TRANSISTOR (NPN) **Plastic-Encapsulate Transistor**

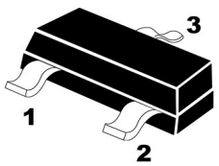
FEATURES

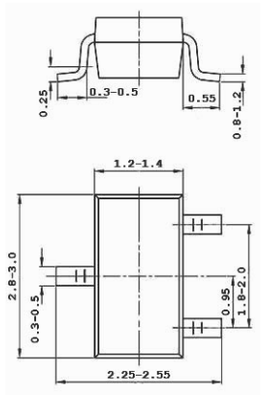
- Low output capacitance: C_{ob} = 1pF(typ.)
- High gain bandwidth product: f_T = 600MHz(typ.)

MARKING:F12,F13,F14

SOT-23

1. BASE
2. EMITTER
3. COLLECTOR





Unit:mm

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25℃ 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	℃

ELECTRICAL CHARACTERISTICS

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

CLASSIFICATION OF h_{FE}

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

RoHS Pb-free TIP Semiconductor