Data Sheet

Type Description : SPS Secondary Supervisor IC

Product Name : EST.7610V/VS

Reversion : Rev 1.0

Reversion Date : 05, 2011

Page : 13 Pages

Description

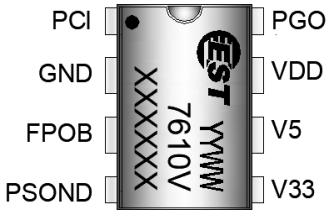
The EST7610V is a PC switching power supply monitor with minimum external components. It provides protection circuits, power-good output (PGO), fault protection output (FPOB) and on/off control (PSONB).

The over-voltage protection (OVP) and under-voltage protection (UVP) monitors 3.3V, 5V and 12V (12V supplies voltage detects via VDD pin). When an OV or UV condition is detected, the fault protection output (FPOB) is latched high and the power good output (PGO) go low. PSONB from low to high resets the latch. When OV, UV and PGI are all right, the power good output (PGO) will be issue. A built-in 4ms delay and 38ms debounce for PSONB turn off FPOB.

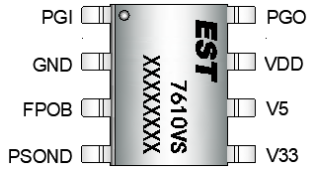
Features

- Over-voltage protection (OVP) for 3.3V, 5V and 12V supplies
- Under-voltage protection (UVP) for 3.3V, 5V and 12V supplies
- Fault protection output (FPOB) with open drain output
- Power good output (PGO) with open drain output
- 300ms PGO delay time
- 38ms PSONB debounce time
- 35us OVP debounce time
- 73us UVP debounce time
- 73us PGI debounce time
- 4ms FPOB turn off delay time
- 75ms UVP delay time

Pin Assignments



DIP-8L

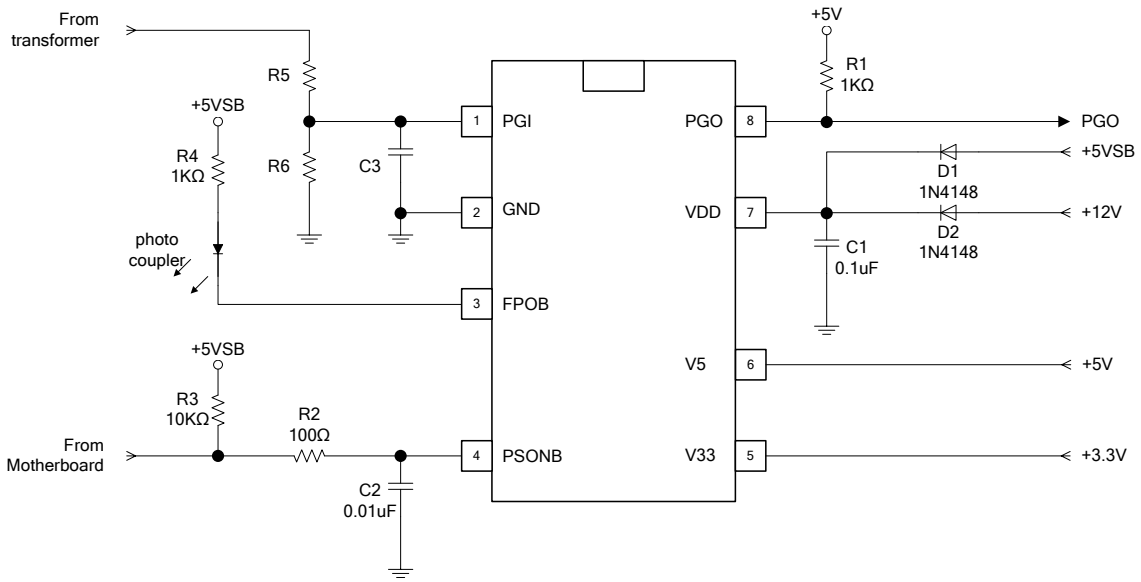


SOP-8L

Ordering Information

Order Number	Package Type	Packing	Top Marking
EST7610V	DIP-8 (RoHS)	Tube	EST.7610V
EST7610VS	SOP-8 (RoHS)	Tube	EST.7610VS
EST7610VSR	SOP-8 (RoHS)	Tape & Reel	EST.7610VS

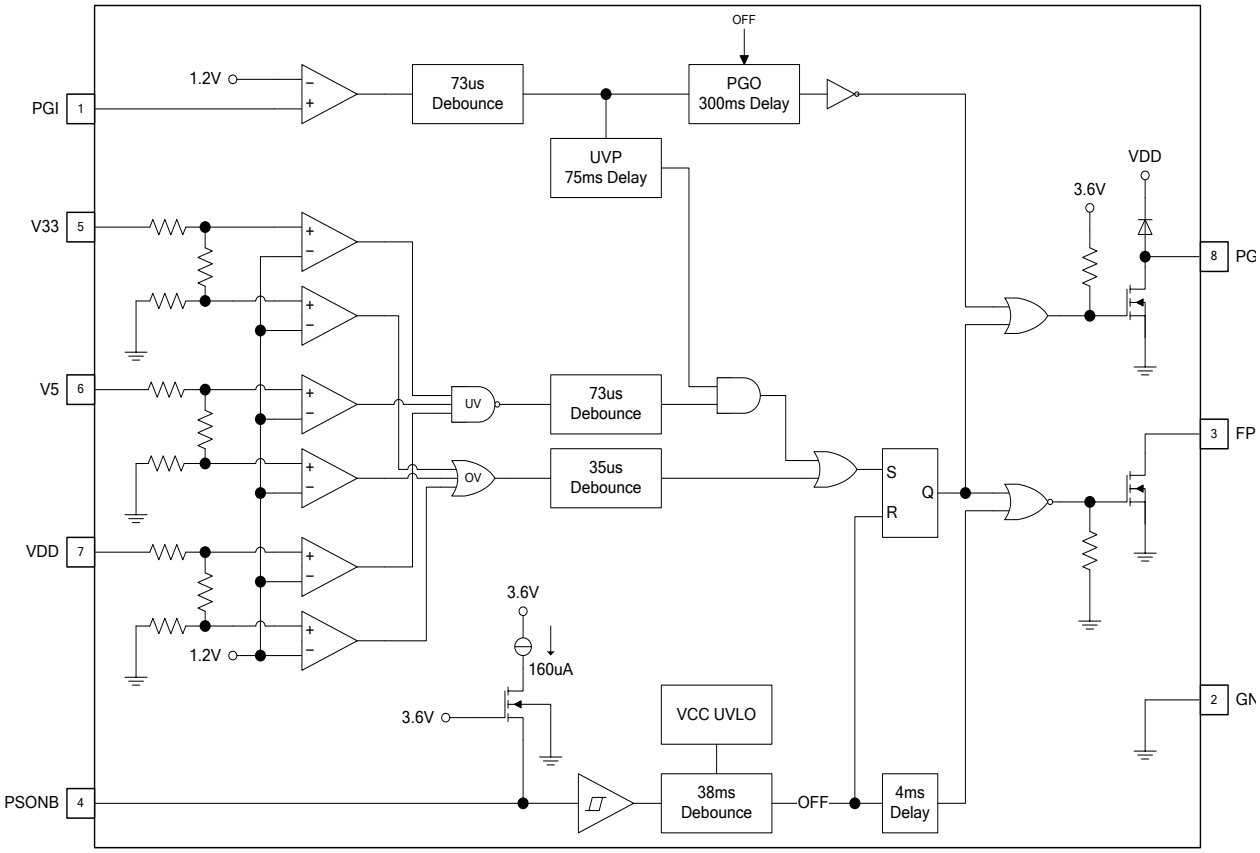
Typical Application Circuit



Pin Description

Pin	Symbol	Function
1	PGI	AC power good input pin.
2	GND	Power supply ground.
3	FPOB	Open drain output of the fault protection.
4	PSONB	ON/OFF control input pin.
5	V33	3.3V input pin for OVP and UVP.
6	V5	5V input pin for OVP and UVP.
7	VDD	Power supply. +12V input pin for OVP and UVP.
8	PGO	Open drain output of power good signal.

Block Diagram



Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Supply Voltage	VDD	-0.3	16	V
Supply Voltage Rising Time		1	-	ms
Input Voltage	PGI, PSONB, V5, V33	-0.3	7	V
Output Voltage	PGO, FPOB	-0.3	16	V
Operating Temperature Range		-40	125	℃
Storage Temperature Range		-65	150	℃
Soldering Temperature		-	260	℃

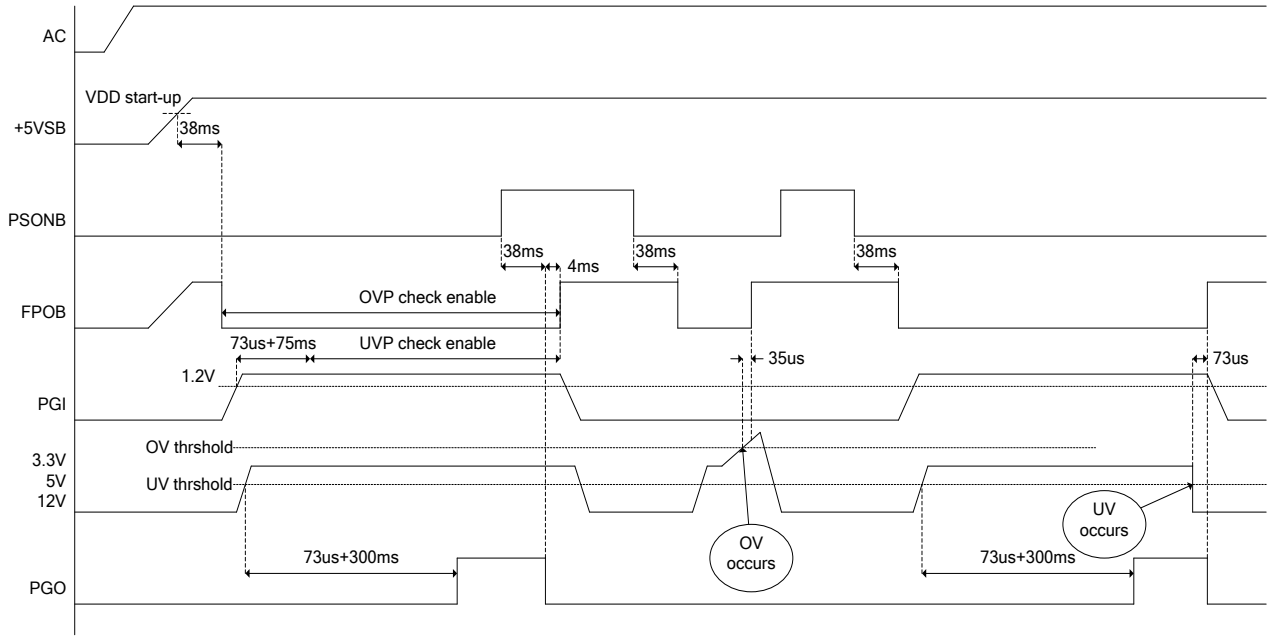
Note: Stresses above those listed may cause permanent damage to the devices.

Electrical Characteristics (T_A=25℃, VDD=5V, unless otherwise noted.)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
VDD Power Supply						
VDD Operating Voltage	VDD		4	5	15	V
IDD Supply Current	I_{DD}	PSONB=5V	-	-	1	mA
VDD Start-up Voltage			-	3.4	3.6	V
VDD Under Voltage Lockout after Start-up			2.8	3.0	-	V
Over Voltage and Under Voltage Detection						
Over Voltage Threshold	V33		3.7	3.8	3.9	V
	V5		5.7	5.85	6.0	V
	VDD		12.9	13.25	13.6	V
Under Voltage Threshold	V33		2.55	2.69	2.83	V
	V5		4.1	4.3	4.47	V
	VDD		8.8	9.3	9.8	V
PGI Threshold Voltage	PGI 1		1.16	1.20	1.24	V
Temperature Coefficient of Voltage	TCV		-0.02	-	0.02	% / ℃
Output						
Low Level Output Voltage	$V_{OL\ (FPOB)}$	I_{SINK}=20mA	-	-	0.4	V
	$V_{OL\ (PGO)}$	I_{SINK}=20mA	-	-	0.4	V
Leakage Current of FPOB and PGO	I_{LKG}		-1	-	1	uA
PSONB Control						
High Level Input Voltage	V_{IH}		1.8	-	-	V
Low Level Input Voltage	V_{IL}		-	-	1.0	V
Pull-up Current			-	160	-	uA
Timing						
PSONB Debounce Time	t_{db1}		24	38	52	mS
OVP Debounce Time	t_{db2}		20	35	50	uS
UVP Debounce Time	t_{db3}		47	73	100	uS
PGI Debounce Time	t_{db4}		47	73	100	uS
PGO Delay Time	t_{delay1}		200	300	400	mS
FPOB Turn-off Time (PGO to FPOB)	t_{delay2}		2	4	6	mS
UVP Enable Delay Time	$t_{delay3-1}$	PGI < PGI2	Disable UVP check			
	$t_{delay3-2}$	PGI > PGI2	49	75	100	mS

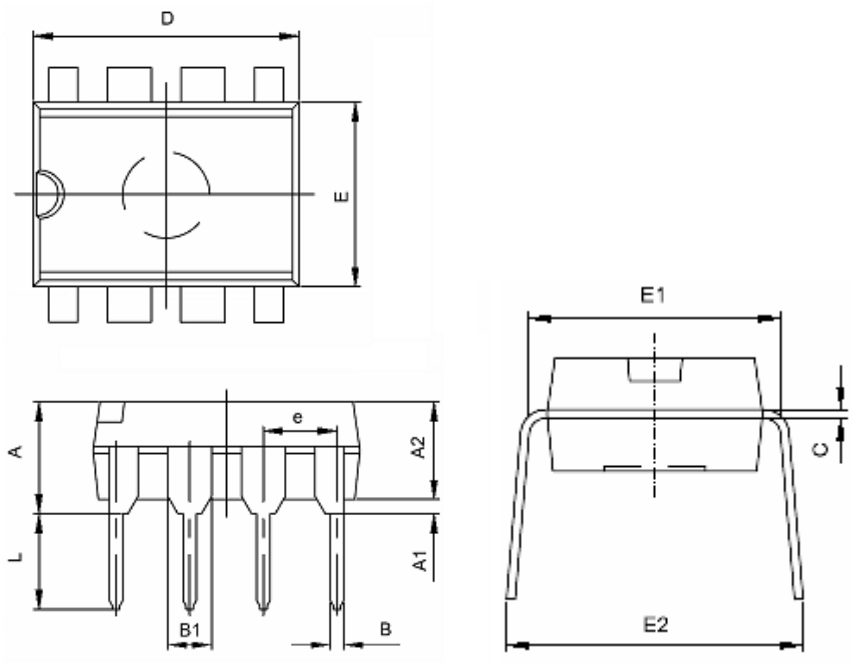
Timing Diagram

Fig.1 Normal ➔ OVP ➔ UVP



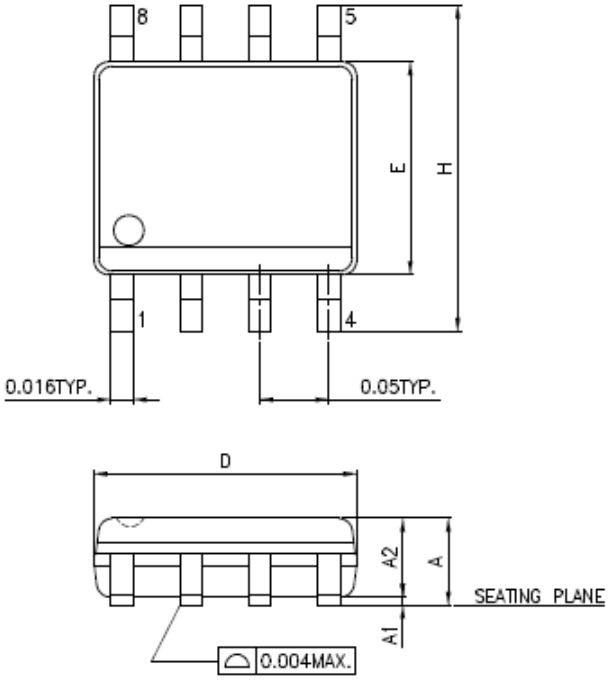
PACKAGING INFORMATION

DIP-8 Package



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	3.710	4.310	0.146	0.170
A1	0.510		0.020	
A2	3.200	3.600	0.126	0.142
B	0.360	0.560	0.014	0.022
B1	1.524(TYP)		0.060(TYP)	
C	0.204	0.360	0.008	0.014
D	9.000	9.400	0.354	0.370
E	6.200	6.600	0.244	0.260
E1	7.620(TYP)		0.300(TYP)	
e	2.540(TYP)		0.100(TYP)	
L	3.000	3.600	0.118	0.142
E2	8.200	9.400	0.323	0.370

SOP-8 Package （mm）

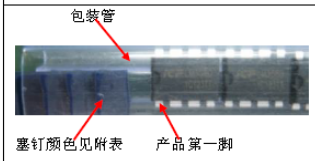
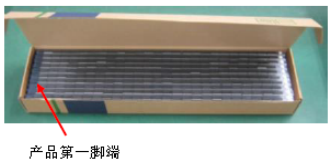
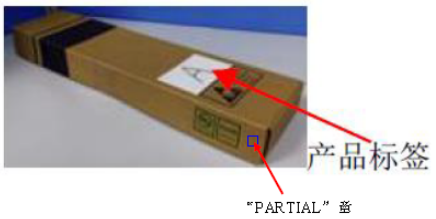


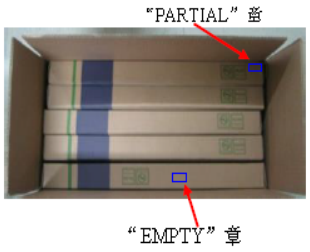
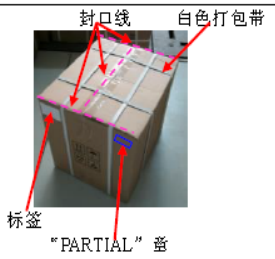
Symbols	Dimensions In Inches			Dimensions In millimeters		
	MIN.	NOR.	MAX.	MIN.	NOR.	MAX.
A	0.050	0.061	0.072	1.270	1.549	1.829
A1	0.000	------	0.010	0.000	------	0.254
A2	------	------	0.062	------	------	1.575
D	0.185	0.193	0.200	4.699	4.902	5.080
E	0.147	0.154	0.160	3.734	3.912	4.064
H	0.225	0.237	0.249	5.715	6.020	6.325
L	0.013	0.033	0.053	0.330	0.838	1.346
θ	0°	4°	8°	0°	4°	8°

Shipping Packing

DIP-8 / Tube data

材料	名称	包装管	通用管装气泡袋	通用管装包装盒	通用管装（1*10）包装箱
	规格	见附表	180*135（mm）	545*127*55（mm）	565*305*275（mm）
	图号	见附表	PTCN1380HTTY	PTCHG1255HTTY	PTCBG5630HTTY
	材质特点	PVC，无色透明	PVC，红色	三层单瓦楞	五层双瓦楞
	图片				

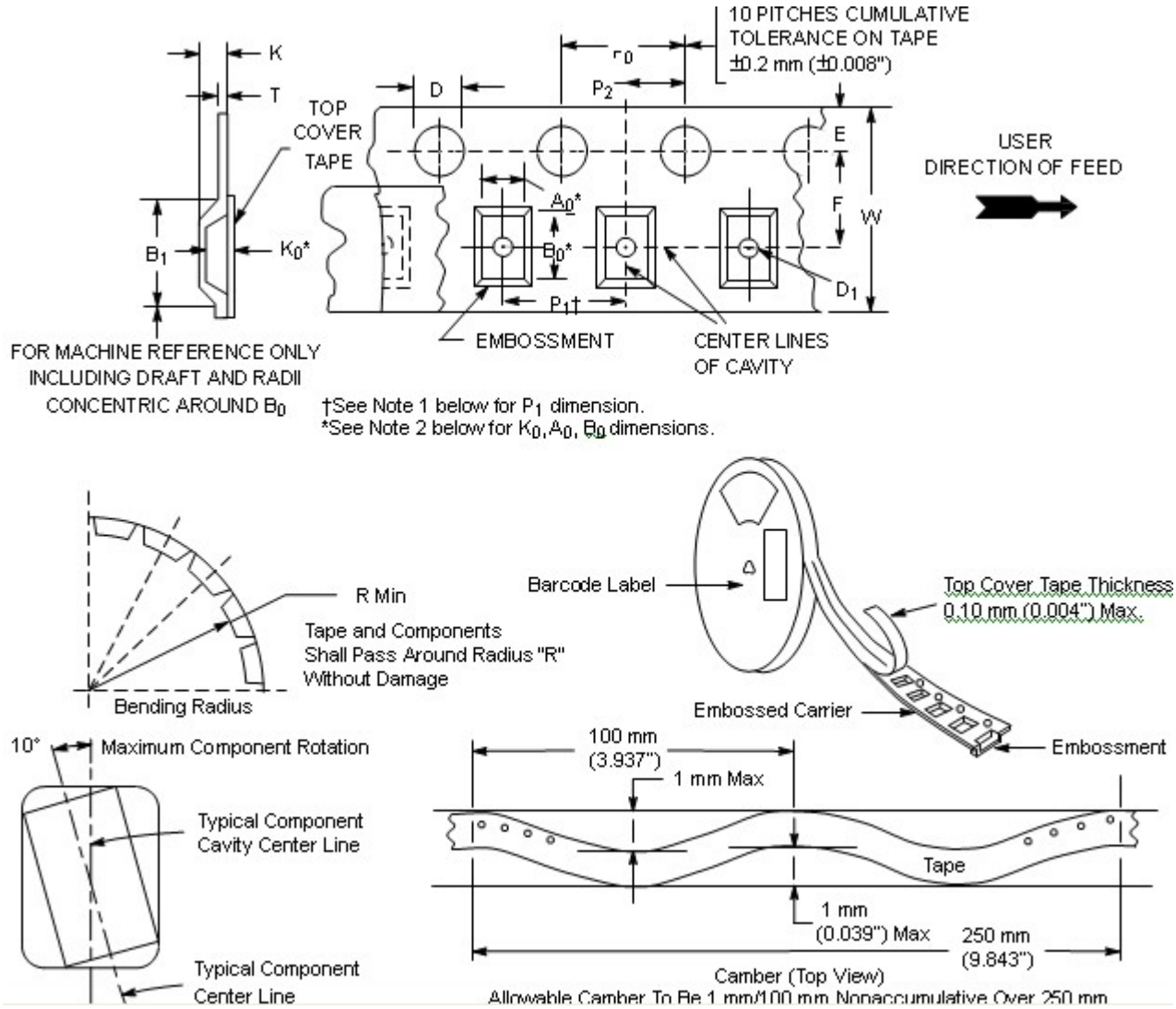
包装流程	产品在包装管中方向	放入包装盒	包装盒封口，贴标签
			
	1.产品第一脚朝向塞钉的颜色见附表（背面），包装管另一端为白色端。 2.所有产品在包装管中的方向一致。	1.将产品按图示方向放入包装盒。 2.每个工单批只能有一个不满管。不满管放在包装盒的最上层，方向与满管方向相反。	1.合住包装盒盖子，用宽胶带封口在包装盒图示位置贴产品标签。 2.是不满盒时，在包装盒上图示位置盖“PARTIAL”章。

装入包装箱，贴标签	包装箱封口，打包
	
1.如图示装入包装箱。 2.不满包装箱用空盒填满。空盒不贴任何标签，在图示位置盖“EMPTY”章。	1.包装箱上下面分别用宽透明胶带以“工”字形封口（即所有开口处都封住）。 2.如图贴产品标签，不满箱图示位置盖“PARTIAL”章。 3.用白色打包带以“井”字形打包，间隔匀称，垂直相交。

序号	包装数量					材料					
	封装形式	只/管	管/盒	盒/箱	只/箱	包装管图号	塞子颜色	销钉颜色	产品在包装管中第一脚塞子或销钉颜色	销钉位置	
1	DIP7L	50	40	10	20000	PTCGD0300HTTY04	蓝色	白色	蓝色塞子	第2孔	
2	DIP8L	50	40	10	20000	PTCGD0300HTTY04	蓝色	白色	蓝色塞子	第2孔	
3	DIP14L	25	40	10	10000	PTCGD0300HTTY04	蓝色	白色	蓝色塞子	第1孔	装有产品的包装管在包装盒中整齐放置

Embossed Tape and Reel Data Carrier Tape Specifications

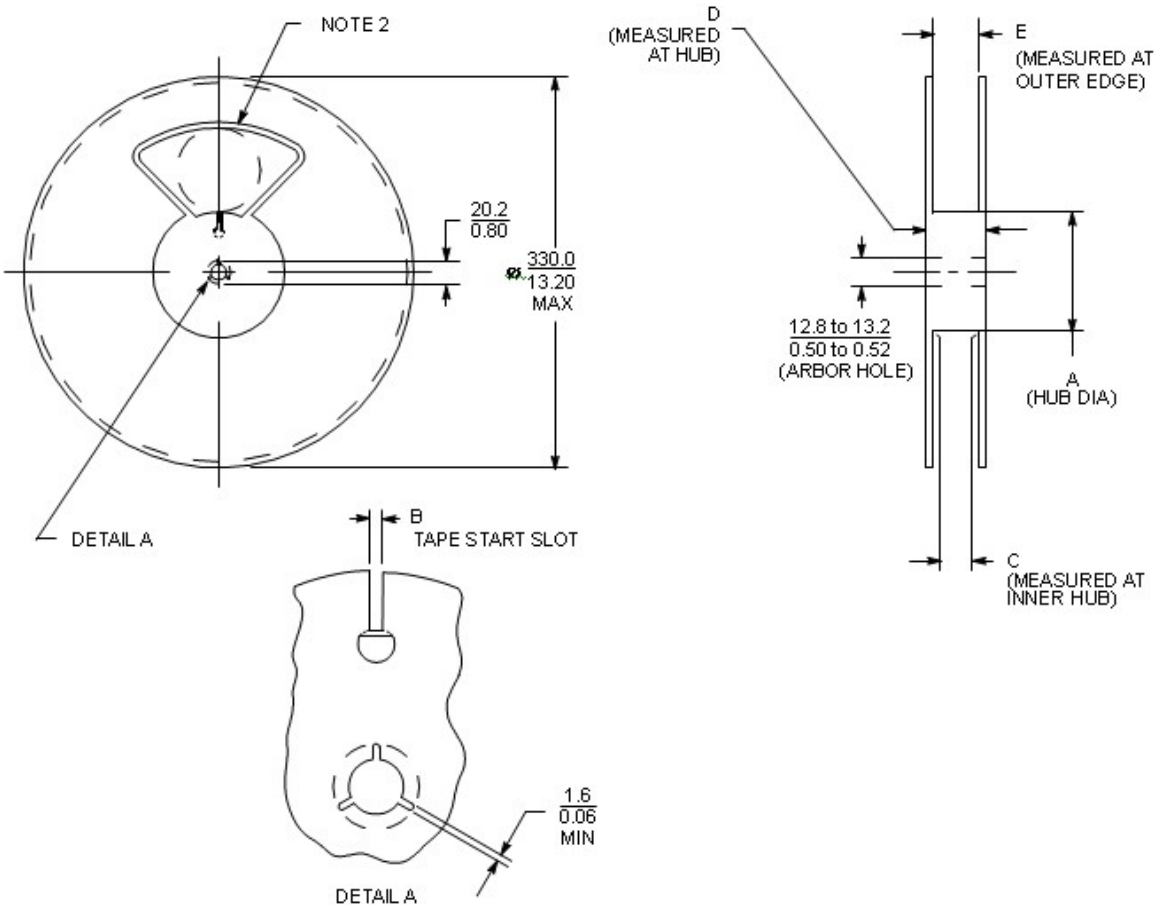
SOP-8/ Tape Reel Data



DIMENSIONS

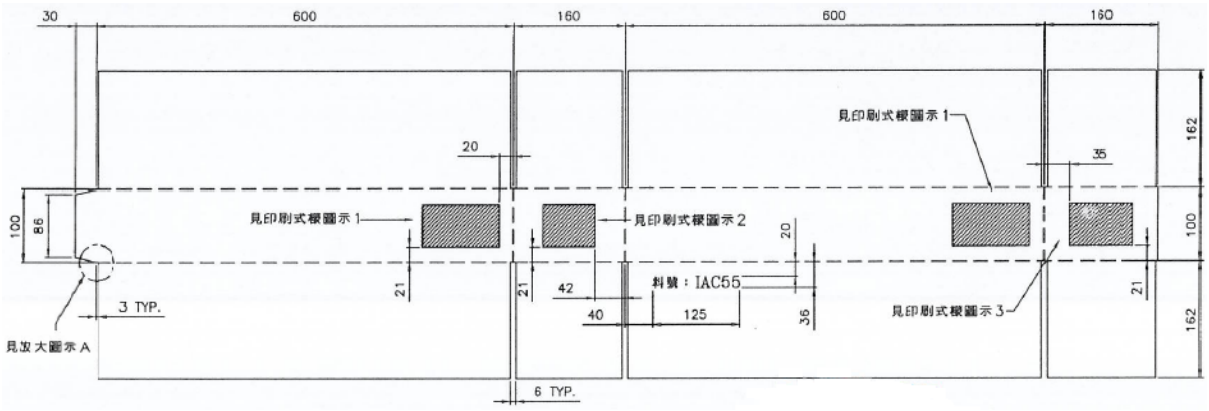
Tape ize (W)	B1 Max (Note 1)	D	D1	E	F	K	P0	P2	R Min	T Max	W Max
8 mm	4.55 mm (0.179")	1.5 + 0.1 − 0.0 (0.059 + 0.004" − 0.0)	1.0 Min (0.039") or 0.5 mm Min (0.020")	1.75 ± 0.1 (0.069 ± 0.004")	3.5 ± 0.05 (0.138 ± 0.002")	2.4 mm Max (0.094")	4.0 ± 0.1 mm (0.157 ± 0.004")	2.0 ± 0.1 mm (0.079 ± 0.002")	25 mm (0.98")	0.6 mm (0.024")	8.3 mm (0.327")
12 mm	8.2 mm (0.323")		1.5 mm Min (0.060")		5.5 ± 0.05 (0.217 ± 0.002")	6.4 mm Max (0.252")			30 mm (1.18")		12 ± 0.30 (0.470 ± 0.012")
16 mm	12.1 mm (0.476")				7.5 ± 0.10 (0.295 ± 0.004")	7.9 mm Max (0.311")					16.3 mm (0.642")
24 mm	20.1 mm (0.791)				11.5 ± 0.1 (0.453 ± 0.004")	11.9 mm Max (0.468")					24.3 mm (0.957")

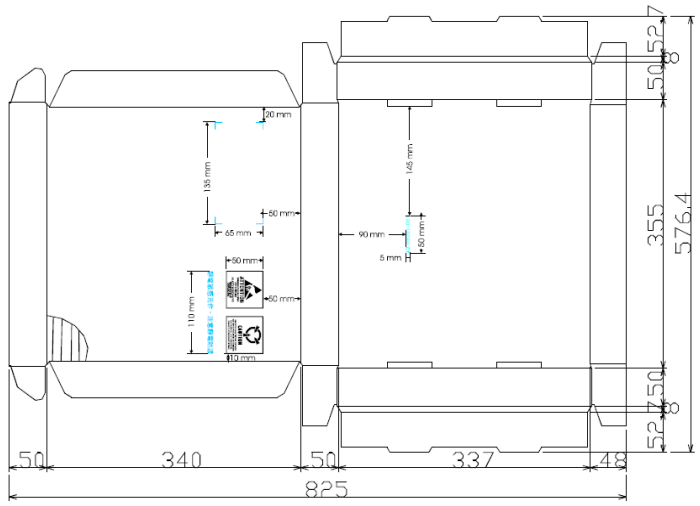
Reel Dimensions



Reel Diameter	Tape Size	A mm (inches)		B mm (inches)		C mm (inches)		D (Max)	E (Max)
		Min	Max	Min	Max	Min	Max		
178.0 (7.01)	16.0 (0.63)		50.0 (1.97)	6.5 (0.26)	7.5 (0.30)	16.4 (0.65)	18.4 (0.72)	22.4 (0.88)	19.4 (0.76)
330.0 (12.99)	12.0 (0.47)	178.0 (7.01)		4.5 (0.18)	5.5 (0.22)	12.4 (0.49)	14.4 (0.57)	18.4 (0.72)	15.4 (0.61)
330.0 (12.99)	56.0 2.20	150.0 (5.91)		10.0 (0.39)	11.0 (0.43)	56.4 (2.22)	58.4 (2.30)	62.4 (2.46)	59.4 (2.34)
330.0 (12.99)	44.0 (1.73)	100.0 (3.94)		10.0 (0.39)	11.0 (0.43)	44.4 (1.75)	46.4 (1.83)	62.4 (2.46)	47.4 (1.87)
330.0 (12.99)	32.0 (1.26)	100.0 (3.94)		10.0 (0.39)	11.0 (0.43)	32.4 (1.28)	34.4 (1.35)	38.4 (1.51)	35.4 (1.39)
330.0 (12.99)	24.0 (0.94)	60.0 (2.36)		9.5 (0.37)	10.5 (0.41)	24.4 (0.96)	26.4 (1.04)	30.4 (1.51)	27.4 (1.08)
330.0 (12.99)	16.0 (0.63)			6.5 (0.26)	7.5 (0.30)	16.4 (0.65)	18.4 (0.72)	22.4 (0.88)	19.4 (0.76)
330.0 (12.99)	12.0 (0.47)			4.5 (0.18)	5.5 (0.22)	12.4 (0.49)	14.4 (0.57)	18.4 (0.72)	15.4 (0.61)
330.0 (12.99)	8.0 (0.31)	50.0 (1.97)		2.5 (0.10)	3.5 (0.14)	8.4 (0.33)	9.9 (0.39)	14.4 (0.57)	10.9 (0.43)
178.0 (7.01)	12.0 (0.47)	50.0 (1.97)		4.5 (0.18)	5.5 (0.22)	12.4 (0.49)	14.4 (0.57)	18.4 (0.72)	15.4 (0.61)
178.0 (7.00)	8.0 (0.31)	50.0 (1.97)		2.5 (0.10)	3.5 (0.14)	8.4 (0.33)	9.9 (0.39)	14.4 (0.47)	10.9 (0.43)
330.0 (12.99)	8.0 (0.31)	50.0 (1.97)		4.0 (0.16)	5.0 (0.20)	8.4 (0.33)	9.9 (0.39)	14.4 (0.57)	10.9 (0.43)
178.0 (7.00)	8.0 (0.31)	50.0 (1.97)		4.0 (0.16)	5.0 (0.20)	8.4 (0.33)	9.9 (0.39)	14.4 (0.57)	10.9 (0.43)

Tube Inner box Data

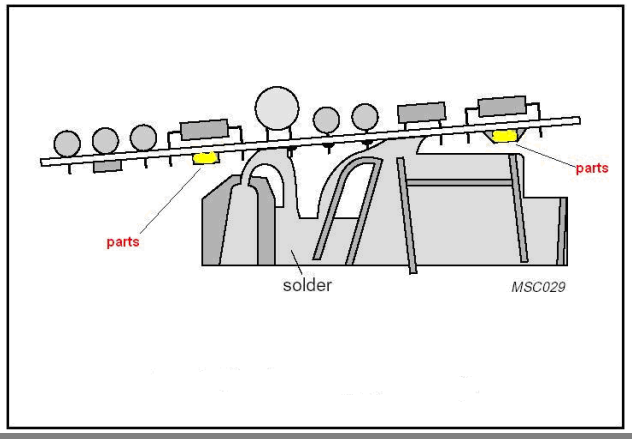
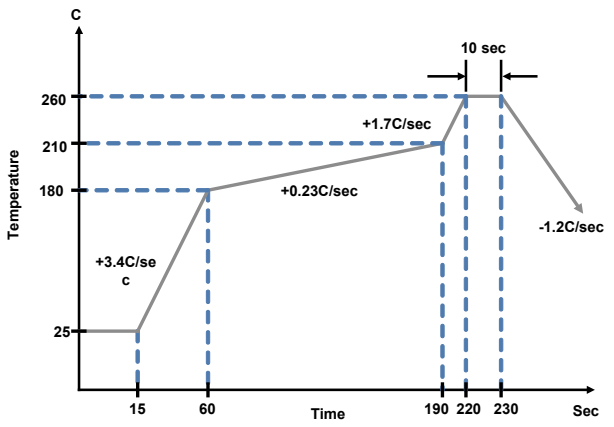




Reliability Test Program

SOP-8/DIP-8

Reflow Condition (IR/Convection or VPR Reflow)

Wave Soldering Process	IR Re-flow Soldering Curve
	

Test Item	Method	Description
SOLDERABILITY	MIL-STD-883D-2003	245℃, 5sec
HOLT	MIL-STD-883D-1005.7	1000Hrs Bias@125℃
PCT	JESD-22-B,A102	168Hrs, 100% RH, 121℃
TST	MIL-STD-883D-1011.9	-65℃~150℃, 200 Cycles
ESD	MIL-STD-883D-3015.7	VHMB>2KV, VMM>200V
Latch-Up	JESD 78	10ms, 1tr> 100mA

Revision History

REVISION	DESCRIPTION	PAGE	DATE
Rev 1.0	First release	13	2011/05/11