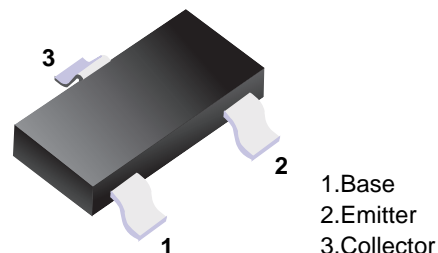


## ■ NPN Transistors



### ■ Features

- High voltage and high current:  $V_{CE0} = 50\text{ V}$ ,  $I_C = 150\text{ mA}$  (max)
- Excellent hFE linearity :  $h_{FE}(I_C = 0.1\text{ mA}) / h_{FE}(I_C = 2\text{ mA}) = 0.95$  (typ.)
- High hFE:  $h_{FE} = 70 \sim 700$
- Low noise:  $NF = 1\text{ dB}$  (typ.),  $10\text{ dB}$  (max)

### ■ Simplified outline(SOT-23)

### ■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	60	V
Collector-emitter voltage	$V_{CEO}$	50	V
Emitter-base voltage	$V_{EBO}$	5	V
Collector current	$I_C$	150	mA
Base current	$I_B$	30	mA
Collector power dissipation	$P_C$	150	mW
Junction temperature	$T_j$	125	$^\circ\text{C}$
Storage temperature range	$T_{stg}$	-55 to +125	$^\circ\text{C}$

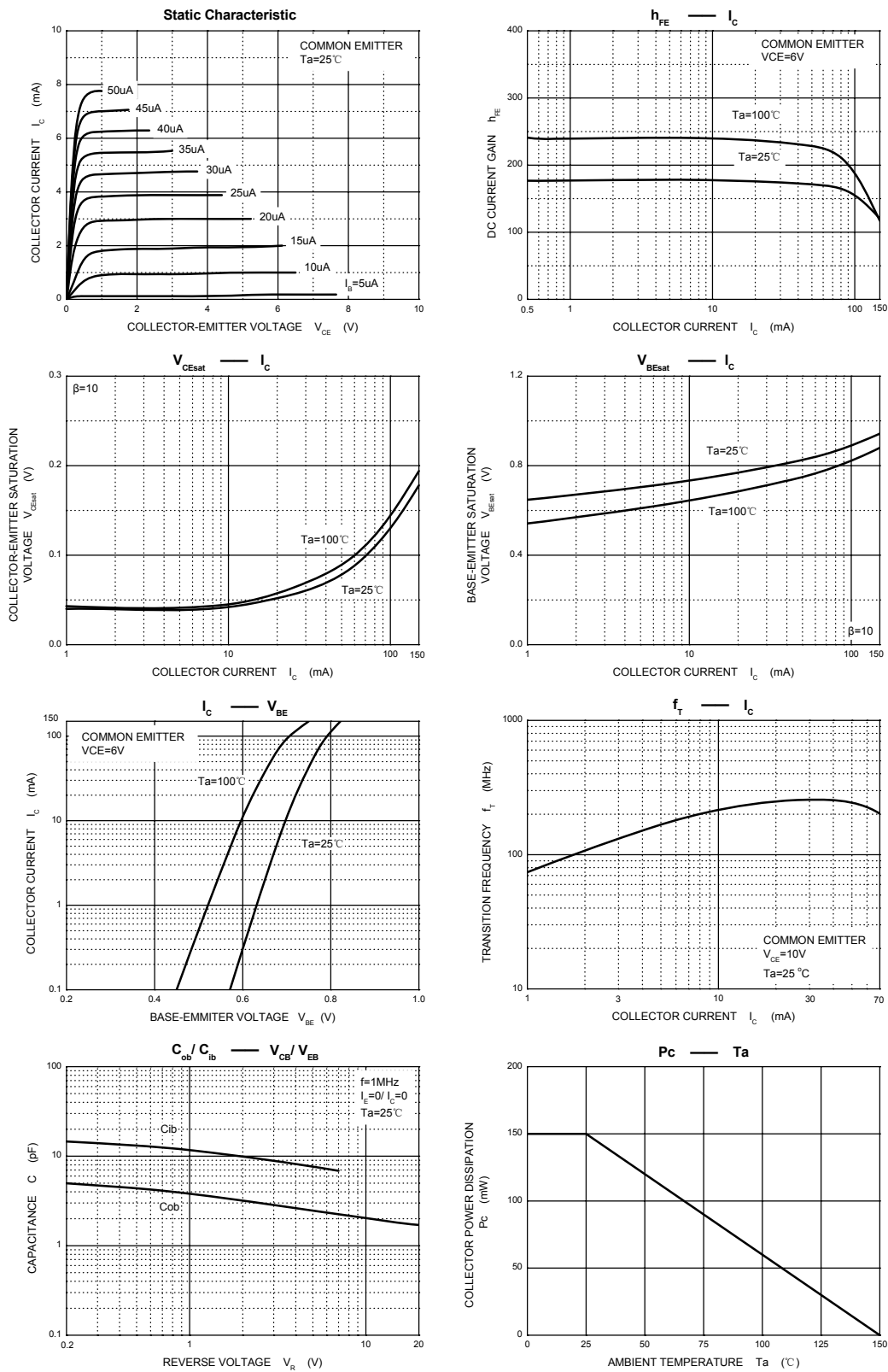
### ■ Electrical Characteristics $T_a = 25^\circ\text{C}$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	$V_{CBO}$	$I_C = 100\ \mu\text{A}$ , $I_E = 0$	60			V
Collector- emitter breakdown voltage	$V_{CEO}$	$I_C = 1\text{ mA}$ , $I_B = 0$	50			
Emitter - base breakdown voltage	$V_{EBO}$	$I_E = 100\ \mu\text{A}$ , $I_C = 0$	5			
Collector-base cut-off current	$I_{CBO}$	$V_{CB} = 60\text{ V}$ , $I_E = 0$			100	nA
Emitter cut-off current	$I_{EBO}$	$V_{EB} = 5\text{ V}$ , $I_C = 0$			100	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 100\text{ mA}$ , $I_B = 10\text{ mA}$			0.25	V
Base - emitter saturation voltage	$V_{BE(sat)}$	$I_C = 100\text{ mA}$ , $I_B = 10\text{ mA}$			1.2	
DC current gain	hFE	$V_{CE} = 6\text{ V}$ , $I_C = 2\text{ mA}$	70		700	
Noise figure	NF	$V_{CE} = 6\text{ V}$ , $I_C = 0.1\text{ mA}$ , $f = 1\text{ kHz}$ , $R_G = 10\text{ k}\Omega$		1	10	dB
Collector output capacitance	$C_{ob}$	$V_{CB} = 10\text{ V}$ , $I_E = 0$ , $f = 1\text{ MHz}$		2	3.5	pF
Transition frequency	$f_T$	$V_{CE} = 10\text{ V}$ , $I_C = 1\text{ mA}$	80			MHz

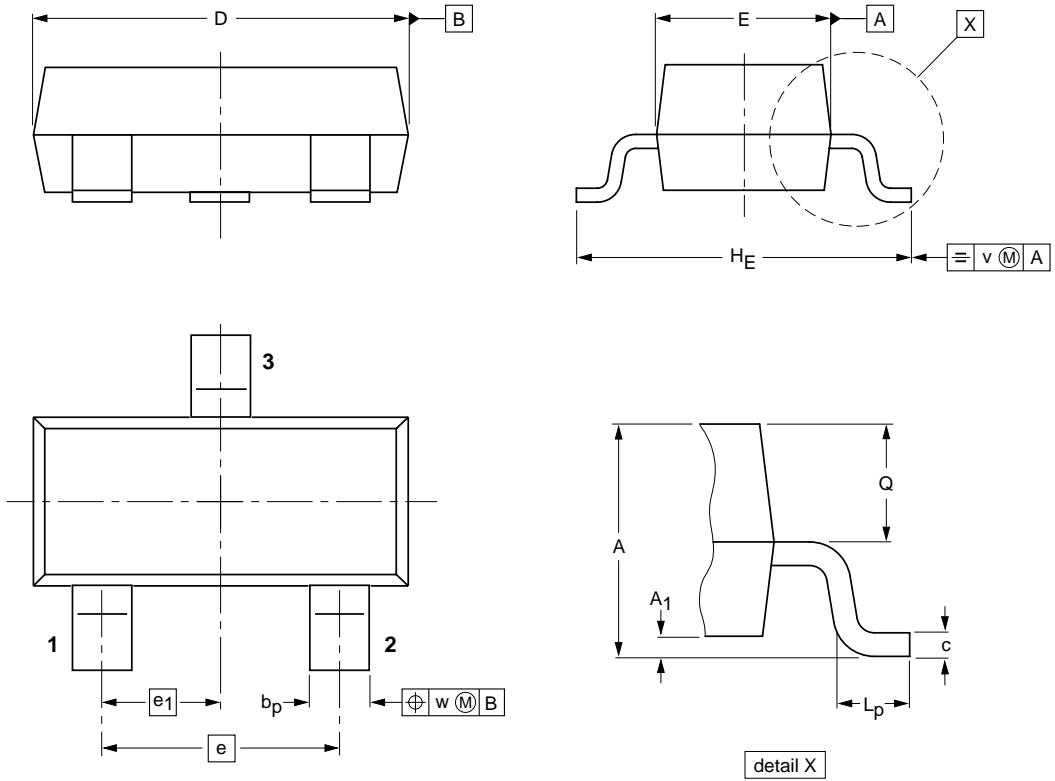
### ■ hFE Classification

Type	2SC2712-O	2SC2712-Y	2SC2712-G	2SC2712-L
Range	70-140	120-240	200-400	350-700
Marking	LO	LY	LG	LL

## Typical Characteristics



■ SOT-23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A <sub>1</sub> max.	b <sub>p</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1