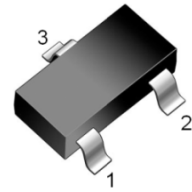


**REPLACEMENT TYPE : 2SA1037**
**FEATURES**

- Excellent  $h_{FE}$  Linearity.
- Compliments The HAC2412



SOT-23

1: BASE 2:EMITTER 3: COLLECTOR

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

Parameter	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	-60	V
Collector-Emitter Voltage	$V_{CEO}$	-50	V
Emitter-Base Voltage	$V_{EBO}$	-6	V
Collector Current-Continuous	$I_C$	-150	mA
Collector Power Dissipation	$P_C$	200	mW
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

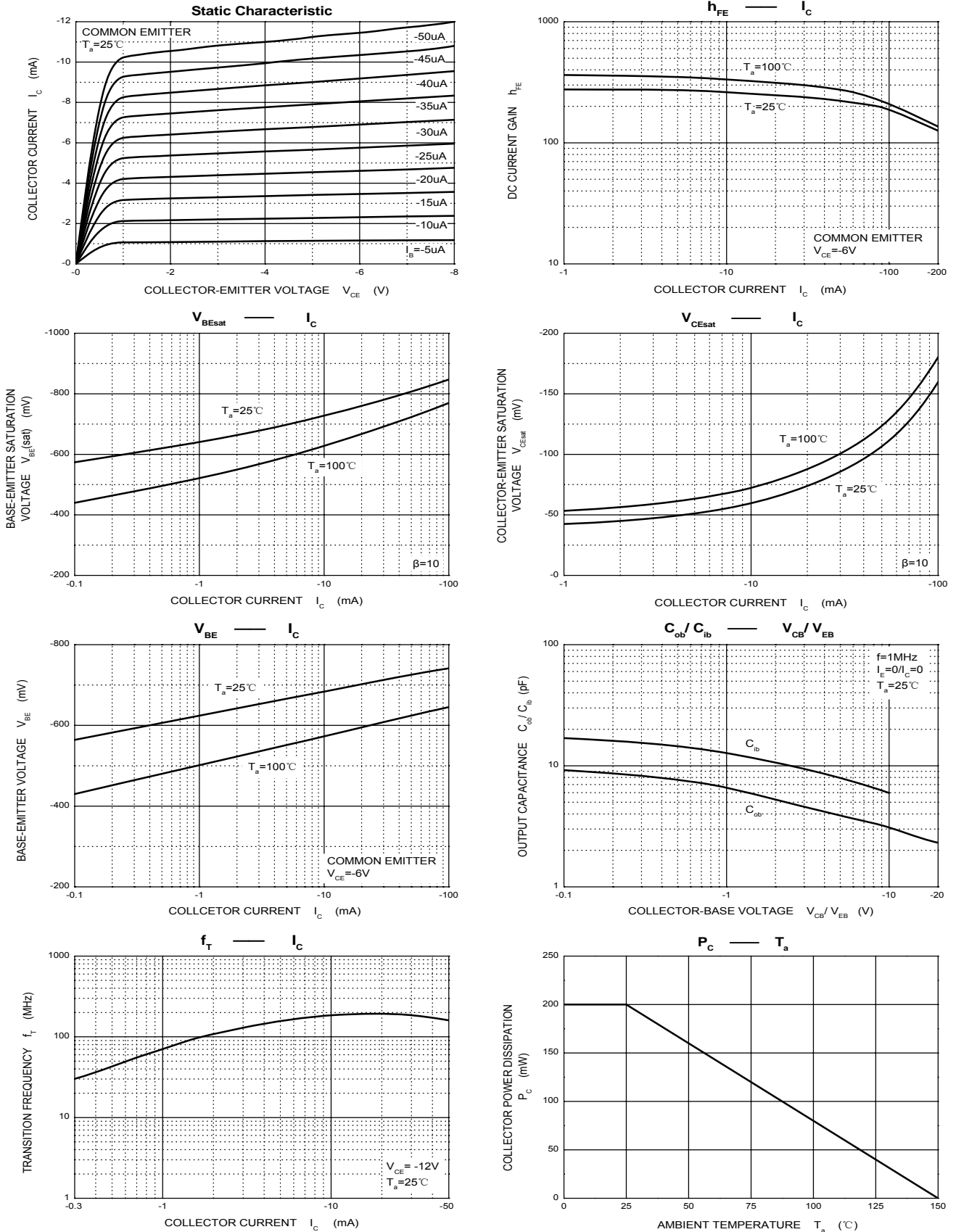
**ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$  unless otherwise noted)**

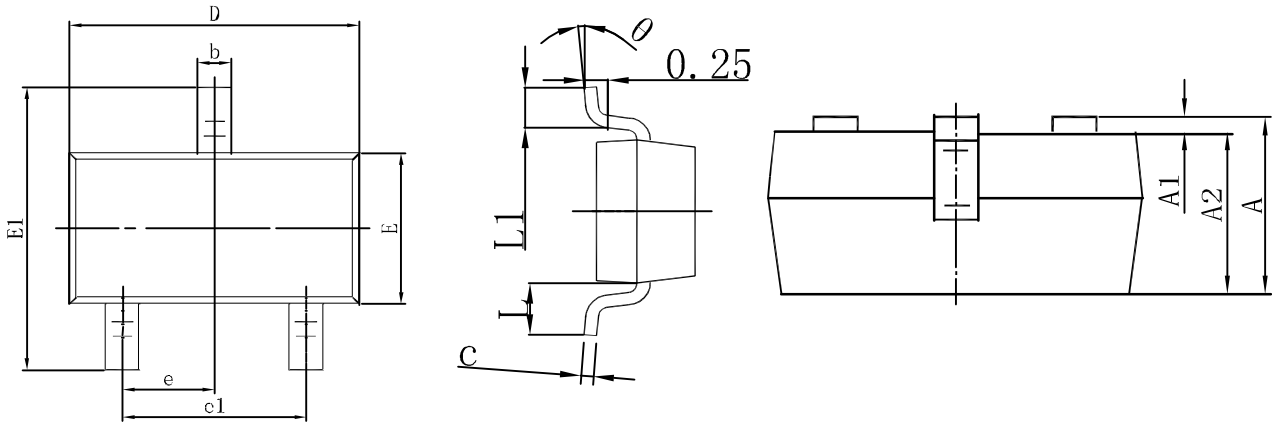
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	$V_{CBO}$	$I_C = -50\mu\text{A}, I_E = 0$	-60			V
Collector-Emitter Breakdown Voltage	$V_{CEO}$	$I_C = -1\text{mA}, I_B = 0$	-50			V
Emitter-Base Breakdown Voltage	$V_{EBO}$	$I_E = -50\mu\text{A}, I_C = 0$	-6			V
Collector Cut-off Current	$I_{CBO}$	$V_{CB} = -60\text{V}, I_E = 0$			-0.1	$\mu\text{A}$
Emitter Cut-off Current	$I_{EBO}$	$V_{EB} = -6\text{V}, I_C = 0$			-0.1	$\mu\text{A}$
DC Current Gain	$h_{FE}$	$V_{CE} = -6\text{V}, I_C = -1\text{mA}$	120		560	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = -50\text{mA}, I_B = -5\text{mA}$			-0.5	V
Transition Frequency	$f_T$	$V_{CE} = -12\text{V}, I_C = 2\text{mA}, f = 30\text{M Hz}$		140		MHz
Collector Output Capacitance	$C_{OB}$	$V_{CB} = -12\text{V}, I_E = 0, f = 1\text{MHz}$		4.0	5.0	pF

**CLASSIFICATION OF  $h_{FE}$** 

Rank	Q	R	S
Range	120-270	180-390	270-560
Marking	FQ	FR	FS

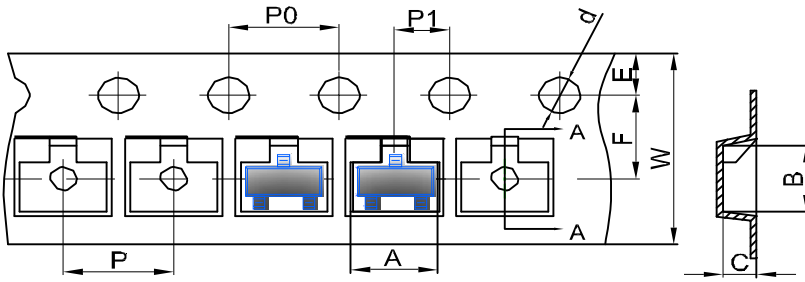
**Typical Characteristics**



**SOT-23 Package Outline Dimensions**


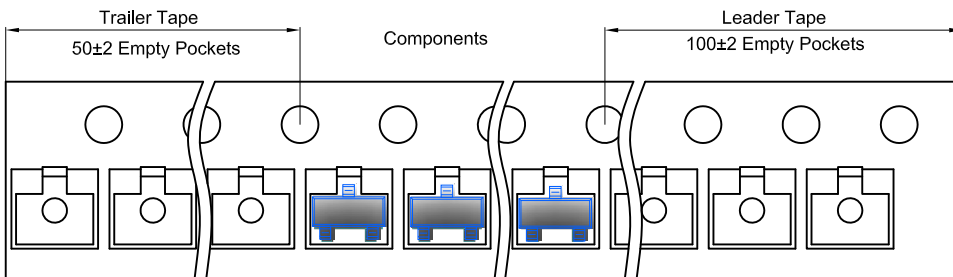
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
$\theta$	0°	8°	0°	8°

**SOT-23 Embossed Carrier Tape**

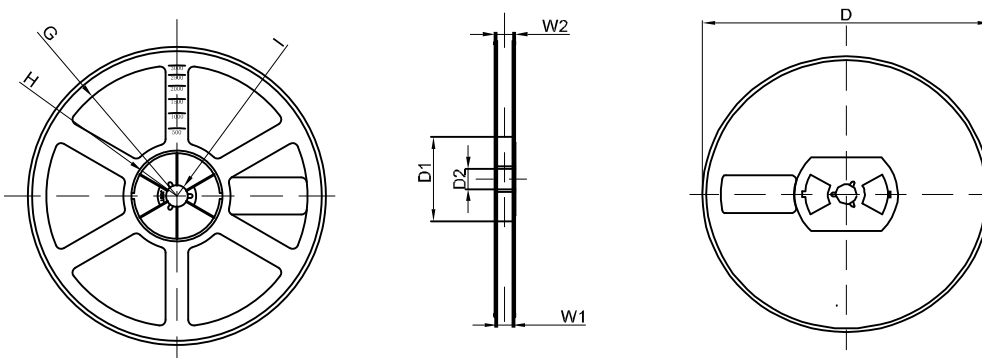


DIMENSIONS ARE IN MILLIMETER										
TYPE	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	φ1.50	1.75	3.50	4.00	4.00	2.00	8.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

**SOT-23 Tape Leader and Traller**



**SOT-23 Reel**



DIMENSIONS ARE IN MILLIMETER								
REEL OPTION	D	D1	D2	G	H	I	W1	W2
7" DIA	φ178	54.40	13.00	R78	R25.60	R6.50	9.50	12.30
TOLERANCE	±2	±1	±1	±1	±1	±1	±1	±1