



STABP01

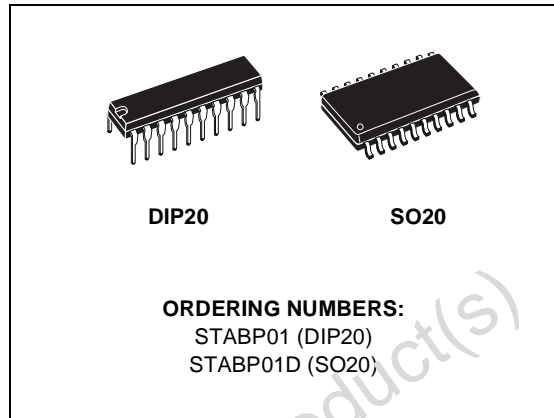
BASH[®] DIGITAL FIDELITY DIGITAL PROCESSOR

■ BASH[®] LICENCE REQUIRED

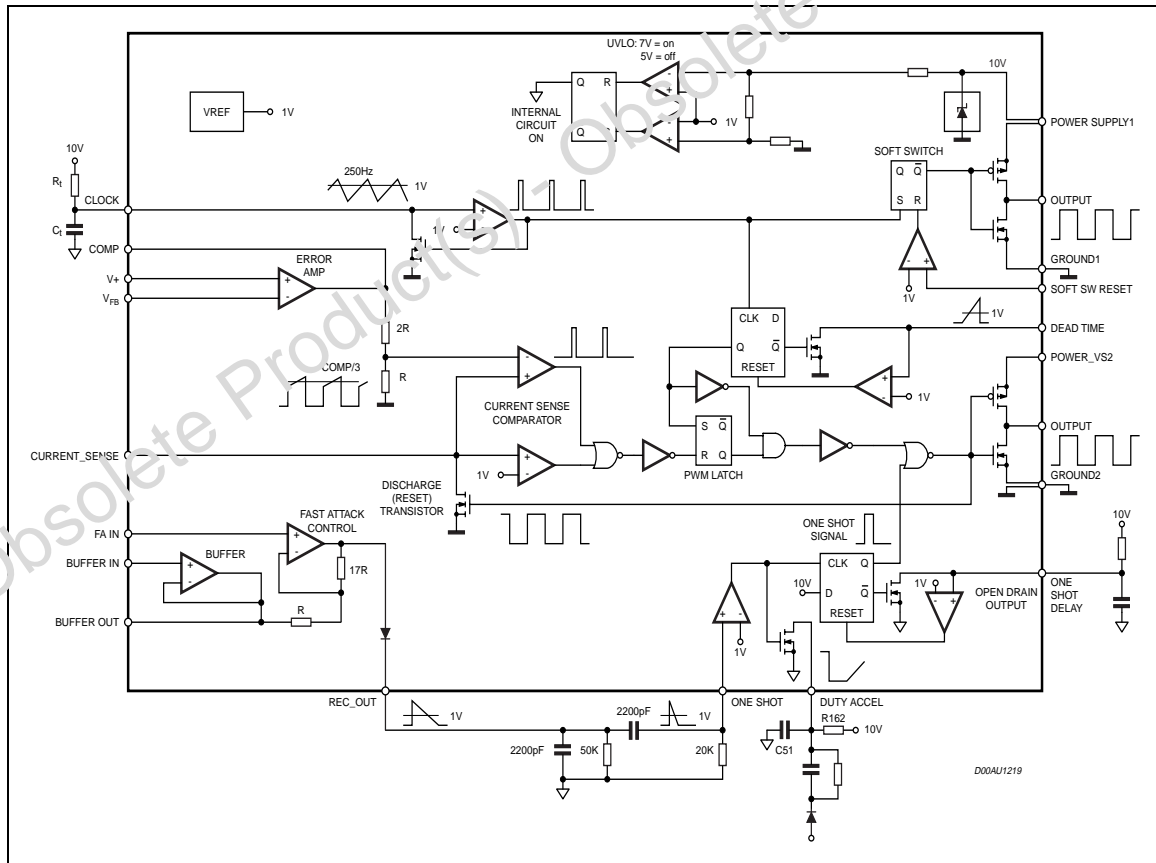
DESCRIPTION

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.



BLOCK DIAGRAM



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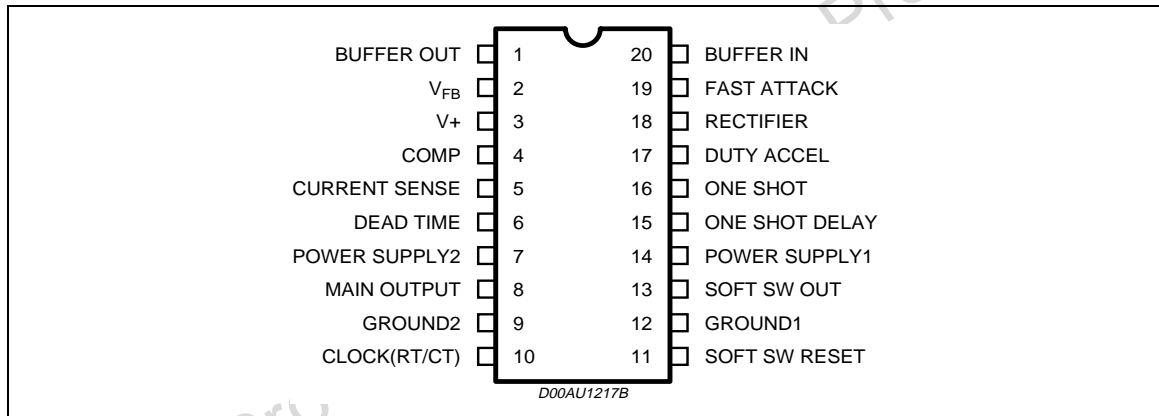
ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V _s	Supply Voltage	10.5	V
I _o	Output Current	±0.6	A
E _o	Output Energy(capacitive load)	5	μJ
V _i	Analog Input Voltage	-0.3 to 8	V
I _o	Error Amplifier Output Sink Current	10	mA
P _{tot}	Power Dissipation at Tamb	500	mW
T _{stg}	Storage Ambient Temperature	-65 to 150	°C
T _L	Lead Temperature (soldering 10s)	300	°C
T _{op}	Operating Temperature Range	-25 to 85	°C

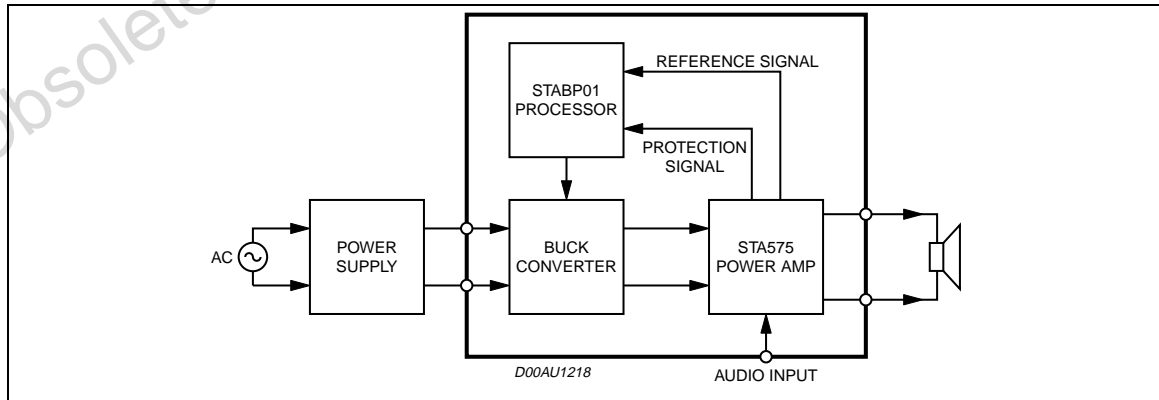
THERMAL DATA

Symbol	Parameter	SO20	DIP20	Unit
R _{th j-amb}	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
OSCILLATOR SECTION						
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
ERROR AMP SECTION						
I_b	Input Bias Current				1	μA
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
CURRENT SENSE SECTION						
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	μA
O_{dt}	Delay to Output (minimum output pulse)			150	300	ns
OUTPUT SECTION						
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
UNDER-VOLTAGE LOCKOUT SECTION						
UV_{start}	Start Threshold		6.3	7	7.7	V
UV_{stop}	Min Operating Voltage After Turn-on		4.5	5	5.5	V
TOTAL STANDBY CURRENT						
I_{st}	Start-up Current			0.5	1	mA
I_s	Operating Supply Current			10	20	mA

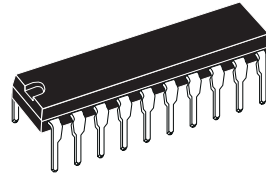
STABP01**ELECTRICAL CHARACTERISTICS** (continued)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
BUFFER SECTION						
I _b	Input Bias Current				1	μA
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		9	V
O _R	Output Range	I = 1mA	0.5		8.5	V
SOFT SWITCH SECTION						
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°C CL=1nF		50	150	ns
t _f	Fall Time	T _j =25°C CL=1nF		50	150	ns
V _{reset}	Reset Level			1		V
FAST ATTACK CONTROL SECTION						
G _{diff}	Differential Gain		16	18	20	V/V
OS _{th}	Level for one shot		0.9	1	1.1	V
OSD _{th}	Level for one shot delay		0.9	1	1.1	V
I _{15leak}	Leakage pin 15	V ₁₅ = 0.8V			0.2	μA
I _{17leak}	Leakage pin 17	V ₁₇ = 10V, V ₁₆ = 0V			0.2	μA

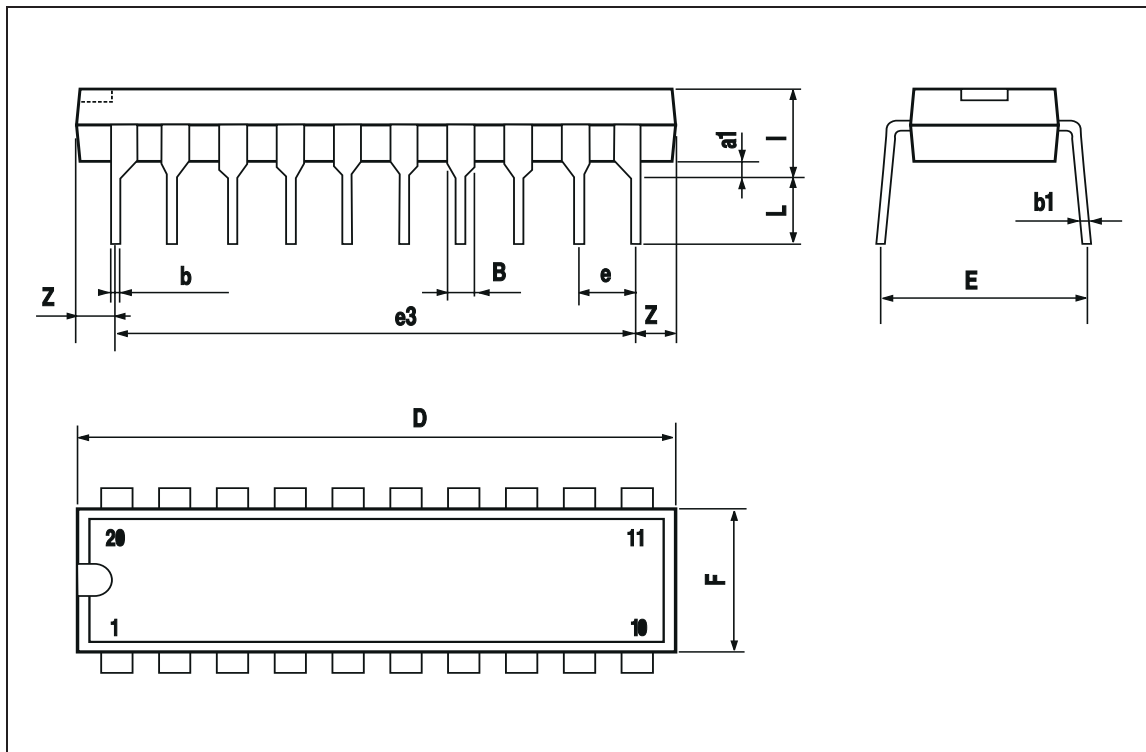
(*) R_t, C_t = 1% precision component

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



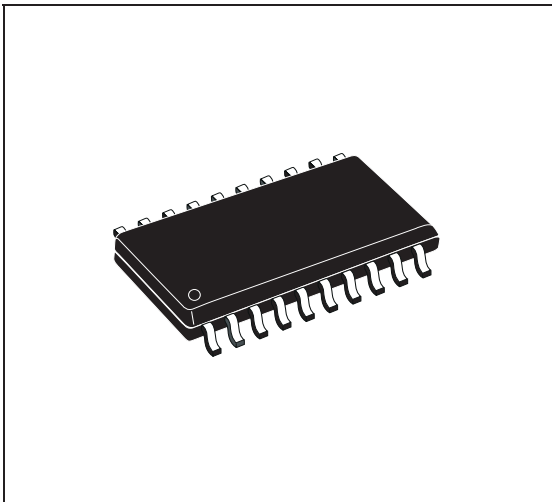
DIP20



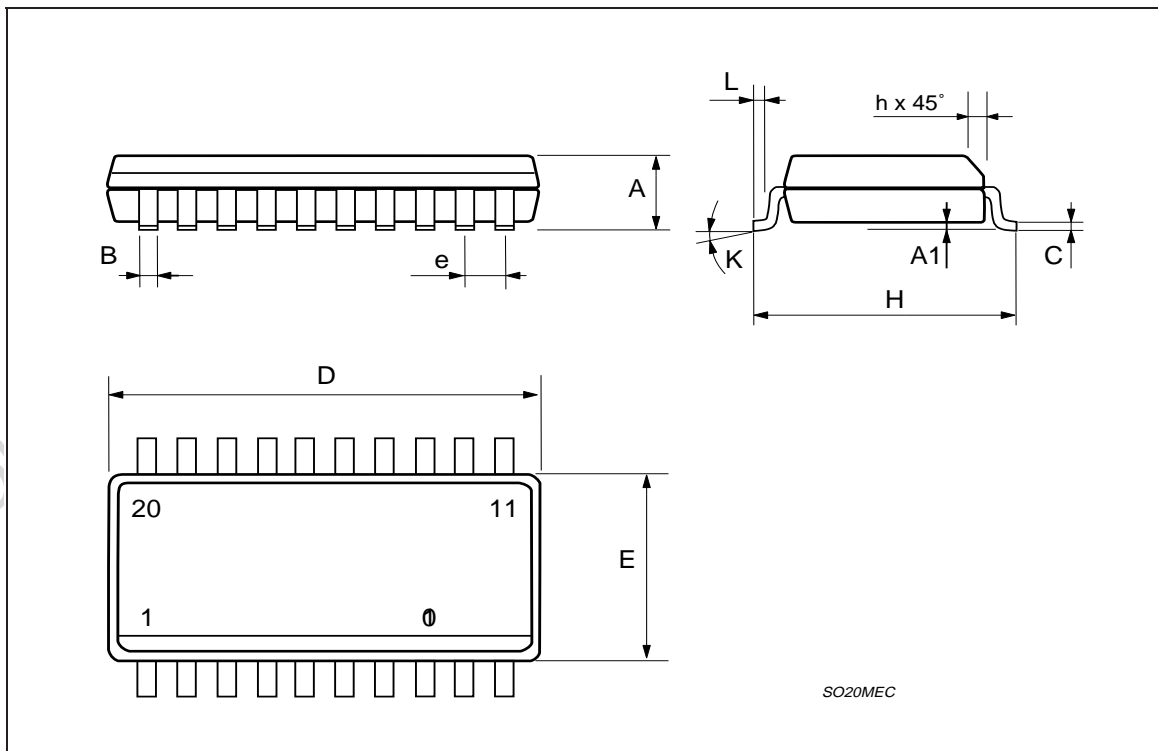
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DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	2.35		2.65	0.093		0.104
A1	0.1		0.3	0.004		0.012
B	0.33		0.51	0.013		0.020
C	0.23		0.32	0.009		0.013
D	12.6		13	0.496		0.512
E	7.4		7.6	0.291		0.299
e		1.27			0.050	
H	10		10.65	0.394		0.419
h	0.25		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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