Data Sheet

Type Description : Low Offset Voltage Dual Operational Amplifier

Product Name : EST.4258A

Reversion : V1.0

Reversion Date : May, 2016

Page : 9 Pages

GENERAL DESCRIPTION

The EST.4258A integrates a low power, low offset and high performance Independent operational amplifier.

Now, it is available in a tiny SOP-8 and TSSOP-8 package

APPLICATION

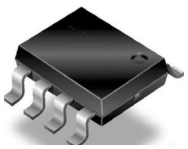
- Switching ac/dc adapter and battery charger
- ATX standby power
- Open frame switching power and CD(R)

FEATURE

Operational Amplifier

- Power supply range : 6V(+/-3V) to 26V(+/-13V)
- Low supply current : 300uA/channel (@ VCC+=20V)
- Low input offset voltage : ±150uV
- Low input offset voltage drifting : 7uV/℃
- Unity gain bandwidth : 1MHz
- Wide input common mode range : 0V ~ VCC+

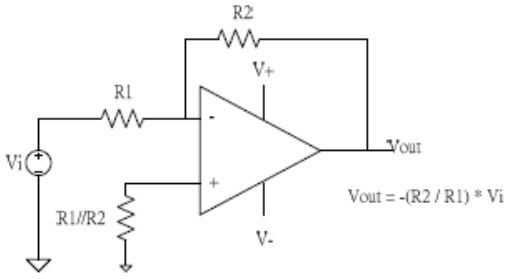
PIN CONFIGURATION



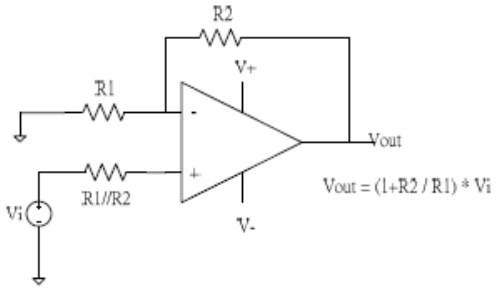
SOP-8L

TSSOP-8L

APPLICATION CIRCUIT



Inverting amplifier circuit



Non-inverting amplifier circuit

ORDERING INFORMATION

Part Number	Package	Packaging	Note
EST.4258AS	SOP-8	Tape & Reel	Green
EST.4258AR	TSSOP-8	Tape & Reel	Green

Note: EST lead-free products contain molding compounds/die attach materials and 100% matte tin plate termination finish; which are fully compliant with RoHS .EST lead-free products meet or exceed the lead-free requirements of IPC/JEDEC J-STD-020C for MSL classification at lead-free peak reflow temperature. EST defines “Green” to mean lead-free (RoHS compliant) and halogen free (Br or Cl does not exceed 900ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500ppm by weight).

PIN DESCRIPTION

SOP-8	NAME Description	Description
1	OUT1	OP1 output
2	INV1	OP1 Inverting Input
3	NINV1	OP1 Non-inverting Input
4	VCC-	Ground for Single supply/ Negative power supply
5	NINV2	OP2 Non-inverting Input
6	INV2	OP2 Inverting Input
7	OUT2	OP2 Outpu
8	VCC+	Positive power supply

ABSOLUTE MAXIMUM RATINGS

Parameter Symbol		Symbol	Limit Values		Unit	Remark
			Min.	Max		
Supply Voltage Vcc		V_{CC}	-0.3	26	V	
Differential Input Voltage		V_{ID},	6	26	V	
Input Voltage		V_i	-0.6	26	V	
OP Output Voltage		V_o	-0.3	Vcc	mA	
Operation Junction Temperature		Tj	-40	150	℃	
Storage Temperature		Tstg	-55	150	℃	
Package Thermal Resistance	SOP-8	θJA	-	180	℃/W	
Power Dissipation @TA<50℃	SOP-8	PD	-	0.42	W	
Package Thermal Resistance	TSSOP-8	θJA	-	270	℃/W	
Power Dissipation @TA<50℃	TSSOP-8	PD	-	0.28	W	
Lead temperature (Soldering, 10 sec)			-	260	℃	
ESD Voltage Protection	HBM	VESD-HBM	-	3.0	KV	
	MM	VESD-MM	-	300	V	

Stress beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliablity.

*Free standing with no heatsink; withoud copper clad.(Measurement condition – just before junction temperature T_J enters into OTP)

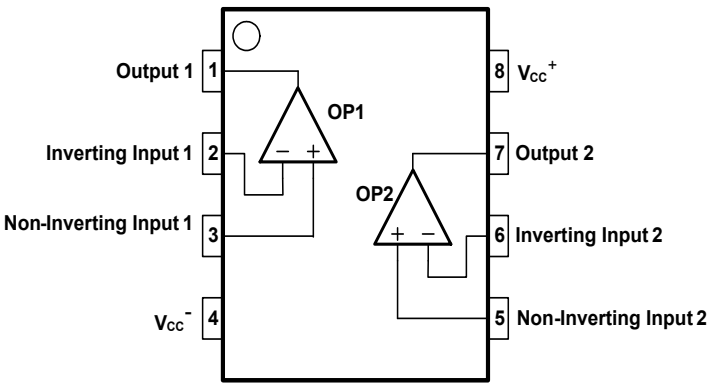
**Measure on the PKG top surface

DC ELECTRICAL CHARACTERISTICS (V_{CC}^+=15V, V_{CC}^-=0V Ta=25°C)

Operational Amplifier :

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Positive Supply Voltage	V_{CC}^+	6		26	V	
Total Supply Current	Icc			300	μA	1. Vcc = 15V 2. no load,
Input Offset Voltage	Vio	-150	0	150	μV	25°C
		-250	0	250		-25~85°C
Small Signal Gain	Avd		80		dB	
Supply Voltage Rejection Ratio	SVR		80		dB	VCC^+ = 9V to 20V
Input Common Mode Voltage Range	Vicm	0		VCC	V	
Common Mode Rejection Ratio	C_{MR}			80	dB	
Output Current Source	Isource			20	mA	1. Vid = +1V 2. VCC = 15V 3. Vo = 2V
Output Current Sink	Isink		15		mA	1. Vid = -1V 2. VCC = 15V 3. Vo = 2V
High Level Output Voltage	VOH			Vcc	V	1. RL = 10K 2. VCC^+ = 20V
Low Level Output Voltage	VOL		20		mV	RL = 10K
Slew Rate at Unity Gain	SR		0.5		V/us	1. Vi = 0.5 to 3V 2. Vcc = 15V 3. RL = 2K 4. CL = 100pF 5. unity gain connection
Gain Bandwidth Product	GBP		1		MHz	1. f = 100KHz 2. Vcc =20V 3. RL = 2K 4. CL = 100pF

BLOCK DIAGRAM



CAUTION

This integrated circuit has been designed carefully in the ESD protection ability. Failure to observe proper handling and installation procedures may cause damage. Recommend that all integrated circuits should be handled with appropriate precautions.

APPLICATION NOTE

Typical Applications

(single supply voltage) Vcc=+5Vdc

Figure 1. AC coupled inverting amplifier

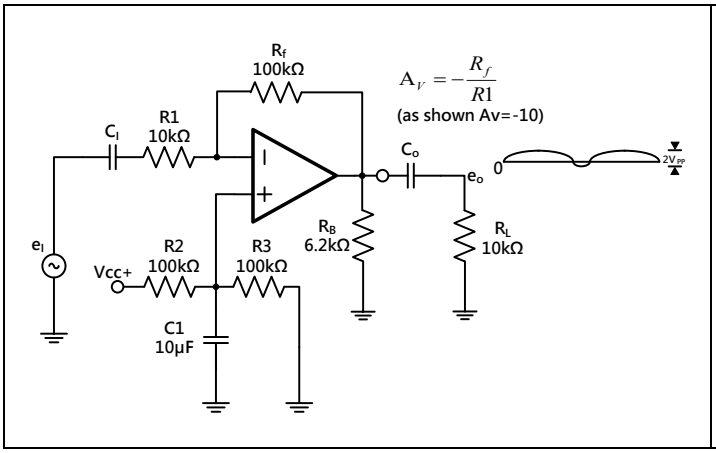


Figure 2. Non-inverting DC amplifier

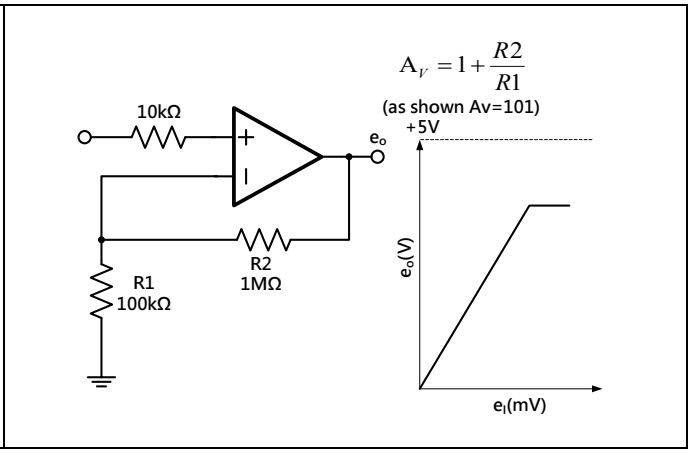


Figure 3. AC coupled non-inverting amplifier

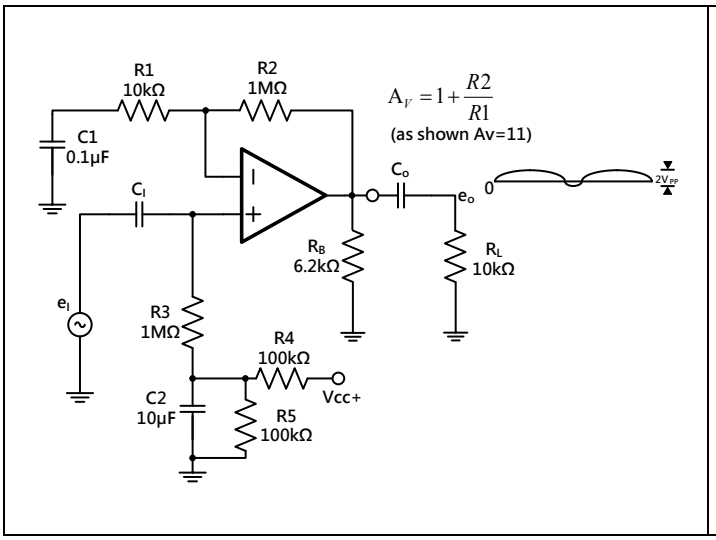
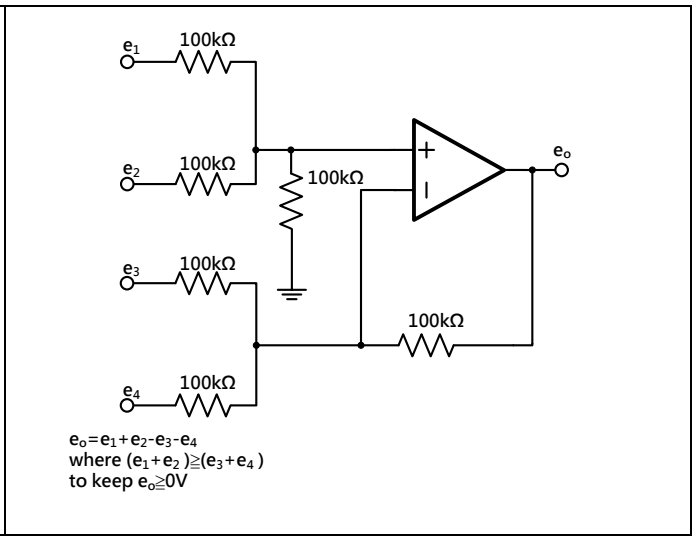


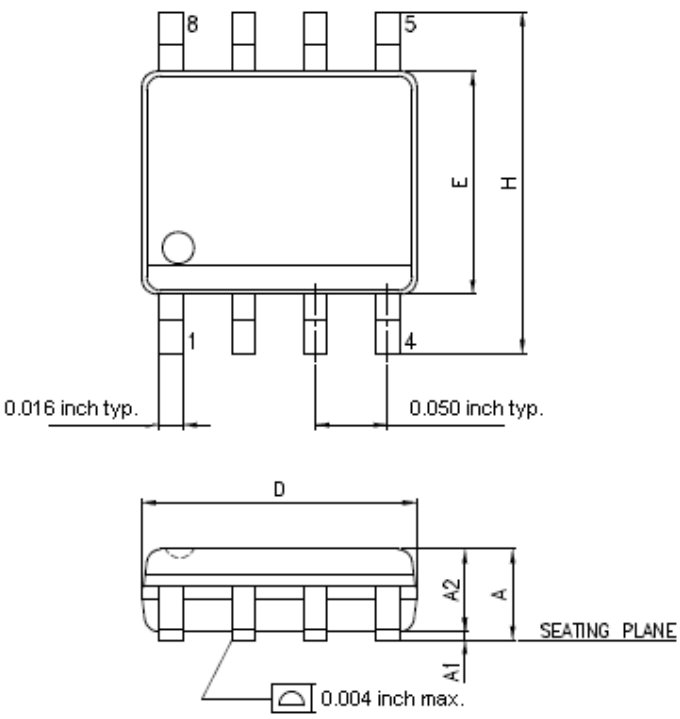
Figure 4. DC summing amplifier



PACKAGE OUTLINES

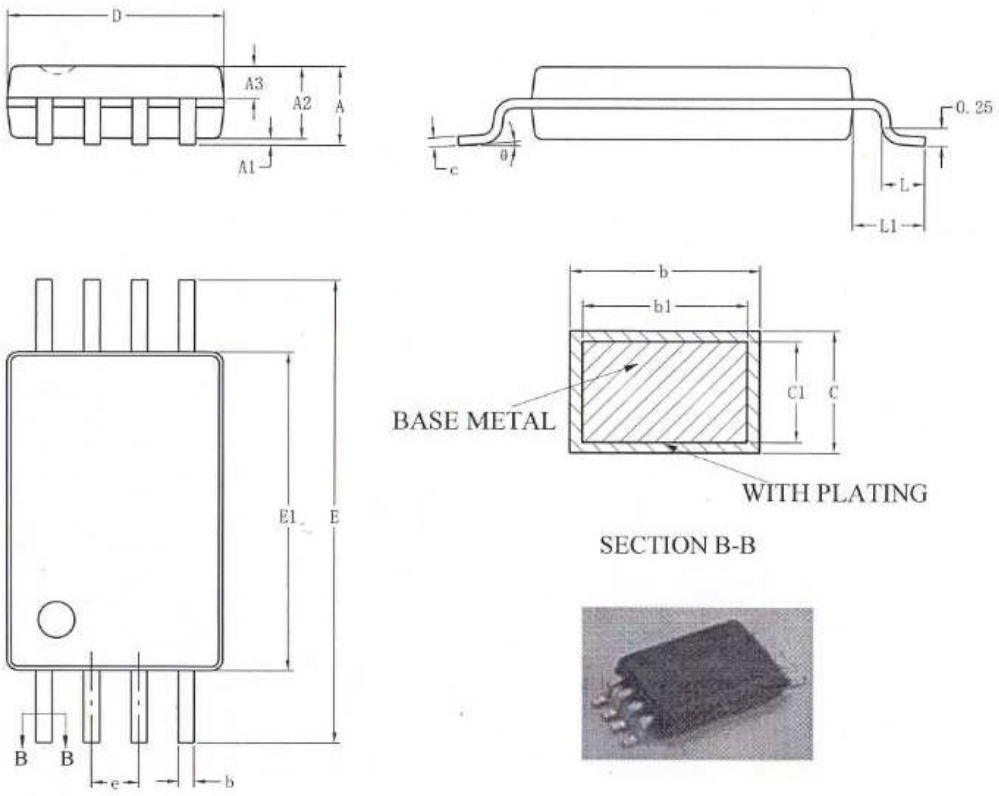
SOP 8

Small Outline Package
UNIT : inch



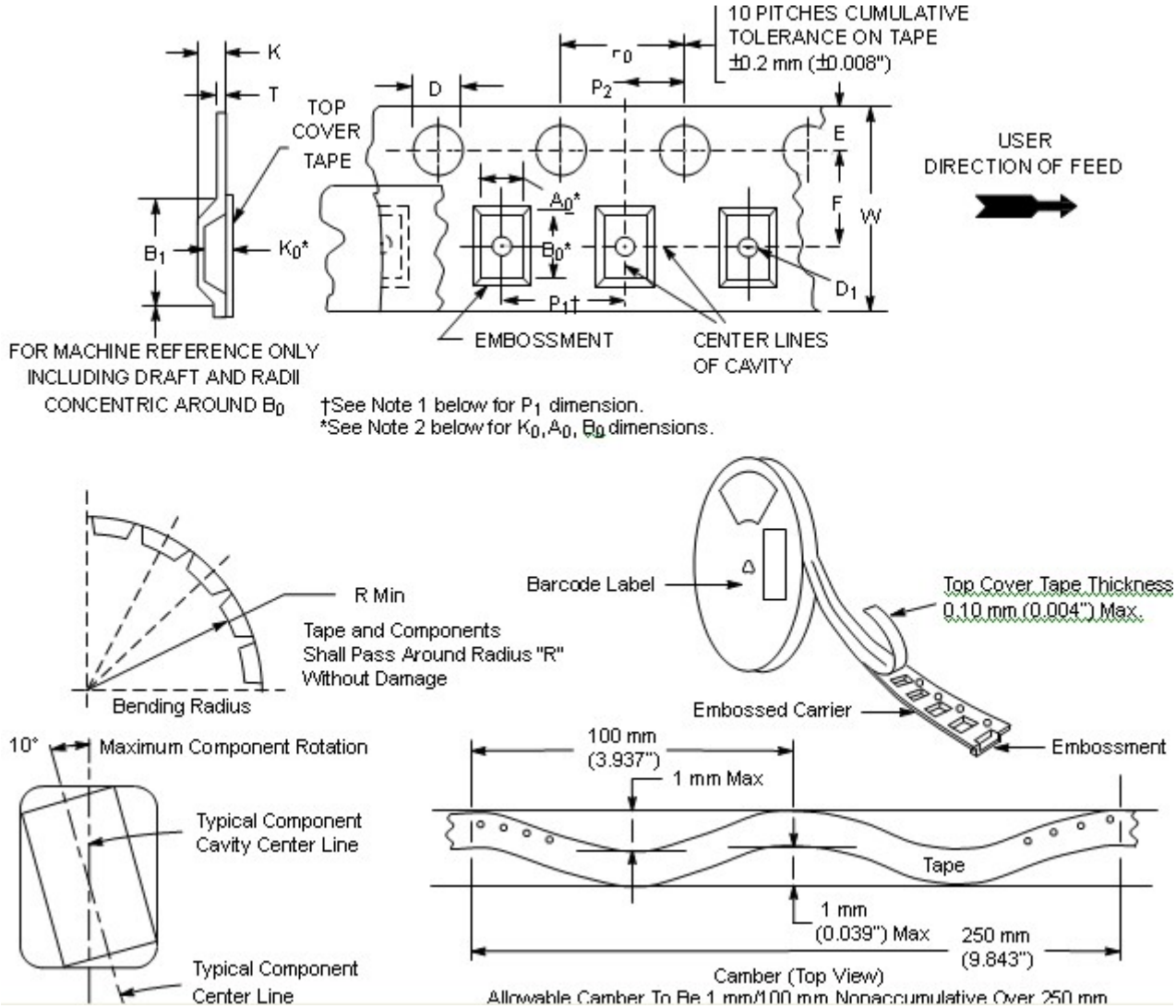
Symbols	Dimensions In Inches			Dimensions In millimeters		
	MIN.	NOR.	MAX.	MIN.	NOR.	MAX.
A	0.050	0.061	0.072	1.270	1.549	1.829
A1	0.000	------	0.010	0.000	------	0.254
A2	------	------	0.062	------	------	1.575
D	0.185	0.193	0.200	4.699	4.902	5.080
E	0.147	0.154	0.160	3.734	3.912	4.064
H	0.225	0.237	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°

TSSOP-8



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	—	—	1.20
A1	0.05	—	0.15
A2	0.90	1.00	1.05
A3	0.39	0.44	0.49
b	0.20	—	0.28
b1	0.19	0.22	0.25
c	0.13	—	0.17
c1	0.12	0.13	0.14
D	2.90	3.00	3.10
E1	4.30	4.40	4.50
E	6.20	6.40	6.60
e	0.65BSC		
L	0.45	—	0.75
L1	1.00REF		
θ	0	—	8°

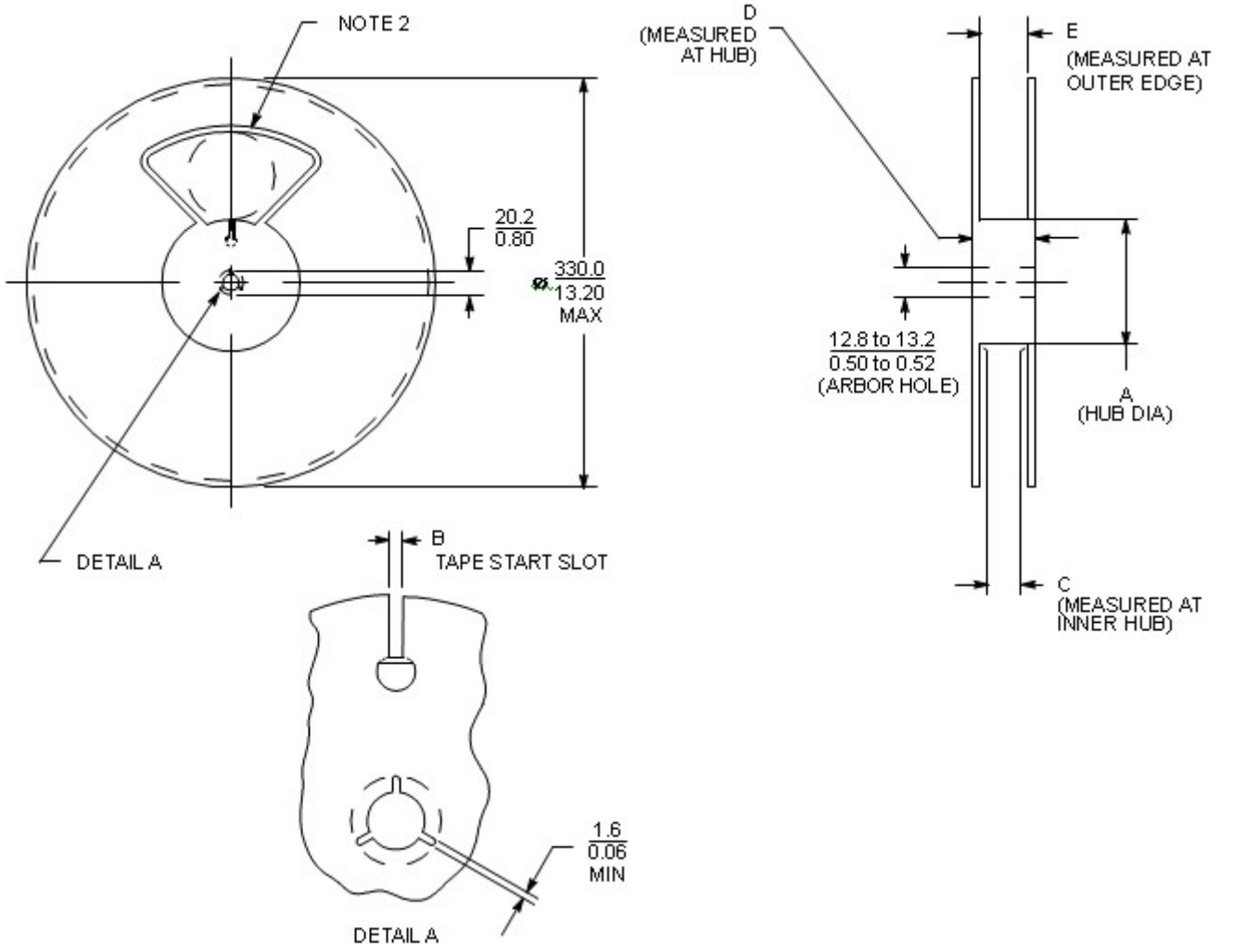
EMBOSSED TAPE AND REEL DATA CARRIER TAPE SPECIFICATIONS



DIMENSIONS

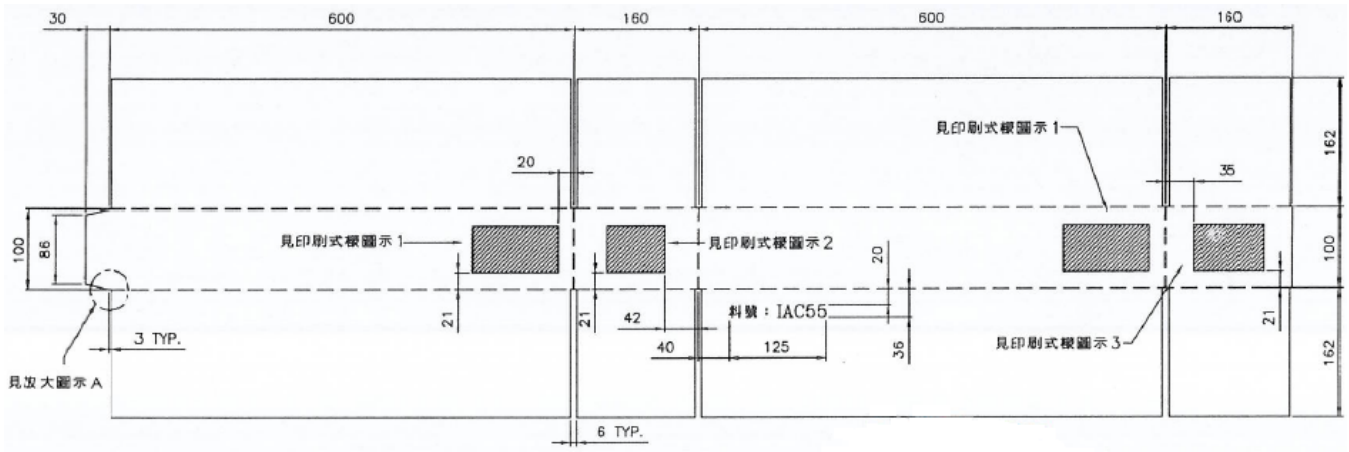
Tape	B_1 Max (Note 1)	D	D_1	E	F	K	P_0	P_2	R Min	T Max	W Max
8 mm	4.55 mm (0.179 3)	1.5 + 0.1 mm − 0.0 (0.059 + 0.004 3 − 0.0)	1.0 Min (0.039 3) or 0.5 mm Min (0.020 3)	1.75 ± 0.1 mm (0.069 ± 0.004 3)	3.5 ± 0.05 mm (0.138 ± 0.002 3)	2.4 mm Max (0.094 3)	4.0 ± 0.1 mm (0.157 ± 0.004 3)	2.0 ± 0.1 mm (0.079 ± 0.002 3)	25 mm (0.983)	0.6 mm (0.024 3)	8.3 mm (0.327 3)
12 mm	8.2 mm (0.323 3)		1.5 mm Min (0.060 3)		5.5 ± 0.05 mm (0.217 ± 0.002 3)	6.4 mm Max (0.252 3)			30 mm (1.183)		12 ± 0.30 mm (0.470 ± 0.012 3)
16 mm	12.1 mm (0.476 3)				7.5 ± 0.10 mm (0.295 ± 0.004 3)	7.9 mm Max (0.311 3)					16.3 mm (0.642 3)
24 mm	20.1 mm (0.791)				11.5 ± 0.1 mm (0.453 ± 0.004 3)	11.9 mm Max (0.468 3)					24.3 mm (0.957 3)

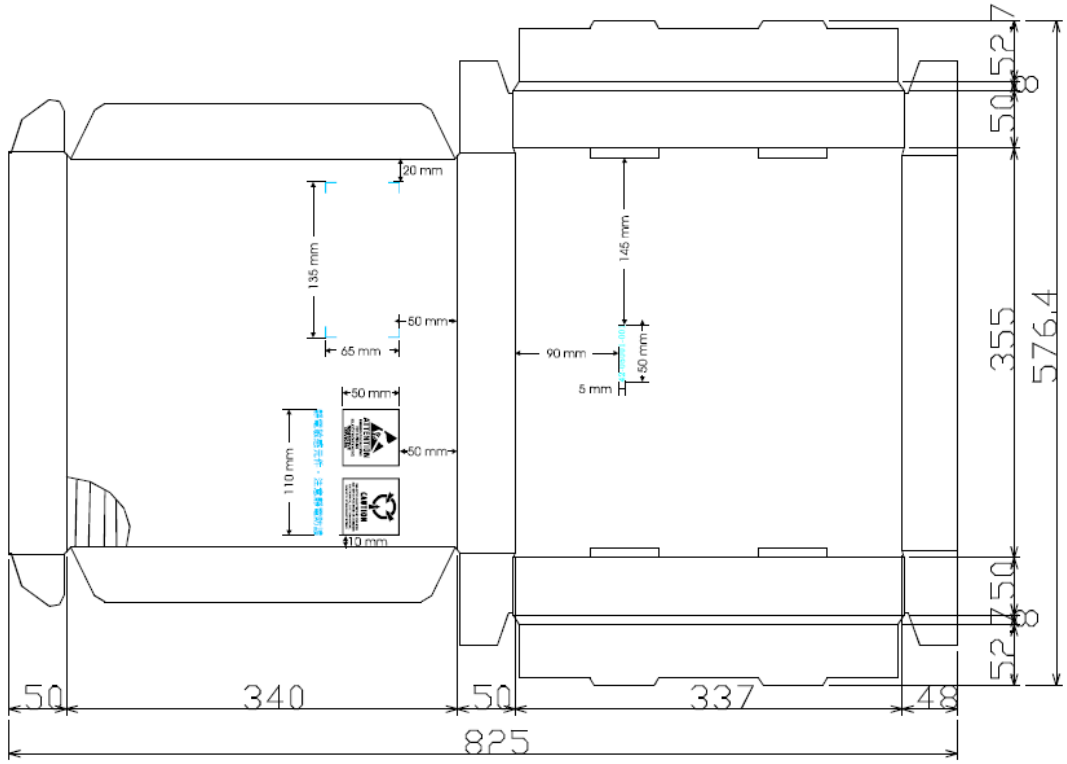
REEL DIMENSIONS

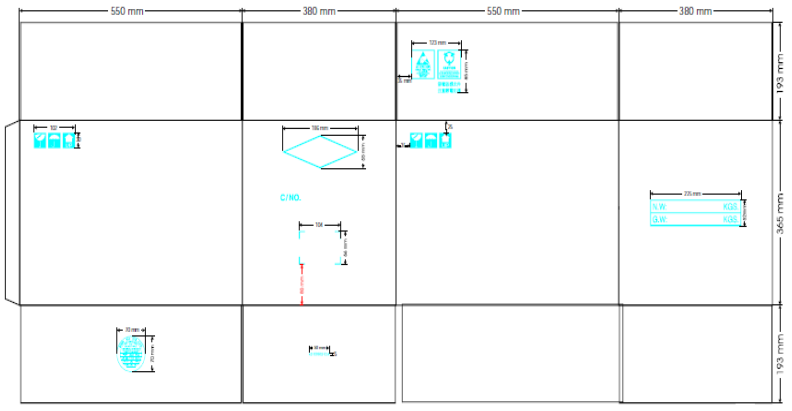


Reel	Tape	A		B		C		D	E
		Min	Max	Min	Max	Min	Max		
178.0 (7.01)	16.0 (0.63)		50.0 (1.97)	6.5 (0.26)	7.5 (0.30)	16.4 (0.65)	18.4 (0.72)	22.4 (0.88)	19.4 (0.76)
330.0 (12.99)	**12.0 (0.47)**	**178.0 (7.01)**		**4.5 (0.18)**	**5.5 (0.22)**	**12.4 (0.49)**	**14.4 (0.57)**	**18.4 (0.72)**	**15.4 (0.61)**
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







NOTE
1.紙箱尺寸：L550 X W380 X H365 mm
2.尺寸公差：± 5 mm
3.紙箱材質：面紙白紙　240
　　芯紙 B 浪　100
　　中紙　175
　　芯紙 A 浪　180
　　底紙 A 級　200
4.破裂強度：250LBS ± 10LBS
5.印刷顏色：天空藍
6.備　　註：紙箱打釘

REVISION HISTORY

REVISION	DESCRIPTION	PAGE	DATE
Rev 1.0	First release	13	2016/05/11