

**isc 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-  
:  $V_{CE(\text{sat})}=1.0\text{ V}(\text{Max})@I_C = 5A$
- Complement to Type BD312
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

**APPLICATIONS**

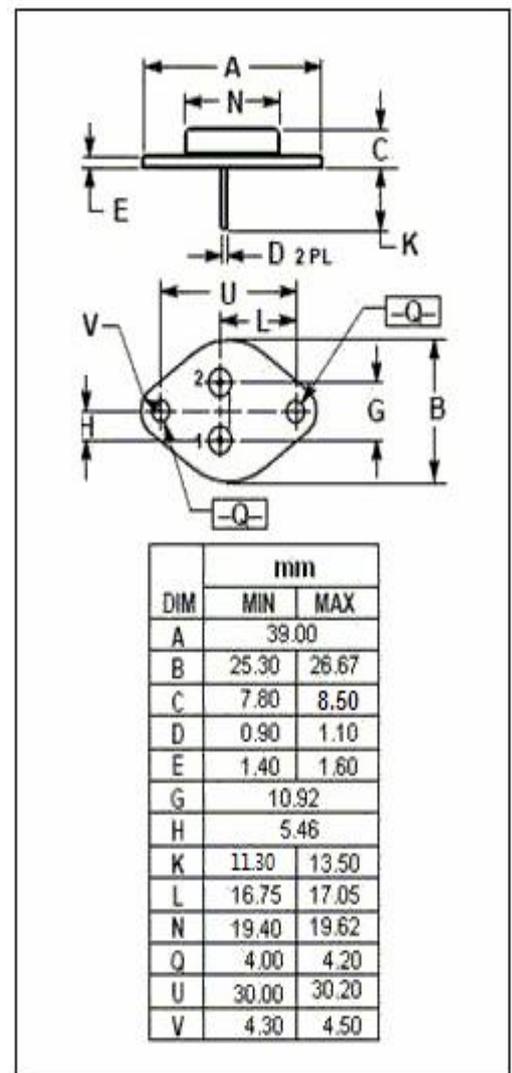
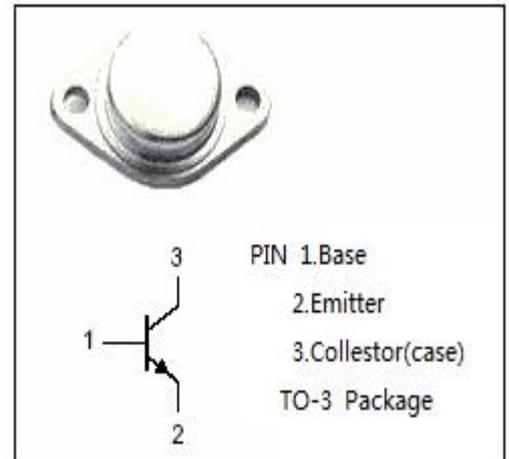
- Designed for high quality amplifiers operating up to 60 watts into 4 ohm load.

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

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@ $T_C=25^\circ\text{C}$	115	W
$T_J$	Junction Temperature	200	$^\circ\text{C}$
$T_{\text{stg}}$	Storage Temperature	-65~200	$^\circ\text{C}$

**THERMAL CHARACTERISTICS**

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



## isc Silicon NPN Power Transistor

BD311

## ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
$V_{CEQ(SUS)}$	Collector-Emitter Sustaining Voltage	$I_C=30\text{mA}$ ; $I_B=0$	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

**NOTICE:**

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