

**isc Silicon NPN Power Transistors**

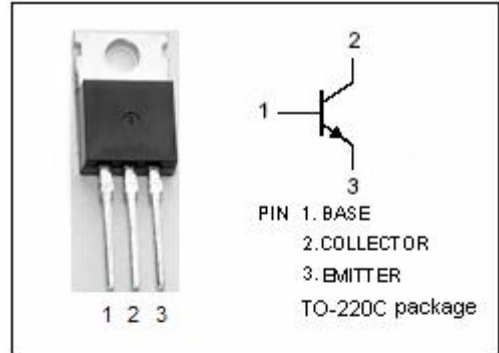
**BDT31/A/B/C**

**DESCRIPTION**

- DC Current Gain  $-h_{FE} = 25(\text{Min})@ I_C = 1.0\text{A}$
- Collector-Emitter Sustaining Voltage-  
:  $V_{CEO(\text{SUS})} = 40\text{V}(\text{Min})$ - BDT31;  $60\text{V}(\text{Min})$ - BDT31A  
 $80\text{V}(\text{Min})$ - BDT31B;  $100\text{V}(\text{Min})$ - BDT31C
- Complement to Type BDT32/A/B/C
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

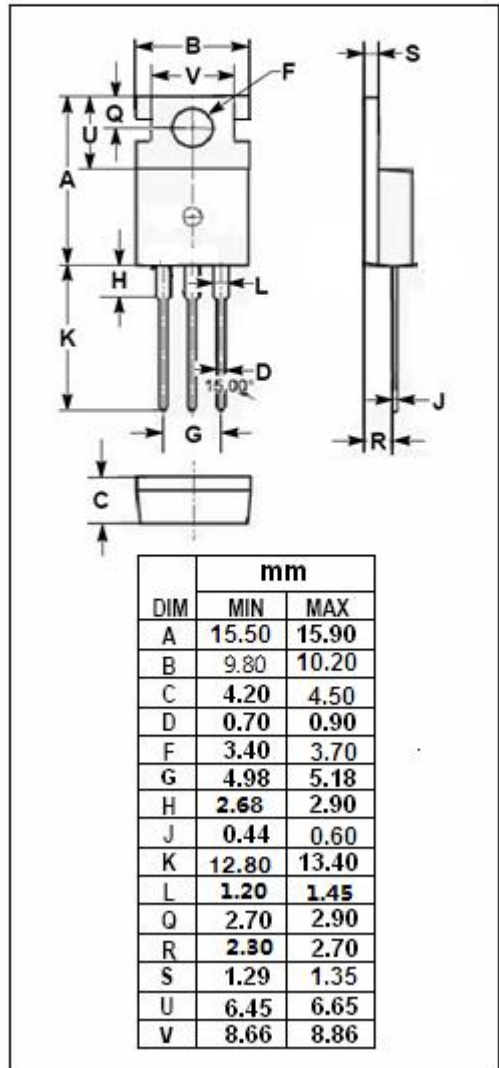
**APPLICATIONS**

- Designed for use in audio output stages and general amplifier and switching applications.



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

SYMBOL	PARAMETER	VALUE	UNIT	
$V_{CBO}$	Collector-Base Voltage	BDT31	80	V
		BDT 31A	100	
		BDT 31B	120	
		BDT 31C	140	
$V_{CEO}$	Collector-Emitter Voltage	BDT31	40	V
		BDT 31A	60	
		BDT 31B	80	
		BDT 31C	100	
$V_{EBO}$	Emitter-Base Voltage	5	V	
$I_C$	Collector Current-Continuous	3	A	
$I_{CM}$	Collector Current-Peak	5	A	
$I_B$	Base Current	1	A	
$P_C$	Collector Power Dissipation $T_C=25^\circ\text{C}$	40	W	
$T_j$	Junction Temperature	150	$^\circ\text{C}$	
$T_{stg}$	Storage Temperature Range	-65~150	$^\circ\text{C}$	



**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	MAX	UNIT
$R_{th\ j-c}$	Thermal Resistance, Junction to Case	3.12	$^\circ\text{C}/\text{W}$
$R_{th\ j-a}$	Thermal Resistance, Junction to Ambient	70	$^\circ\text{C}/\text{W}$

## isc Silicon NPN Power Transistors

## BDT31/A/B/C

## ELECTRICAL CHARACTERISTICS

T<sub>C</sub>=25°C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V <sub>CE(SUS)</sub>	Collector-Emitter Sustaining Voltage	BDT31	I <sub>C</sub> = 30mA; I <sub>B</sub> = 0	40		V
		BDT 31A		60		
		BDT 31B		80		
		BDT 31C		100		
V <sub>CE(sat)</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 3A; I <sub>B</sub> = 0.375A			1.2	V
V <sub>BE(on)</sub>	Base-Emitter On Voltage	I <sub>C</sub> = 3A; V <sub>CE</sub> = 4V			1.8	V
I <sub>CES</sub>	Collector Cutoff Current	V <sub>CE</sub> = V <sub>CE0max</sub> ; V <sub>BE</sub> = 0			0.2	mA
I <sub>CEO</sub>	Collector Cutoff Current	BDT31/A			0.1	mA
		BDT31B/C				
I <sub>EBO</sub>	Emitter Cutoff Current	V <sub>EB</sub> = 5V; I <sub>C</sub> = 0			0.2	mA
h <sub>FE-1</sub>	DC Current Gain	I <sub>C</sub> = 1A; V <sub>CE</sub> = 4V	25			
h <sub>FE-2</sub>	DC Current Gain	I <sub>C</sub> = 3A; V <sub>CE</sub> = 4V	10		50	
f <sub>T</sub>	Current-Gain—Bandwidth Product	I <sub>C</sub> = 0.5A; V <sub>CE</sub> = 10V	3			MHz
Switching Times						
t <sub>on</sub>	Turn-On Time	I <sub>C</sub> = 1.0A; I <sub>B1</sub> = -I <sub>B2</sub> = 0.1A		0.3		μs
t <sub>off</sub>	Turn-Off Time			1.0		μs

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