



## **AD-2SA1213\* Series Plastic-Encapsulated Transistor**

### **AD-2SA1213\* series Transistor (PNP)**

#### **FEATURES**

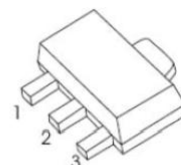
- Small flat package
- Low saturation voltage
- Power amplifier and switching applications
- Complementary to AD-2SC2873\* series
- High speed switching time
- AEC-Q101 qualified

#### **SOT-89-3L**

1. BASE

2. COLLECTOR

3. EMITTER



**MAXIMUM RATINGS ( $T_j = 25^\circ\text{C}$  unless otherwise specified)**

Parameter	Symbol	Value	Unit
Collector-base voltage	$V_{\text{CBO}}$	-50	V
Collector-emitter voltage	$V_{\text{CEO}}$	-50	V
Emitter-base voltage	$V_{\text{EBO}}$	-5	V
Collector continuous current	$I_{\text{C}}$	-2	A
Collector power dissipation	$P_{\text{C}}$	500	mW
Thermal Resistance From Junction To Ambient	$R_{\theta\text{JA}}$	250	$^\circ\text{C}/\text{W}$
Operating junction and storage temperature range	$T_j, T_{\text{stg}}$	-55 ~ 150	$^\circ\text{C}$

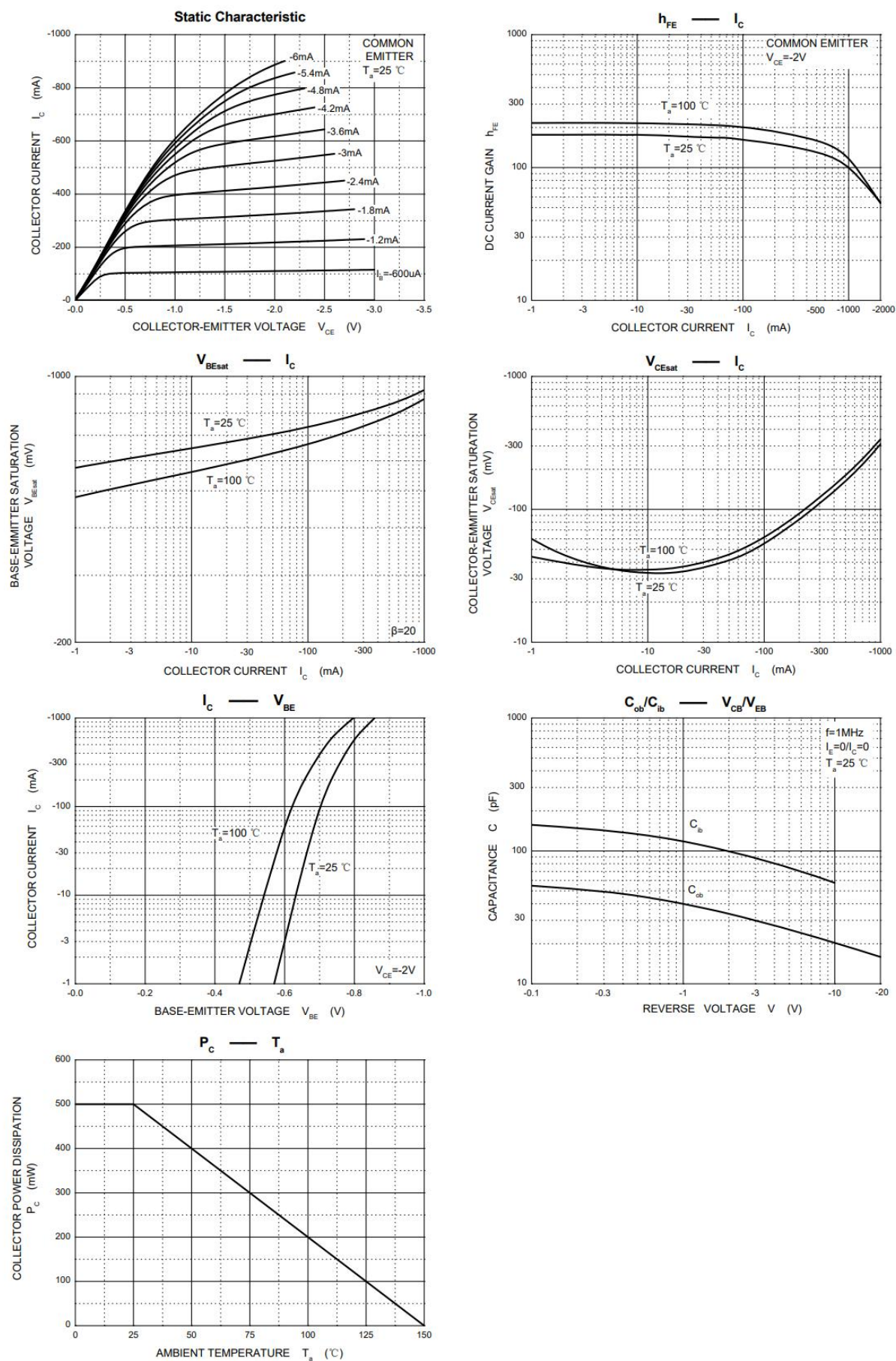
**ELECTRICAL CHARACTERISTICS ( $T_j = 25^\circ\text{C}$  unless otherwise specified)**

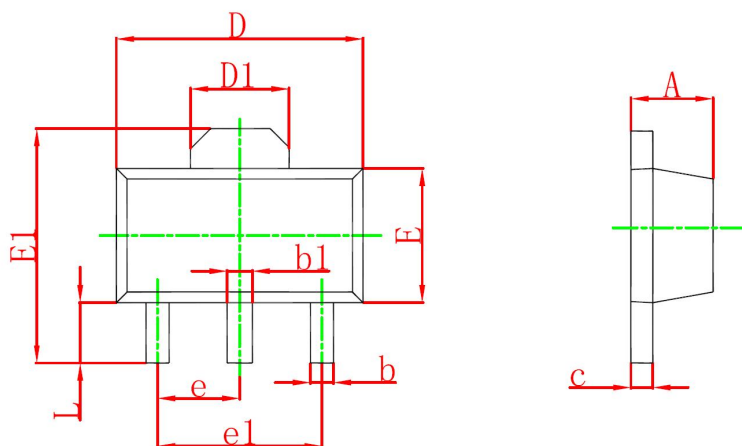
Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(\text{BR})\text{CBO}}$	$I_{\text{C}} = -0.1\text{mA}, I_{\text{E}} = 0\text{A}$	-50	-	-	V
Collector-emitter breakdown voltage	$V_{(\text{BR})\text{CEO}}$	$I_{\text{C}} = -10\text{mA}, I_{\text{B}} = 0\text{A}$	-50	-	-	V
Emitter-base breakdown voltage	$V_{(\text{BR})\text{EBO}}$	$I_{\text{E}} = -0.1\text{mA}, I_{\text{C}} = 0\text{A}$	-5	-	-	V
Collector-base cut-off current	$I_{\text{CBO}}$	$V_{\text{CB}} = -50\text{V}, I_{\text{E}} = 0\text{A}$	-	-	-100	nA
Emitter-base cut-off current	$I_{\text{EBO}}$	$V_{\text{EB}} = -5\text{V}, I_{\text{C}} = 0\text{A}$	-	-	-100	nA
DC current gain	$h_{\text{FE}(1)}$	$V_{\text{CE}} = -2\text{V}, I_{\text{C}} = -500\text{mA}$	70	-	240	-
	$h_{\text{FE}(2)}$	$V_{\text{CE}} = -2\text{V}, I_{\text{C}} = -2\text{A}$	20	-	-	-
Collector-emitter saturation voltage	$V_{\text{CE}(\text{sat})}$	$I_{\text{C}} = -1\text{A}, I_{\text{B}} = -50\text{mA}$	-	-	-0.5	V
Base-emitter saturation voltage	$V_{\text{BE}(\text{sat})}$	$I_{\text{C}} = -1\text{A}, I_{\text{B}} = -50\text{mA}$	-	-	-1.2	
Transition frequency	$f_{\text{T}}$	$V_{\text{CE}} = -2\text{V}, I_{\text{C}} = -0.5\text{A}$	100	-	-	MHz
Collector output capacitance	$C_{\text{ob}}$	$V_{\text{CB}} = -10\text{V}, I_{\text{E}} = 0\text{A}, f = 1\text{MHz}$	-	40	-	pF

**CLASSIFICATION OF  $h_{\text{FE}(1)}$** 

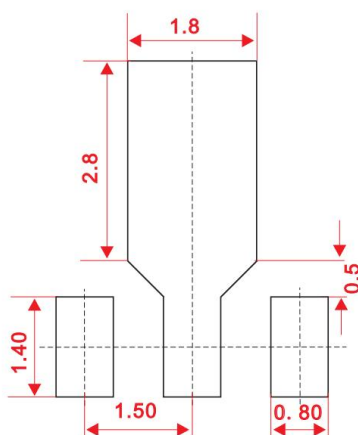
RANK	AD-2SA1213-O	AD-2SA1213-Y
RANGE	70 ~ 140	120 ~ 240
MARKING	$\overline{\text{NO}}$	$\overline{\text{NY}}$

## TYPICAL CHARACTERISTICS



**SOT-89-3L PACKAGE OUTLINE DIMENSIONS**

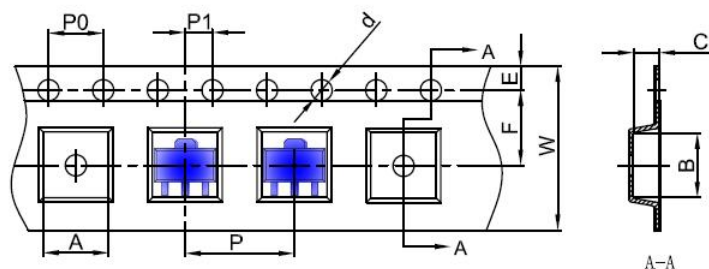
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047

**SOT-89-3L SUGGESTED PAD LAYOUT****Note:**

1. Controlling dimension in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purpose only.

## SOT-89-3L TAPE AND REEL

### SOT-89-3L Embossed Carrier Tape

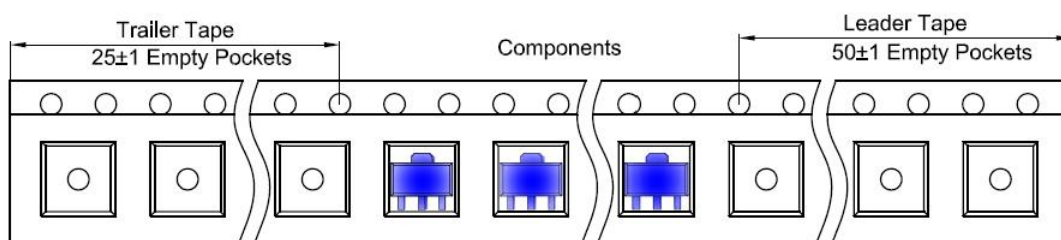


#### Packaging Description:

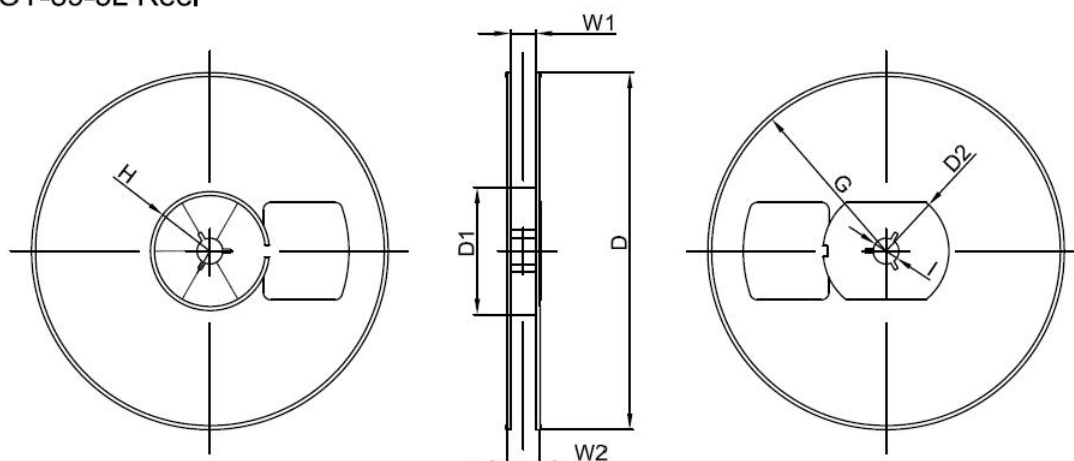
SOT-89-3L parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 1,000 units per 7" or 18.0 cm diameter reel. The reels are clear in color and are made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-89-3L	4,85	4,45	1,85	Ø1,50	1,75	5,50	4,00	8,00	2,00	12,00

### SOT-89-3L Tape Leader and Trailer



### SOT-89-3L Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7" Dia	Ø180.00	60.00	R32.00	R86.50	R30.00	Ø13.00	13.20	16.50

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
1000 pcs	7 inch	10,000 pcs	203×203×195	40,000 pcs	438×438×220	

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