

KSB772**PNP EPITAXIAL SILICON TRANSISTOR**

T-33-17

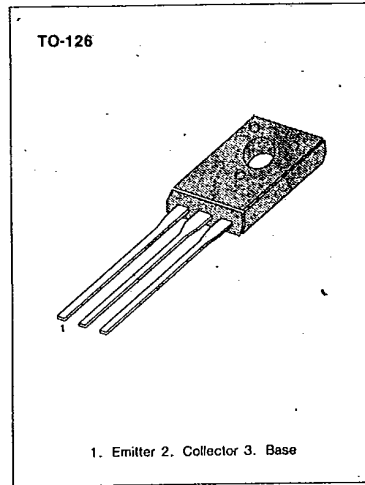
**AUDIO FREQUENCY POWER AMPLIFIER
LOW SPEED SWITCHING**

- Complement to KSD882

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

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CB0}	-40	V
Collector-Emitter Voltage	V_{CE0}	-30	V
Emitter-Base Voltage	V_{EB0}	-5	V
Collector Current (DC)	I_C	-3	A
*Collector Current (Pulse)	I_C	-7	A
Base Current (DC)	I_B	-0.6	A
Collector Dissipation ($T_c=25^\circ\text{C}$)	P_C	10	W
Collector Dissipation ($T_a=25^\circ\text{C}$)	P_C	1	W
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55~150	$^\circ\text{C}$

- $PW \leq 10\text{ms}$, Duty Cycle $\leq 50\%$

**ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)**

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Cutoff Current	I_{CBO}	$V_{CB} = -30\text{V}, I_E = 0$			-1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = -3\text{V}, I_C = 0$			-1	μA
*DC Current Gain	h_{FE1}	$V_{CE} = -2\text{V}, I_C = -20\text{mA}$	30	220		
	h_{FE2}	$V_{CE} = -2\text{V}, I_C = -1\text{A}$	60	160	400	
*Collector Emitter Saturation Voltage	$V_{CE}(\text{sat})$	$I_C = -2\text{A}, I_B = -0.2\text{A}$		-0.3	-0.5	V
*Base Emitter Saturation Voltage	$V_{BE}(\text{sat})$	$I_C = -2\text{A}, I_B = -0.2\text{A}$		-1.0	-2.0	V
Current Gain Bandwidth Product	f_T	$V_{CE} = -5\text{V}, I_E = 0.1\text{A}$		80		MHz
Output Capacitance	C_{ob}	$V_{CB} = -10\text{V}, I_E = 0$ $f = 1\text{MHz}$		55		pF

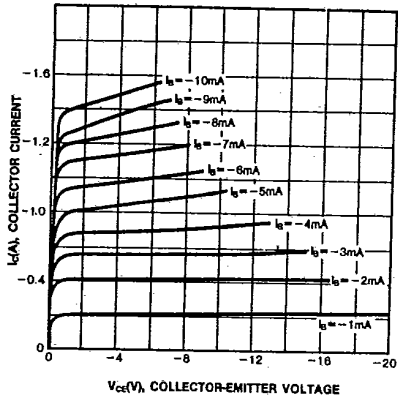
- Pulse Test: $PW \leq 350\mu\text{s}$, Duty Cycle $\leq 2\%$

 $h_{FE}(2)$ CLASSIFICATION

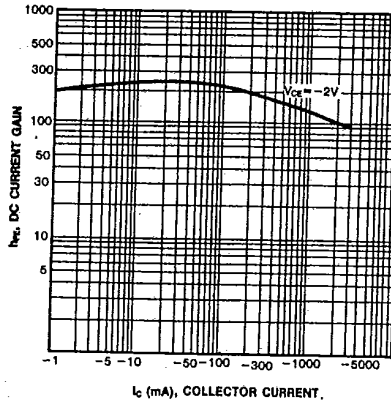
Classification	R	O	Y	G
$h_{FE}(2)$	60-120	100-200	160-320	200-400



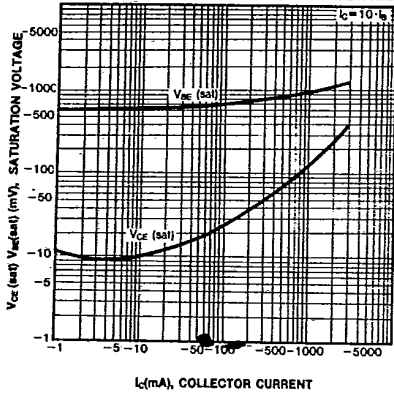
STATIC CHARACTERISTIC



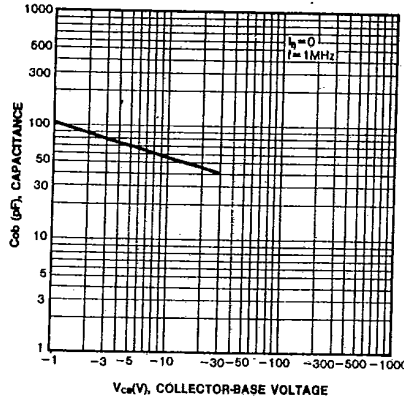
DC CURRENT GAIN



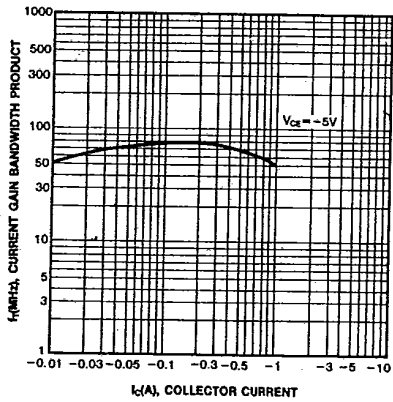
BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE



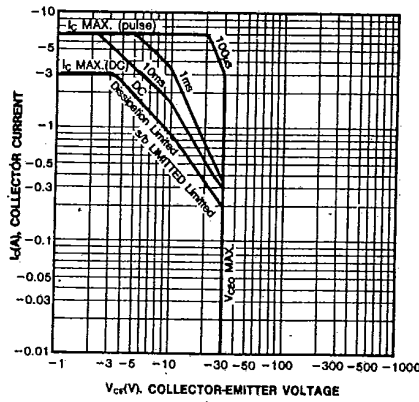
COLLECTOR OUTPUT CAPACITANCE



CURRENT GAIN-BANDWIDTH PRODUCT



SAFE OPERATING AREA

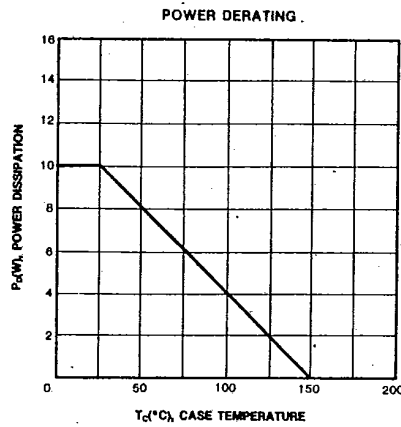
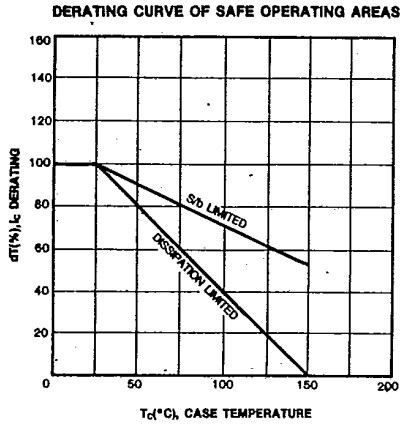


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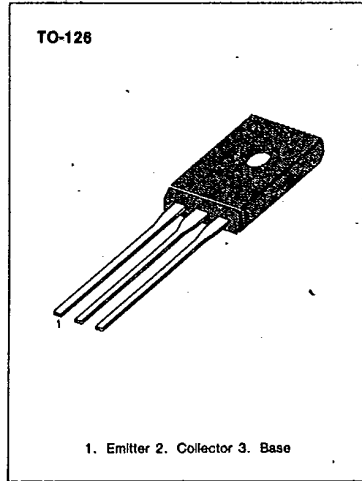


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**PNP EPITAXIAL SILICON
DARLINGTON TRANSISTOR**

T-33-31

**AUDIO FREQUENCY POWER AMPLIFIER
LOW SPEED SWITCHING
INDUSTRIAL USE**



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ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V _{CB0}	-60	V
Collector-Emitter Voltage	V _{CEO}	-60	V
Emitter-Base Voltage	V _{EB0}	-8	V
Collector Current (DC)	I _C	±1.5	A
*Collector Current (Pulse)	I _C	±3	A
Base Current (DC)	I _B	-0.15	A
Collector Dissipation (T _a =25°C)	P _C	1	W
Collector Dissipation (T _c =25°C)	P _C	10	W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{stg}	-55~150	°C

* PW≤300μs, Duty Cycle ≤10%

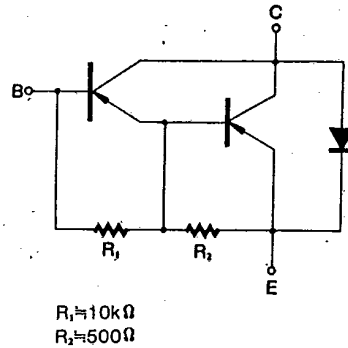
ELECTRICAL CHARACTERISTICS (T_a=25°C)

Characteristic	Symbol	Test Condition	Min	Max	Unit
Collector Cutoff Current	I _{CB0}	V _{CB} =-60V, I _E =0		-10	μA
Collector Cutoff Current	I _{CE0}	V _{CE} =-60V, R _{BE} =51Ω, T _a =125°C		-1	mA
Collector Cutoff Current	I _{CEx1}	V _{CE} =-60V, V _{BE} (off)=1.5V		-10	μA
Collector Cutoff Current	I _{CEx2}	V _{CE} =-60V, V _{BE} (off)=1.5V T _a =125°C		-1	mA
Emitter Cutoff Current	I _{EB0}	V _{EB} =-5V, I _C =0		-1	mA
*DC Current Gain	h _{FE1}	V _{CE} =-2V, I _C =-0.5A	1000		
	h _{FE2}	V _{CE} =-2V, I _C =-1A	2000	30000	
*Collector-Emitter Saturation Voltage	V _{CE(sat)}	I _C =-1A, I _B =-1mA		-1.5	V
*Base-Emitter Saturation Voltage	V _{BE(sat)}	I _C =-1A, I _B =-1mA		-2	V

*Pulse Test: PW≤350μs, Duty Cycle≤2% pulsed.

h_{FE}(2) CLASSIFICATION

Classification	R	O	Y
h _{FE} (2)	2000-5000	4000-10000	8000-30000

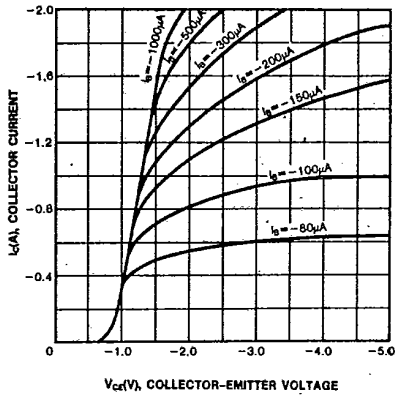


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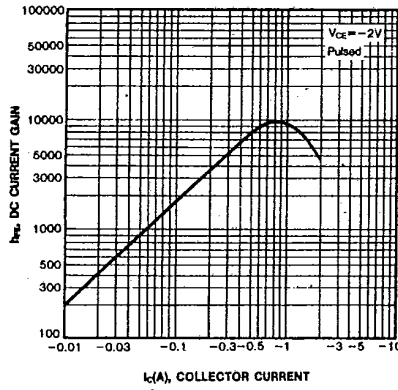
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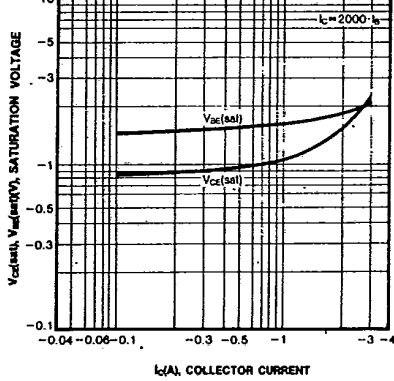
STATIC CHARACTERISTIC



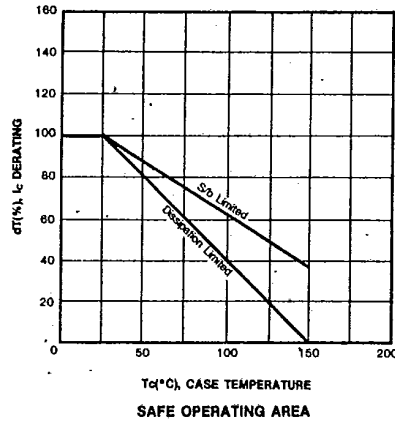
DC CURRENT GAIN



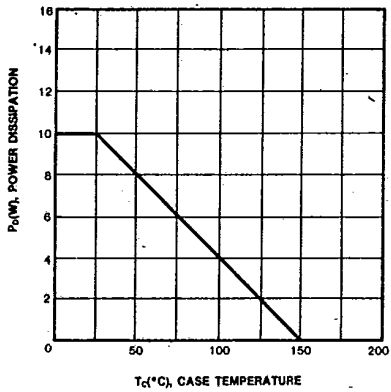
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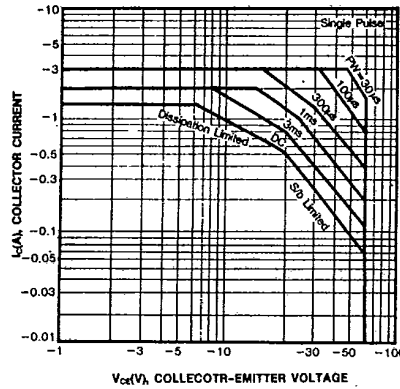
DERATING CURVE OF SAFE OPERATING AREAS



POWER DERATING



SAFE OPERATING AREA

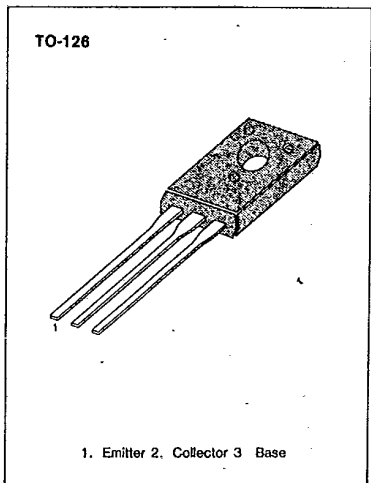


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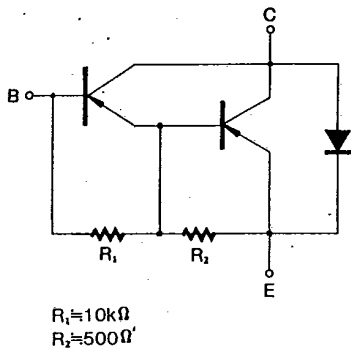
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Collector Cutoff Current	I _{CEx1}	V _{CE} =-80V, V _{BE} (off)=1.5V		-10	μA
Collector Cutoff Current	I _{CEx2}	V _{CE} =-80V, V _{BE} (off)=1.5V T _a =125°C		-1	mA
Emitter Cutoff Current	I _{EBO}	V _{EB} =-5V, I _C =0		-1	mA
*DC Current Gain	h _{FE1}	V _{CE} =-2V, I _C =-0.5A	1000		
	h _{FE2}	V _{CE} =-2V, I _C =-1A	2000	30000	
* Collector-Emitter Saturation Voltage	V _{CE} (sat)	I _C =-1A, I _B =-1mA		-1.5	V
* Base-Emitter Saturation Voltage	V _{BE} (sat)	I _C =-1A, I _B =-1mA		-2	V

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