

INCHANGE Semiconductor

isc Product Specification

isc 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

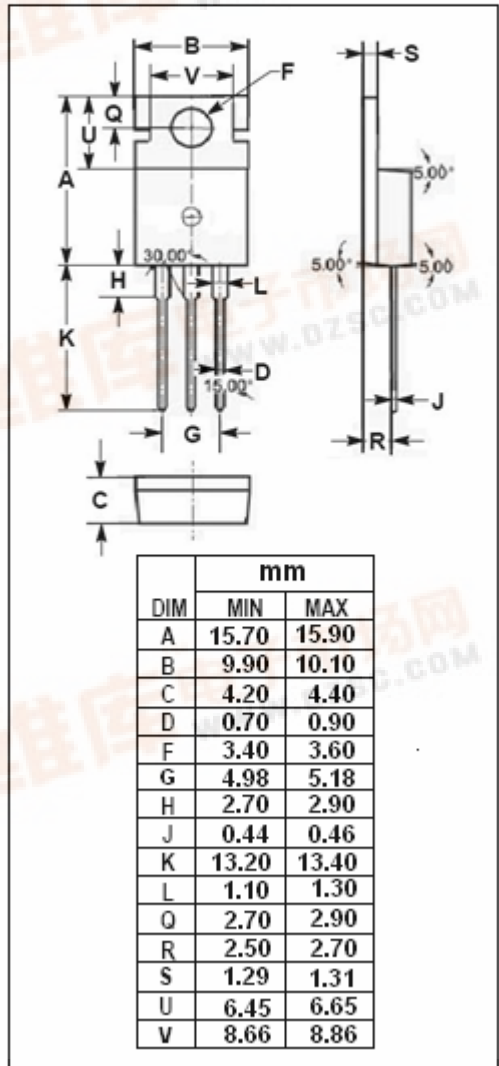
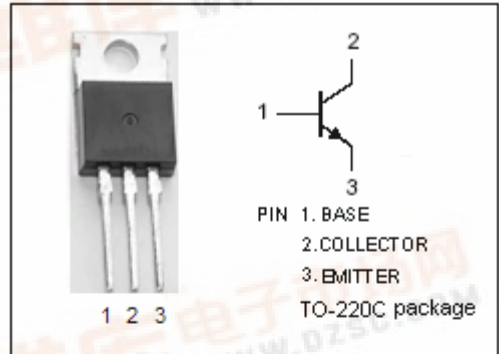
- Designed for use in output stages of audio and television amplifier circuits where high peak powers can occur.

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	$^\circ\text{C}/\text{W}$
$R_{th\ j-a}$	Thermal Resistance, Junction to Ambient	70	$^\circ\text{C}/\text{W}$



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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	$I_C=100\text{mA}; I_B=0$	BD933	45			V
			BD935	60			
			BD937	80			
			BD939	100			
			BD941	120			
$V_{CE(sat)}$	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	μs
t_{off}	Turn-Off Time			1.5	3.0	μs