

TOSHIBA TRANSISTOR SILICON PNP EPITAXIAL PLANAR TYPE

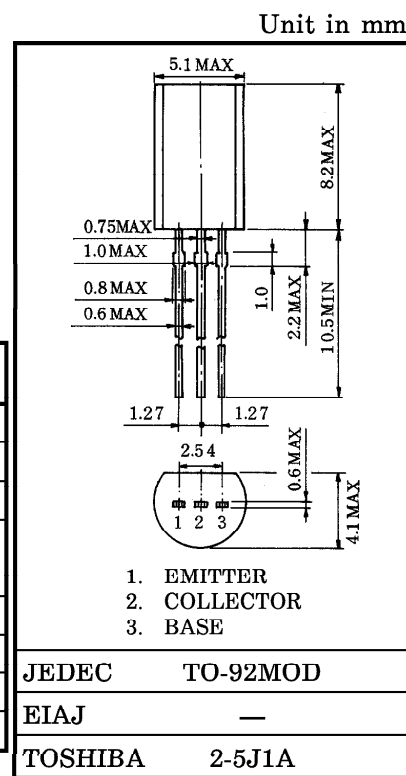
## 2SA1382

POWER AMPLIFIER APPLICATIONS  
HIGH SPEED SWITCHING APPLICATIONS

- High DC Current Gain :  $h_{FE} = 150 \sim 400$  ( $I_C = -0.5A$ )
- Low Saturation Voltage  
:  $V_{CE(sat)} = -0.5V$  (MAX.) ( $I_C = -1A$ )
- High Speed Switching :  $t_{stg} = 1.0\mu s$  (TYP.)

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        |      | $V_{EBO}$ | -7      | V          |
| Collector Current           | DC   | $I_C$     | -2      | A          |
|                             | Peak | $I_{CP}$  | -4      |            |
| Base Current                |      | $I_B$     | -1      | A          |
| Collector Power Dissipation |      | $P_C$     | 900     | mW         |
| Junction Temperature        |      | $T_j$     | 150     | $^\circ C$ |
| Storage Temperature Range   |      | $T_{stg}$ | -55~150 | $^\circ C$ |



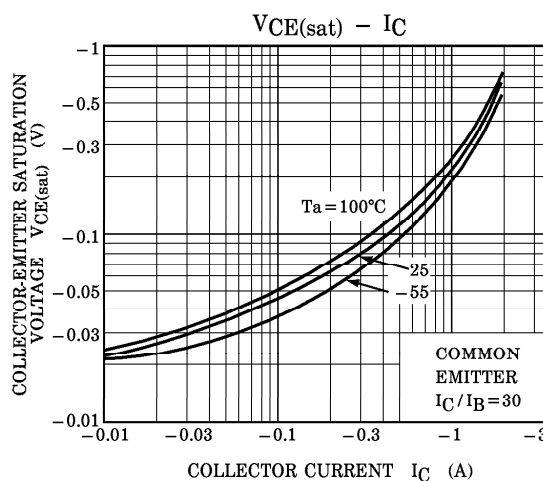
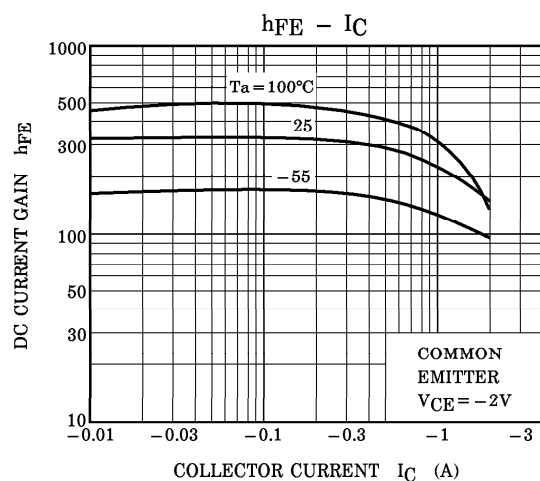
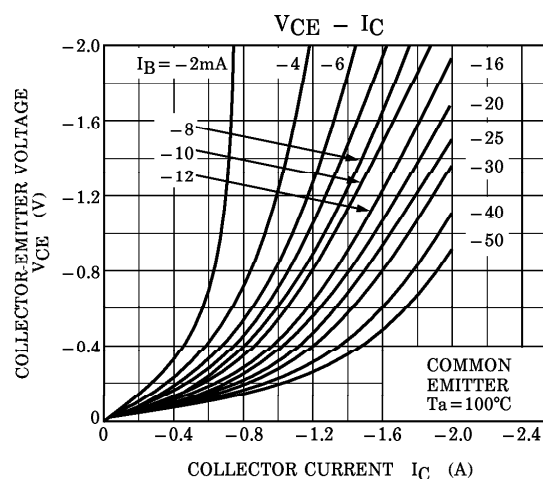
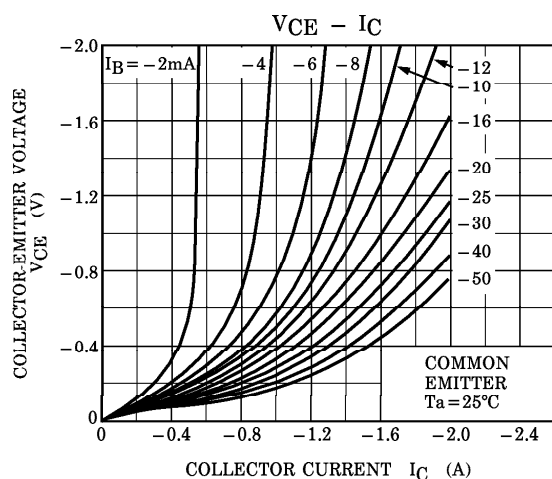
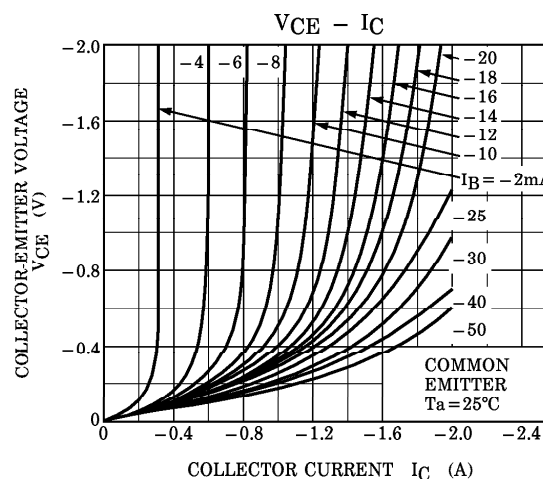
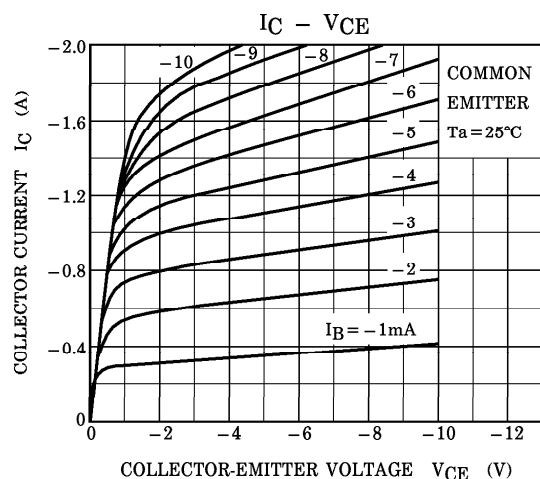
Weight : 0.36g

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

| CHARACTERISTIC                      |                   | SYMBOL        | TEST CONDITION                                                                                                                                                                                                            | MIN. | TYP. | MAX. | UNIT    |
|-------------------------------------|-------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|---------|
| Collector Cut-off Current           |                   | $I_{CBO}$     | $V_{CB} = -50V, I_E = 0$                                                                                                                                                                                                  | —    | —    | -0.1 | $\mu A$ |
| Emitter Cut-off Current             |                   | $I_{EBO}$     | $V_{EB} = -7V, I_C = 0$                                                                                                                                                                                                   | —    | —    | -0.1 | $\mu A$ |
| Collector-Emitter Breakdown Voltage |                   | $V_{(BR)CEO}$ | $I_C = -10mA, I_B = 0$                                                                                                                                                                                                    | -50  | —    | —    | V       |
| DC Current Gain                     |                   | $h_{FE(1)}$   | $V_{CE} = -2V, I_C = -0.5A$                                                                                                                                                                                               | 150  | —    | 400  |         |
|                                     |                   | $h_{FE(2)}$   | $V_{CE} = -2V, I_C = -1.5A$                                                                                                                                                                                               | 60   | —    | —    |         |
| Saturation Voltage                  | Collector-Emitter | $V_{CE(sat)}$ | $I_C = -1A, I_B = -0.033A$                                                                                                                                                                                                | —    | -0.2 | -0.5 | V       |
|                                     | Base-Emitter      | $V_{BE(sat)}$ | $I_C = -1A, I_B = -0.033A$                                                                                                                                                                                                | —    | -0.9 | -1.2 |         |
| Transition Frequency                |                   | $f_T$         | $V_{CE} = -2V, I_C = -0.5A$                                                                                                                                                                                               | —    | 110  | —    | MHz     |
| Collector Output Capacitance        |                   | $C_{ob}$      | $V_{CB} = -10V, I_E = 0, f = 1MHz$                                                                                                                                                                                        | —    | 50   | —    | pF      |
| Switching Time                      | Turn-on Time      | $t_{on}$      | <p>20<math>\mu s</math><br/>INPUT <math>I_{B1}</math> <math>I_{B2}</math> <math>I_C</math> <math>I_{B2}</math> <math>I_{B1}</math><br/>OUTPUT<br/>30<math>\Omega</math><br/>-30V<br/>DUTY CYCLE <math>\leq 1\%</math></p> | —    | 0.2  | —    | $\mu s$ |
|                                     | Storage Time      | $t_{stg}$     |                                                                                                                                                                                                                           | —    | 1.0  | —    |         |
|                                     | Fall Time         | $t_f$         |                                                                                                                                                                                                                           | —    | 0.2  | —    |         |

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