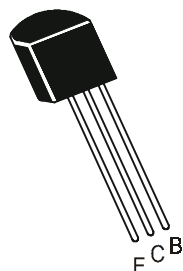


NPN SILICON EPITAXIAL TRANSISTORS



**CSC1213
CSC1213A**

**TO-92
Plastic Package**

Low Frequency Amplifier.

ABSOLUTE MAXIMUM RATINGS (Ta=25°C unless specified otherwise)

DESCRIPTION	SYMBOL	CSC1213	CSC1213A	UNIT
Collector Emitter Voltage	V_{CEO}	35	50	V
Collector Base Voltage	V_{CBO}	35	50	V
Emitter Base Voltage	V_{EBO}	4.0	6	V
Collector Current	I_C	500		mA
Collector Power Dissipation	P_C	400		mW
Operating And Storage Junction Temperature Range	T_j, T_{stg}	-55 to +150		°C

ELECTRICAL CHARACTERISTICS (Ta=25°C unless specified otherwise)

DESCRIPTION	SYMBOL	MIN	TYP	MAX	UNIT
Collector Base Voltage	V_{CBO} $I_C=10\mu A, I_E=0$				
CSC1213		35			V
CSC1213A		50			V
Collector Emitter Voltage	V_{CEO} $I_C=1mA, I_B=0$				
CSC1213		35			V
CSC1213A		50			V
Emitter Base Voltage	V_{EBO} $I_E=10\mu A, I_C=0$	4.0			V
Collector Cut off Current	I_{CBO} $V_{CB}=20V, I_E=0$			500	nA
DC Current Gain	h_{FE}^* $V_{CE}=3V, I_C=10mA$	60		320	
	h_{FE}^{**} $V_{CE}=3V, I_C=500mA$	10			
Collector Emitter Saturation Voltage	$V_{CE(sat)}^{**}$ $I_C=150mA, I_B=15mA$			0.6	V
Base Emitter on Voltage	$V_{BE(on)}$ $I_C=10mA, V_{CE}=3V$		0.64		V

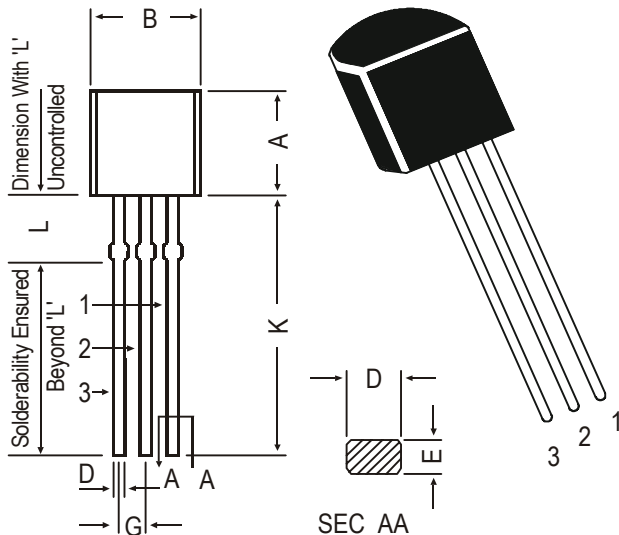
* hFE CLASSIFICATION

	B	C	D
CSC1213 & CSC1213A	60-120	100-200	160-320

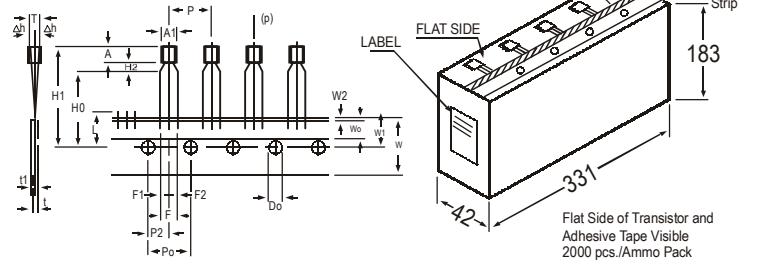
** Pulse Test

TO-92 Plastic Package

TO-92 Transistors on Tape and Ammo Pack



MECHANICAL DATA



All dimensions in mm unless specified otherwise

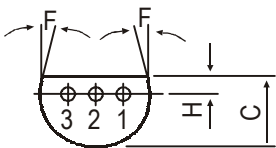
ITEM	SYMBOL	SPECIFICATION				REMARKS
		MIN.	NOM.	MAX.	TOL.	
BODY WIDTH	A1	4.0		4.8		CUMULATIVE PITCH ERROR 1.0 mm/20 PITCH TO BE MEASURED AT BOTTOM OF CLINCH
BODY HEIGHT	A	4.8		5.2		
BODY THICKNESS	T	3.9		4.2		
PITCH OF COMPONENT	P		12.7		±1	
FEED HOLE PITCH	Po		12.7		±0.3	
FEED HOLE CENTRE TO COMPONENT CENTRE	P2		6.35		±0.4	AT TOP OF BODY
DISTANCE BETWEEN OUTER LEADS	F		5.08		+0.6 -0.2	
COMPONENT ALIGNMENT	Δh		0	1		
TAPE WIDTH	W		18		±0.5	
HOLD-DOWN TAPE WIDTH	Wo		6		±0.2	
HOLE POSITION	W1		9		+0.7 -0.5	t1 0.3 - 0.6
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	
TOTAL TAPE THICKNESS	t			1.2		
LEAD - TO - LEAD DISTANCE F1,	F2		2.54		+0.4 -0.1	
CLINCH HEIGHT	H2			3		
PULL - OUT FORCE	(P)	6N				

NOTES

1. MAXIMUM ALIGNMENT DEVIATION BETWEEN LEADS NOT TO BE GREATER THAN 0.2 mm.
2. MAXIMUM NON-CUMULATIVE VARIATION BETWEEN TAPE FEED HOLES SHALL NOT EXCEED 1 mm IN 20 PITCHES.
3. HOLDDOWN TAPE NOT TO EXCEED BEYOND THE EDGE(S) OF CARRIER TAPE AND THERE SHALL BE NO EXPOSURE OF ADHESIVE.
4. NO MORE THAN 3 CONSECUTIVE MISSING COMPONENTS ARE PERMITTED.
5. A TAPE TRAILER, HAVING AT LEAST THREE FEED HOLES ARE REQUIRED AFTER THE LAST COMPONENT.
6. SPLICES SHALL NOT INTERFERE WITH THE SPROCKET FEED HOLES.

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	1.14	1.53
K	12.70	—
L	1.982	2.082

All dimensions in mm.



PIN CONFIGURATION

1. BASE
2. COLLECTOR
3. EMITTER

Packing Detail

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

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