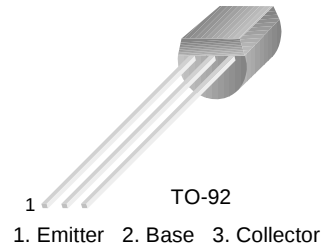


# KSC838

KSC838

## FM Radio RF AMP, MIX, CONV, OSC, IF AMP

- High Current Gain Bandwidth Product :  $f_T=250\text{MHz}$  (TYP)
- Suffix "-C" means Center Collector (1. Emitter 2. Collector 3. Base)



## NPN Epitaxial Silicon Transistor

### Absolute Maximum Ratings $T_a=25^\circ\text{C}$ unless otherwise noted

| Symbol    | Parameter                   | Value     | Units            |
|-----------|-----------------------------|-----------|------------------|
| $V_{CBO}$ | Collector-Base Voltage      | 35        | V                |
| $V_{CEO}$ | Collector-Emitter Voltage   | 30        | V                |
| $V_{EBO}$ | Emitter-Base Voltage        | 4         | V                |
| $I_C$     | Collector Current           | 30        | mA               |
| $P_C$     | Collector Power Dissipation | 250       | mW               |
| $T_J$     | Junction Temperature        | 150       | $^\circ\text{C}$ |
| $T_{STG}$ | Storage Temperature         | -55 ~ 150 | $^\circ\text{C}$ |

### Electrical Characteristics $T_a=25^\circ\text{C}$ unless otherwise noted

| Symbol               | Parameter                            | Test Condition                                  | Min. | Typ. | Max. | Units         |
|----------------------|--------------------------------------|-------------------------------------------------|------|------|------|---------------|
| $BV_{CBO}$           | Collector-Base Breakdown Voltage     | $I_C=100\mu\text{A}$ , $I_E=0$                  | 35   |      |      | V             |
| $BV_{CEO}$           | Collector-Emitter Breakdown Voltage  | $I_C=5\text{mA}$ , $I_B=0$                      | 30   |      |      | V             |
| $BV_{EBO}$           | Emitter-Base Breakdown Voltage       | $I_E=10\mu\text{A}$ , $I_C=0$                   | 4    |      |      | V             |
| $I_{CBO}$            | Collector Cut-off Current            | $V_{CB}=30\text{V}$ , $I_E=0$                   |      |      | 0.1  | $\mu\text{A}$ |
| $I_{EBO}$            | Emitter Cut-off Current              | $V_{EB}=4\text{V}$ , $I_C=0$                    |      |      | 0.1  | $\mu\text{A}$ |
| $h_{FE}$             | DC Current Gain                      | $V_{CE}=12\text{V}$ , $I_C=2\text{mA}$          | 40   |      | 240  |               |
| $V_{BE}(\text{on})$  | Base-Emitter On Voltage              | $V_{CE}=6\text{V}$ , $I_C=1\text{mA}$           | 0.65 | 0.70 | 0.75 | V             |
| $V_{CE}(\text{sat})$ | Collector-Emitter Saturation Voltage | $I_C=10\text{mA}$ , $I_B=1\text{mA}$            |      | 0.1  | 0.4  | V             |
| $f_T$                | Current Gain Bandwidth Product       | $V_{CE}=10\text{V}$ , $I_C=1\text{mA}$          | 100  | 250  |      | MHz           |
| $C_{ob}$             | Output Capacitance                   | $V_{CB}=10\text{V}$ , $I_E=0$ , $f=1\text{MHz}$ |      | 2.0  | 3.2  | pF            |

### $h_{FE}$ Classification

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

## Typical Characteristics

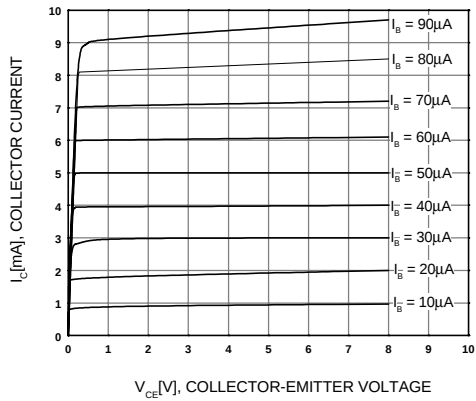


Figure 1. Static Characteristic

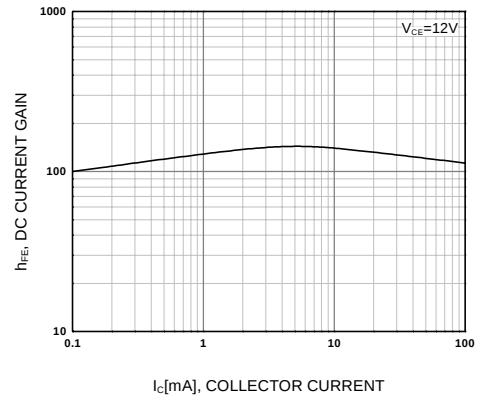


Figure 2. DC current Gain

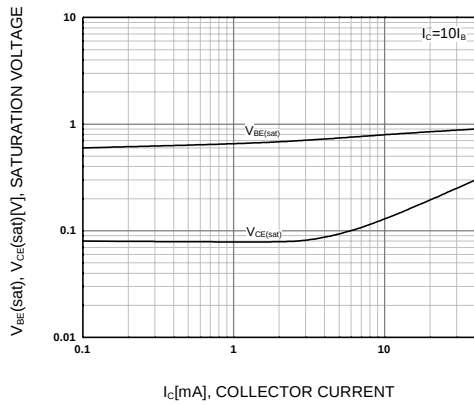


Figure 3. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

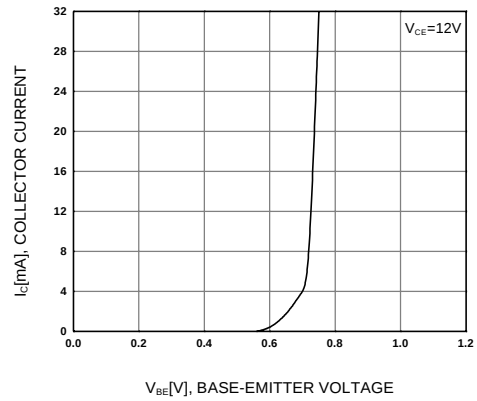


Figure 4. Base-Emitter On Voltage

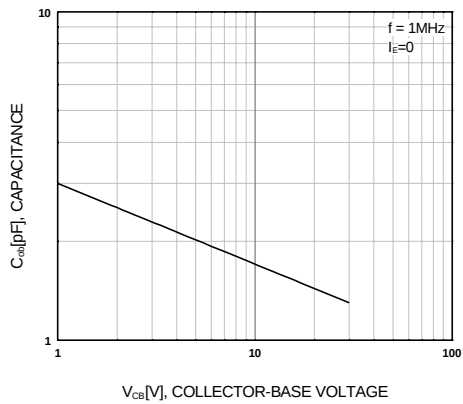


Figure 5. Collector Output Capacitance

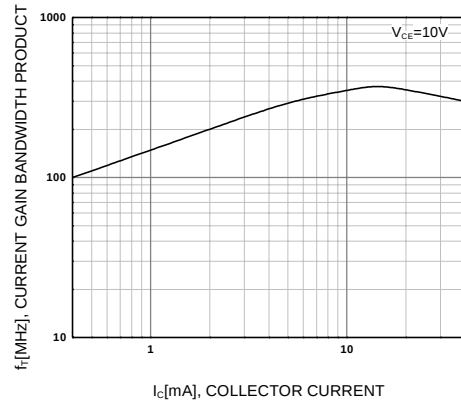
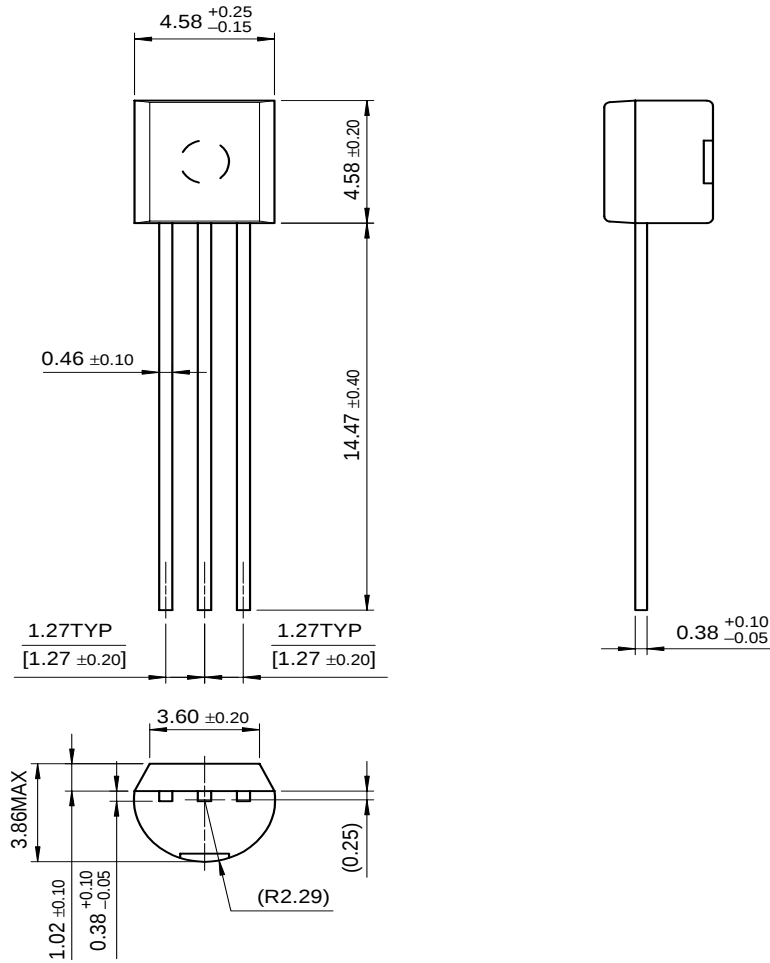


Figure 6. Current Gain Bandwidth Product

# Package Dimensions

## TO-92



Dimensions in Millimeters

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| ActiveArray <sup>™</sup>                         | FACT Quiet series <sup>™</sup>  | ISOPLANAR <sup>™</sup>         | POP <sup>™</sup>                | Stealth <sup>™</sup>        |
| Bottomless <sup>™</sup>                          | FAST <sup>®</sup>               | LittleFET <sup>™</sup>         | Power247 <sup>™</sup>           | SuperSOT <sup>™</sup> -3    |
| CoolFET <sup>™</sup>                             | FAST <sup>™</sup>               | MicroFET <sup>™</sup>          | PowerTrench <sup>®</sup>        | SuperSOT <sup>™</sup> -6    |
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