

## Medium Power Transistor (32V, 0.8A)

### L2SD1781K\*LT1

#### ●Features

- 1) Very low  $V_{CE(sat)}$ .  
 $V_{CE(sat)} < 0.4\text{ V}$  (Typ.)  
( $I_C / I_B = 500\text{mA} / 50\text{mA}$ )
- 2) High current capacity in compact package.
- 3) Complements the L2SB1197K\*LT1
- 4) Pb Free Package is Available.

#### ●Structure

Epitaxial planar type  
NPN silicon transistor

#### ●Absolute maximum ratings ( $T_a = 25^\circ\text{C}$ )

| Parameter                   | Symbol    | Limits          | Unit             |
|-----------------------------|-----------|-----------------|------------------|
| Collector-base voltage      | $V_{CBO}$ | 40              | V                |
| Collector-emitter voltage   | $V_{CEO}$ | 32              | V                |
| Emitter-base voltage        | $V_{EBO}$ | 5               | V                |
| Collector current           | $I_C$     | 0.8             | A (DC)           |
|                             |           | 1.5             | A (Pulse) *      |
| Collector power dissipation | $P_C$     | 200             | mW               |
| Junction temperature        | $T_j$     | 150             | $^\circ\text{C}$ |
| Storage temperature         | $T_{stg}$ | $-55 \sim +150$ | $^\circ\text{C}$ |

\* Single pulse  $P_w = 100\text{ms}$

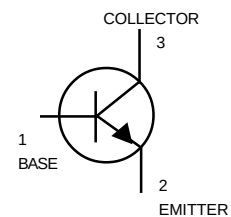
#### ORDERING INFORMATION

| Device         | Marking      | Shipping         |
|----------------|--------------|------------------|
| L2SD1781KQLT1  | AFQ          | 3000 Tape & Reel |
| L2SD1781KQLT1G | AFQ(Pb-Free) | 3000 Tape & Reel |
| L2SD1781KRLT1  | AFR          | 3000 Tape & Reel |
| L2SD1781KRLT1G | AFR(Pb-Free) | 3000 Tape & Reel |

### L2SD1781K\*LT1



**SOT-23 /TO-236AB**



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### ●Electrical characteristics (Ta = 25°C)

| Parameter                            | Symbol        | Min. | Typ. | Max. | Unit    | Conditions                       |
|--------------------------------------|---------------|------|------|------|---------|----------------------------------|
| Collector-base breakdown voltage     | $BV_{CBO}$    | 40   | —    | —    | V       | $I_C=50\mu A$                    |
| Collector-emitter breakdown voltage  | $BV_{CEO}$    | 32   | —    | —    | V       | $I_C=1mA$                        |
| Emitter-base breakdown voltage       | $BV_{EBO}$    | 5    | —    | —    | V       | $I_E=50\mu A$                    |
| Collector cutoff current             | $I_{CBO}$     | —    | —    | 0.5  | $\mu A$ | $V_{CB}=20V$                     |
| Emitter cutoff current               | $I_{EBO}$     | —    | —    | 0.5  | $\mu A$ | $V_{EB}=4V$                      |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | —    | —    | 0.4  | V       | $I_C/I_B=500mA/50mA$             |
| DC current transfer ratio            | $h_{FE}$      | 120  | —    | 390  | —       | $V_{CE}=3V, I_C=100mA$           |
| Transition frequency                 | $f_T$         | —    | 150  | —    | MHz     | $V_{CE}=5V, I_E=-50mA, f=100MHz$ |
| Output capacitance                   | $C_{ob}$      | —    | 10   | —    | pF      | $V_{CB}=10V, I_E=0A, f=1MHz$     |

### ●DEVICE MARKING

|                   |                  |
|-------------------|------------------|
| L2SD1781KQLT1-AFQ | L2S1781KRLT1-AFR |
|-------------------|------------------|

| Item     | Q       | R       |
|----------|---------|---------|
| $h_{FE}$ | 120~270 | 180~390 |

### ●Electrical characteristic curves

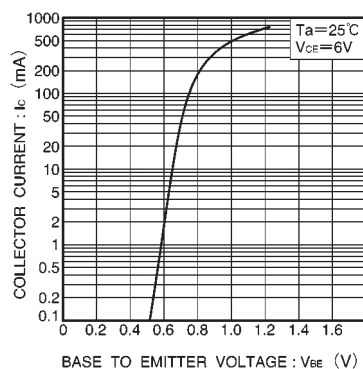


Fig.1 Grounded emitter propagation characteristics

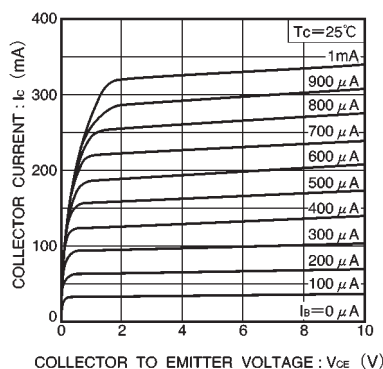


Fig.2 Grounded emitter output characteristics

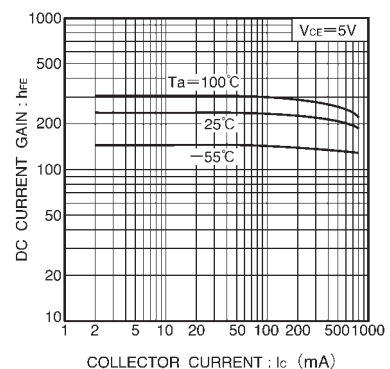


Fig.3 DC current gain vs. collector current

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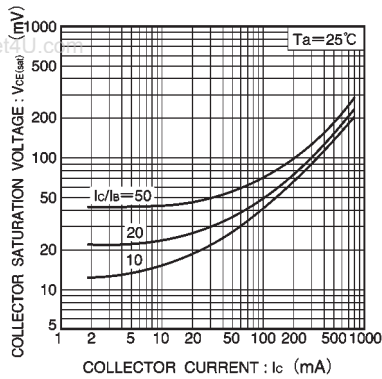


Fig.4 Collector-emitter saturation voltage vs. collector current ( I )

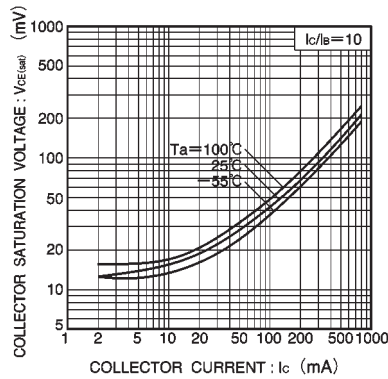


Fig.5 Collector-emitter saturation voltage vs. collector current ( II )

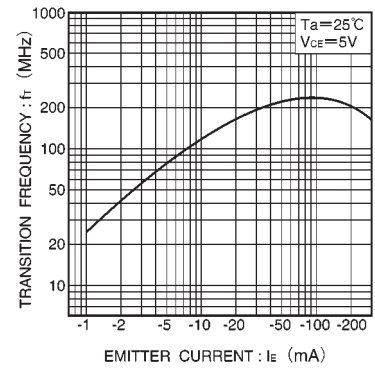


Fig.6 Gain bandwidth product vs. emitter current

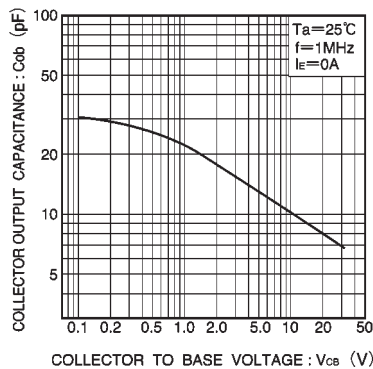


Fig.7 Collector output capacitance vs. collector-base voltage

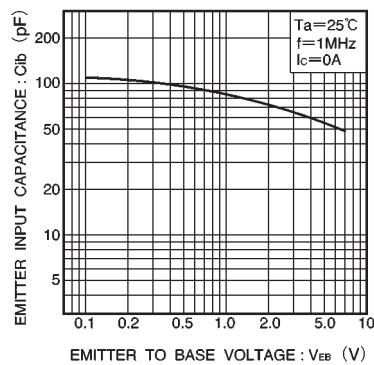
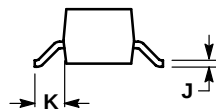
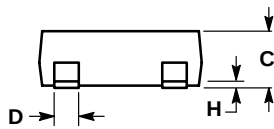
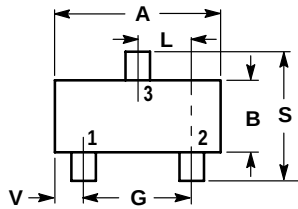


Fig.8 Emitter input capacitance vs. emitter-base voltage

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## SOT-23

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### NOTES:

- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
- 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  |
| E   | 0.0701 | 0.0807 | 1.78        | 2.04  |
| F   | 0.0005 | 0.0040 | 0.013       | 0.100 |
| G   | 0.0034 | 0.0070 | 0.085       | 0.177 |
| H   | 0.0140 | 0.0285 | 0.35        | 0.69  |
| I   | 0.0350 | 0.0401 | 0.89        | 1.02  |
| J   | 0.0830 | 0.1039 | 2.10        | 2.64  |
| K   | 0.0177 | 0.0236 | 0.45        | 0.60  |

- PIN 1. BASE  
2. EMITTER  
3. COLLECTOR

