

TRANSISTOR (NPN)

Plastic-Encapsulate Transistor

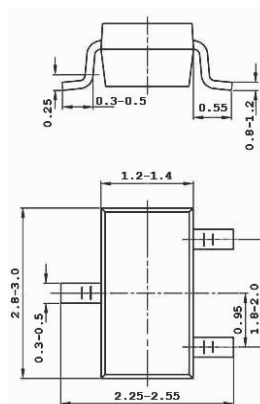
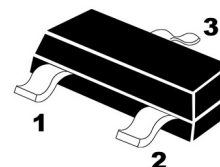
FEATURES

- Low output capacitance: $C_{ob} = 1\text{pF}(\text{typ.})$
- High gain bandwidth product: $f_T = 600\text{MHz}(\text{typ.})$

MARKING:F12,F13,F14

SOT-23

1. BASE
2. EMITTER
3. COLLECTOR



Unit:mm

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

MAXIMUM RATINGS

Parameters	Symbols	Value	UNITS
Collector-Base Voltage	V_{CBO}	30	V
Collector-Emitter Voltage	V_{CEO}	20	V
Emitter-Base Voltage	V_{EBO}	4	V
Collector Current - Continuous	I_C	20	mA
Collector Dissipation	P_C	150	mW
Junction and Storage Temperature	T_J, T_{stg}	-55-150	°C

ELECTRICAL CHARACTERISTICS

Parameters	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=100\mu\text{A}, I_E=0$	30			V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1\text{mA}, I_B=0$	20			V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=100\mu\text{A}, I_C=0$	4			V
Collector Cut-Off Current	I_{CBO}	$V_{CB}=25\text{V}, I_E=0$			0.1	μA
Emitter Cut-Off Current	I_{EBO}	$V_{EB}=3\text{V}, I_C=0$			0.1	μA
DC Current Gain	h_{FE}	$V_{CE}=6\text{V}, I_C=1\text{mA}$	40		180	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=10\text{mA}, I_B=1\text{mA}$			0.3	V
Base-Emitter Voltage	V_{BE}	$V_{CE}=6\text{V}, I_C=1\text{mA}$		0.72		V
Transition Frequency	f_T	$V_{CE}=6\text{V}, I_C=1\text{mA}$	400	600		MHz
Collector Output Capacitance	C_{ob}	$V_{CB}=6\text{V}, I_E=0, f=1\text{MHz}$		1		pF
Noise Figure	NF	$V_{CE}=6\text{V}, I_C=1\text{mA}, f=100\text{MHz}, R_g=50\Omega$		3		dB

CLASSIFICATION OF h_{FE}

Rank	F12	F13	F14
Range	40-80	60-120	90-180