

## TO-92 Plastic-Encapsulate Transistors

### CJ303NL TRANSISTOR (NPN)

#### FEATURES

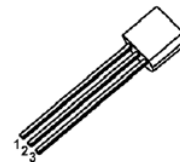
- High DC Current Gain
- Ultra Low Collector-Emitter Saturation Voltage

#### MAXIMUM RATINGS (T<sub>a</sub>=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V <sub>CBO</sub>	Collector-Base Voltage	50	V
V <sub>CEO</sub>	Collector-Emitter Voltage	35	V
V <sub>EBO</sub>	Emitter-Base Voltage	5	V
I <sub>C</sub>	Collector Current	3	A
P <sub>C</sub>	Collector Power Dissipation	625	mW
R <sub>θJA</sub>	Thermal Resistance from Junction to Ambient	200	°C/W
T <sub>j</sub>	Junction Temperature	150	°C
T <sub>stg</sub>	Storage Temperature Range	-55~+150	°C

#### TO-92

1. EMITTER
2. COLLECTOR
3. BASE



**ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25°C unless otherwise specified)**

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> = 0.1mA, I <sub>E</sub> =0	50			V
Collector-emitter breakdown voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> =0	35			V
Emitter-base breakdown voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =0.1mA, I <sub>C</sub> =0	5			V
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> =35V, I <sub>E</sub> =0			100	nA
Collector cut-off current	I <sub>CES</sub>	V <sub>CES</sub> =35V			100	nA
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> =4V, I <sub>C</sub> =0			100	nA
DC current gain	h <sub>FE</sub> *	V <sub>CE</sub> =1.5V, I <sub>C</sub> =1A	100			
		V <sub>CE</sub> =1.5V, I <sub>C</sub> =1.5A	100		400	
		V <sub>CE</sub> =3V, I <sub>C</sub> =2A	100			
Collector-emitter saturation voltage	V <sub>CE(sat)</sub> *	I <sub>C</sub> =0.8A, I <sub>B</sub> =26mA			0.15	V
		I <sub>C</sub> =1.2A, I <sub>B</sub> =40mA			0.2	V
		I <sub>C</sub> =2A, I <sub>B</sub> =66.6mA			0.25	V
		I <sub>C</sub> =3A, I <sub>B</sub> =100mA			0.4	V
Base-emitter saturation voltage	V <sub>BE(sat)</sub> *	I <sub>C</sub> =1.2A, I <sub>B</sub> =40mA			1	V
		I <sub>C</sub> =3A, I <sub>B</sub> =100mA			1.2	V
Base-emitter voltage	V <sub>BE</sub> *	V <sub>CE</sub> =3V, I <sub>C</sub> =2A			1	V
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> =5V, I <sub>C</sub> =100mA, f=100MHz	100			MHz
Collector input capacitance	C <sub>ib</sub>	V <sub>EB</sub> =0.5V, I <sub>C</sub> =0, f=1MHz			650	pF
Collector output capacitance	C <sub>ob</sub>	V <sub>CB</sub> =3V, I <sub>E</sub> =0, f=1MHz			100	pF
Turn on time	t <sub>on</sub>	V <sub>CC</sub> =10V, I <sub>C</sub> =1A, I <sub>B1</sub> = 100mA, R <sub>L</sub> =3Ω		35		ns
Turn off time	t <sub>off</sub>	V <sub>CC</sub> =10V, I <sub>C</sub> =1A, I <sub>B1</sub> = -I <sub>B2</sub> =100mA, R <sub>L</sub> =3Ω		225		ns

\*Pulse width=300μs, Duty cycle<2%.