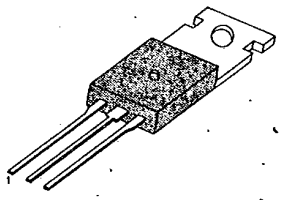
# KSA473 PNP EPITAXIAL SILICON TRANSISTOR

T-33-17

## LOW FREQUENCY POWER AMPLIFIER POWER REGULATOR

- Complement to KSC1173
- Collector Current: $I_C = -3A$
- Collector Dissipation: $P_C = 10W$ ($T_C = 25°C$)

TO-220



1. Base 2. Collector 3. Emitter

## ABSOLUTE MAXIMUM RATINGS ($T_a = 25°C$)

| Characteristic | Symbol | Rating | Unit |
|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | −30 | V |
| Collector-Emitter Voltage | $V_{CEO}$ | −30 | V |
| Emitter-Base Voltage | $V_{EBO}$ | −5 | V |
| Collector Current | $I_C$ | −3 | A |
| Collector Dissipation ($T_C = 25°C$) | $P_C$ | 10 | W |
| Junction Temperature | $T_J$ | 150 | °C |
| Storage Temperature | Tstg | −55 ~ +150 | °C |

## ELECTRICAL CHARACTERISTICS ($T_a = 25°C$)

| Characteristic | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Collector-Base Breakdown Voltage | $BV_{CBO}$ | $I_C = -500\mu A$, $I_E = 0$ | −30 | | | V |
| Collector-Emitter Breakdown Voltage | $BV_{CEO}$ | $I_C = -10mA$, $I_B = 0$ | −30 | | | V |
| Emitter-Base Breakdown Voltage | $BV_{EBO}$ | $I_E = 1mA$, $I_C = 0$ | −5 | | | |
| Collector Cut-off Current | $I_{CBO}$ | $V_{CB} = -20V$, $I_E = 0$ | | | −1.0 | μA |
| Emitter Cut-off Current | $I_{EBO}$ | $V_{EB} = -5V$, $I_C = 0$ | | | −1.0 | μA |
| DC Current Gain | $h_{FE}1$ | $V_{CE} = -2V$, $I_C = -0.5A$ | 70 | | 240 | |
| | $h_{FE}2$ | $V_{CE} = -2V$, $I_C = -2.5A$ | 25 | | | |
| Collector-Emitter Saturation Voltage | $V_{CE}$ (sat) | $I_C = -2A$, $I_B = -0.2A$ | | −0.3 | −0.8 | V |
| Base-Emitter On Voltage | $V_{BE}$ (on) | $V_{CE} = -2V$, $I_C = -0.5A$ | | −0.75 | −1.0 | V |
| Current Gain Bandwidth Product | $f_T$ | $V_{CE} = -2V$, $I_C = -0.5A$ | | 100 | | MHz |
| Output Capacitance | Cob | $V_{CB} = -10V$, $I_E = 0$, f=1MHz | | 40 | | PF |

## $h_{FE}$ CLASSIFICATION

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

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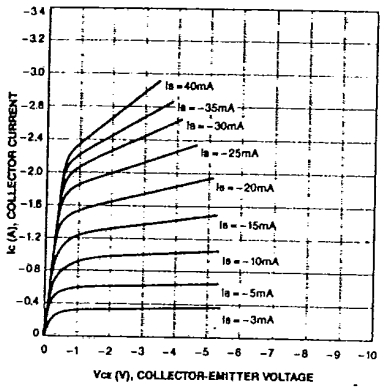
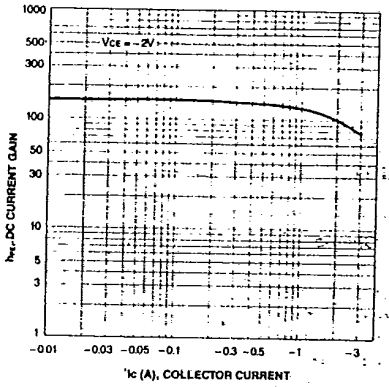
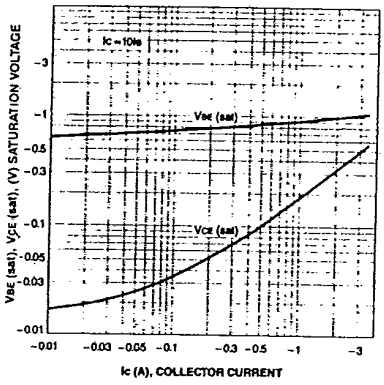
STATIC CHARACTERISTIC



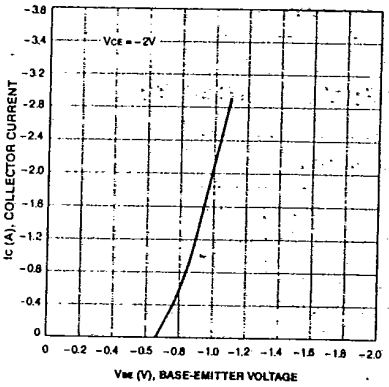

DC CURRENT GAIN



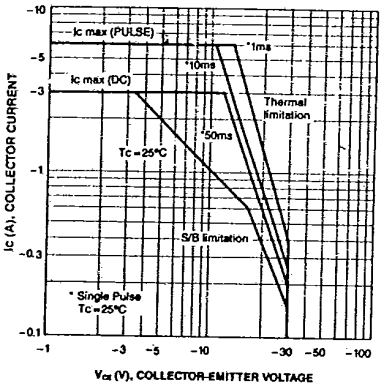

BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE



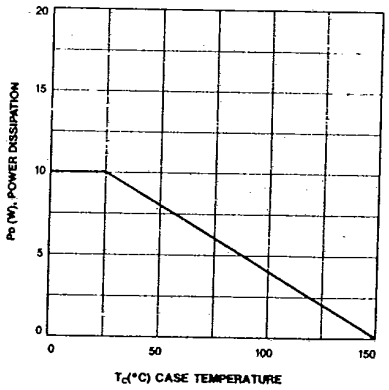

BASE-EMITTER ON VOLTAGE




SAFE OPERATING AREA




POWER DERTING



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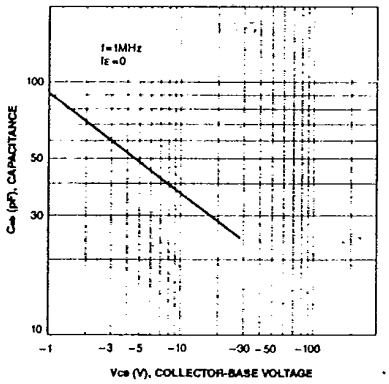
COLLECTOR OUTPUT CAPACITANCE

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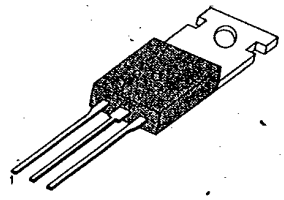
# KSA614 PNP EPITAXIAL SILICON TRANSISTOR

T-33-19

## LOW FREQUENCY POWER AMPLIFIER POWER REGULATOR

- Complement to KSD288
- Collector-Base Voltage $V_{CBO} = -80V$
- Collector Dissipation $P_C = 25W$ ($T_C = 25°C$)

TO-220



1. Base 2. Collector 3. Emitter

## ABSOLUTE MAXIMUM RATINGS ($T_a = 25°C$)

| Characteristic | Symbol | Rating | Unit |
|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | −80 | V |
| Collector-Emitter Voltage | $V_{CEO}$ | −55 | V |
| Emitter-Base Voltage | $V_{EBO}$ | −5 | V |
| Collector Current | $I_C$ | −3.0 | A |
| Collector Dissipation ($T_C = 25°C$) | $P_C$ | 25 | W |
| Junction Temperature | Tj | 150 | °C |
| Storage Temperature | Tstg | −55 ~ +150 | °C |

## ELECTRICAL CHARACTERISTICS ($T_a = 25°C$)

| Characteristic | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Collector-Base Breakdown Voltage | $BV_{CBO}$ | $I_C = -500\mu A$, $I_E = 0$ | −80 | | | V |
| Collector-Emitter Breakdown Voltage | $BV_{CEO}$ | $I_C = -10mA$, $I_B = 0$ | −55 | | | V |
| Emitter-Base Breakdown Voltage | $BV_{EBO}$ | $I_E = -500\mu A$, $I_C = 0$ | −5 | | | V |
| Collector Cut-off Current | $I_{CBO}$ | $V_{CB} = -50V$, $I_E = 0$ | | | 50 | 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 | −0.5 | V |

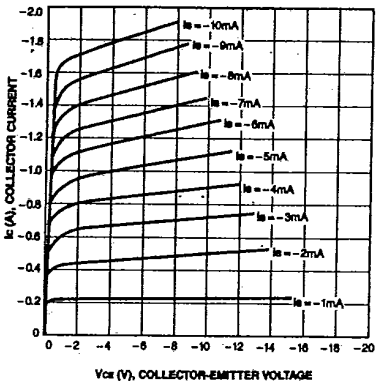
## $h_{FE}$ CLASSIFICATION

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

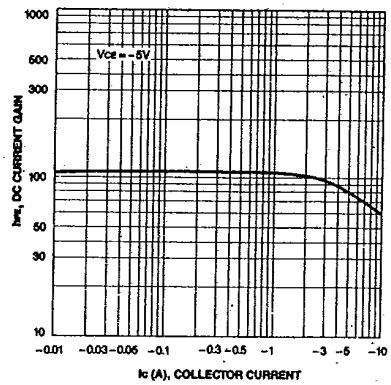
# KSA614 PNP EPITAXIAL SILICON TRANSISTOR

T-33-19

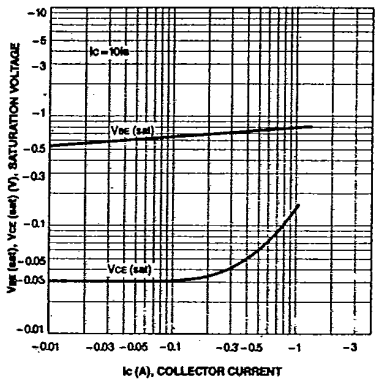
STATIC CHARACTERISTIC



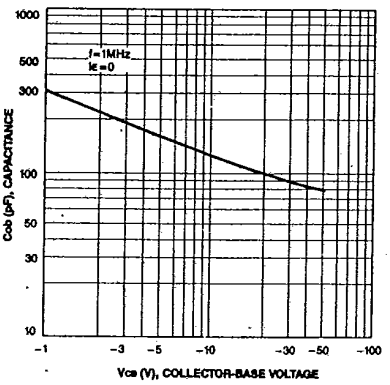

DC CURRENT GAIN



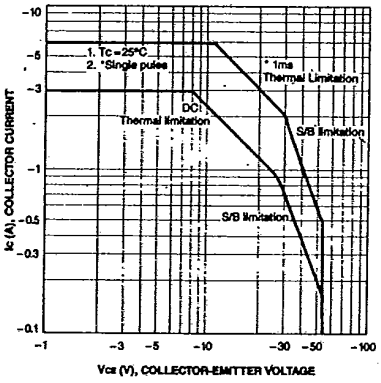

BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE



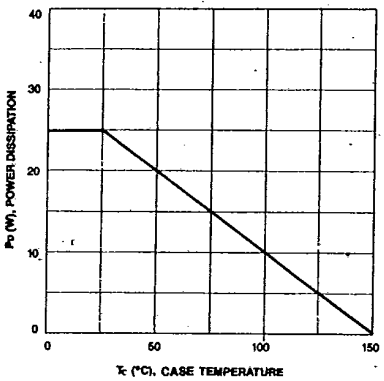

COLLECTOR OUTPUT CAPACITANCE




SAFE OPERATING AREA




POWER DERATING

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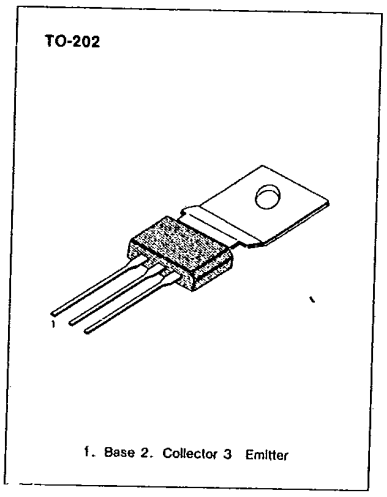
# KSA634 PNP EPITAXIAL SILICON TRANSISTOR

T-33-17

## LOW FREQUENCY POWER AMPLIFIER
## POWER REGULATOR

- Complement to KSC1096
- Collector Current $I_C = -2A$
- Collector Dissipation $P_C = 10W$ ($T_C = 25°C$)




## ABSOLUTE MAXIMUM RATINGS ($T_a = 25°C$)

| Characteristic | Symbol | Rating | Unit |
|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | −40 | V |
| Collector-Emitter Voltage | $V_{CEO}$ | −30 | V |
| Emitter-Base Voltage | $V_{EBO}$ | −5 | V |
| Collector Current | $I_C$ | −2.0 | A |
| Collector Dissipation ($T_C = 25°C$) | $P_C$ | 10 | W |
| Junction Temperature | Tj | 150 | °C |
| Storage Temperature | Tstg | −55 ~ +150 | °C |

## ELECTRICAL CHARACTERISTICS ($T_a = 25°C$)

| Characteristic | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Collector-Base Breakdown Voltage | $BV_{CBO}$ | $I_C = -500\mu A$, $I_E = 0$ | −40 | | | V |
| Collector-Emitter Breakdown Voltage | $BV_{CEO}$ | $I_C = -10mA$, $I_B = 0$ | −30 | | | V |
| Emitter-Base Breakdown Voltage | $BV_{EBO}$ | $I_E = -500\mu A$, $I_C = 0$ | −5 | | | V |
| Collector Cut-off Current | $I_{CBO}$ | $V_{CB} = -30V$, $I_E = 0$ | | | −1 | μA |
| DC Current Gain | $h_{FE}$ | $V_{CE} = -5V$, $I_C = -1.0A$ | 40 | | 240 | |
| Collector-Emitter Saturation Voltage | $V_{CE}$ (sat) | $I_C = -1.5A$, $I_B = -0.15A$ | | −0.3 | −0.7 | V |

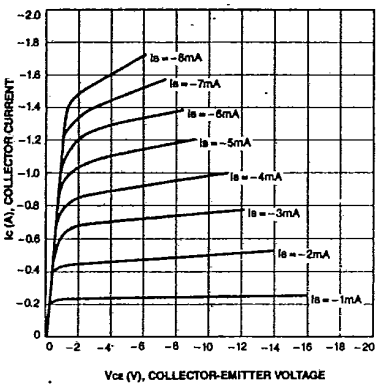
## $h_{FE}$ CLASSIFICATION

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

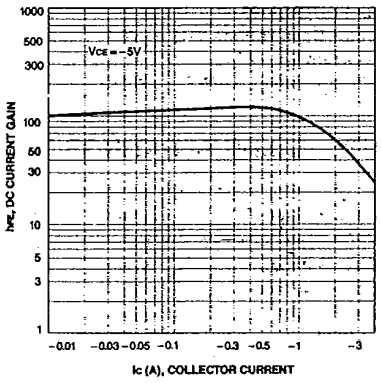
# KSA634 PNP EPITAXIAL SILICON TRANSISTOR

T-33-17

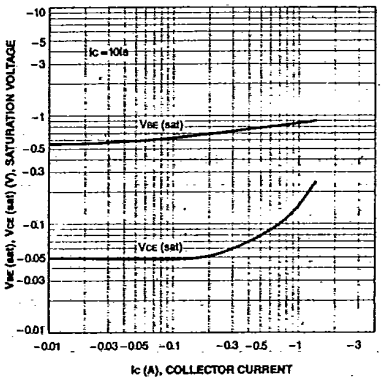
STATIC CHARACTERISTIC



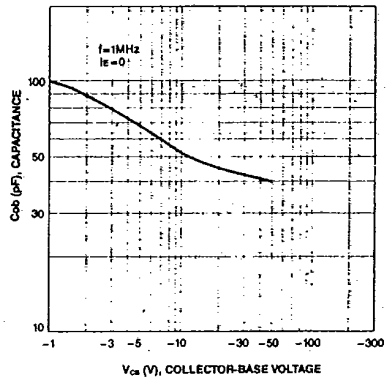

DC CURRENT GAIN



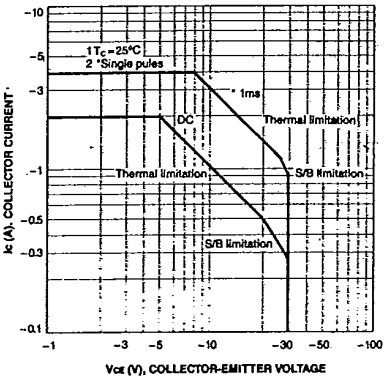

BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE



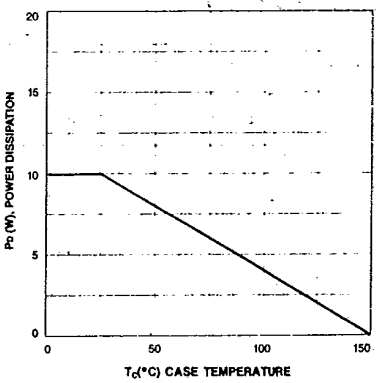

COLLECTOR OUTPUT CAPACITANCE




SAFE OPERATING AREA




POWER DERATING

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