

**Silicon NPN Power Transistor**

**BD311**

**DESCRIPTION**

- Excellent Safe Operating Area
- DC Current Gain- $h_{FE} = 25(\text{Min.}) @ I_C = 5A$
- Collector-Emitter Saturation Voltage-  
:  $V_{CE(sat)} = 1.0 V(\text{Max}) @ I_C = 5A$
- Complement to Type BD312

**APPLICATIONS**

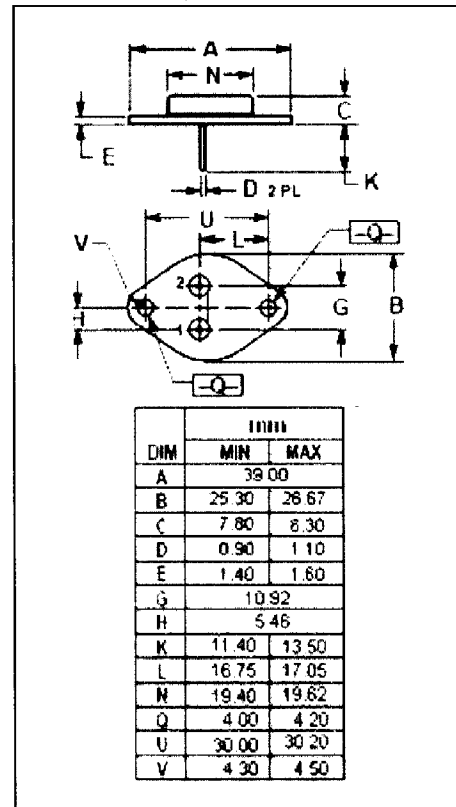
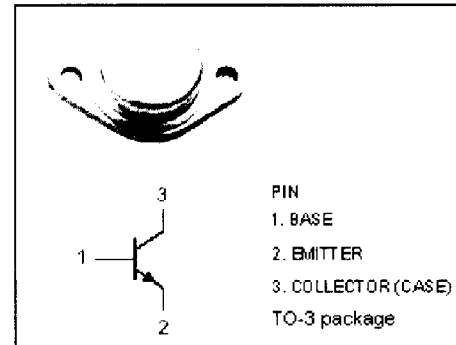
- Designed for high quality amplifiers operating up to 60 watts into 4 ohm load.

**ABSOLUTE MAXIMUM RATINGS( $T_a = 25^\circ C$ )**

SYMBOL	PARAMETER	VALUE	UNIT
$V_{CBO}$	Collector-Base Voltage	60	V
$V_{CEO}$	Collector-Emitter Voltage	60	V
$V_{EBO}$	Emitter-Base Voltage	5	V
$I_C$	Collector Current-Continuous	10	A
$I_{CM}$	Collector Current-Peak	20	A
$I_B$	Base Current-Continuous	4	A
$P_C$	Collector Power Dissipation@ $T_C = 25^\circ C$	115	W
$T_J$	Junction Temperature	200	$^\circ C$
$T_{stg}$	Storage Temperature	-65~200	$^\circ C$

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	MAX	UNIT
$R_{th j-c}$	Thermal Resistance, Junction to Case	1.52	$^\circ C/W$



NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.



# Silicon NPN Power Transistor

# BD311

## ELECTRICAL CHARACTERISTICS

$T_c=25^\circ\text{C}$  unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
$V_{CE(SUS)}$	Collector-Emitter Sustaining Voltage	$I_C=200\text{mA}$ ; $I_B=0$	60		V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C= 5\text{A}$ ; $I_B= 0.5\text{A}$		1.0	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C= 5\text{A}$ ; $I_B= 0.5\text{A}$		1.8	V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C= 5\text{A}$ ; $V_{CE}= 4\text{V}$		1.5	V
$I_{CBO}$	Collector Cutoff Current	$V_{CB}= 60\text{V}$ ; $I_B=0$		1.0	mA
$I_{EBO}$	Emitter Cutoff Current	$V_{EB}= 7.0\text{V}$ ; $I_C=0$		1.0	mA
$h_{FE-1}$	DC Current Gain	$I_C= 5\text{A}$ ; $V_{CE}= 4\text{V}$	25		
$h_{FE-2}$	DC Current Gain	$I_C= 10\text{A}$ ; $V_{CE}= 4\text{V}$	5		
$I_{s/b}$	Second Breakdown Collector Current with Base Forward Biased	$V_{CE}= 39\text{V}$ ; $t= 0.5\text{s}$ $V_{CE}= 50\text{V}$ ; $t= 0.5\text{s}$	2.95 0.60		A
$f_T$	Current Gain-Bandwidth Product	$I_C= 0.5\text{A}$ ; $V_{CE}= 10\text{V}$ ; $f=1.0\text{MHz}$	4		MHz