Piezoelectric Transformer LCD CCFL Controller

Features:

- 6V~20V Operation Voltage
- Full Bridge & Half Bridge Fixed Frequency
- Resonance ZVS Control
- Boost SYNC Control
- 1 Bit change 0V~3V, 3V~0V Dimming
- Built-in ADC For Digital Burst Model Dimming
- Open lamp & short circuit protection
- Low power CMOS process
- Independence 6 ports control for 6 Lamps

Application:

- LCD TV & Monitor
- Digital Camera
- Tablet PC & PDA
- Cold Cathode Fluorescent Lamps system
- Navigation Devices (GPS Equipment)
- Notebook Computer
- Video Phone/Door Phone
- Personal Digital Assistants

Description:

The AL728 is the highest performance with digital and analog control design circuit for driving Piezoelectric transformer product applications. The device is particularly suitable for use in products such as CCFL applications. The AL728 contains 8 bits ADC, short circuit protections. It can autotrace calibrate Piezoelectric Transformer frequency changes. The device also supports power saving capacity.

Absolute Maximum Ratings

VCC ---------- 18V
Operating Junction Temperature---- 150℃
Storage Temperature-----－55℃ to 150℃

Recommended Operating Conditions

Input Voltage VCC ---------- 6V to 20V
Brightness Voltage ---------- 0V to 3.0V
Enable ---------- 0V or 3V
CPU Operating Temperature －20℃ to +85℃
CPU Operating Frequency ---- 8MHz

Electrical Characteristics (TA=25℃、Vcc=18℃)

Parameter	SYM	Conditions	MIN .	TYP.	MAX.	UNIT.
Operating Voltage	V_{CC}		6		20	V
Operating Current	I_{OP}	Enable = V_{DD}		3		MA
Output Drive Current (AHS,BHS,SYNC)	I_{OH}	V_O = GND		25		MA
(ALS,BLS,BOOST)	I_{OL}	V_O = 18V		25		MA
Operating Frequency	F_{OSC}			8		MHz
Reference Voltage	V_{DD}	$V_{CC} \geq$ 6V		3		V
Standby Current	I_{SB}	Enable = GND V_{CC} = 18V		15		UA

Order Information

TA	P W	SSOP 28 pin				
0℃ to 70℃	**AL728PW**					

1.The PW package is available taped and reeled. ADD TR suffix to device type (e.g. AL728PWTR) to order quantities of 1000 devices per reel.
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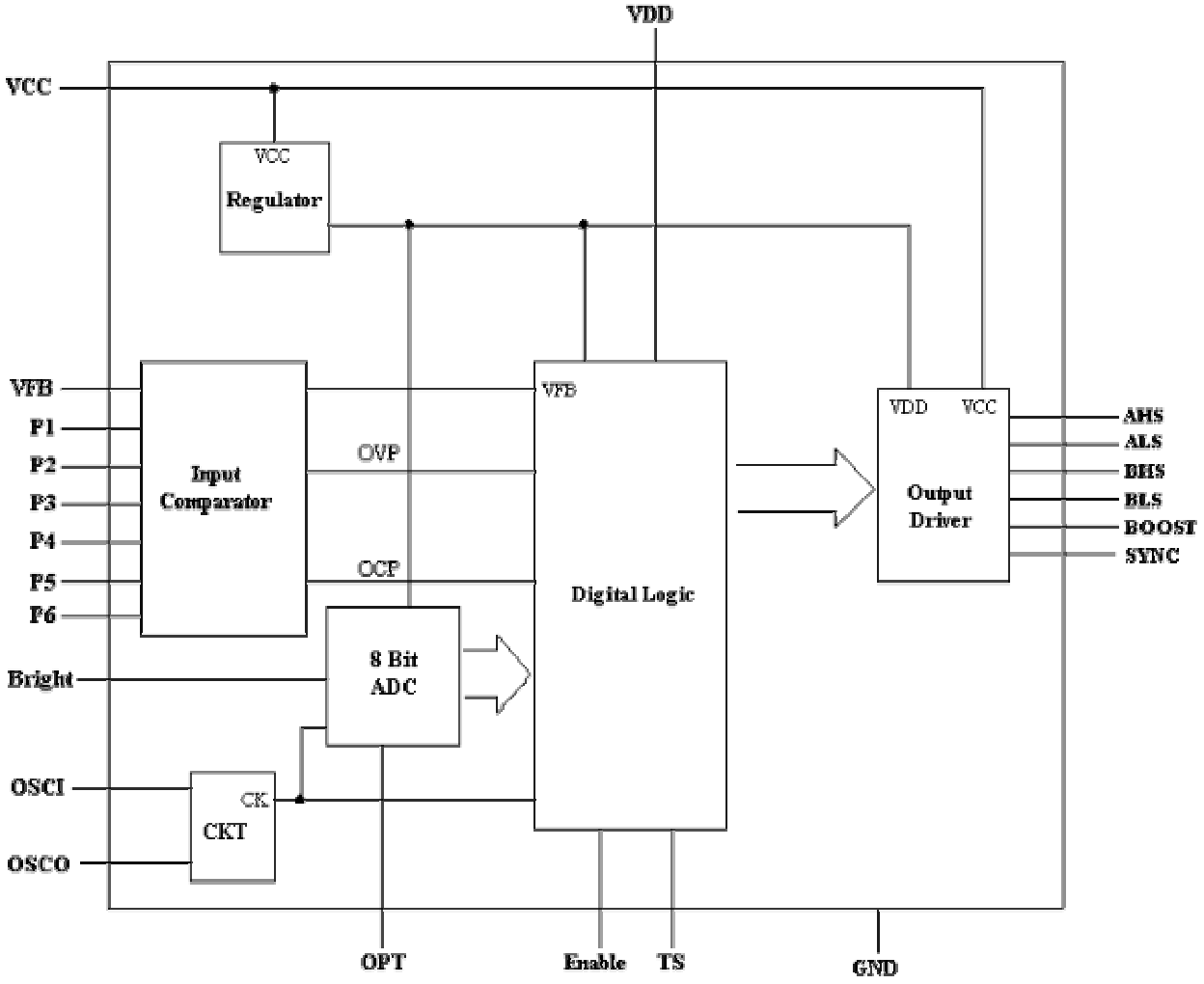
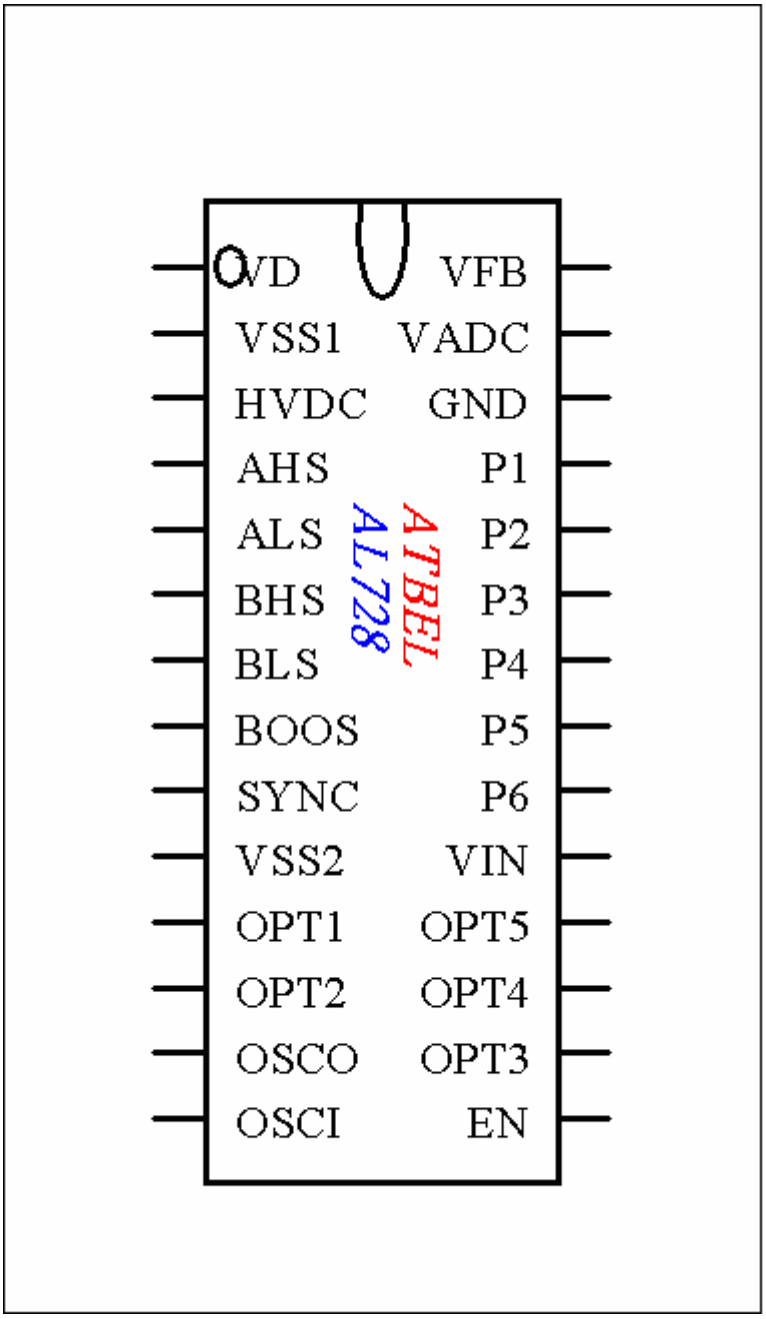
Function Diagram

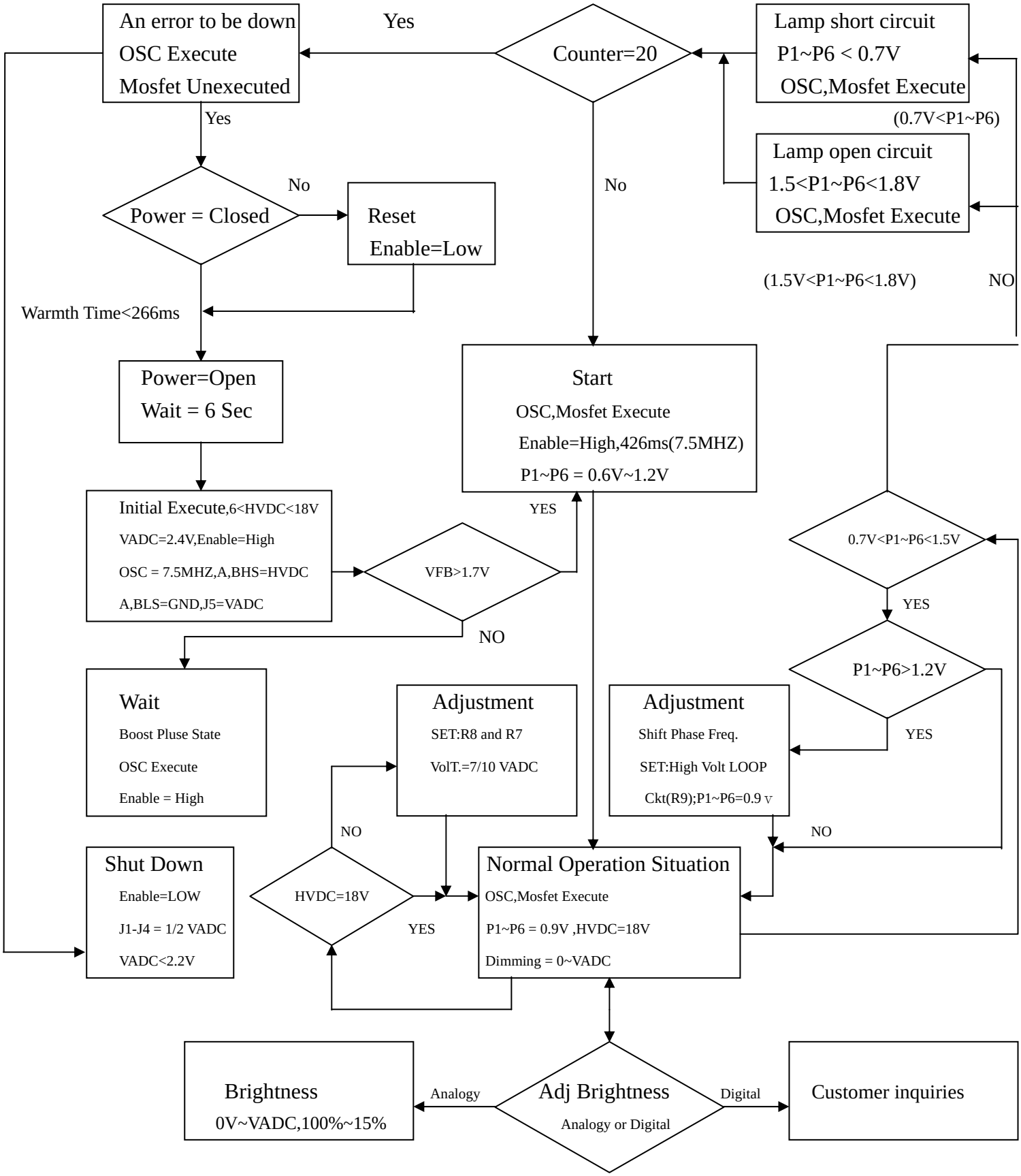


SSOP:PIN Description:

NO.	Symbol	I/O	Description
1	VD	I	VDD ref adj (Match for A/D board control level)
2	VSS1	GND	Ground.
3	HVDC	PWR	Supply voltage input +6V ~ 20V.
4	AHS	O	Gate driver output for power MOSFET.
5	ALS	O	
6	BHS	O	
7	BLS	O	
8	BOOST	O	
9	SYNC	O	
10	VSS2	GND	Ground.
11	OPT1	I	Reference frequency for PZT.
12	OPT2	I	Reference frequency for PZT.
13	OSCO	O	Crystal (Resonant) Oscillator output
14	OSCI	I	Crystal (Resonant) Oscillator input.
15	EN	I	The enable will turn the chip ON/OFF
16	OPT3	I	Reference frequency for PZT.
17	OPT4	I	Reference frequency for PZT.
18	OPT5	I	Dimmer control option. OPT5 | Short = VDD | Open=GND Control | 3V~0V(Light) | 0V~3V(Light)
19	BRI	I	Dimmer control input
20	P6	I	Over voltage protection & Over Current protection
21	P5	I	Over voltage protection & Over Current protection.
22	P4	I	Over voltage protection & Over Current protection
23	P3	I	Over voltage protection & Over Current protection.
24	P2	I	Over voltage protection & Over Current protection.
25	P1	I	Over voltage protection & Over Current protection.
26	GND	GND	GND
27	VADC	PWR	8 bit ADC output
28	VFB	I	Voltage feedback sense input



PZT 6~18V INVERTER CIRCUIT STATE DIAGRAM

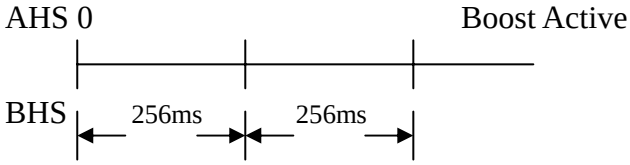


Characteristic:

- Digital phase modulation control CCFL lamps.
- Steady frequency & Accurate driver circuit.

Application circuit characterization:

(1) Power ON,OSC resonance,OPT1~OPT5=High ;VIN=Low,Mode=Low,
P1~P6=1.5,TS=30HZ,VFB=Low, Output Single Diagram



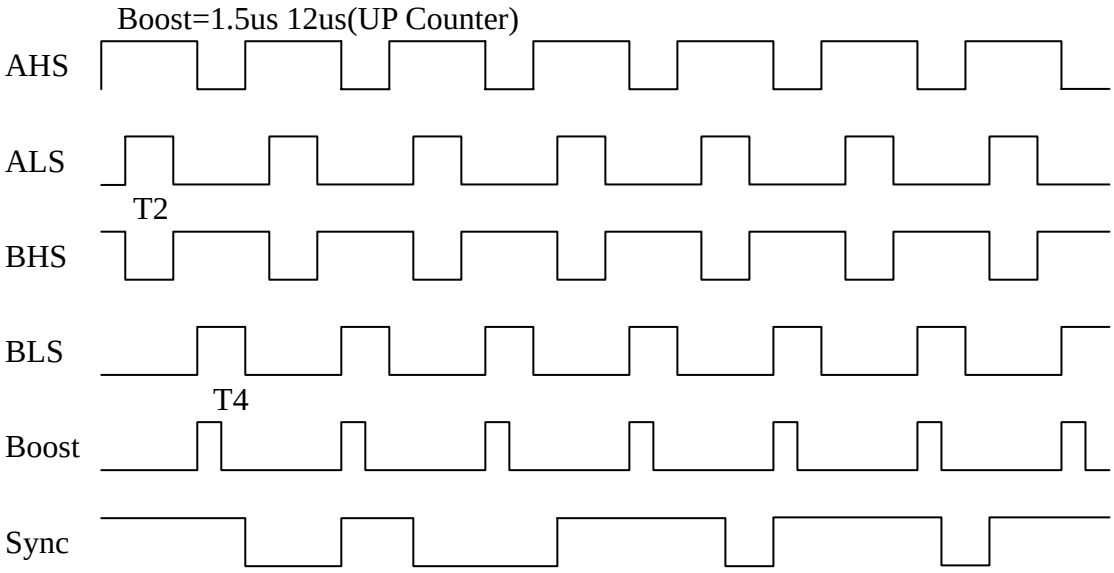
(1) Power ON delay time = 256ms

(2) EN=0→ EN=1 delay time = 256ms

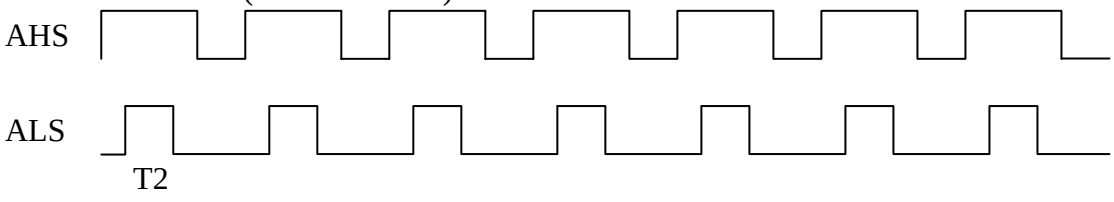
(3) (1)+(2) = 512ms

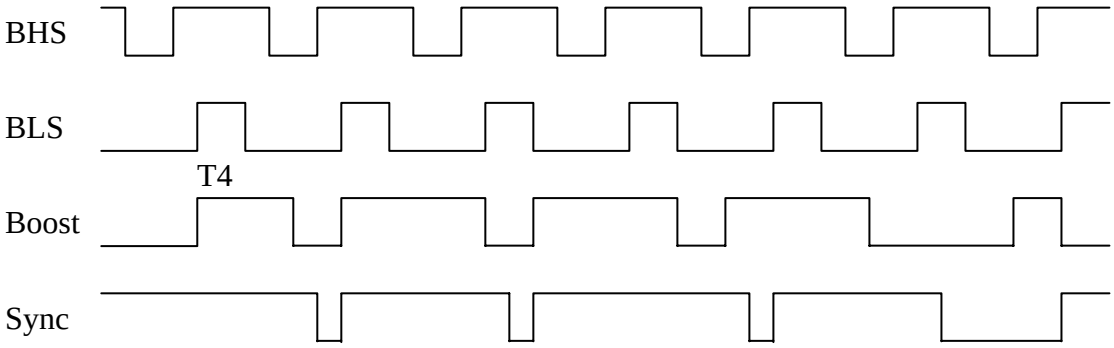
(1) After Boost & SYNC = SOFT Start
When EN=0,AHS、BHS、SYNC=0,ALS、BLS、BOOST=1,OSC Unresponsive
→Sleeping mode

(a) EN=1、VFB=0

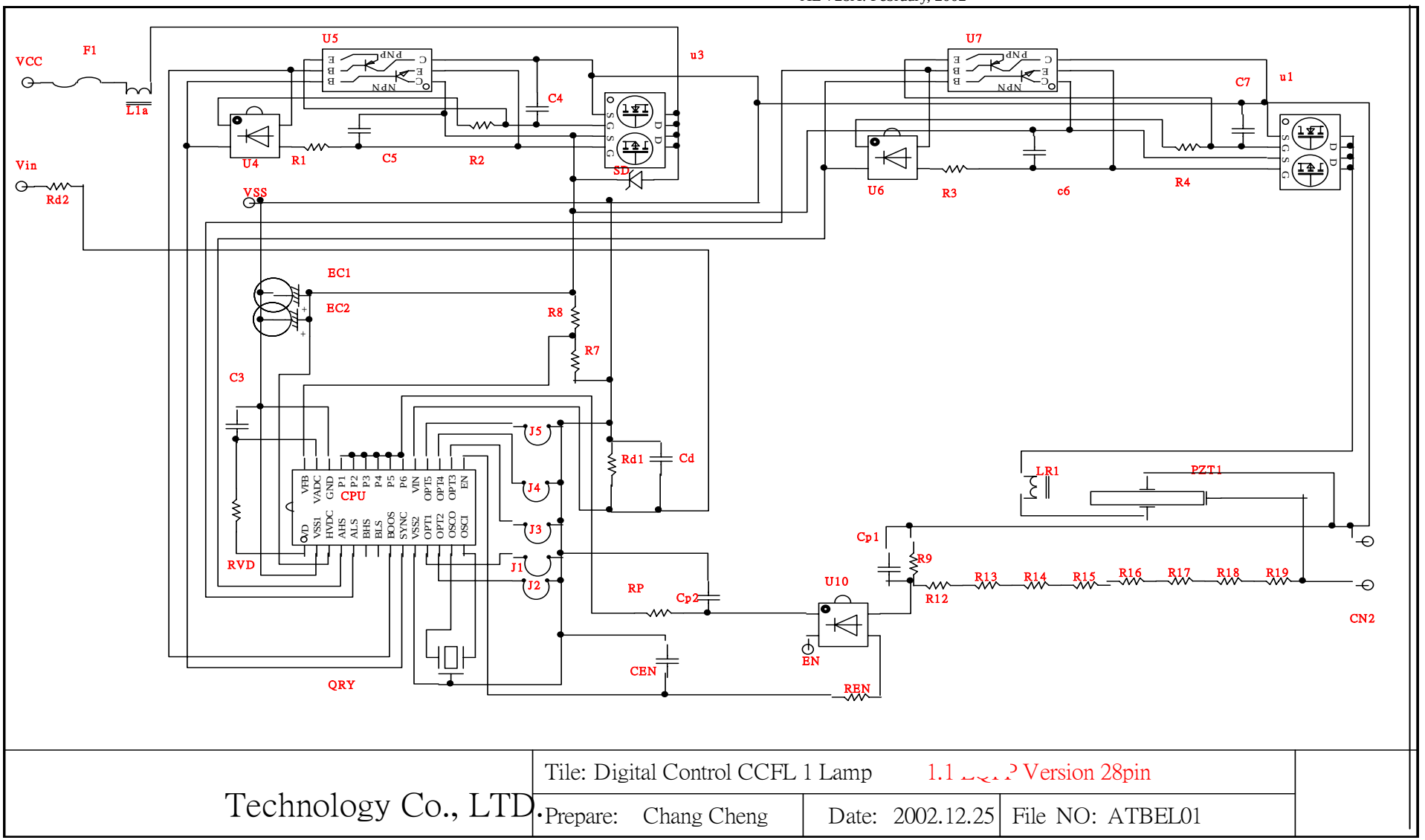


(b)EN=1、VFB=1

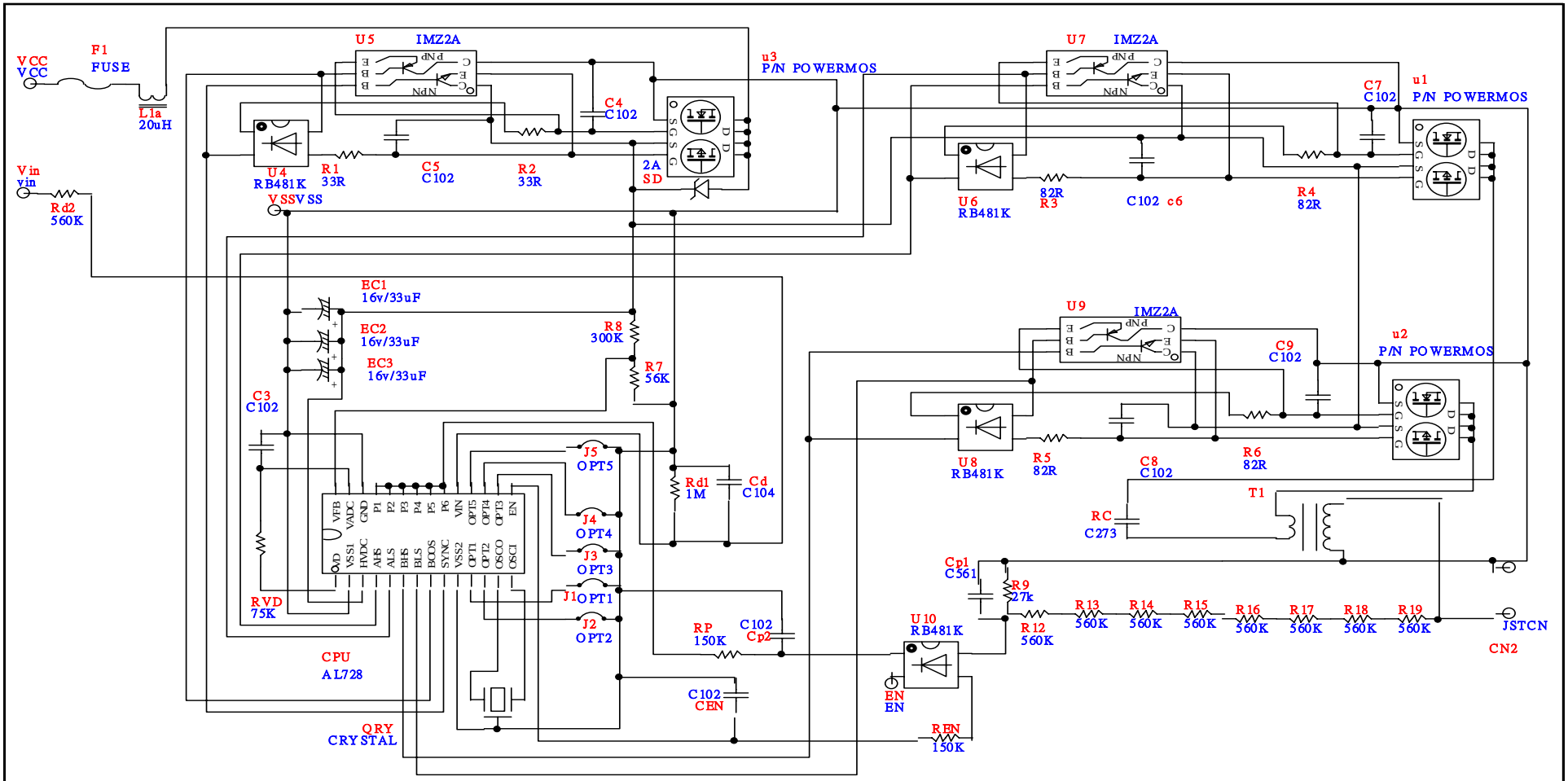




* VBF always = High, Boost=Low, SYNC=High.

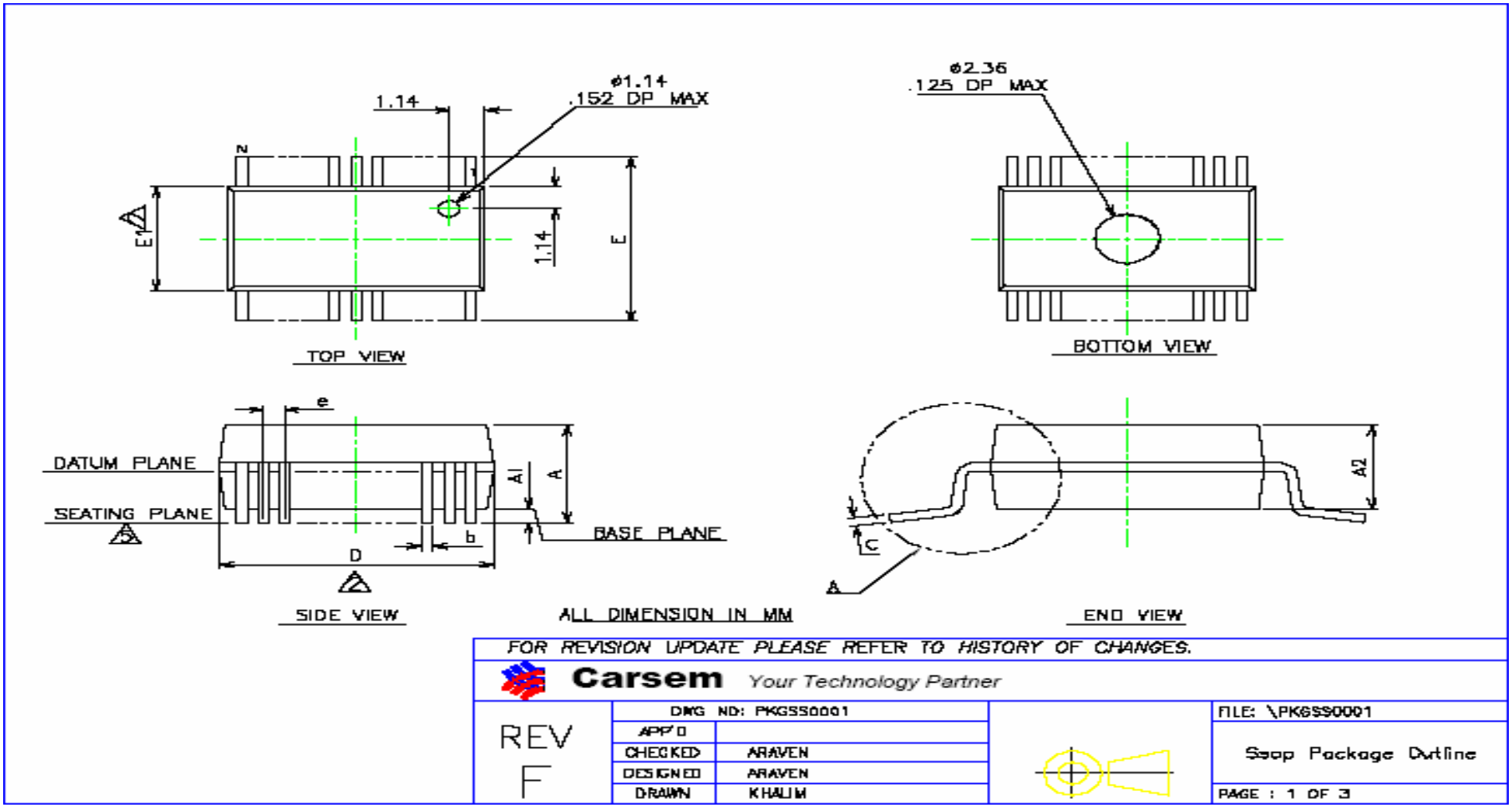


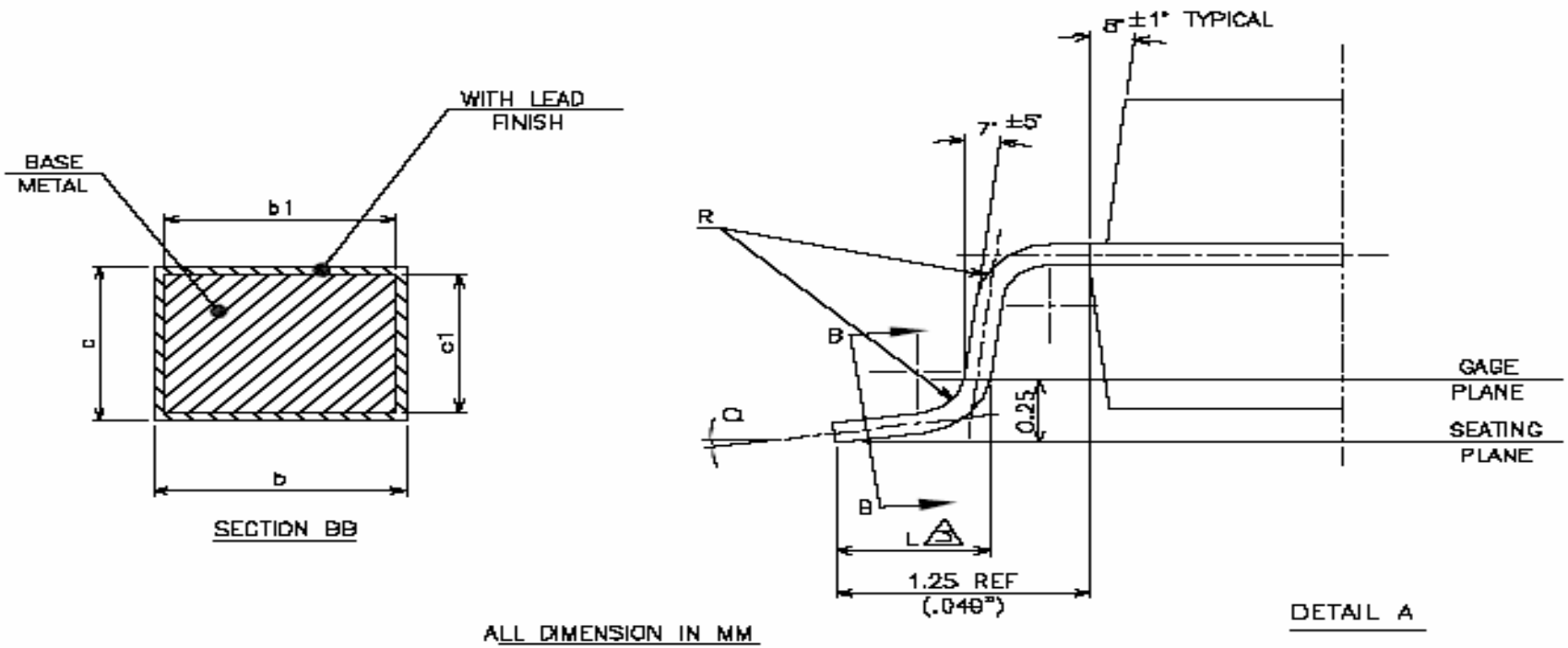
Technology Co., LTD.	Tile: Digital Control CCFL 1 Lamp 1.1 [illegible] Version 28pin		
	Prepare: Chang Cheng	Date: 2002.12.25	File NO: ATBEL01



科技股份有限公司	圖名 數位式 冷陰極管驅動IC 半橋 1 LAMP		1.1版
	製圖員 Chang Cheng	日期 2002.12.25	檔案編號NO:ATBEL01

SSOP-28 PIN PW PACKAGE





FOR REVISION UPDATE PLEASE REFER TO HISTORY OF CHANGES.

Carsem Your Technology Partner

REV F	DWG NO: PKGSS0001		FILE: \PKGSS0001
	APP'D		Soop Package Outline
	CHECKED	ARAVEN	
	DESIGNED	ARAVEN	
	DRAWN	KHALIM	PAGE : 1 OF 3

SYMBOL	COMMON DIMENSION						NOTE
	MIN		NOM		MAX		
	INCH	MM	INCH	MM	INCH	MM	
A	.068	1.73	.073	1.86	.078	2.00	
A1	.002	0.05	.005	0.13	.008	0.20	
A2	.065	1.65	.069	1.75	.073	1.85	
b	.009	0.22	.012	0.30	.015	0.38	
b1	.009	0.22	.012	0.30	.013	0.33	
c	.004	0.09	.006	0.15	.010	0.25	
c1	.004	0.09	.006	0.15	.008	0.21	
D	SEE VARIATIONS						2
E	.291	7.40	.307	7.80	.323	8.20	
E1	.197	5.00	.209	5.30	.221	5.60	2
e	.026 INCH 0.65 MM BSC						
L	.022	0.55	.030	0.75	.037	0.95	3
N	SEE VARIATIONS						4
R	.004	0.09					
α	0°		4°		8°		

NOTE	2						4 , 7
VARIATIONS	D						N
	MIN		NOM		MAX		
	INCH	MM	INCH	MM	INCH	MM	
AE	.271	6.90	.283	7.20	.295	7.50	20
AG	.311	7.90	.323	8.20	.334	8.50	24
AH	.390	9.90	.402	10.20	.413	10.50	28

NOTE:

1– DIMENSIONING AND TOLERANCING PER ANSI Y14.5M–1982
2– "D" & "E1" ARE REFERANCE DATUMS AND DO NOT INCLUDE MOLD DEFLASH OR PROTRUSIONS.BUT DO INCLUDE MOLD MISMATCH AND ARE MEASURED AT THE PARTING LINE.MOLD DEFLASH OR PROTRUSIONS SHALL NOT EXCEED 0.15(.006") PER SIDE.
END FLASH FROM THE PACKAGE BODY SHALL NOT EXCEED 0.15(.006") PER SIDE (D).
3– DIMENSION L IS THE LENGTH OF TERMINAL FOR SOLDERING TO A SUBSTRATE.
4– 'N' IS THE NUMBER OF THE TERMINAL POSITIONS.
5– FORMED LEADS SHALL BE PLANAR WITH RESPECT TO ONE ANOTHER WITHIN 0.10(.004") AT SEATING PLANE.
6– DIMENSION b DOES NOT INCLUDE DAMBAR PROTRUSION/INTRUSION.
DAMBAR PROTRUSION TO BE 0.13mm(.005") MAX PER SIDE.
△7– CURRENTLY ONLY 20/24/28 LD ARE TOOLED UP.

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REV	DWG NO: PKGSS0001		FILE: \PKGSS0001
F	APP'D		Soop Package Outline
	CHECKED	ARAVEN	
	DESIGNED	ARAVEN	
	DRAWN	KHALIM	PAGE: 3 OF 3