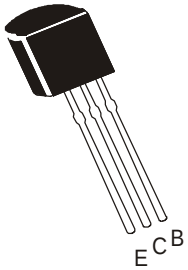
SILICON PLANAR EPITAXIAL TRANSISTORS

CIL928A PNP
CIL2328A NPN



TO-92
Plastic Package

For use in Audio Power Amplifier

ABSOLUTE MAXIMUM RATINGS

DESCRIPTION	SYMBOL	VALUE	UNITS
Collector Base Voltage	V_{CBO}	30	V
Collector Emitter Voltage	V_{CEO}	30	V
Emitter Base Voltage	V_{EBO}	5.0	V
Collector Current Continuous	I_C	1.5	A
Collector Current Peak	I_{CM}	2.0	A
Power Dissipation @ T_a=25ºC	P_D	0.7	W
Operating and Storage Junction Temperature Range	T_j, T_{stg}	- 55 to +150	ºC

ELECTRICAL CHARACTERISTICS (T_a=25ºC unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNITS
Collector Base Voltage	V_{CBO}	I_C=100µA, I_E=0	30			V
Collector Emitter Voltage	V_{CEO}	I_C=10mA, I_B=0	30			V
Emitter Base Voltage	V_{EBO}	I_E=1mA, I_C=0	5			V
Collector Cut off Current	I_{CBO}	V_{CB}=30V, I_E = 0			0.1	µA
Emitter Cut off Current	I_{EBO}	V_{EB}=5V, I_C = 0			0.1	µA
DC Current Gain	*h_{FE}	V_{CE}=2V, I_C=500mA	100		320	
Collector Emitter Saturation Voltage	*$V_{CE(sat)}$	I_C=1.5A, I_B=30mA			2.0	V
Base Emitter On Voltage	*$V_{BE(on)}$	V_{CE}=2V, I_C=500mA			1.0	V
Transition Frequency	f_T	I_C=500mA, V_{CE}=2V		120		MHz
Output Capacitance	C_{ob}	I_E=0, V_{CB}=10V, f=1MHz				
		NPN		30		pF
		PNP		48		pF

***hFE Classification** **O : 100 - 200 , Y : 160 - 320**

***Pulse Test: Pulse Width ≤300ms, Duty Cycle≤2%**

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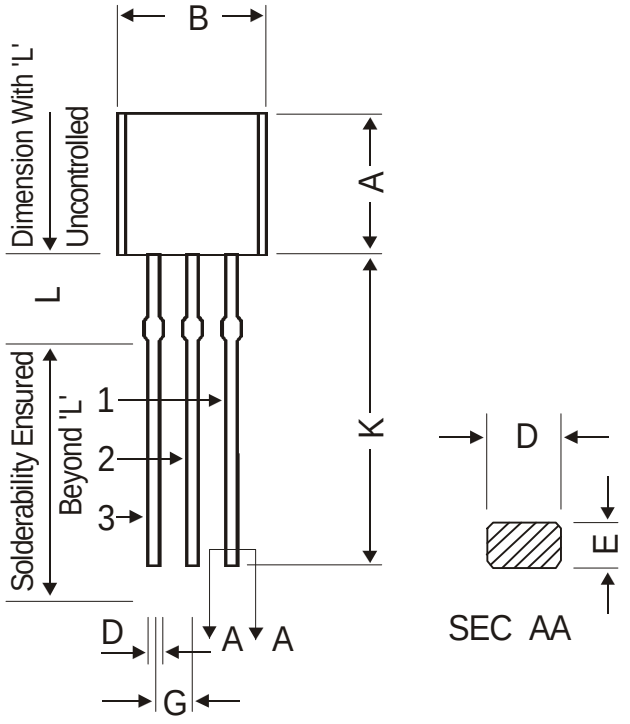
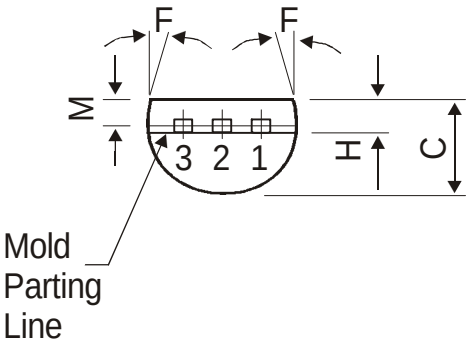
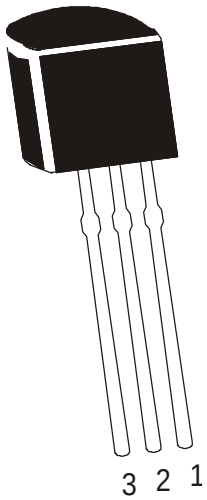


DIM	MIN.	MAX.
A	4.32	5.33
B	4.45	5.20
C	3.18	4.19
D	0.41	0.55
E	0.35	0.50
F	5 DEG	
G	1.14	1.40
H	1.20	1.40
K	12.70	—
L	1.982	2.082
M	1.03	1.20

All dimensions are in mm





PIN CONFIGURATION
1. BASE
2. COLLECTOR
3. EMITTER

The TO-92 Package, Tape and Ammo Pack Drawings are correct as on the date of issue/revision of this Data Sheet.

The currently valid dimensions and information, may please be confirmed from the TO-92 Drawing in the Packages and Packing Section of the Product Catalogue.

Packing Details

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
TO-92 Bulk	1K/polybag	200 gm/1K pcs	3" x 7.5" x 7.5"	5K	17" x 15" x 13.5"	80K	23 kgs
TO-92 T&A	2K/ammo box	645 gm/2K pcs	12.5" x 8" x 1.8"	2K	17" x 15" x 13.5"	32K	12.5 kgs

CIL928A PNP
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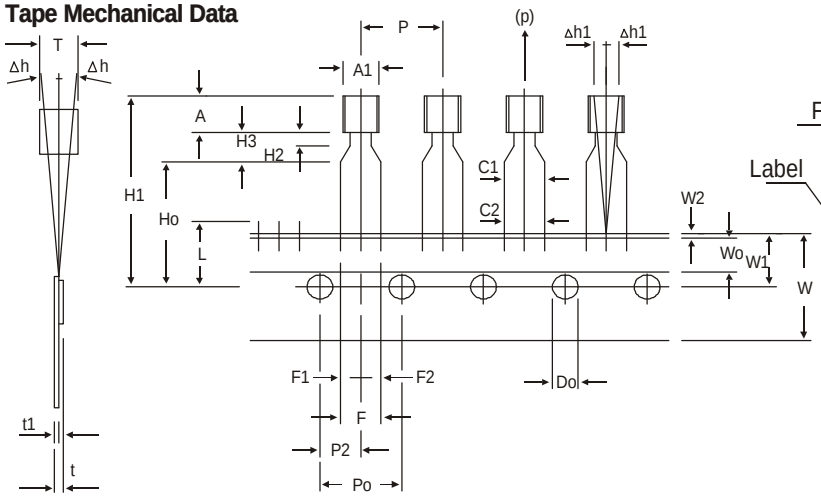
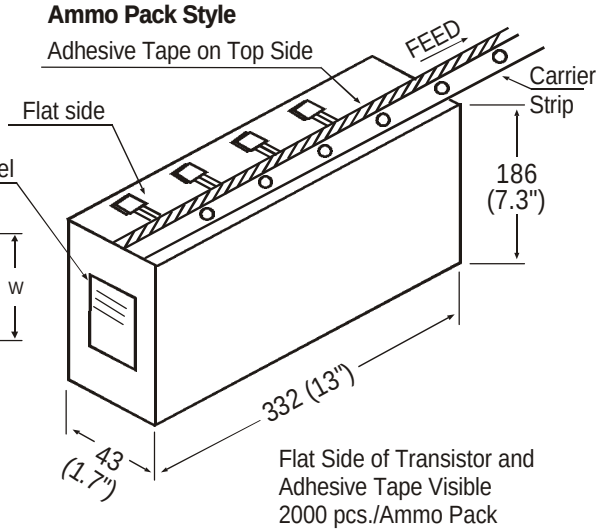
TO-92
Plastic Package

TO-92 Tape and Ammo Pack

Tape Mechanical Data



Ammo Pack Style



Flat Side of Transistor and Adhesive Tape Visible
2000 pcs./Ammo Pack

All dimensions are in mm

ITEM	SYMBOL	SPECIFICATION			
		MIN.	NOM.	MAX.	TOL .
BODY WIDTH	A1	4.0		4.8	
BODY HEIGHT	A	4.8		5.2	
BODY THICKNESS	T	3.9		4.2	
PITCH OF COMPONENT	P		12.7		± 1.0
*1 FEED HOLE PITCH	Po		12.7		± 0.3
*2 FEED HOLE CENTRE TO COMPONENT CENTRE	P2		6.35		± 0.4
DISTANCE BETWEEN OUTER LEADS	F		5.08		+ 0.6 - 0.2
*3 COMPONENT ALIGNMENT SIDE VIEW	△h		0	1.0	
*4 COMPONENT ALIGNMENT FRONT VIEW	△h1		0	1.3	
TAPE WIDTH	W		18		± 0.5
HOLD-DOWN TAPE WIDTH	Wo		6		± 0.2
HOLE POSITION	W1		9		+ 0.7 - 0.5
HOLD-DOWN TAPE POSITION	W2		0.5		± 0.2
LEAD WIRE CLINCH HEIGHT	Ho		16		± 0.5
COMPONENT HEIGHT	H1			23.25	
LENGTH OF SNIPPED LEADS	L			11.0	
FEED HOLE DIAMETER	Do		4		± 0.2
*5 TOTAL TAPE THICKNESS	t			1.2	
LEAD - TO - LEAD DISTANCE	F1, F2		2.54		+ 0.4 - 0.1
STAND OFF	H2	0.45		1.45	
CLINCH HEIGHT	H3			3.0	
LEAD PARALLELISM	| C1 - C2 |			0.22	
PULL - OUT FORCE	(p)	6N			

NOTES

1. Maximum alignment deviation between leads will not to be greater than 0.2mm.
2. Maximum non-cumulative variation between tape feed holes shall not exceed 1 mm in 20 pitches.
3. Holddown tape will not exceed beyond the edge(s) of carrier tape and there shall be no exposure of adhesive.
4. There will be no more than three (3) consecutive missing components in a tape.
5. A tape trailer, having at least three feed holes are provided after the last component in a tape.
6. Splices should not interfere with the sprocket feed holes.

REMARKS

*1 Cumulative pitch error 1.0 mm/20 pitch

*2 To be measured at bottom of clinch

*3 At top of body

*4 At top of body

*5 t1 0.3 – 0.6 mm

Disclaimer

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