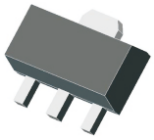
General Purpose Transistor

2SA1213-HF Series (PNP)

RoHS Device
Halogen Free

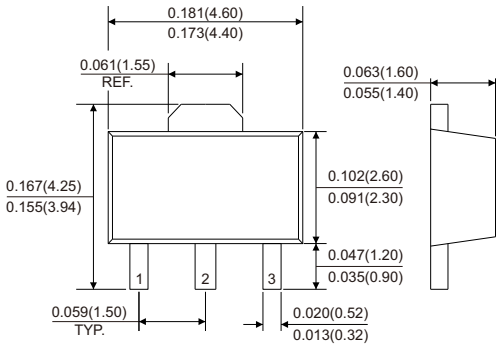


Features

- Small flat package.
- Power amplifier and switching applications.
- Low saturation voltage.
- High speed switching time.

SOT-89-3L

1 : Base
2 : Collector
3 : Emitter

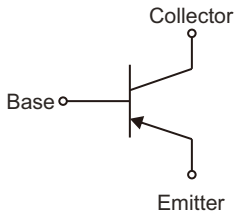


Dimensions in inches and (millimeter)

Mechanical data

- Case: SOT-89-3L, molded plastic.
- Mounting position: Any.

Circuit Diagram



Maximum Ratings (at TA=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-base voltage	V_{CBO}	-50	V
Collector-emitter voltage	V_{CEO}	-50	V
Emitter-base voltage	V_{EBO}	-5	V
Continuous current	I_C	-2	A
Collector power dissipation	P_C	500	mW
Thermal resistance from junction to ambient	$R_{\theta JA}$	250	°C/W
Operation junction and storage temperature range	T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (at T_A=25°C unless otherwise noted)

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

Classification Of h_{FE}

Part No.	2SA1213O-HF	2SA1213Y-HF
Range	70-140	120-240

Typical Rating and Characteristic Curves (2SA1213-HF Series)

Fig.1 - Static Characteristic

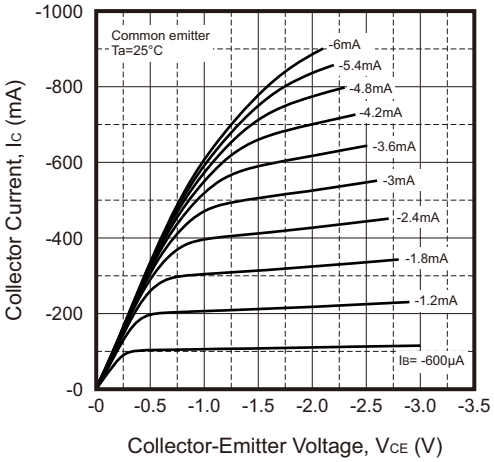
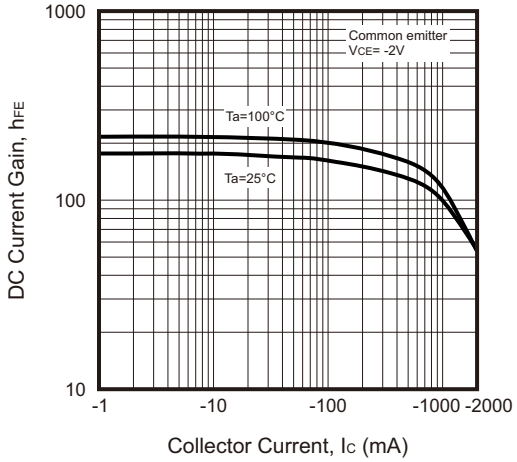


Fig.2 - h_{FE} — I_C



Typical Rating and Characteristic Curves (2SA1213-HF Series)

Fig.3 - V_{BEsat} — I_C

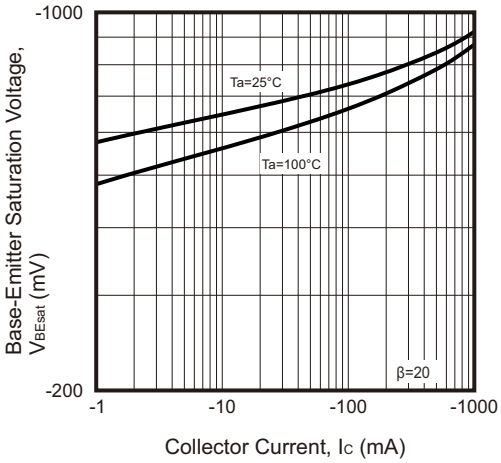


Fig.4 - V_{CEsat} — I_C

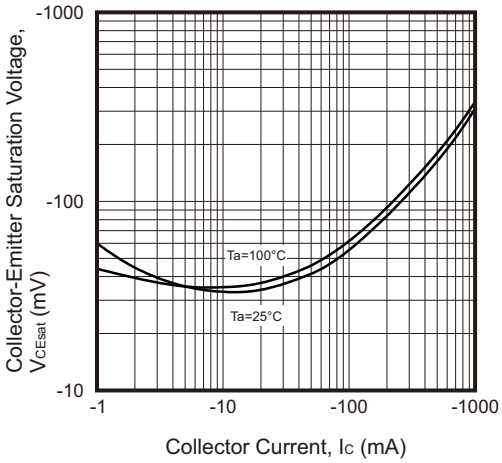


Fig.5 - I_C — V_{BE}

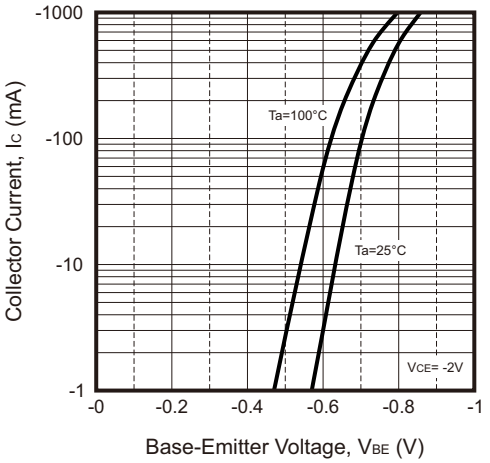


Fig.6 - C_{ob}/C_{ib} — V_{CB}/V_{EB}

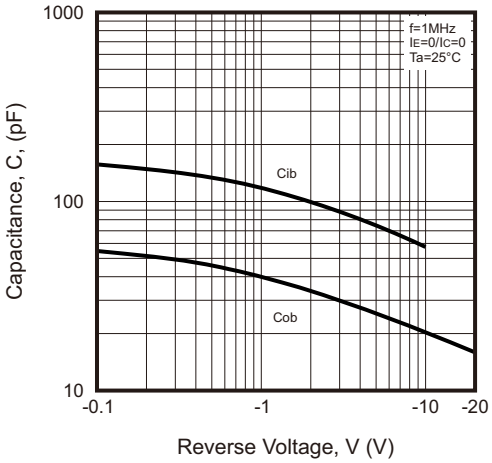
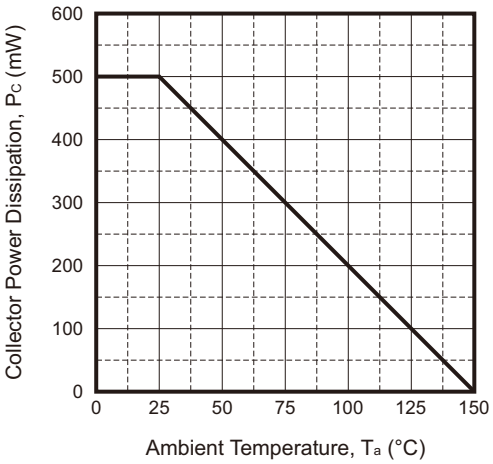
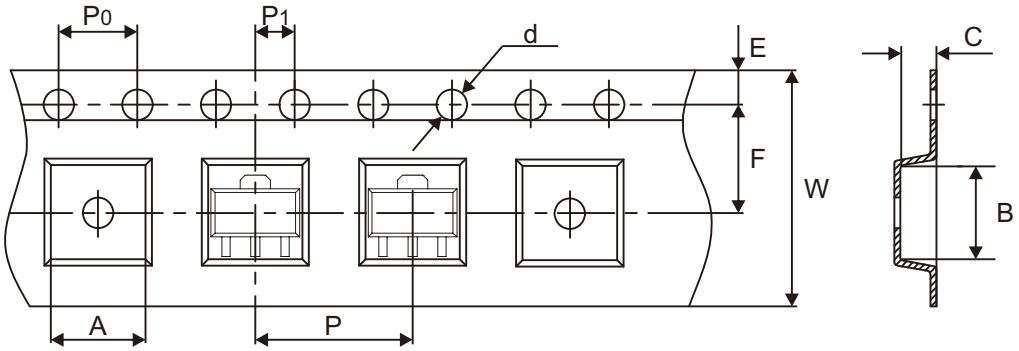
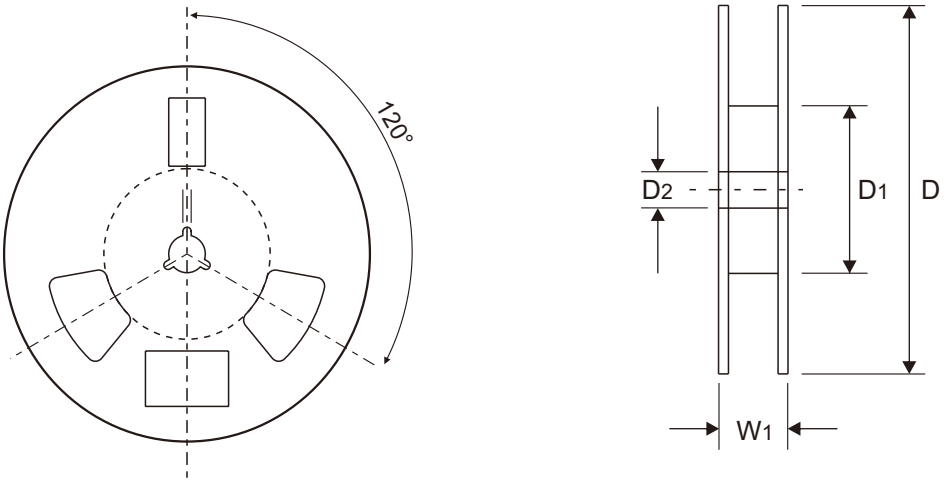


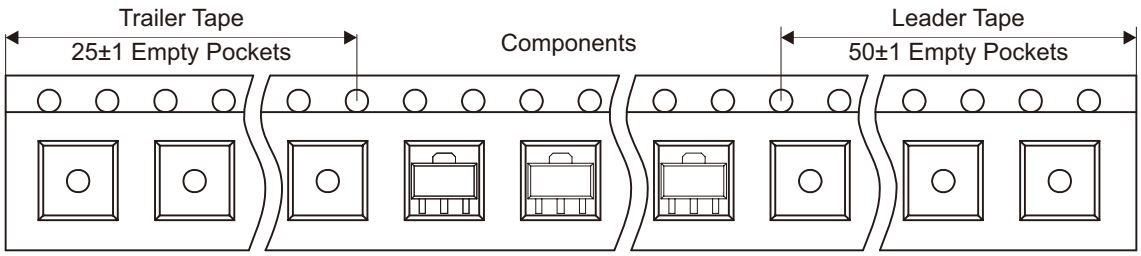
Fig.7 - P_C — T_a



Reel Taping Specification





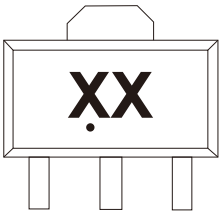


	SYMBOL	A	B	C	d	D	D_1	D_2
SOT-89-3L	(mm)	4.85 ± 0.10	4.45 ± 0.10	1.85 ± 0.10	1.50 + 0.10	180.00 ± 1.00	60.00 ± 1.50	13.20 ± 0.20
	(inch)	0.191 ± 0.004	0.175 ± 0.004	0.073 ± 0.004	0.059 + 0.004	7.087 ± 0.039	2.362 ± 0.059	0.520 ± 0.008

	SYMBOL	E	F	P	P_0	P_1	W	W_1
SOT-89-3L	(mm)	1.75 ± 0.10	5.50 ± 0.05	8.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	12.00 + 0.30 − 0.10	16.50 + 2.00 − 1.00
	(inch)	0.069 ± 0.004	0.217 ± 0.002	0.315 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.472 + 0.012 − 0.004	0.650 + 0.079 − 0.039

Marking Code

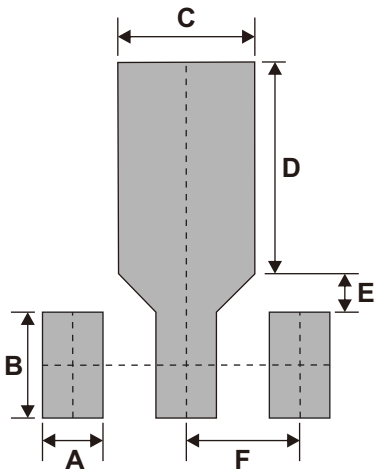
Part Number	Marking Code
2SA1213O-HF	NO
2SA1213Y-HF	NY



xx = Product type marking code
Solid dot = Control code

Suggested P.C.B. PAD Layout

SIZE	SOT-89-3L	
	(mm)	(inch)
A	0.80	0.031
B	1.40	0.055
C	1.80	0.071
D	2.80	0.110
E	0.50	0.020
F	1.50	0.059



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOT-89-3L	1,000	7