# ISA1235AC1 ISA1602AM1

FOR LOW FREQUENCY AMPLIFY APPLICATION
SILICON PNP EPITAXIAL TYPE

## DESCRIPTION

ISA1235AC1 ISA1602AM1 is super mini package resin sealed silicon PNP epitaxial type transistor.

These are designed for low frequency voltage amplify application .

## FEATURE

・Excellent linearity of DC forward current gain.

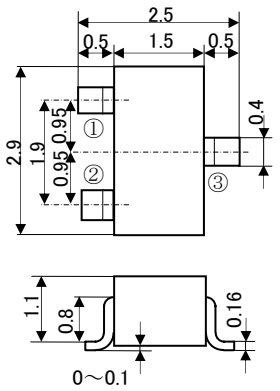
・Small collector to emitter saturation voltage
VCE(sat)=−0.3Vmax

## APPLICATION

For small type machine low frequency voltage amplify application.

OUTLINE DRAWING UNIT:mm

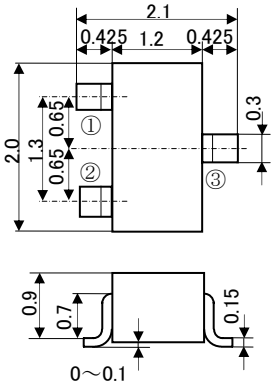
ISA1235AC1




JEITA:SC-59
JEDEC:TO-236 resemblance

TERMINAL CONNECTOR
①:BASE
②:EMITTER
③:COLLECTOR

ISA1602AM1



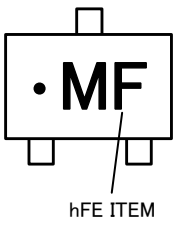

JEITA:SC-70
JEDEC:—

TERMINAL CONNECTOR
①:BASE
②:EMITTER
③:COLLECTOR

## MAXIMUM RATINGS(Ta=25℃)

| Symbol | Parameter | Ratings | | UNIT |
|---|---|---|---|---|
| | | ISA1235AC1 | ISA1602AM1 | |
| $V_{CBO}$ | Collector to Base voltage | −60 | | V |
| $V_{EBO}$ | Collector to Emitter voltage | −6 | | V |
| $V_{CEO}$ | Emitter to Base voltage | −50 | | V |
| $I_C$ | Collector current | −200 | | mA |
| $P_C$ | Collector dissipation | 200 | | mW |
| Tj | Junction temperature | +150 | | ℃ |
| Tstg | Storage temperature | −55～+150 | | ℃ |

MARKING




## ELECTRICAL CHARACTERISTICS(Ta=25℃)

| Symbol | Parameter | Test conditions | Limits | | | UNIT |
|---|---|---|---|---|---|---|
| | | | Min | Ave | Max | |
| $V_{(BR)CEO}$ | Collector to Emitter Breakdown voltage | $I_C$=−100μA, $R_{BE}$=∞ | −50 | | | V |
| $I_{CBO}$ | Collector cut off current | $V_{CB}$=−60V, $I_E$=0 | | | −0.1 | μA |
| $I_{EBO}$ | Emitter cut off current | $V_{EB}$=−6V, $I_C$=0 | | | −0.1 | μA |
| $h_{FE}$* | DC forward current gain | $V_{CE}$=−6V, $I_C$=−1mA | 150 | | 500 | — |
| $h_{FE}$ | DC forward current gain | $V_{CE}$=−6V, $I_C$=−0.1mA | 90 | | | — |
| $V_{CE(sat)}$ | Collector to Emitter saturation voltage | $I_C$=−100mA, $I_B$=−10mA | | | −0.3 | V |
| $f_T$ | Gain bandwidth product | $V_{CE}$=−6V, $I_E$=10mA | | 200 | | MHz |
| Cob | Collector output capacitance | $V_{CB}$=−6V, $I_E$=0,f=1MHz | | 4.0 | | pF |
| NF | Noise Figure | $V_{CE}$=−6V, $I_E$=0.3mA, f=100Hz, RG=10kΩ | | | 20 | dB |

*:It shows hFE classification in below table.

| | E | F |
|---|---|---|
| hFE | 150～300 | 250～500 |

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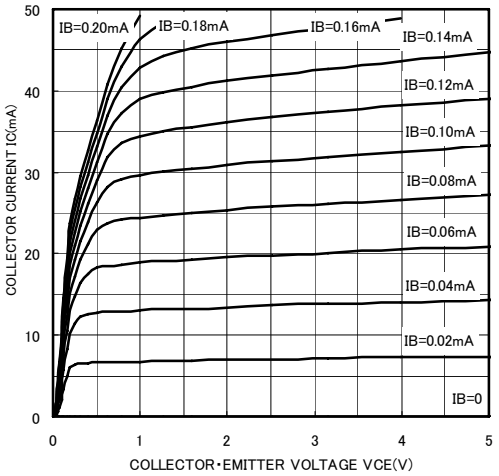
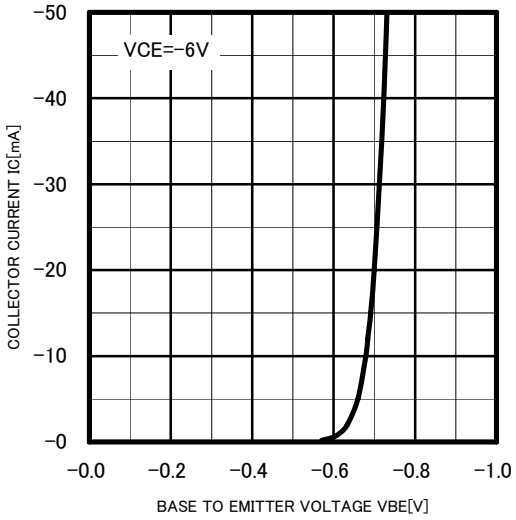
## TYPICAL CHARACTERISTICS

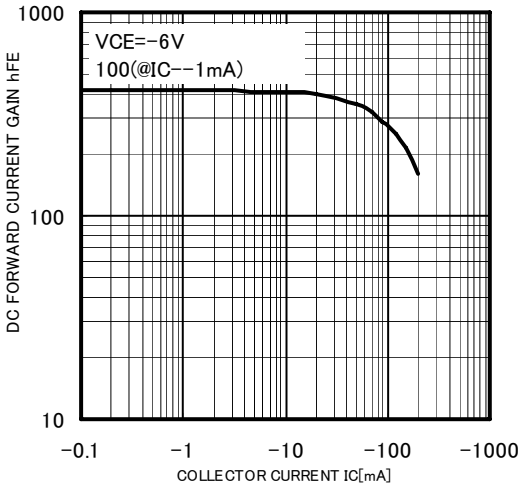
COMMON EMITTER OUTPUT



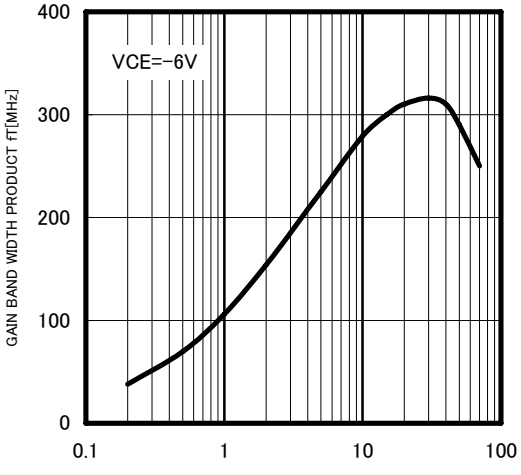

COMMON EMITTER TRANSFER



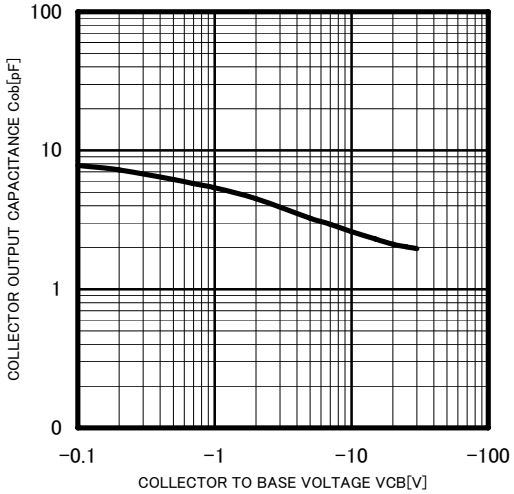

DC FORWARD CURRENT GAIN VS. COLLECTOR CURRENT



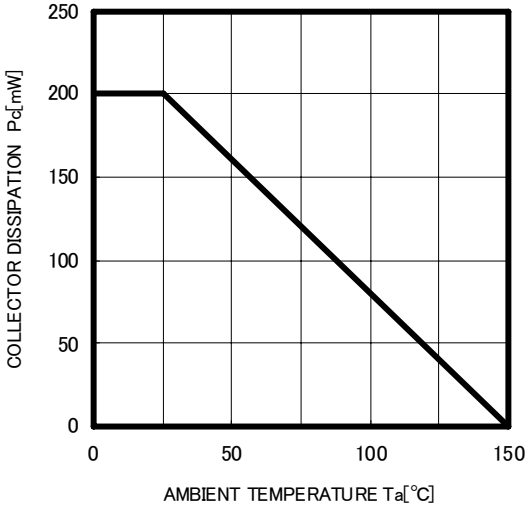

GAIN BAND WIDTH PRODUCT VS. EMITTER CURRENT




COLLECTOR OUTPUT CAPACITANCE
VS. COLLECTOR TO BASE VOLTAGE




COLLECTOR DISSIPATION VS AMBIENT TEMPERATURE



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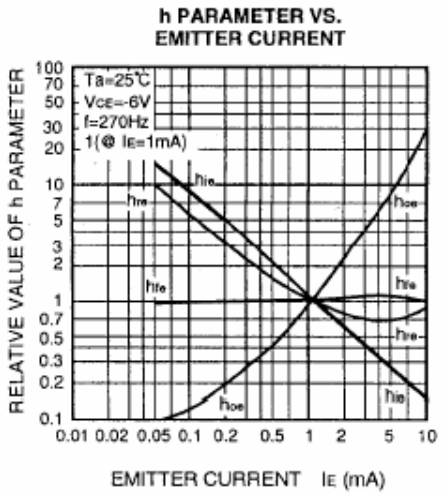


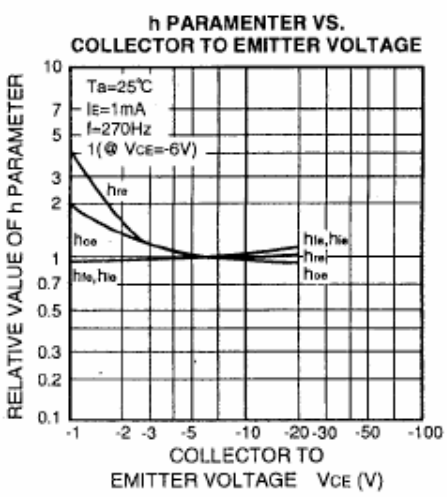


**COMMON EMITTER h PARAMETER** (TYPICAL VALUE)

| Symbol | Parameter | Test conditions | Limits | Unit |
|---|---|---|---|---|
| $h_{ie}$ | Closed loop small signal input impedance | Ta=25℃<br>VCE=-6V<br>IE=1mA<br>f=270Hz | 7.0 | kΩ |
| $h_{re}$ | Open loop small signal reverse voltage amplification factor | | 0.1 | $\times 10^{-3}$ |
| $h_{fe}$ | Closed loop small signal forward current amplification factor | | 250 | — |
| $h_{oe}$ | Open loop small signal output admittance | | 18 | μS |

ISAHAYA ELECTRONICS CORPORATION

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