

Silicon NPN Power Transistors

BDT31/A/B/C

DESCRIPTION

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

APPLICATIONS

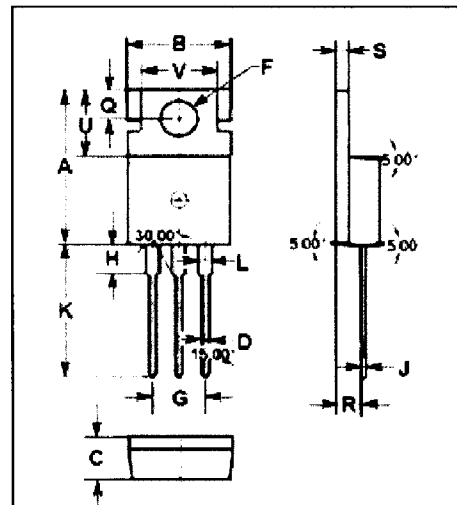
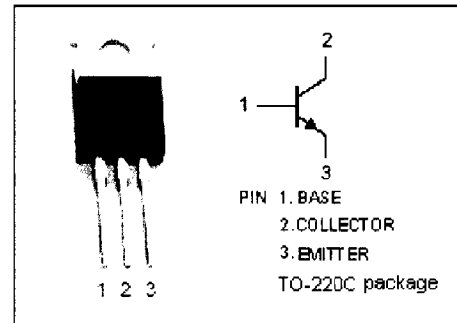
- Designed for use in audio output stages and general amplifier and switching applications.

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 Ttemperature Range	-65~150	$^\circ\text{C}$	

THERMAL CHARACTERISTICS

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



DIM	mm	
	MIN	MAX
A	15.70	15.90
B	9.90	10.10
C	4.20	4.40
D	0.70	0.90
F	3.40	3.60
G	4.98	5.18
H	2.70	2.90
J	0.44	0.46
K	13.20	13.40
L	1.10	1.30
Q	2.70	2.90
R	2.50	2.70
S	1.29	1.31
U	6.45	6.65
V	8.66	8.86



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ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{CE0(SUS)}$	Collector-Emitter Sustaining Voltage	BDT31	40			V
		BDT 31A	60			
		BDT 31B	80			
		BDT 31C	100			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=3A; I_B=0.375A$			1.2	V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C=3A; V_{CE}=4V$			1.8	V
I_{CES}	Collector Cutoff Current	$V_{CE}=V_{CE0max}; V_{BE}=0$			0.2	mA
I_{CEO}	Collector Cutoff Current	BDT31/A			0.1	mA
		BDT31B/C				
I_{EBO}	Emitter Cutoff Current	$V_{EB}=5V; I_C=0$			0.2	mA
h_{FE-1}	DC Current Gain	$I_C=1A; V_{CE}=4V$	25			
h_{FE-2}	DC Current Gain	$I_C=3A; V_{CE}=4V$	10		50	
f_T	Current-Gain—Bandwidth Product	$I_C=0.5A; V_{CE}=10V$	3			MHz

Switching Times

t_{on}	Turn-On Time	$I_C=1.0A; I_{B1}=-I_{B2}=0.1A$		0.3		μs
t_{off}	Turn-Off Time			1.0		μs