

KSB546

PNP EPITAXIAL SILICON TRANSISTOR

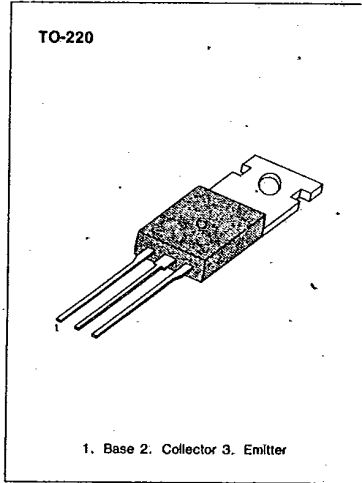
T-33-19

TV VERTICAL DEFLECTION OUTPUT

- Complement to KSD401
- Collector-Base Voltage $V_{CBO} = -200V$
- Collector Current $I_C = -2A$
- Collector Dissipation $P_C = 25W$ ($T_C = 25^\circ C$)

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

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	-200	V
Collector-Emitter Voltage	V_{CEO}	-150	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current	I_C	-2	A
Collector Dissipation ($T_C = 25^\circ C$)	P_C	25	W
Junction Temperature	T_j	150	$^\circ C$
Storage Temperature	T_{stg}	-55 ~ +150	$^\circ C$



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ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ C$)

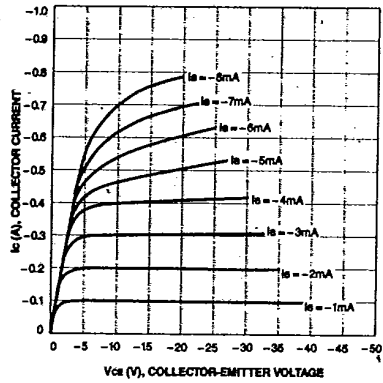
Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	BV_{CBO}	$I_C = -500\mu A, I_E = 0$	-200			V
Collector-Emitter Breakdown Voltage	BV_{CEO}	$I_C = -10mA, I_B = 0$	-150			V
Emitter-Base Breakdown Voltage	BV_{EBO}	$I_E = -500\mu A, I_C = 0$	-5			V
Collector Cut-off Current	I_{CBO}	$V_{CB} = -150V, I_E = 0$			-50	μA
DC Current Gain	h_{FE}	$V_{CE} = -10V, I_C = -0.4A$	40		240	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = -500mA, I_B = -50mA$			-1	V
Current Gain-Bandwidth Product	f_T	$V_{CE} = -10V, I_C = -0.4A$		5		MHz

h_{FE} CLASSIFICATION

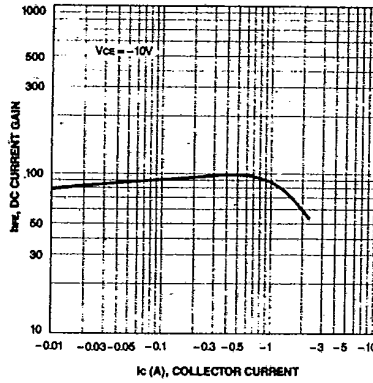
Classification	R	O	Y
h_{FE}	40-80	70-140	120-240

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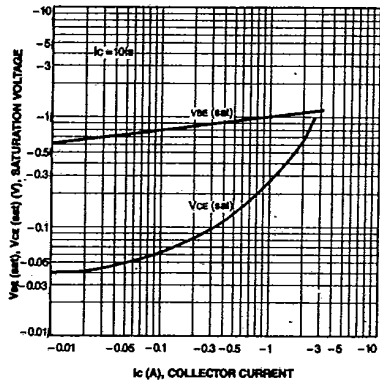
STATIC CHARACTERISTIC



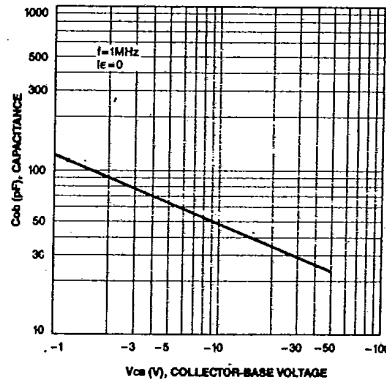
DC CURRENT GAIN



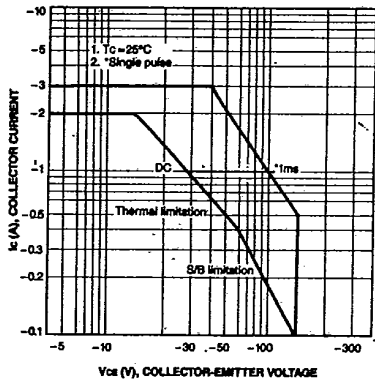
**BASE-EMITTER SATURATION VOLTAGE
 COLLECTOR-EMITTER SATURATION VOLTAGE**



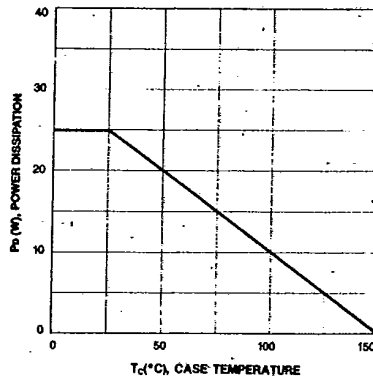
COLLECTOR OUTPUT CAPACITANCE



SAFE OPERATING AREA



POWER DERATING



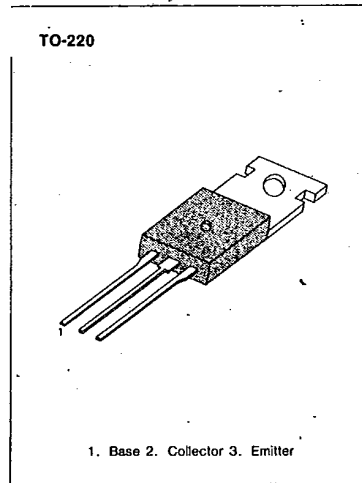
KSB596**PNP EXITAXIAL SILICON TRANSISTOR****POWER AMPLIFIER APPLICATIONS**

- Complement to KSD526

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

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CB0}	-80	V
Collector-Emitter Voltage	V_{CE0}	-80	V
Emitter-Base Voltage	V_{EB0}	-5	V
Collector Current	I_C	-4	A
Base Current	I_B	-0.4	A
Collector Dissipation ($T_c=25^\circ\text{C}$)	P_C	30	W
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55~150	$^\circ\text{C}$

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

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Cutoff Current	I_{CBO}	$V_{CB}=-80\text{V}, I_E=0$			-70	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=-5\text{V}, I_C=0$			-100	μA
Collector-Emitter Breakdown Voltage	BV_{CE0}	$I_C=-50\text{mA}, I_B=0$	-80			V
Emitter-Base Breakdown Voltage	BV_{EB0}	$I_E=-10\text{mA}, I_C=0$	-5			V
DC Current Gain	h_{FE1}	$V_{CE}=-5\text{V}, I_C=-0.5\text{A}$	40		240	
	h_{FE2}	$V_{CE}=-5\text{V}, I_C=-3\text{A}$	15			
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=-3\text{A}, I_B=-0.3\text{A}$		-1	-1.7	V
Base-Emitter On Voltage	$V_{BE(on)}$	$V_{CE}=-5\text{V}, I_C=-3\text{A}$		-1	-1.5	V
Current Gain-Bandwidth Product	f_T	$V_{CE}=-5\text{V}, I_C=-0.5\text{A}$	3			MHz
Collector Output Capacitance	C_{ob}	$V_{CB}=-10\text{V}, I_E=0$ $f=1\text{MHz}$		130		pF

 $h_{FE}(1)$ CLASSIFICATION

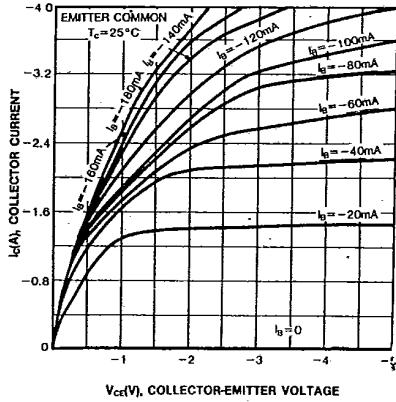
Classification	R	O	Y
$h_{FE}(1)$	40-80	70-140	120-240

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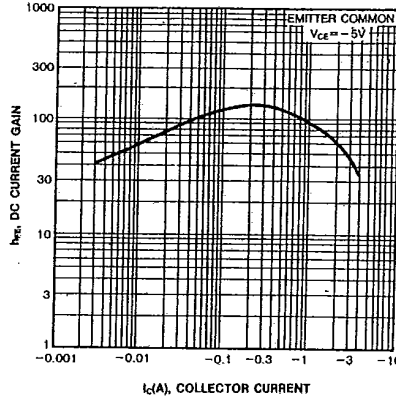
PNP EXITAXIAL SILICON TRANSISTOR

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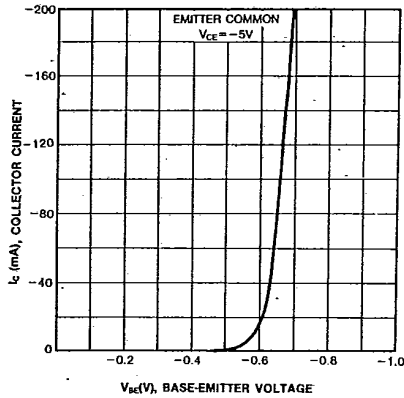
STATIC CHARACTERISTIC



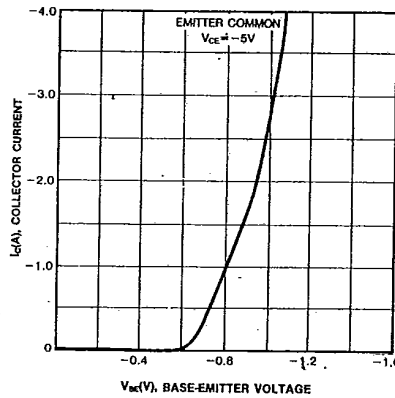
DC CURRENT GAIN



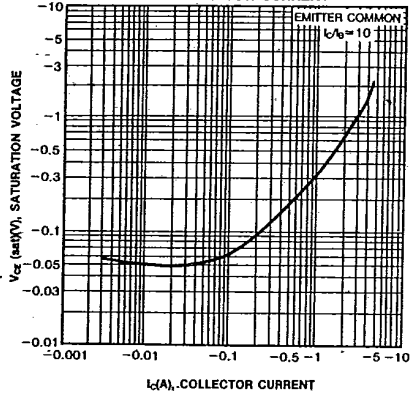
BASE-EMITTER ON VOLTAGE



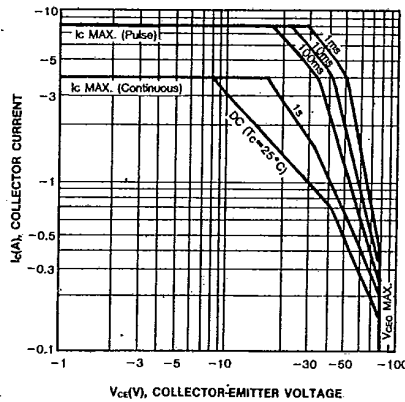
BASE-EMITTER VOLTAGE vs COLLECTOR CURRENT



COLLECTOR-EMITTER SATURATION VOLTAGE vs COLLECTOR CURRENT



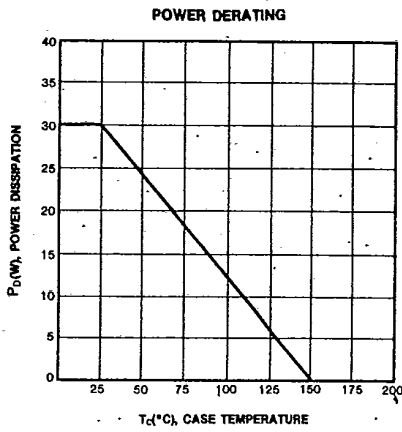
SAFE OPERATION AREA



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PNP EXITAXIAL SILICON TRANSISTOR

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**PNP EPITAXIAL SILICON
DARLINGTON TRANSISTOR**

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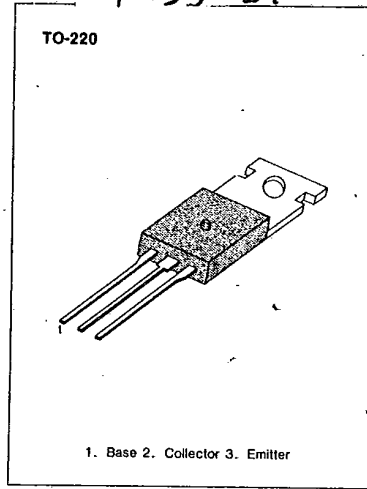
SAMSUNG SEMICONDUCTOR INC

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

• Complement to KSD560

ABSOLUTE MAXIMUM RATINGS (T_a = 25°C)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V _{CB0}	-100	V
Collector-Emitter Voltage	V _{CEO}	-100	V
Emitter-Base Voltage	V _{EB0}	-7	V
Collector Current (DC)	I _C	-5	A
Collector Current (Pulse)	I _C	-8	A
Base Current (DC)	I _B	-0.5	A
Collector Dissipation (T _a = 25°C)	P _C	1.5	W
Collector Dissipation (T _c = 25°C)	P _C	30	W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{stg}	-55~150	°C



* PW ≤ 10ms, Duty Cycle ≤ 50%

ELECTRICAL CHARACTERISTICS (T_a = 25°C)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Emitter Sustaining Voltage	V _{CEO (sus)}	I _C = -3A, I _{B1} = -3mA, L = 1mH	-100			V
Collector Emitter Sustaining Voltage	V _{CEX (sus)1}	I _C = -3A, I _{B1} = -I _{B2} = -3mA V _{BE (off)} = 5V, L = 180μH Clamped	-100			V
Collector Emitter Sustaining Voltage	V _{CEX (sus)2}	I _C = -6A, I _{B1} = -12mA I _{B2} = 3mA, V _{BE (off)} = 5V L = 180μH, Clamped	-100			V
Collector Cutoff Current	I _{CB0}	V _{CE} = -100V, I _E = 0			-10	μA
Collector Cutoff Current	I _{CER}	V _{CE} = -100V, R _{BE} = 51Ω T _a = 125°C			-1	mA
Collector Cutoff Current	I _{CEx1}	V _{CE} = -100V, V _{BE (off)} = 1.5V			-10	μA
Collector Cutoff Current	I _{CEx2}	V _{CE} = -100V, V _{BE (off)} = 1.5V T _a = 125°C			-1	mA
Emitter Cutoff Current	I _{EB0}	V _{EB} = -5V, I _C = 0			-3	mA
• DC Current Gain	h _{FE1}	V _{CE} = -2V, I _C = -3A	2000		15000	
	h _{FE2}	V _{CE} = -2V, I _C = -5A	500			
• Collector-Emitter Saturation Voltage	V _{CE (sat)}	I _C = -3A, I _B = -3mA			-1.5	V
• Base-Emitter Saturation Voltage	V _{BE (sat)}	I _C = -3A, I _B = -3mA			-2	V
Turn On Time	t _{on}	I _C = -3A, R _L = 17Ω		0.5		μs
Storage Time	t _s	I _{B1} = -I _{B2} = -3mA		1		μs
Fall time	t _f	V _{CC} = -50V		1		μs

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

h_{FE}(1) CLASSIFICATION

Classification	R	O	Y
h _{FE} (1)	2000-5000	3000-7000	5000-15000

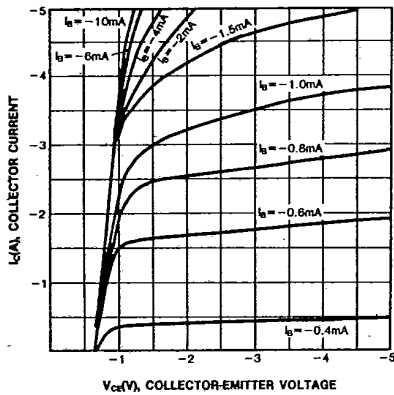
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SAMSUNG SEMICONDUCTOR INC

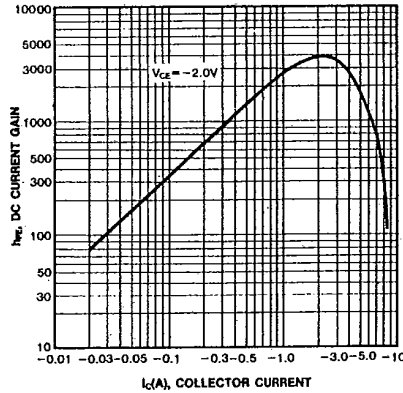
**PNP EPITAXIAL SILICON
DARLINGTON TRANSISTOR**

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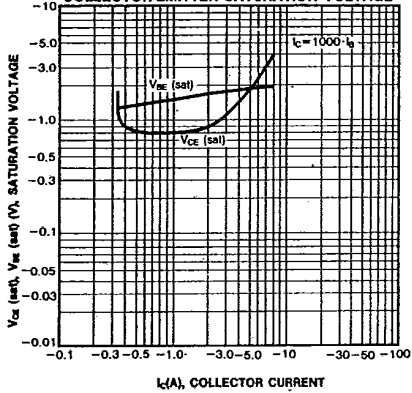
STATIC CHARACTERISTIC



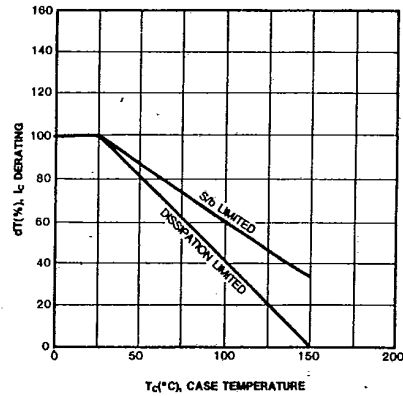
DC CURRENT GAIN



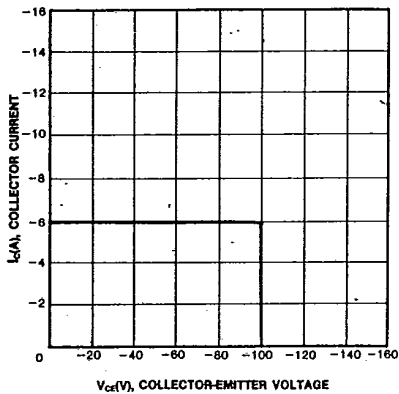
BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE



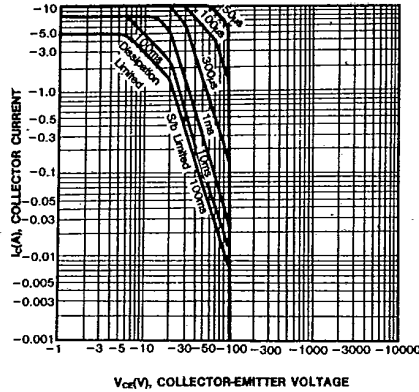
DERATING CURVE OF SAFE OPERATING AREAS



REVERSE BIAS SAFE OPERATING AREAS



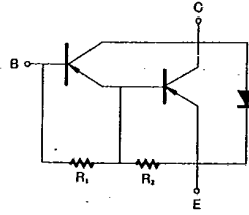
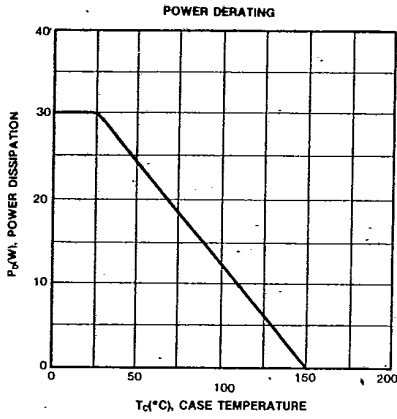
SAFE OPERATING AREA



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R₁ ≈ 3kΩ
R₂ ≈ 300Ω

