

General Purpose Transistors

FEATURE

- High Voltage: $V_{CEO} = -50\text{ V}$.
- Epitaxial planar type.
- NPN complement: L2SC1623
- Pb-Free Package is available.

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DEVICE MARKING AND ORDERING INFORMATION

| Device | Marking | Shipping |
|--------------|-----------------|----------------|
| L2SA812QLT1 | M8 | 3000/Tape&Reel |
| L2SA812QLT1G | M8 (Pb-Free) | 3000/Tape&Reel |
| L2SA812RLT1 | M6 | 3000/Tape&Reel |
| L2SA812RLT1G | M6 (Pb-Free) | 3000/Tape&Reel |
| L2SA812SLT1 | M7 | 3000/Tape&Reel |
| L2SA812SLT1G | M7 (Pb-Free) | 3000/Tape&Reel |

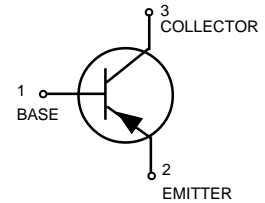
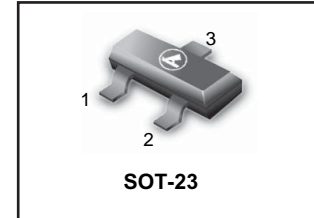
MAXIMUM RATINGS

| Rating | Symbol | L2SA812 | Unit |
|------------------------------|-----------|---------|------|
| Collector-Emitter Voltage | V_{CEO} | -50 | V |
| Collector-Base Voltage | V_{CBO} | -60 | V |
| Emitter-Base Voltage | V_{EBO} | -6 | V |
| Collector current-continuoun | I_c | -150 | mAdc |

THERMAL CHARATEERISTICS

| Characteristic | Symbol | Max | Unit |
|---|-----------------|-------------|---------------------------|
| Total Device Dissipation FR-5 Board, (1) $T_A=25^\circ\text{C}$ | P_D | 200 | mW |
| Derate above 25°C | | 1.8 | mW/ $^\circ\text{C}$ |
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 556 | $^\circ\text{C}/\text{W}$ |
| Total Device Dissipation Alumina Substrate, (2) $T_A=25^\circ\text{C}$ | P_D | 200 | mW |
| Derate above 25°C | | 2.4 | mW/ $^\circ\text{C}$ |
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 417 | $^\circ\text{C}/\text{W}$ |
| Junction and Storage Temperature | T_j, T_{stg} | -55 to +150 | $^\circ\text{C}$ |

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ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|----------------|--------|-----|-----|-----|------|
|----------------|--------|-----|-----|-----|------|

OFF CHARACTERISTICS

| | | | | | |
|--|---------------|-----|---|------|---------------|
| Collector-Emitter Breakdown Voltage ($I_C = -1\text{mA}$) | $V_{(BR)CEO}$ | -50 | - | - | V |
| Emitter-Base Breakdown Voltage ($I_E = -50\ \mu\text{A}$) | $V_{(BR)EBO}$ | -6 | - | - | V |
| Collector-Base Breakdown Voltage ($I_C = -50\ \mu\text{A}$) | $V_{(BR)CBO}$ | -60 | - | - | V |
| Collector Cutoff Current ($V_{CB} = -50\text{V}$) | I_{CBO} | - | - | -0.1 | μA |
| Emitter Cutoff Current ($V_{BE} = -6\text{V}$) | I_{EBO} | - | - | -0.1 | μA |

ON CHARACTERISTICS

| | | | | | |
|---|---------------|-------|-------|-------|---|
| DC Current Gain ($I_C = -1\text{mA}, V_{CE} = -6.0\text{V}$) | h_{FE} | 120 | - | 560 | |
| Collector-Emitter Saturation Voltage ($I_C = -100\text{mA}, I_B = -10\text{mA}$) | $V_{CE(sat)}$ | - | -0.18 | -0.3 | V |
| Base -Emitter On Voltage $I_E = -1.0\text{mA}, V_{CE} = -6.0\text{V}$ | V_{BE} | -0.58 | -0.62 | -0.68 | V |

SMALL-SIGNAL CHARACTERISTICS

| | | | | | |
|---|-----------|---|-----|---|-----|
| Current-Gain-Bandwidth Product ($V_{CE} = -6.0\text{V}, I_E = -10\text{mA}$) | F_t | - | 180 | - | MHz |
| Output Capacitance ($V_{CE} = -10\text{V}, I_E = 0, f = 1.0\text{MHz}$) | C_{obo} | - | 4.5 | - | pF |

h_{FE} Values are classified as follows

| | | | | |
|-------|----------|---------|---------|---------|
| NOTE: | * | Q | R | S |
| | h_{FE} | 120~270 | 180~390 | 270~560 |

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Fig.1 Grounded emitter propagation characteristics

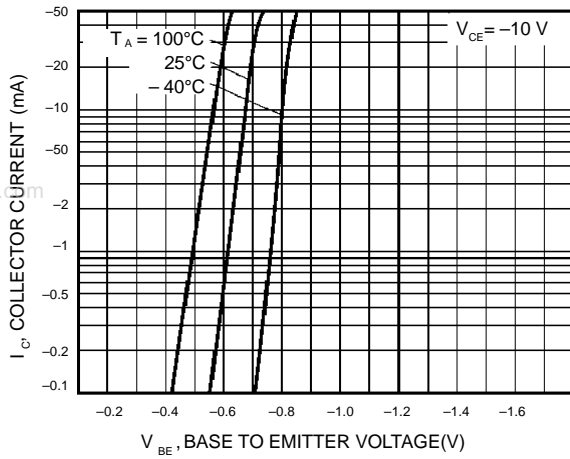


Fig.2 Grounded emitter output characteristics(I)

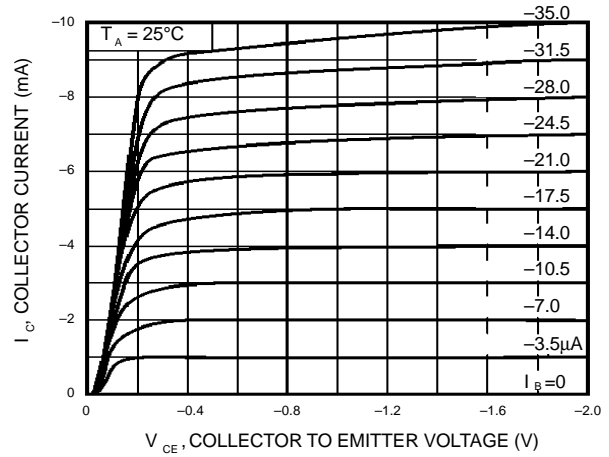


Fig.3 Grounded emitter output characteristics(II)

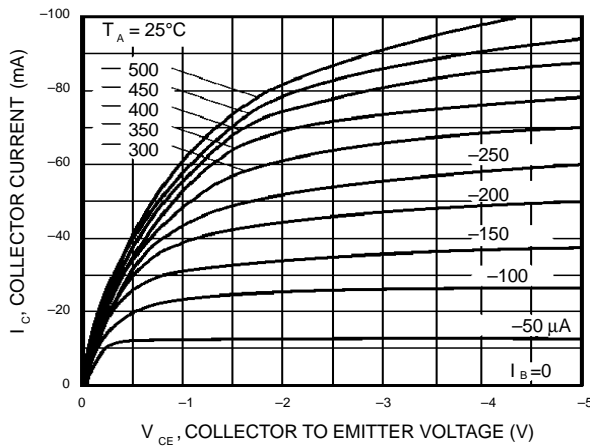


Fig.4 DC current gain vs. collector current (I)

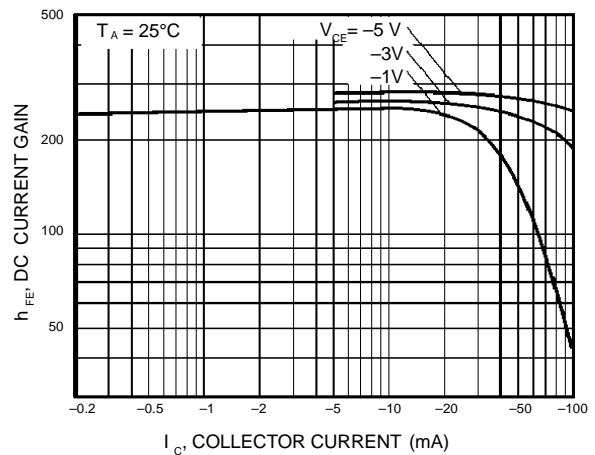


Fig.5 DC current gain vs. collector current (II)

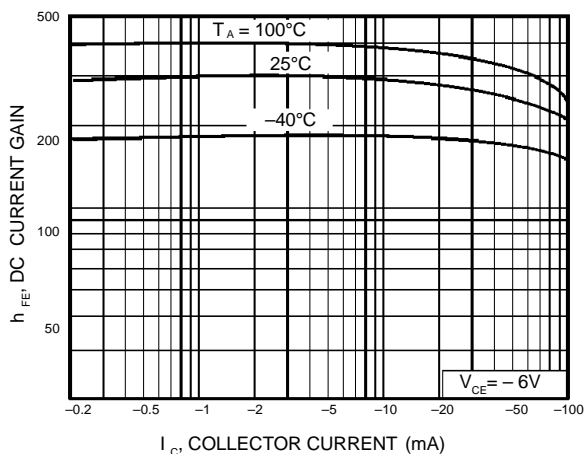
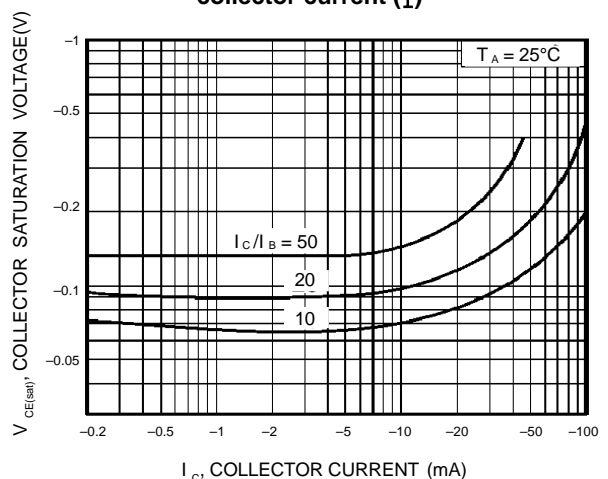


Fig.6 Collector-emitter saturation voltage vs. collector current (I)



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Fig.7 Collector-emitter saturation voltage vs. collector current (I)

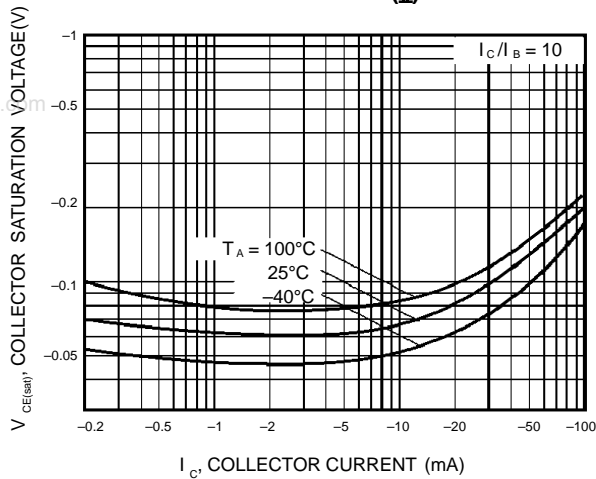
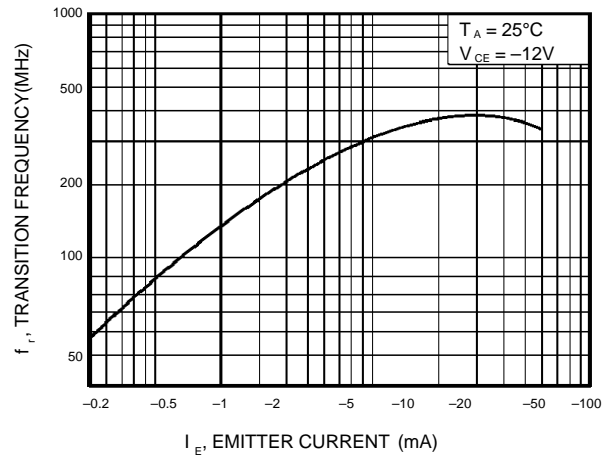
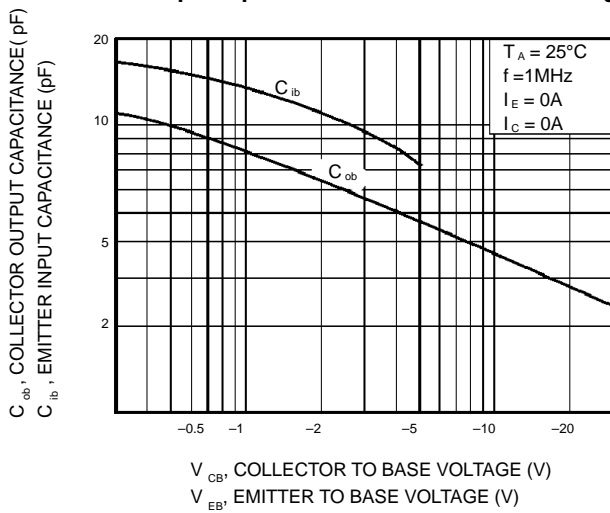


Fig.8 Gain bandwidth product vs. emitter current



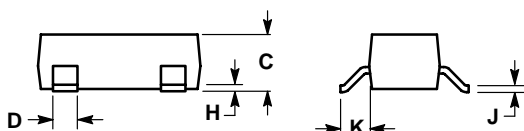
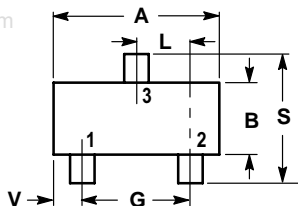
**Fig.9 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage**



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NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

| DIM | INCHES | | MILLIMETERS | |
|-----|--------|--------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.1102 | 0.1197 | 2.80 | 3.04 |
| B | 0.0472 | 0.0551 | 1.20 | 1.40 |
| C | 0.0350 | 0.0440 | 0.89 | 1.11 |
| D | 0.0150 | 0.0200 | 0.37 | 0.50 |
| G | 0.0701 | 0.0807 | 1.78 | 2.04 |
| H | 0.0005 | 0.0040 | 0.013 | 0.100 |
| J | 0.0034 | 0.0070 | 0.085 | 0.177 |
| K | 0.0140 | 0.0285 | 0.35 | 0.69 |
| L | 0.0350 | 0.0401 | 0.89 | 1.02 |
| S | 0.0830 | 0.1039 | 2.10 | 2.64 |
| V | 0.0177 | 0.0236 | 0.45 | 0.60 |

- PIN 1. BASE
 2. EMITTER
 3. COLLECTOR

