



# DONGGUAN NANJING ELECTRONICS LTD.,

## TO-92 Plastic-Encapsulate Transistors

### S9011 TRANSISTOR ( NPN )

#### FEATURE

Power dissipation

$$P_{CM} : 0.31 \text{ W (Tamb=25}^\circ\text{C)}$$

Collector current

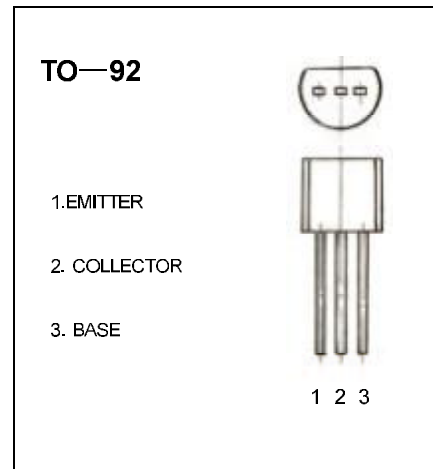
$$I_{CM} : 0.03 \text{ A}$$

Collector-base voltage

$$V_{(BR)CBO} : 30 \text{ V}$$

Operating and storage junction temperature range

$$T_j, T_{stg} : -55^\circ\text{C to } +150^\circ\text{C}$$



#### ELECTRICAL CHARACTERISTICS (Tamb=25°C unless otherwise specified)

Parameter	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	$V_{(BR)CEO}$	$I_C = 0.1 \text{ mA}, I_B = 0$	20			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = 100 \mu\text{A}, I_C = 0$	4			V
Collector cut-off current	$I_{CBO}$	$V_{CB} = 16\text{V}, I_E = 0$			0.1	$\mu\text{A}$
Collector cut-off current	$I_{CBO}$	$V_{CB} = 16\text{V}, I_E = 0$			0.1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = 3.5\text{V}, I_C = 0$			0.1	$\mu\text{A}$
DC current gain	$h_{FE(1)}$	$V_{CE} = 5\text{V}, I_C = 1\text{mA}$	28		270	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 10 \text{ mA}, I_B = 1\text{mA}$			0.3	V
Base-emitter voltage	$V_{BE(sat)}$	$I_C = 10 \text{ mA}, I_B = 1\text{mA}$			1	V
Transition frequency	$f_T$	$V_{CE} = 5\text{V}, I_C = 1\text{mA}, f = 30\text{MHz}$	150			MHz

#### CLASSIFICATION OF $h_{FE(1)}$

Rank	D	E	F	G	H	I	J
Range	28-45	39-60	54-80	72-108	97-146	132-198	180-270