

isc Silicon NPN Power Transistor

BD233/235/237

DESCRIPTION

- DC Current Gain-
: $h_{FE} = 40(\text{Min}) @ I_C = 0.15A$
- Complement to Type BD234/236/238

APPLICATIONS

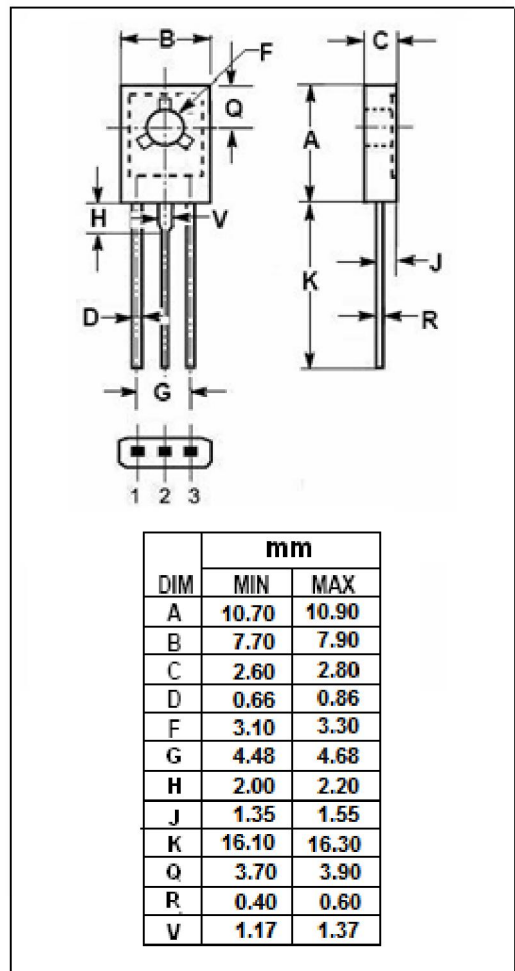
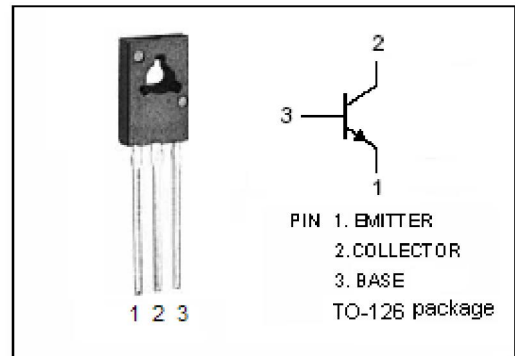
- Designed for use in 5~10 watt audio amplifiers and drivers utilizing complementary or quasi complementary circuits.

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

SYMBOL	PARAMETER	VALUE	UNIT	
V_{CBO}	Collector-Base Voltage	BD233	45	V
		BD235	60	
		BD237	100	
V_{CEO}	Collector-Emitter Voltage	BD233	45	V
		BD235	60	
		BD237	80	
V_{CER}	Collector-Emitter Voltage($R_{BE} = 1k\Omega$)	BD233	45	V
		BD235	60	
		BD237	100	
V_{EBO}	Emitter-Base Voltage	5	V	
I_C	Collector Current-Continuous	2	A	
I_{CM}	Collector Current-Peak	6	A	
I_B	Base Current-Continuous	0.5	A	
P_C	Collector Power Dissipation @ $T_C=25^\circ\text{C}$	25	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	5	$^\circ\text{C/W}$
$R_{th\ j-a}$	Thermal Resistance, Junction to Ambient	100	$^\circ\text{C/W}$



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ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{CEQ(SUS)}$	Collector-Emitter Sustaining Voltage	BD233	45			V
		BD235	60			
		BD237	80			
		$I_C=100\text{mA}; I_B=0$				
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=1.0\text{A}; I_B=0.1\text{A}$			0.6	V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C=1.0\text{A}; V_{CE}=2\text{V}$			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 1.0	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	$I_C=1.0\text{A}; V_{CE}=2\text{V}$	25			
f_T	Current-Gain—Bandwidth Product	$I_C=250\text{mA}; V_{CE}=10\text{V}; f_{test}=1.0\text{MHz}$	3.0			MHz

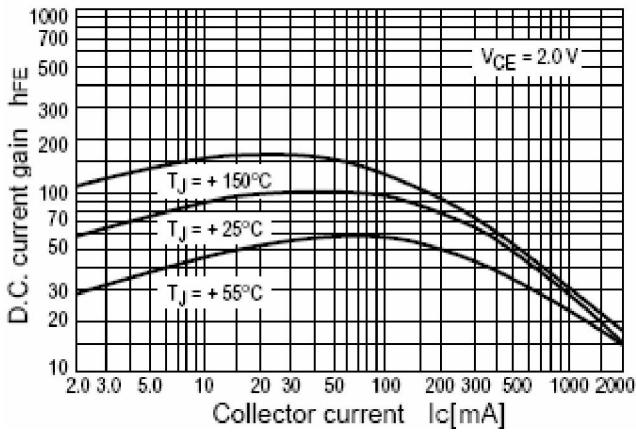
Switching Times

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

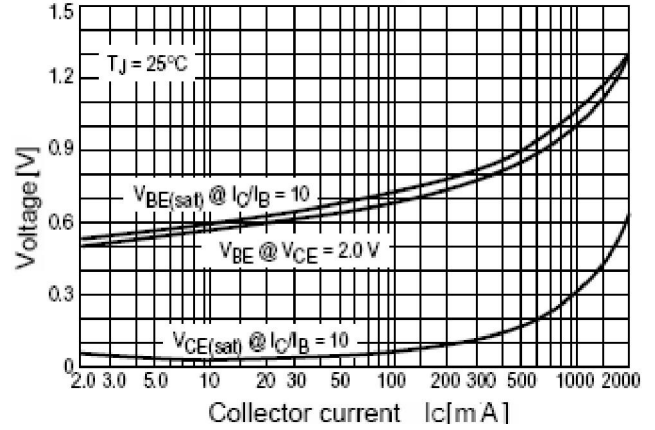
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h_{FE} - I_C Characteristics



"On" Voltages



Safe Operating Area

