

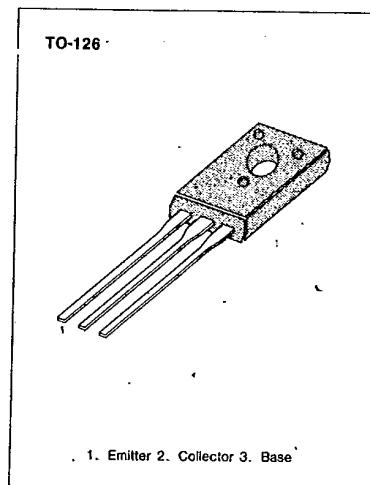
T-33-07

**KSD882****NPN EPITAXIAL SILICON TRANSISTOR****AUDIO FREQUENCY POWER AMPLIFIER  
LOW SPEED SWITCHING**

• Complement to KSB772

**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	$^\circ\text{C}$

•  $P_W \leq 10\text{ms}$ , 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	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 3\text{V}$ , $I_C = 0$			1	$\mu\text{A}$
* DC Current Gain	$h_{FE1}$	$V_{CE} = 2\text{V}$ , $I_C = 20\text{mA}$	30	150		
	$h_{FE2}$	$V_{CE} = 2\text{V}$ , $I_C = 1\text{A}$	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	$f_T$	$V_{CE} = 5\text{V}$ , $I_E = -0.1\text{A}$		90		MHz
Output Capacitance	$C_{ob}$	$V_{CB} = 10\text{V}$ , $I_E = 0$ $f = 1\text{MHz}$		45		pF

• Pulse Test:  $P_W \leq 350\mu\text{s}$ , Duty Cycle  $\leq 2\%$  **$h_{FE}(2)$  CLASSIFICATION**

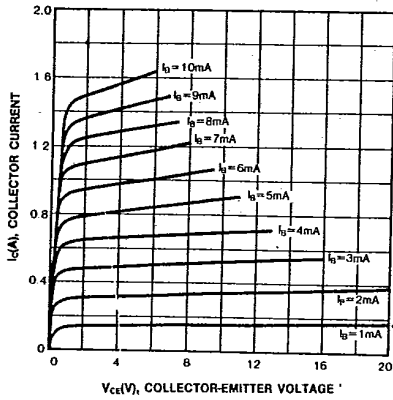
Classification	R	O	Y	G
$h_{FE}(2)$	60-120	100-200	160-320	200-400

KSD882

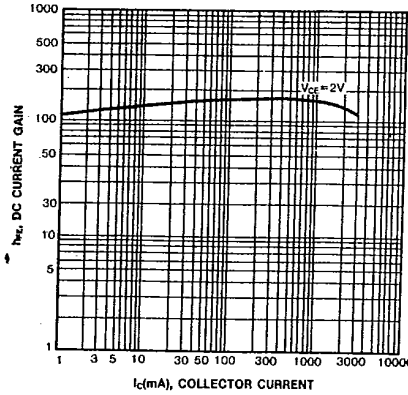
NPN EPITAXIAL SILICON TRANSISTOR

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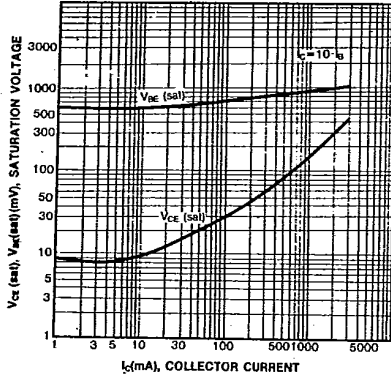
STATIC CHARACTERISTIC



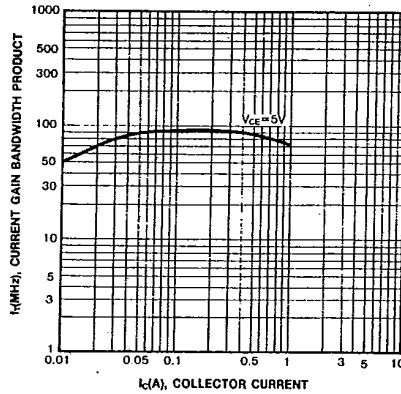
DC CURRENT GAIN



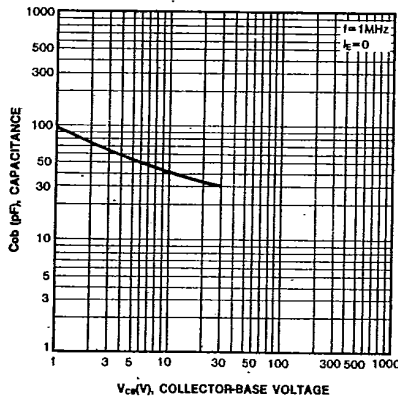
BASE-EMITTER SATURATION VOLTAGE - COLLECTOR-EMITTER SATURATION VOLTAGE



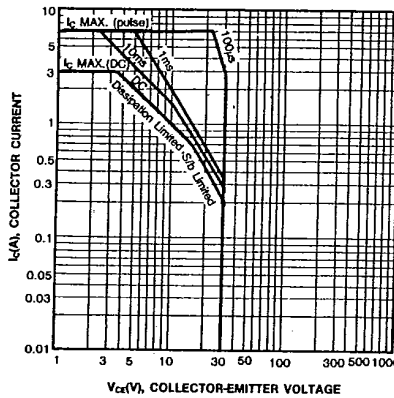
CURRENT GAIN-BANDWIDTH PRODUCT



COLLECTOR OUTPUT CAPACITANCE



SAFE OPERATING AREA



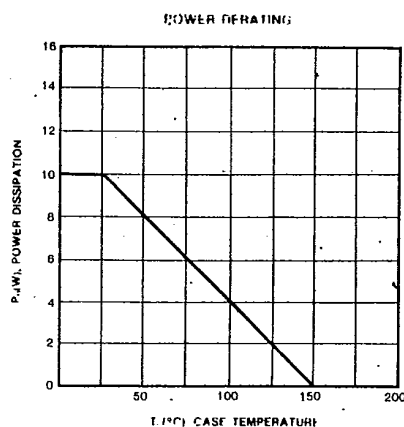
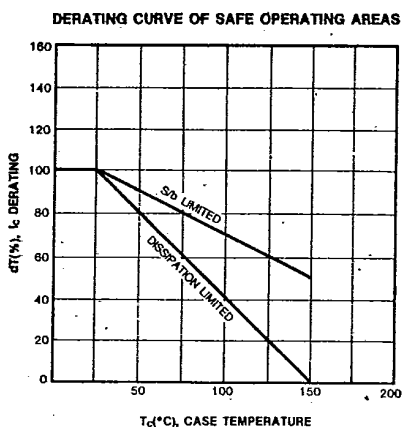
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**KSD882**

**NPN EPITAXIAL SILICON TRANSISTOR**

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**NPN EPITAXIAL SILICON  
DARLINGTON TRANSISTOR**

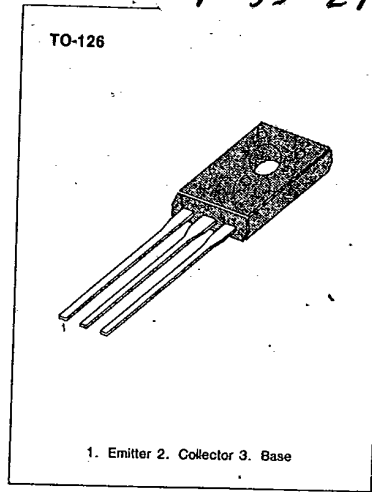
**KSD985**  
SAMSUNG SEMICONDUCTOR INC

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

T-33-29

**ABSOLUTE MAXIMUM RATINGS (T<sub>a</sub> = 25°C)**

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V <sub>CB0</sub>	150	V
Collector-Emitter Voltage	V <sub>CEO</sub>	60	V
Emitter-Base Voltage	V <sub>EB0</sub>	8.0	V
Collector Current (DC)	I <sub>C</sub>	±1.5	A
*Collector Current (Pulse)	I <sub>C</sub>	±3.0	A
Base Current (DC)	I <sub>B</sub>	0.15	A
Collector Dissipation (T <sub>a</sub> = 25°C)	P <sub>C</sub>	1.0	W
Collector Dissipation (T <sub>c</sub> = 25°C)	P <sub>C</sub>	10	W
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-55~150	°C



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\* PW ≤ 300μs, Duty Cycle ≤ 10%

**ELECTRICAL CHARACTERISTICS (T<sub>a</sub> = 25°C)**

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Cutoff Current	I <sub>CB0</sub>	V <sub>CB</sub> = 60V, I <sub>E</sub> = 0			10	μA
Collector Cutoff Current	I <sub>CER</sub>	V <sub>CE</sub> = 60V, R <sub>BE</sub> = 51Ω T <sub>a</sub> = 125°C			1.0	mA
Collector Cutoff Current	I <sub>CEX1</sub>	V <sub>CE</sub> = 60V, V <sub>BE</sub> (off) = -1.5V			10	μA
Collector Cutoff Current	I <sub>CEX2</sub>	V <sub>CE</sub> = 60V, V <sub>BE</sub> (off) = -1.5V T <sub>a</sub> = 125°C			1.0	mA
Emitter Cutoff Current	I <sub>EB0</sub>	V <sub>EB</sub> = 5V, I <sub>C</sub> = 0			1.0	mA
*DC Current Gain	h <sub>FE1</sub>	V <sub>CE</sub> = 2V, I <sub>C</sub> = 0.5A	1000			
	h <sub>FE2</sub>	V <sub>CE</sub> = 2V, I <sub>C</sub> = 1A	2000		30000	
*Collector-Emitter Saturation Voltage	V <sub>CE</sub> (sat)	I <sub>C</sub> = 1A, I <sub>B</sub> = 1mA			1.5	V
*Base-Emitter Saturation Voltage	V <sub>BE</sub> (sat)	I <sub>C</sub> = 1A, I <sub>B</sub> = 1mA			2.0	V
Turn On Time	t <sub>on</sub>	I <sub>C</sub> = 1A, R <sub>L</sub> = 50Ω		0.5		μs
Storage Time	t <sub>s</sub>	I <sub>B1</sub> = -I <sub>B2</sub> = 1mA		1.0		μs
Fall time	t <sub>f</sub>	V <sub>CC</sub> = 50V		1.0		μs

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

**h<sub>FE</sub>(2) CLASSIFICATION**

Classification	R	O	Y
h <sub>FE</sub> (2)	2000-5000	4000-10000	8000-30000

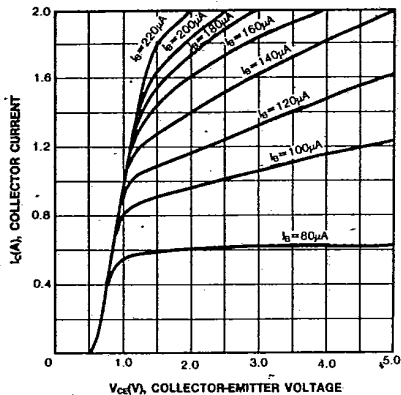
# NPN EPITAXIAL SILICON DARLINGTON TRANSISTOR

## KSD985

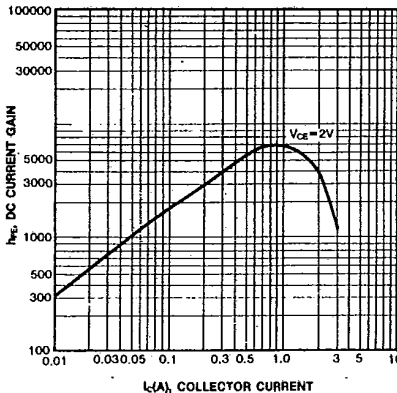
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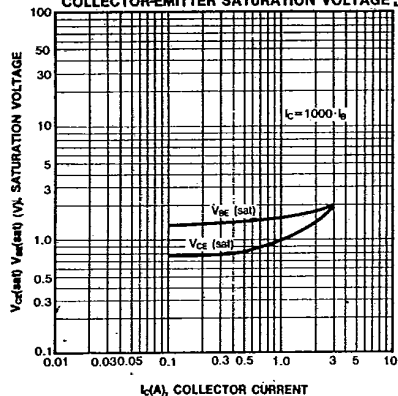
STATIC CHARACTERISTIC



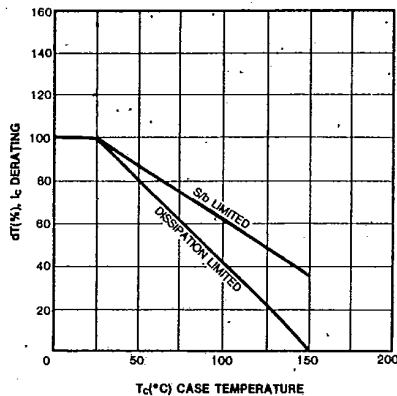
DC CURRENT GAIN



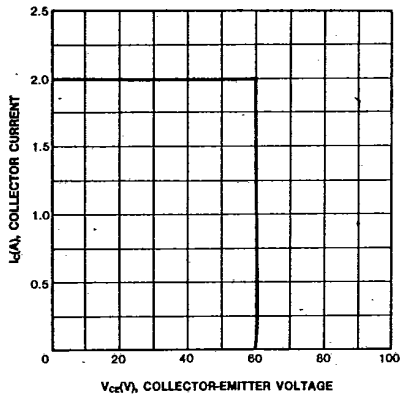
BASE-EMITTER SATURATION VOLTAGE  
COLLECTOR-EMITTER SATURATION VOLTAGE



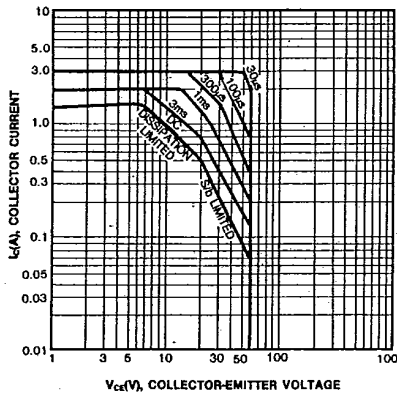
DERATING CURVE OF SAFE OPERATING AREAS



REVERSE BIAS SAFE OPERATING AREAS



SAFE OPERATING AREA

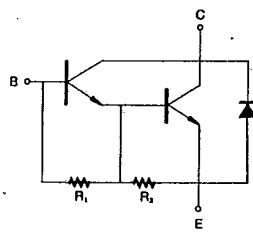
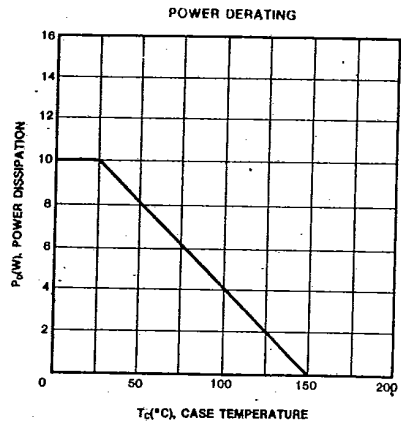


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**KSD985**  
SAMSUNG SEMICONDUCTOR INC

# NPN EPITAXIAL SILICON DARLINGTON TRANSISTOR

T-33-29



R<sub>1</sub> = 10kΩ  
R<sub>2</sub> = 500Ω

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