

KSA636

PNP EPITAXIAL SILICON TRANSISTOR

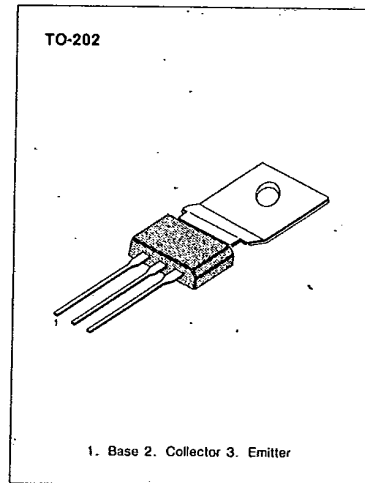
T-33-17

LOW FREQUENCY POWER AMPLIFIER

- Complement to KSC1098
- High Collector-Base Voltage $V_{CB0} = -70V$
- Collector Current $I_C = -2A$
- Collector Dissipation $P_C = 10W$ ($T_C = 25^\circ C$)

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

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CB0}	-70	V
Collector-Emitter Voltage	V_{CE0}	-45	V
Emitter-Base Voltage	V_{EB0}	-5	V
Collector Current	I_C	-2.0	A
Collector Dissipation ($T_C = 25^\circ C$)	P_C	10	W
Junction Temperature	T_J	150	$^\circ C$
Storage Temperature	T_{stg}	-55 ~ +150	$^\circ C$

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

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	BV_{CB0}	$I_C = -500\mu A, I_E = 0$	-70			V
Collector-Emitter Breakdown Voltage	BV_{CE0}	$I_C = -10mA, I_B = 0$	-45			V
Emitter-Base Breakdown Voltage	BV_{EB0}	$I_E = -500\mu A, I_C = 0$	-5			V
Collector Cut-off Current	I_{CBO}	$V_{CB} = -40V, I_E = 0$			-1	μA
DC Current Gain	h_{FE}	$V_{CE} = -5V, I_C = -0.5A$	40		240	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = -1A, I_B = -0.1A$		-0.15	-0.7	V

 h_{FE} CLASSIFICATION

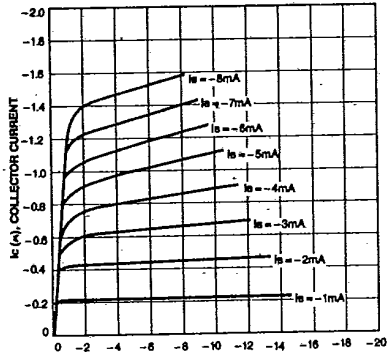
Classification	R	O	Y
h_{FE}	40-80	70-140	120-240

KSA636

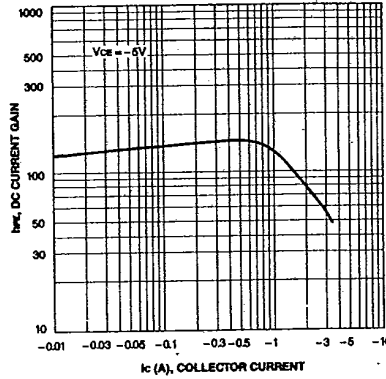
PNP EPITAXIAL SILICON TRANSISTOR

T-33-17

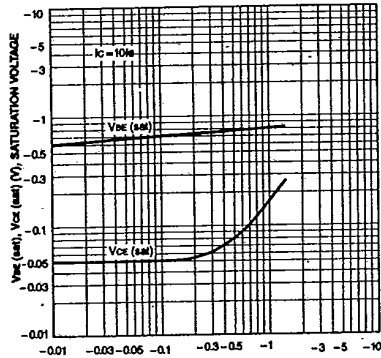
STATIC CHARACTERISTIC



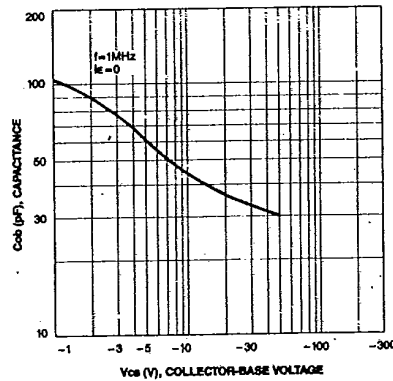
DC CURRENT GAIN



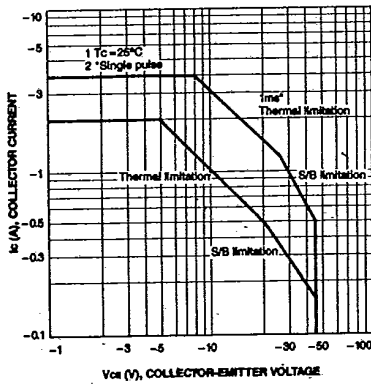
BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE



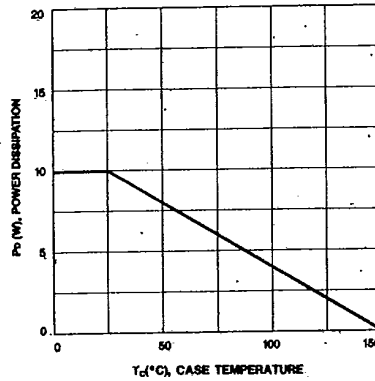
COLLECTOR OUTPUT CAPACITANCE



SAFE OPERATING AREA



POWER DERATING



3

KSA940

PNP EPITAXIAL SILICON TRANSISTOR

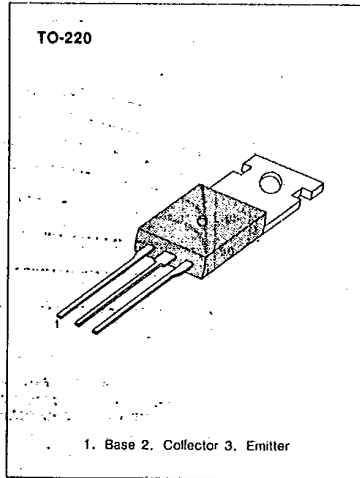
T-33-19

**POWER AMPLIFIER
VERTICAL DEFLECTION OUTPUT**

• Complement to KSC2073

ABSOLUTE MAXIMUM RATINGS (T_c = 25°C)

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



ELECTRICAL CHARACTERISTICS (T_c = 25°C)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector Cutoff Current	I _{CB0}	V _{CB} = -120V, I _E = 0			-10	μA
Emitter Cutoff Current	I _{EB0}	V _{EB} = -5V, I _C = 0			-10	μA
DC Current Gain	h _{FE}	V _{CE} = -10V, I _C = -500mA	40	75	140	
Collector-Emitter Saturation Voltage	V _{CE (sat)}	I _C = -500mA, I _B = -50mA			-1.5	V
Base-Emitter On Voltage	V _{BE (on)}	V _{CE} = -10V, I _C = -500mA	-0.65	-0.75	-0.85	V
Current Gain-Bandwidth Product	f _T	V _{CE} = -10V, I _C = -500mA		4		MHz
Output Capacitance	C _{ob}	V _{CB} = -10V, I _E = 0 f = 1MHz		55		pF

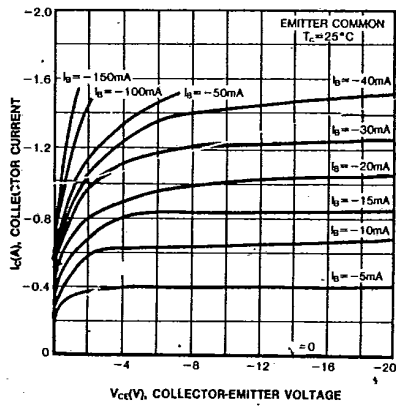


KSA940

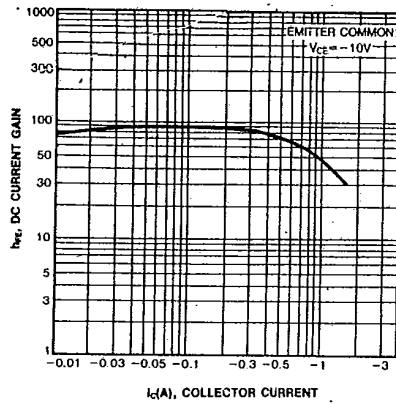
PNP EPITAXIAL SILICON TRANSISTOR

T-33-19

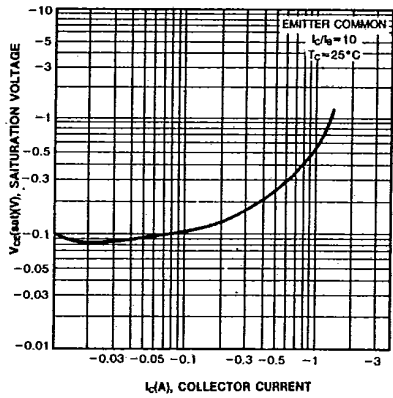
STATIC CHARACTERISTIC



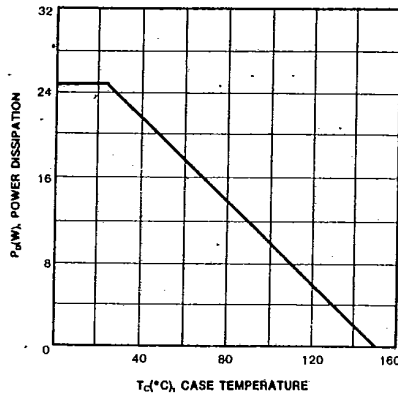
DC CURRENT GAIN



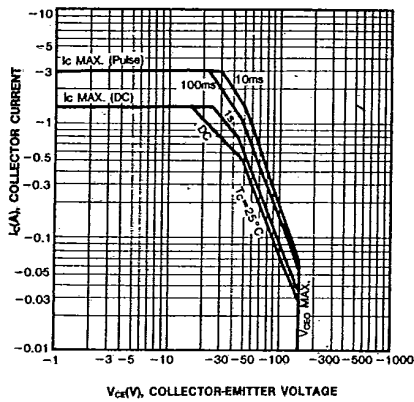
COLLECTOR-EMITTER SATURATION VOLTAGE



POWER DERATING



SAFE OPERATION AREA



3

KSA1010

PNP EPITAXIAL SILICON TRANSISTOR

HIGH SPEED HIGH VOLTAGE SWITCHING
INDUSTRIAL USE

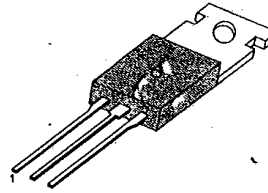
• Complement to KSC2334

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	-7	A
Collector Current (Pulse)	I_C	-15	A
Base Current (DC)	I_B	-3.5	A
Collector Dissipation ($T_c = 25^\circ\text{C}$)	P_C	40	W
Collector Dissipation ($T_a = 25^\circ\text{C}$)	P_C	1.5	W
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-95~150	$^\circ\text{C}$

* $PW \leq 300\mu\text{s}$, Duty Cycle $\leq 10\%$

TO-220



1. Base 2. Collector 3. Emitter

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

Characteristic	Symbol	Test Condition	Min	Max	Unit
Collector Emitter Sustaining Voltage	V_{CEO} (sus)	$I_C = -5\text{A}$, $I_B1 = -0.5\text{A}$, $L = 1\text{mH}$	-100		V
Collector Emitter Sustaining Voltage	V_{CEX} (sus)1	$I_C = -5\text{A}$, $I_B1 = -I_B2 = -0.5\text{A}$ V_{BE} (off) = 5V, $L = 180\mu\text{H}$ Clamped	-100		V
Collector Emitter Sustaining Voltage	V_{CEX} (sus)2	$I_C = -10\text{A}$, $I_B1 = -1\text{A}$ $I_B2 = 0.5\text{A}$, V_{BE} (off) = 5V $L = 180\mu\text{H}$, 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} (off) = 1.5V		-10	μA
Collector Cutoff Current	I_{CEX2}	$V_{CE} = -100\text{V}$, V_{BE} (off) = 1.5V $T_a = 125^\circ\text{C}$		-1	mA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = -5\text{V}$, $I_C = 0$		-10	μA
*DC Current Gain	h_{FE1}	$V_{CE} = -5\text{V}$, $I_C = -0.5\text{A}$	40	200	
	h_{FE2}	$V_{CE} = -5\text{V}$, $I_C = -3\text{A}$	40	200	
	h_{FE3}	$V_{CE} = -5\text{V}$, $I_C = -5\text{A}$	20		
*Collector-Emitter Saturation Voltage	V_{CE} (sat)	$I_C = -5\text{A}$, $I_B = -0.5\text{A}$		-0.6	V
*Base-Emitter Saturation Voltage	V_{BE} (sat)	$I_C = -5\text{A}$, $I_B = -0.5\text{A}$		-1.5	V
Turn On Time	t_{on}	$I_C = -5\text{A}$, $R_L = 10\Omega$		0.5	μs
Storage Time	t_s	$I_B1 = -I_B2 = -0.5\text{A}$		1.5	μs
Fall Time	t_f	$V_{CC} = -50\text{V}$		0.5	μs

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

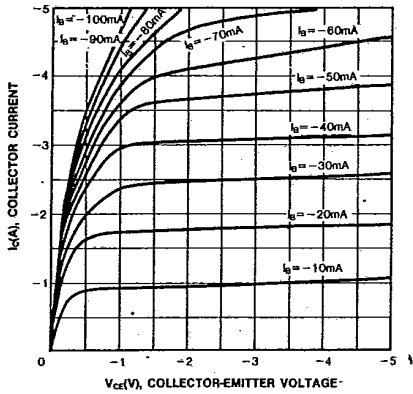
Classification	R	O	Y
h_{FE} (2)	40-80	60-120	100-200

KSA1010

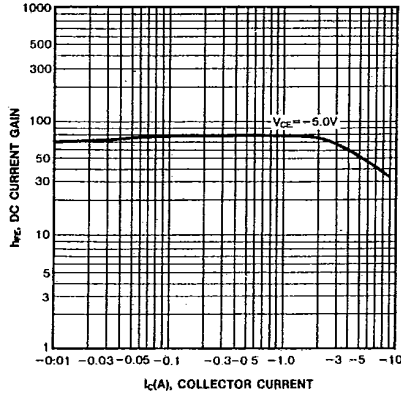
PNP EPITAXIAL SILICON TRANSISTOR

T-33-19

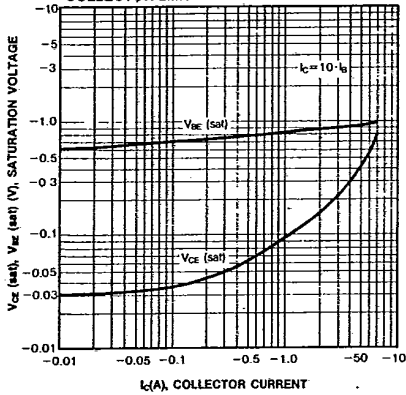
STATIC CHARACTERISTIC



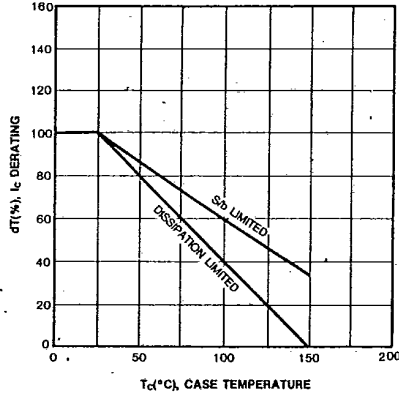
DC CURRENT GAIN



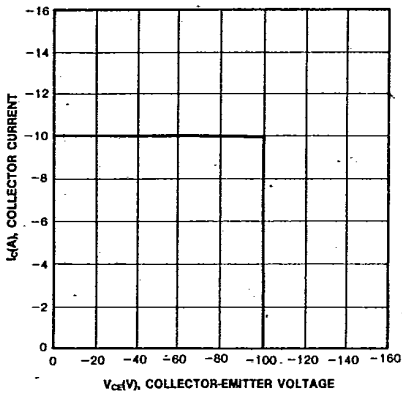
BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE



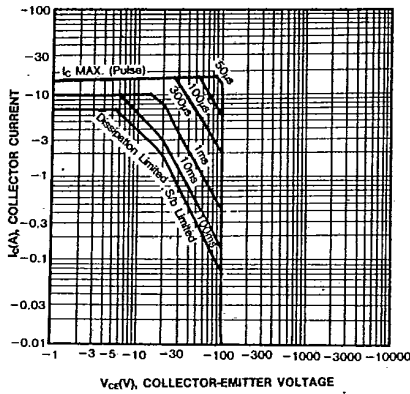
DERATING CURVE OF SAFE OPERATING AREAS



REVERSE BIAS SAFE OPERATING AREAS



SAFE OPERATING AREA



3

KSA1010

PNP EPITAXIAL SILICON TRANSISTOR

T-33-19

