

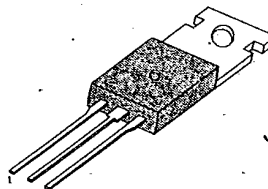
KSB546**PNP EPITAXIAL SILICON TRANSISTOR****T-33-19****TV VERTICAL DEFLECTION OUTPUT**

- 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	$^\circ C$

TO-220



1. Base 2. Collector 3. Emitter

3**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

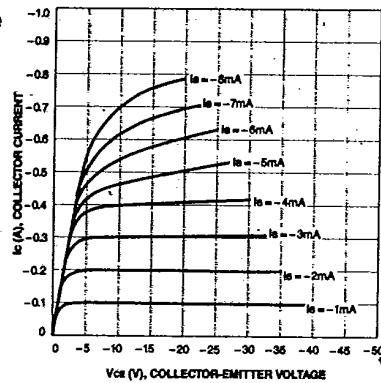
 h_{FE} CLASSIFICATION

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

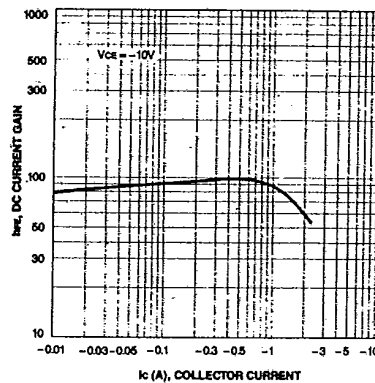
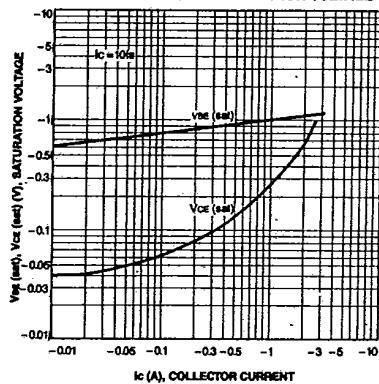


T-33-19

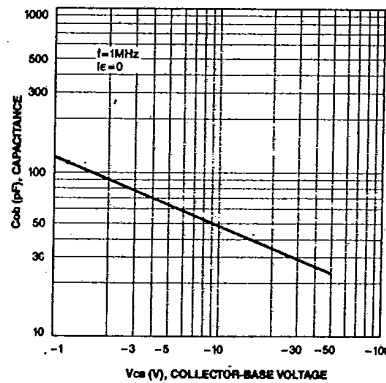
STATIC CHARACTERISTIC



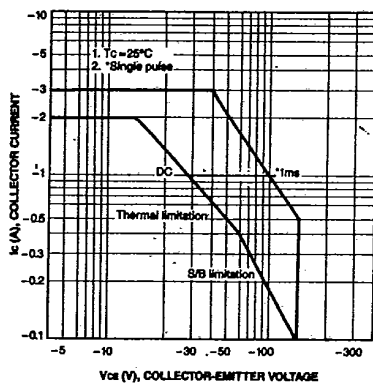
DC CURRENT GAIN

BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE

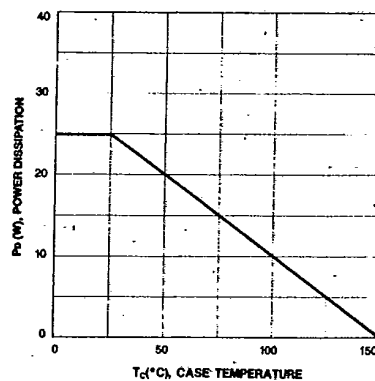
COLLECTOR OUTPUT CAPACITANCE



SAFE OPERATING AREA



POWER DERATING



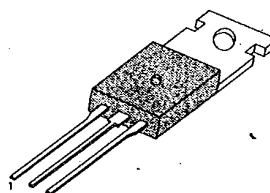
KSB596**PNP EXTAXIAL SILICON TRANSISTOR****POWER AMPLIFIER APPLICATIONS**

- 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	$^\circ\text{C}$

TO-220



1. Base 2. Collector 3. Emitter

3

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

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Cutoff Current	I_{C0}	$V_{CB}=-80\text{V}, I_E=0$			-70	μA
Emitter Cutoff Current	I_{E0}	$V_{EB}=-5\text{V}, I_C=0$			-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

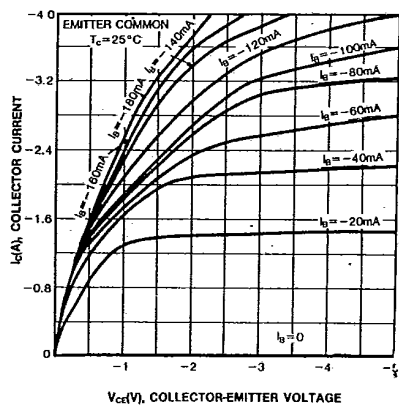


KSB596

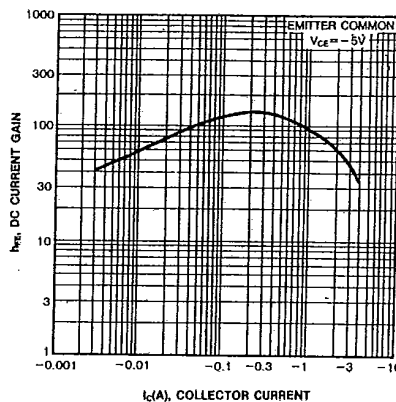
PNP EXITAXIAL SILICON TRANSISTOR

T-33-19

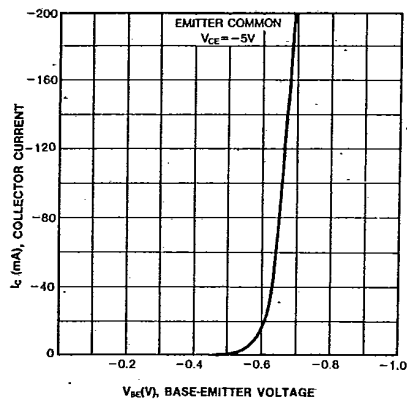
STATIC CHARACTERISTIC



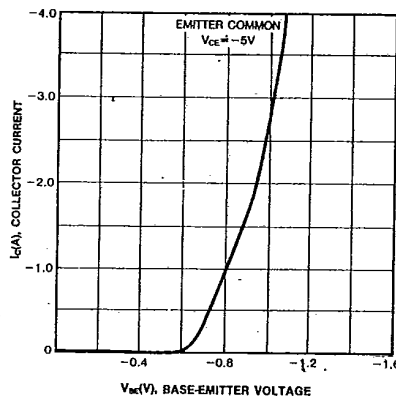
DC CURRENT GAIN



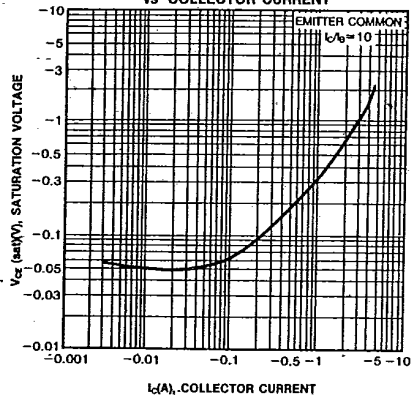
BASE-EMITTER ON VOLTAGE



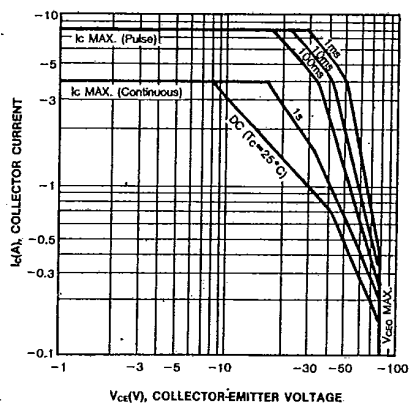
BASE-EMITTER VOLTAGE vs COLLECTOR CURRENT



COLLECTOR-EMITTER SATURATION VOLTAGE vs COLLECTOR CURRENT

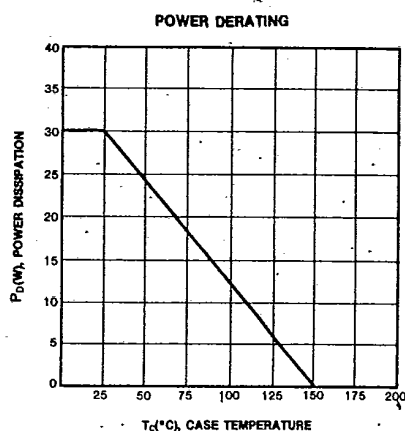


SAFE OPERATION AREA



KSB596**PNP EXITAXIAL SILICON TRANSISTOR**

T-33-19



3



KSB601**PNP EPITAXIAL SILICON
DARLINGTON TRANSISTOR**

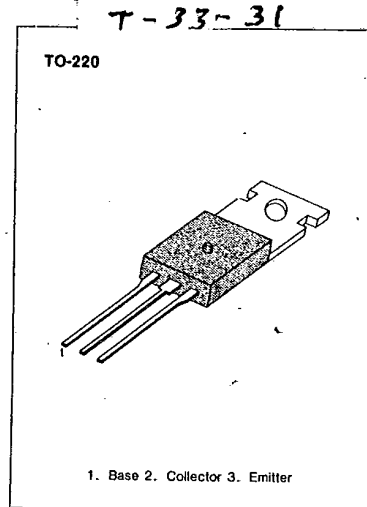
SAMSUNG SEMICONDUCTOR INC

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

• Complement to KSD560

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

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	-100	V
Collector-Emitter Voltage	V_{CEO}	-100	V
Emitter-Base Voltage	V_{EBO}	-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 ($T_a = 25^\circ\text{C}$)	P_C	1.5	W
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	$^\circ\text{C}$

• $PW \leq 10\text{ms}$, Duty Cycle $\leq 50\%$ **ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)**

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Emitter Sustaining Voltage	$V_{CEO}(\text{sus})$	$I_C = -3\text{A}$, $I_B = -3\text{mA}$, $L = 1\text{mH}$	-100			V
Collector Emitter Sustaining Voltage	$V_{CEX}(\text{sus})1$	$I_C = -3\text{A}$, $I_B = -I_{B2} = -3\text{mA}$ $V_{BE}(\text{off}) = 5\text{V}$, $L = 180\mu\text{H}$ Clamped	-100			V
Collector Emitter Sustaining Voltage	$V_{CEX}(\text{sus})2$	$I_C = -6\text{A}$, $I_B = -12\text{mA}$ $I_{B2} = 3\text{mA}$, $V_{BE}(\text{off}) = 5\text{V}$ $L = 180\mu\text{H}$, Clamped	-100			V
Collector Cutoff Current	I_{CBO}	$V_{CB} = -100\text{V}$, $I_E = 0$			-10	μA
Collector Cutoff Current	I_{CER}	$V_{CE} = -100\text{V}$, $R_{BE} = 51\Omega$ $T_a = 125^\circ\text{C}$			-1	mA
Collector Cutoff Current	I_{CEX1}	$V_{CE} = -100\text{V}$, $V_{BE}(\text{off}) = 1.5\text{V}$			-10	μA
Collector Cutoff Current	I_{CEX2}	$V_{CE} = -100\text{V}$, $V_{BE}(\text{off}) = 1.5\text{V}$ $T_a = 125^\circ\text{C}$			-1	mA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = -5\text{V}$, $I_C = 0$			-3	mA
• DC Current Gain	h_{FE1}	$V_{CE} = -2\text{V}$, $I_C = -3\text{A}$	2000		15000	
	h_{FE2}	$V_{CE} = -2\text{V}$, $I_C = -5\text{A}$	500			
• Collector-Emitter Saturation Voltage	$V_{CE}(\text{sat})$	$I_C = -3\text{A}$, $I_B = -3\text{mA}$			-1.5	V
• Base-Emitter Saturation Voltage	$V_{BE}(\text{sat})$	$I_C = -3\text{A}$, $I_B = -3\text{mA}$			-2	V
Turn On Time	t_{on}	$I_i = -3\text{A}$, $R_L = 17\Omega$		0.5		μs
Storage Time	t_s	$I_B = -I_{B2} = -3\text{mA}$		1		μs
Fall time	t_f	$V_{CC} \approx -50\text{V}$		1		μs

• Pulse Test; $PW \leq 350\mu\text{s}$, Duty Cycle $\leq 2\%$ **$h_{FE}(1)$ CLASSIFICATION**

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



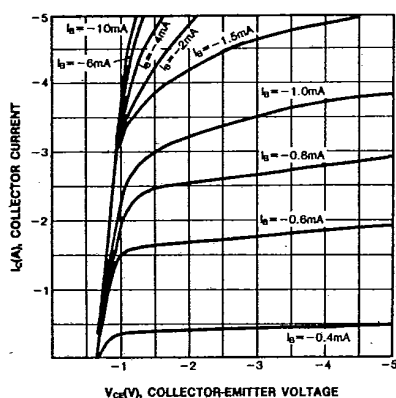
SAMSUNG SEMICONDUCTOR

KSB601

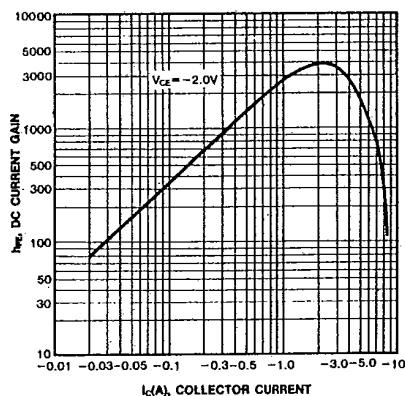
SAMSUNG SEMICONDUCTOR INC

T-33.3

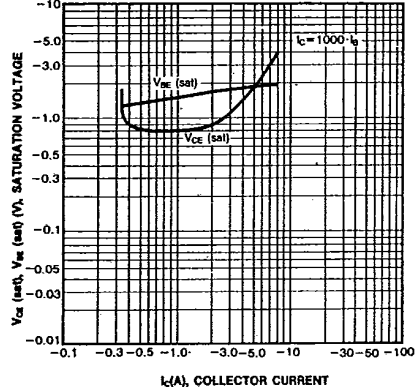
STATIC CHARACTERISTIC



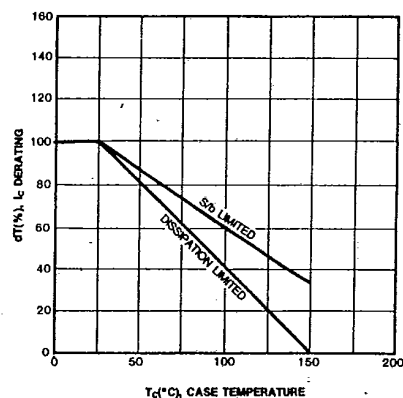
DC CURRENT GAIN



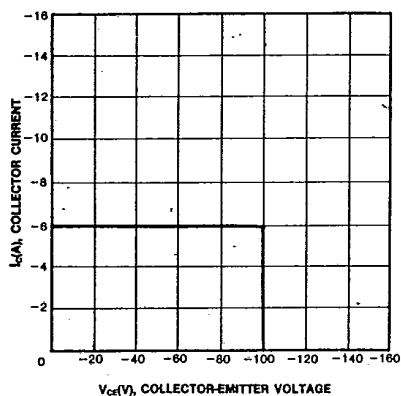
BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE



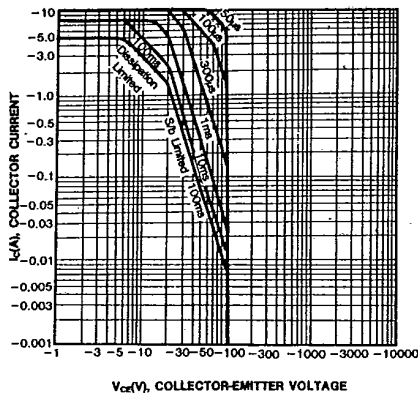
DERATING CURVE OF SAFE OPERATING AREAS



REVERSE BIAS SAFE OPERATING AREAS

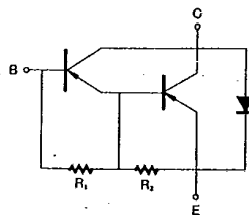
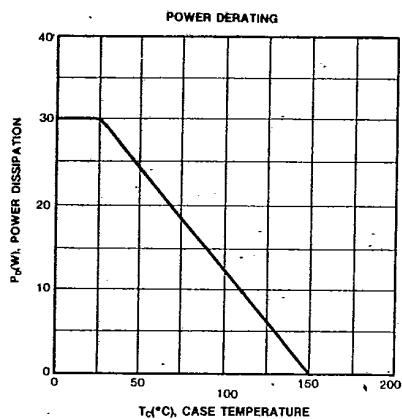


SAFE OPERATING AREA



KSB601**PNP EPITAXIAL SILICON
DARLINGTON TRANSISTOR**

T-33-31



R₁≈3kΩ
R₂≈300Ω

