

isc Silicon NPN Power Transistor

MJE180

DESCRIPTION

- Collector–Emitter Sustaining Voltage—
: $V_{CEO(SUS)} = 40\text{ V}$
- DC Current Gain—
: $h_{FE} = 30(\text{Min}) @ I_C = 0.5\text{ A}$
= $12(\text{Min}) @ I_C = 1.5\text{ A}$
- Complement to Type MJE170

APPLICATIONS

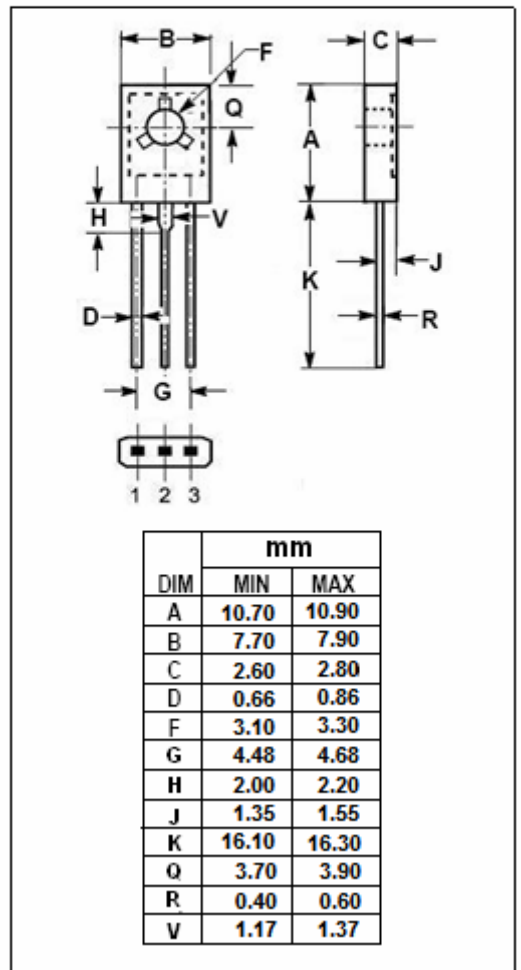
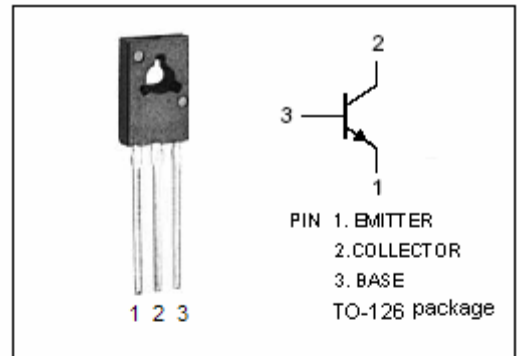
- Low power audio amplifier
- Low current high speed switching applications

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

SYMBOL	PARAMETER	VALUE	UNIT
V_{CBO}	Collector-Base Voltage	60	V
V_{CEO}	Collector-Emmitter Voltage	40	V
V_{EBO}	Emmitter-Base Voltage	7	V
I_C	Collector Current-Continuous	3	A
I_{CM}	Collector Current-peak	6	A
I_B	Base Current	1	A
P_C	Collector Power Dissipation $T_a=25^\circ\text{C}$	1.5	W
	Collector Power Dissipation $T_C=25^\circ\text{C}$	12.5	
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	10	$^\circ\text{C/W}$
$R_{th\ j-a}$	Thermal Resistance, Junction to Ambient	83.4	$^\circ\text{C/W}$



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ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
$V_{CEO(SUS)}$	Collector-Emitter Sustaining Voltage	$I_C = 10\text{mA}; I_B = 0$	40		V
$V_{CE(sat)-1}$	Collector-Emitter Saturation Voltage	$I_C = 0.5\text{A}; I_B = 50\text{mA}$		0.3	V
$V_{CE(sat)-2}$	Collector-Emitter Saturation Voltage	$I_C = 1.5\text{A}; I_B = 0.15\text{A}$		0.9	V
$V_{CE(sat)-3}$	Collector-Emitter Saturation Voltage	$I_C = 3\text{A}; I_B = 0.6\text{A}$		1.7	V
$V_{BE(sat)-1}$	Base-Emitter Saturation Voltage	$I_C = 1.5\text{A}; I_B = 0.15\text{A}$		1.5	V
$V_{BE(sat)-2}$	Base-Emitter Saturation Voltage	$I_C = 3\text{A}; I_B = 0.6\text{A}$		2.0	V
$V_{BE(on)}$	Base-Emitter On Voltage	$V_{CE} = 1\text{V}; I_C = 0.5\text{A}$		1.2	V
I_{CBO}	Collector Cutoff Current	$V_{CB} = 60\text{V}; I_E = 0$ $V_{CB} = 60\text{V}; I_E = 0; T_C = 150^\circ\text{C}$		0.1 0.1	μA mA
I_{EBO}	Emitter Cutoff Current	$V_{EB} = 7\text{V}; I_C = 0$		0.1	μA
h_{FE-1}	DC Current Gain	$I_C = 0.1\text{A}; V_{CE} = 1\text{V}$	50	250	
h_{FE-2}	DC Current Gain	$I_C = 0.5\text{A}; V_{CE} = 1\text{V}$	30		
h_{FE-3}	DC Current Gain	$I_C = 1.5\text{A}; V_{CE} = 1\text{V}$	12		
f_T	Current-Gain—Bandwidth Product	$I_C = 0.1\text{A}; V_{CE} = 10\text{V};$	50		MHz
C_{OB}	Collector Capacitance	$I_E = 0; V_{CB} = 10\text{V}; f_{test} = 0.1\text{MHz}$		40	pF