

**Silicon NPN Power Transistor**

**BD933/935/937/939/941**

**DESCRIPTION**

- DC Current Gain-  
 :  $h_{FE} = 40(\text{Min}) @ I_C = 150\text{mA}$
- Complement to Type BD934/936/938/940/942

**APPLICATIONS**

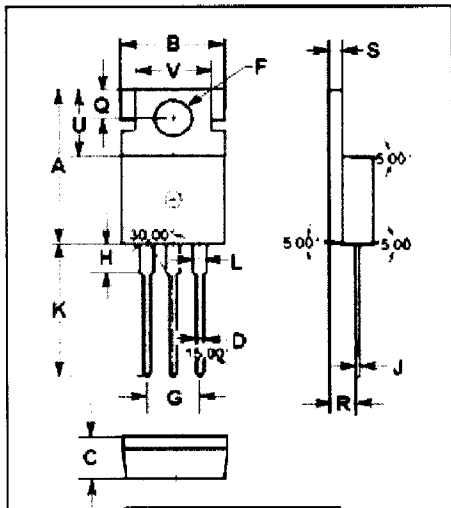
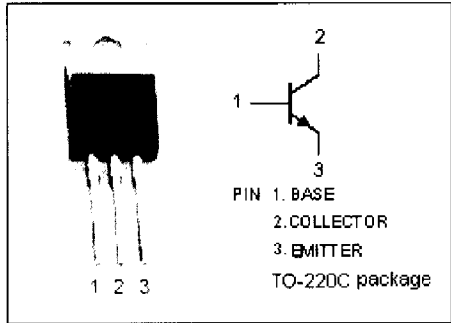
- Designed for use in output stages of audio and television amplifier circuits where high peak powers can occur.

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

SYMBOL	PARAMETER	VALUE	UNIT	
$V_{CBO}$	Collector-Base Voltage	BD933	45	V
		BD935	60	
		BD937	100	
		BD939	120	
		BD941	140	
$V_{CEO}$	Collector-Emitter Voltage	BD933	45	V
		BD935	60	
		BD937	80	
		BD939	100	
		BD941	120	
$V_{EBO}$	Emitter-Base Voltage	5	V	
$I_C$	Collector Current-Continuous	3	A	
$I_{CM}$	Collector Current-Peak	7	A	
$I_B$	Base Current-Continuous	0.5	A	
$P_C$	Collector Power Dissipation @ $T_c = 25^\circ\text{C}$	30	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	4.17	$^\circ\text{C/W}$
$R_{th\ j-a}$	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
$V_{CE(SUS)}$	Collector-Emitter Sustaining Voltage	BD933	$I_C = 100\text{mA}; I_B = 0$			V
		BD935				
		BD937				
		BD939				
		BD941				
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 1\text{A}; I_B = 0.1\text{A}$			0.6	V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C = 1\text{A}; V_{CE} = 2\text{V}$			1.3	V
$I_{CBO}$	Collector Cutoff Current	$V_{CB} = V_{CB0max}; I_E = 0$ $V_{CB} = V_{CB0max}; I_E = 0, T_J = 150^\circ\text{C}$			0.05 1	mA
$I_{CEO}$	Collector Cutoff Current	$V_{CE} = V_{CE0max}; I_B = 0$			0.1	mA
$I_{EBO}$	Emitter Cutoff Current	$V_{EB} = 5\text{V}; I_C = 0$			0.2	mA
$h_{FE-1}$	DC Current Gain	$I_C = 150\text{mA}; V_{CE} = 2\text{V}$	40		250	
$h_{FE-2}$	DC Current Gain	$I_C = 1\text{A}; V_{CE} = 2\text{V}$	25			
$f_T$	Current-Gain—Bandwidth Product	$I_C = 250\text{mA}; V_{CE} = 10\text{V}$	3			MHz

### Switching Times

$t_{on}$	Turn-On Time	$I_C = 1.0\text{A}; I_{B1} = -I_{B2} = 0.1\text{A}$		0.4	1.0	$\mu\text{s}$
$t_{off}$	Turn-Off Time			1.5	3.0	$\mu\text{s}$