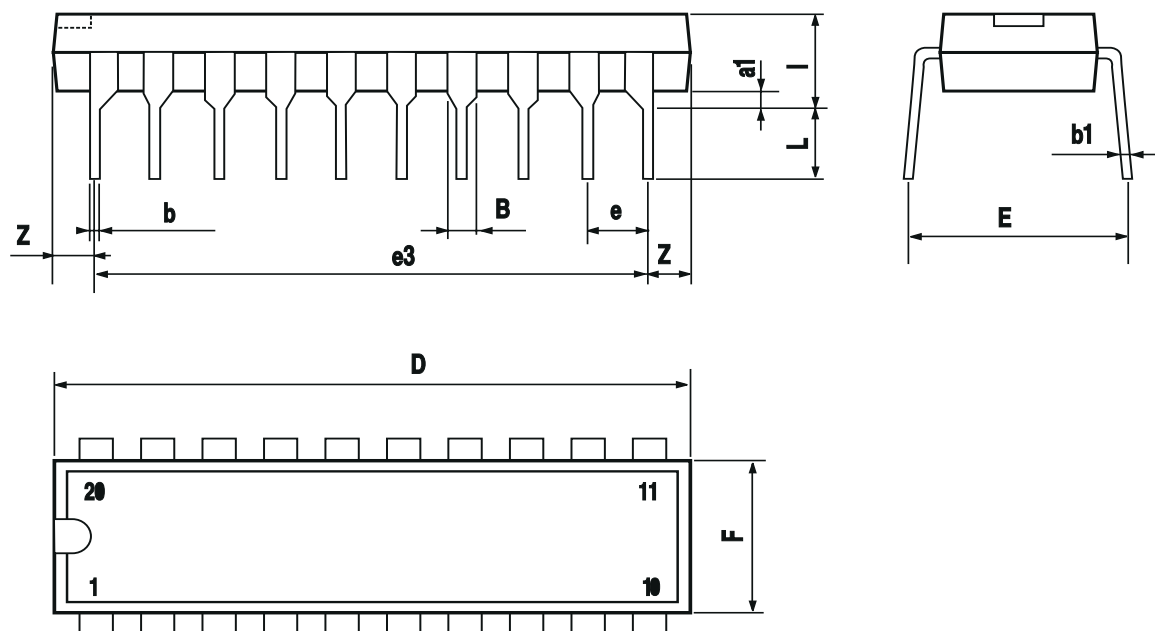
(\*) Rt, Ct = 1% precision component

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
a1	0.254			0.010		
B	1.39		1.65	0.055		0.065
b		0.45			0.018	
b1		0.25			0.010	
D			25.4			1.000
E		8.5			0.335	
e		2.54			0.100	
e3		22.86			0.900	
F			7.1			0.280
I			3.93			0.155
L		3.3			0.130	
Z			1.34			0.053

## OUTLINE AND MECHANICAL DATA

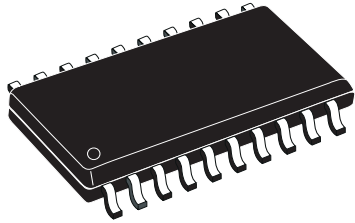


**DIP20**

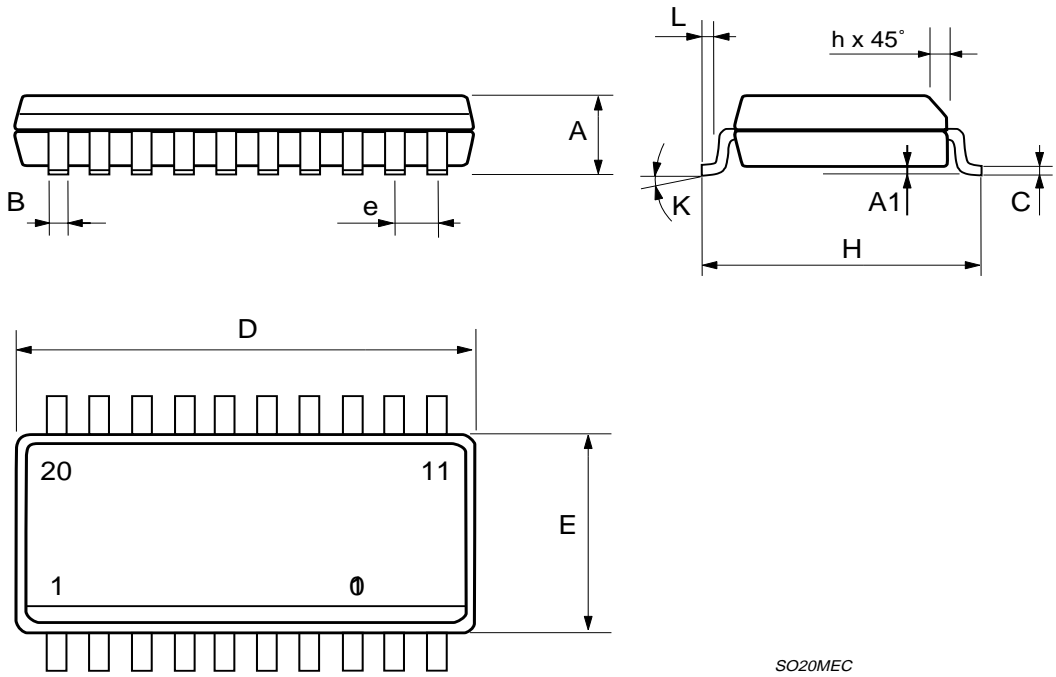


DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	2.35		2.65	0.093		0.104
A1	0.1		0.3	0.004		0.012
B	0.33		0.51	0.013		0.020
C	0.23		0.32	0.009		0.013
D	12.6		13	0.496		0.512
E	7.4		7.6	0.291		0.299
e		1.27			0.050	
H	10		10.65	0.394		0.419
h	0.25		0.75	0.010		0.030
L	0.4		1.27	0.016		0.050
K	0° (min.)8° (max.)					

**OUTLINE AND  
MECHANICAL DATA**



**SO20**



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