

SAMSUNG SEMICONDUCTOR INC T-35114E D 7964142 0007069 5

# KSR1204

## NPN EPITAXIAL SILICON TRANSISTOR

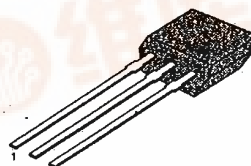
### SWITCHING APPLICATION (Bias Resistor Built In)

- Switching circuit, Inverter, Interface circuit Driver circuit
- Built in bias Resistor( $R_1=47K\Omega$ ,  $R_2=47K\Omega$ )
- Complement to KSR2204

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

| Characteristic            | Symbol    | Rating    | Unit       |
|---------------------------|-----------|-----------|------------|
| Collector-Base Voltage    | $V_{CBO}$ | 50        | V          |
| Collector-Emitter Voltage | $V_{CEO}$ | 50        | V          |
| Emitter-Base Voltage      | $V_{EBO}$ | 10        | V          |
| Collector Current         | $I_C$     | 100       | mA         |
| Collector Dissipation     | $P_C$     | 300       | mW         |
| Junction Temperature      | $T_J$     | 150       | $^\circ C$ |
| Storage Temperature       | $T_{stg}$ | -55 ~ 150 | $^\circ C$ |

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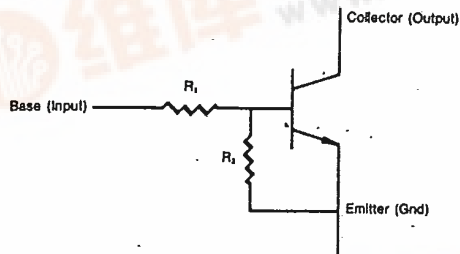
1. Emitter 2. Collector 3. Base

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

| Characteristic                       | Symbol        | Test Condition                       | Min | Typ | Max | Unit      |
|--------------------------------------|---------------|--------------------------------------|-----|-----|-----|-----------|
| Collector-Base Breakdown Voltage     | $BV_{CBO}$    | $I_C=10\mu A$ , $I_E=0$              | 50  |     |     | V         |
| Collector-Emitter Breakdown Voltage  | $BV_{CEO}$    | $I_C=100\mu A$ , $I_B=0$             | 50  |     |     | V         |
| Collector Cutoff Current             | $I_{CBO}$     | $V_{CB}=40V$ , $I_E=0$               |     |     | 0.1 | $\mu A$   |
| DC Current Gain                      | $h_{FE}$      | $V_{CE}=5V$ , $I_C=5mA$              | 68  |     |     |           |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=10mA$ , $I_B=0.5mA$             |     |     | 0.3 | V         |
| Current Gain-Bandwidth Product       | $f_T$         | $V_{CE}=5mA$ , $I_C=10V$             |     | 250 |     | MHz       |
| Output Capacitance                   | $C_{ob}$      | $V_{CB}=10V$ , $I_E=0$<br>$f=1.0MHz$ |     | 3.7 |     | pF        |
| Input Off Voltage                    | $V_{I(off)}$  | $V_{CE}=5V$ , $I_C=100\mu A$         | 0.5 |     |     | V         |
| Input On Voltage                     | $V_{I(on)}$   | $V_{CE}=0.3V$ , $I_C=5mA$            |     |     | 3   | V         |
| Input Resistor                       | $R_1$         |                                      | 32  | 47  | 62  | $K\Omega$ |
| Resistor Ratio                       | $R_1/R_2$     |                                      | 0.9 | 1   | 1.1 |           |

### Equivalent Circuit

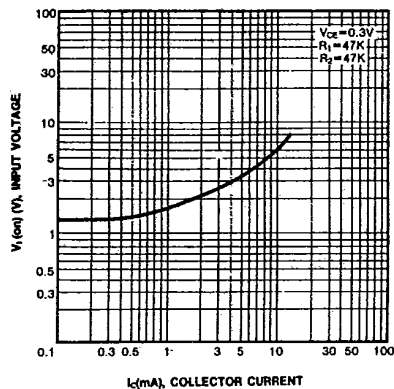


SAMSUNG SEMICONDUCTOR

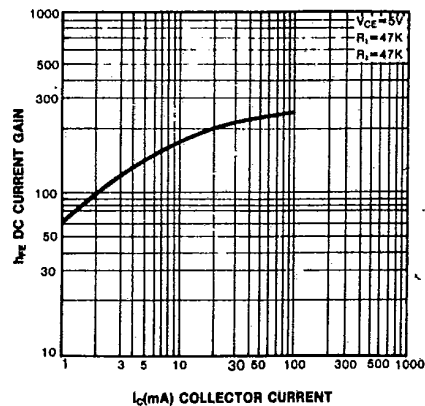
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**NPN EPITAXIAL SILICON TRANSISTOR**

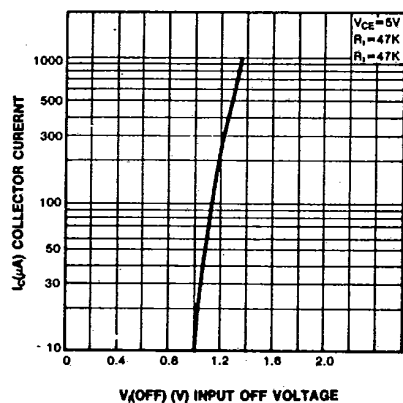
INPUT ON VOLTAGE



DC CURRENT GAIN



INPUT OFF VOLTAGE



POWER DERATING

