Elektronische Bauelemente

# 2SD602 / 2SD602A

**NPN Plastic-Encapsulate Transistor**

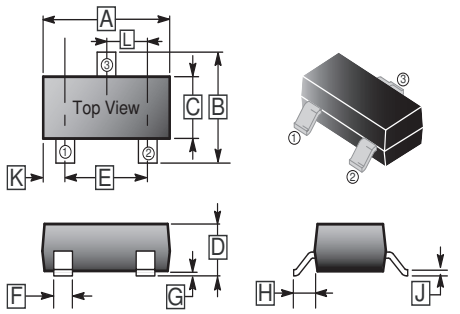
RoHS Compliant Product

A suffix of "-C" specifies halogen & lead-free

## FEATURE

- Low collector to emitter saturation voltage $V_{CE(sat)}$

**SOT-23**




| REF. | Millimeter | | REF. | Millimeter | |
|---|---|---|---|---|---|
| | Min. | Max. | | Min. | Max. |
| A | 2.80 | 3.04 | G | 0.09 | 0.18 |
| B | 2.10 | 2.55 | H | 0.45 | 0.60 |
| C | 1.20 | 1.40 | J | 0.08 | 0.177 |
| D | 0.89 | 1.15 | K | 0.6 REF. | |
| E | 1.78 | 2.04 | L | 0.89 | 1.02 |
| F | 0.30 | 0.50 | | | |

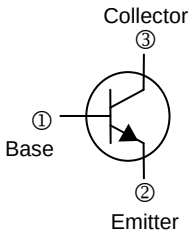
## CLASSIFICATION OF $h_{FE\ (1)}$

| **Product-Rank** | 2SD602-Q | 2SD602-R | 2SD602-S |
|---|---|---|---|
| **Range** | 85~170 | 120~240 | 170~340 |
| **Marking Code** | WQ1 | WR1 | WS1 |

| **Product-Rank** | 2SD602A-Q | 2SD602A-R | 2SD602A-S |
|---|---|---|---|
| **Range** | 85~170 | 120~240 | 170~340 |
| **Marking Code** | XQ | XR | XS |

## PACKAGE INFORMATION

| **Package** | **MPQ** | **LeaderSize** |
|---|---|---|
| SOT-23 | 3K | 7' inch |




## ABSOLUTE MAXIMUM RATINGS ($T_A$ = 25°C unless otherwise specified)

| **Parameter** | | **Symbol** | **Ratings** | **Unit** |
|---|---|---|---|---|
| Collector to Base Voltage | 2SD602 | $V_{CBO}$ | 30 | V |
| | 2SD602A | | 60 | |
| Collector to Emitter Voltage | 2SD602 | $V_{CEO}$ | 25 | V |
| | 2SD602A | | 50 | |
| Emitter to Base Voltage | | $V_{EBO}$ | 5 | V |
| Collector Current - Continuous | | $I_C$ | 500 | mA |
| Collector Power Dissipation | | $P_C$ | 200 | mW |
| Thermal Resistance From Junction to Ambient | | $R_{\theta JA}$ | 625 | ℃ / W |
| Junction, Storage Temperature | | $T_J$, $T_{STG}$ | 150, -55~150 | ℃ |

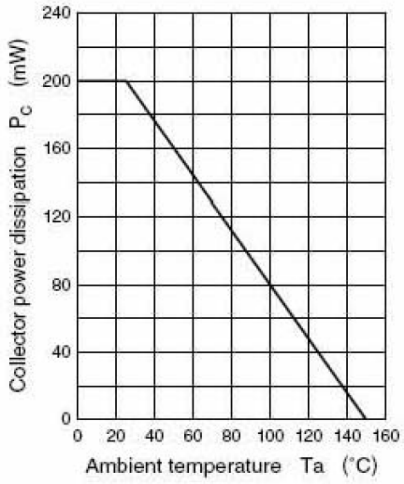
## ELECTRICAL CHARACTERISTICS ($T_A$ = 25°C unless otherwise specified)

| Parameter | | Symbol | Min. | Typ. | Max. | Unit | Test Conditions |
|---|---|---|---|---|---|---|---|
| Collector to Base Breakdown Voltage | 2SD602 | $V_{(BR)CBO}$ | 30 | - | - | V | $I_C$=10μA, $I_E$=0 |
| | 2SD602A | | 60 | - | - | | |
| Collector to Emitter Breakdown Voltage | 2SD602 | $V_{(BR)CEO}$ | 25 | - | - | V | $I_C$=10mA, $I_B$=0 |
| | 2SD602A | | 50 | - | - | | |
| Emitter to Base Breakdown Voltage | | $V_{(BR)EBO}$ | 5 | - | - | V | $I_E$=10μA, $I_C$=0 |
| Collector Cut-Off Current | | $I_{CBO}$ | - | - | 0.1 | μA | $V_{CB}$=20V, $I_E$=0 |
| Emitter Cut-Off Current | | $I_{EBO}$ | - | - | 0.1 | μA | $V_{EB}$=5V, $I_C$=0 |
| DC Current Gain | | $h_{FE\ (1)}$* | 85 | - | 340 | | $V_{CE}$=10V, $I_C$=150mA |
| | | $h_{FE\ (2)}$* | 40 | - | - | | $V_{CE}$=10V, $I_C$=500mA |
| Collector-Emitter Saturation Voltage | | $V_{CE(sat)}$* | - | - | 0.6 | V | $I_C$=300mA, $I_B$=30mA |
| Transition Frequency | | $f_T$ | - | 200 | - | MHz | $V_{CE}$=10V, $I_C$=50mA, f=200MHz |
| Collector Output Capacitance | | $C_{ob}$ | - | - | 15 | pF | $V_{CB}$=10V, $I_E$=0, f=1MHz |

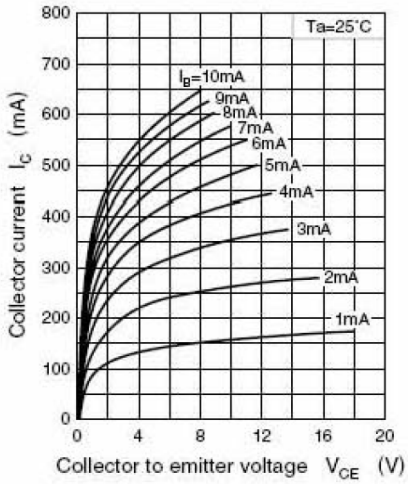
*Pulse test: Pulse width≦350μS, duty cycle≦2.0%

## CHARACTERISTIC CURVES

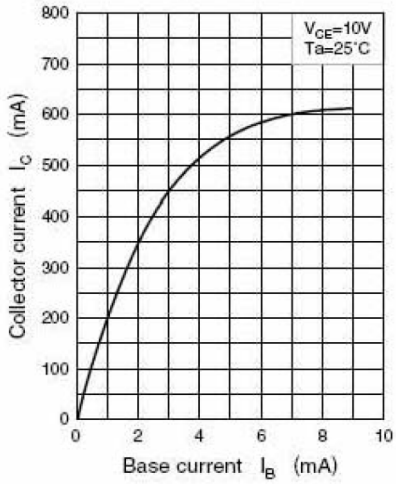
$P_C$ — Ta



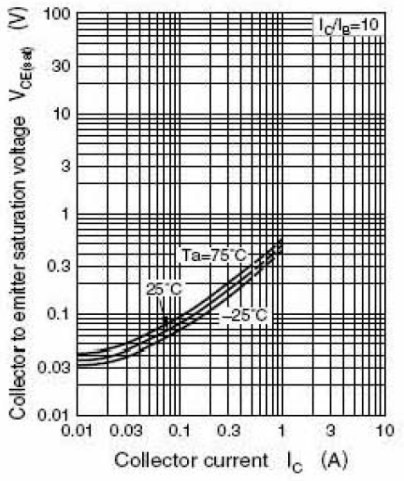

$I_C$ — $V_{CE}$



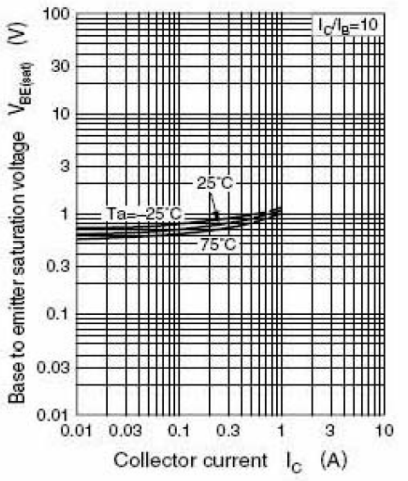

$I_C$ — $I_B$



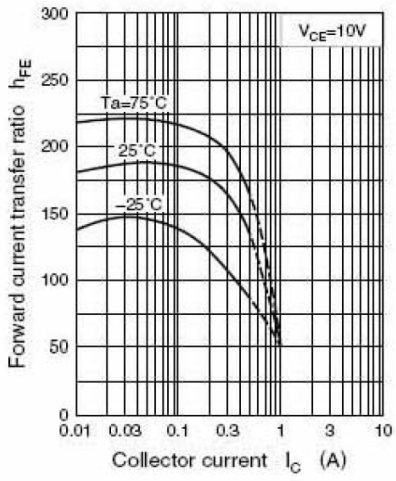

$V_{CE(sat)}$ — $I_C$



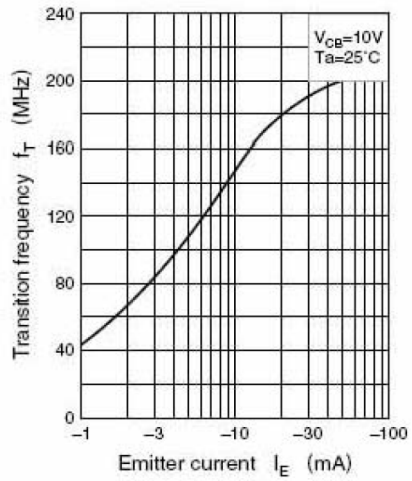

$V_{BE(sat)}$ — $I_C$



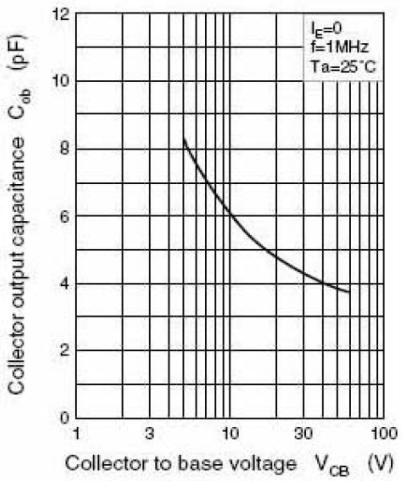

$h_{FE}$ — $I_C$




$f_T$ — $I_E$




$C_{ob}$ — $V_{CB}$




$V_{CER}$ — $R_{BE}$