



CHENMKO ENTERPRISE CO.,LTD

Halogens free devices

**SMALL FLAT
NPN Epitaxial Transistor**

VOLTAGE 50 Volts CURRENT 2 Ampere

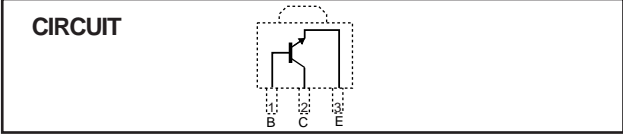
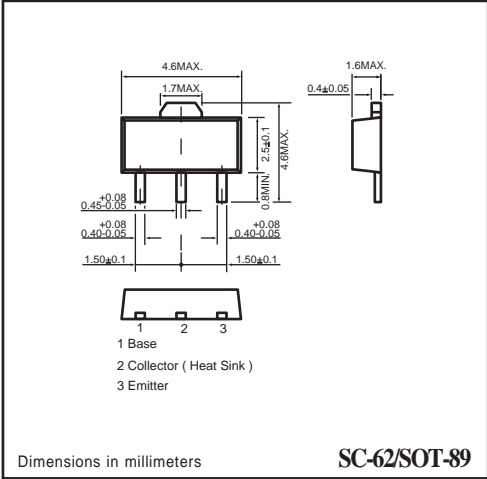
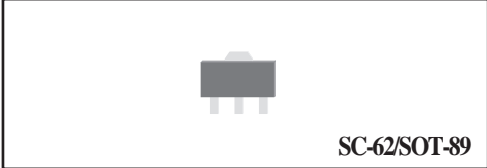
2SC1766GP

APPLICATION
* Power amplifier .

FEATURE
* Small flat package. (SC-62/SOT-89)
* Low saturation voltage $V_{CE(sat)} = -0.5V(\text{max.})(I = -1A)$
* High speed switching time: $t_{stg} = 1.0\mu\text{Sec}(\text{typ.})$
* $PC = 1.0$ to $2.0W$ (mounted on ceramic substrate).
* High saturation current capability.

CONSTRUCTION
* NPN Switching Transistor

MARKING
* hFE Classification P: 1766
Q: Q1766
Y: Y1766



MAXIMUM RATINGS (At $T_A = 25^\circ\text{C}$ unless otherwise noted)

| RATINGS | CONDITION | SYMBOL | MIN. | MAX. | UNITS |
|-------------------------------|--------------------------------------|-----------|------|------|------------------|
| Collector - Base Voltage | Open Emitter | V_{CB0} | - | 50 | Volts |
| Collector - Emitter Voltage | Open Base | V_{CE0} | - | 50 | Volts |
| Emitter - Base Voltage | Open Collector | V_{EB0} | - | 5 | Volts |
| Collector Current DC | | I_C | - | 2 | Amps |
| Peak Collector Current | Note 3 | I_{CM} | - | 3 | Amps |
| Peak Base Current | | I_{BM} | - | 0.4 | Amps |
| Total Power Dissipation | $T_A \leq 25^\circ\text{C}$; Note 1 | P_{TOT} | - | 1000 | mW |
| Storage Temperature | | T_{STG} | -55 | +150 | $^\circ\text{C}$ |
| Junction Temperature | | T_J | - | +150 | $^\circ\text{C}$ |
| Operating Ambient Temperature | | T_{AMB} | -55 | +150 | $^\circ\text{C}$ |

- Note**
1. Transistor mounted on ceramic substrate 50mmX50mmX0.8t.
 2. Measured at Pulse Width 300 us, Duty Cycle 2%.
 3. Single pulse $P_w = 20\text{mS}$

RATING CHARACTERISTIC CURVES (2SC1766GP)

CHARACTERISTICS (At $T_A = 25^\circ\text{C}$ unless otherwise noted)

| PARAMETERS | CONDITION | SYMBOL | MIN. | TYPE | MAX. | UNITS |
|--------------------------------------|--|-------------|----------|--------|----------|---------------|
| Collector Cut-off Current | $I_E=0; V_{CB}=50\text{V}$ | I_{CBO} | - | - | 0.1 | μA |
| Emitter Cut-off Current | $I_C=0; V_{EB}=5\text{V}$ | I_{CEO} | - | - | 0.1 | μA |
| DC Current Gain | $V_{CE}=2\text{V}$; Note 1 $I_C=0.5\text{A}$; Note 2 $I_C=2.0\text{A}$ | h_{FE} | 70 20 | - - | 390 - | |
| Collector-Emitter Saturation Voltage | $I_C=1\text{A}; I_B=0.05\text{A}$ | V_{CEsat} | - | - | 0.5 | Volts |
| Base-Emitter Saturation Voltage | $I_C=1\text{A}; I_B=0.05\text{A}$ | V_{BEsat} | - | - | 1.2 | mVolts |
| Collector Capacitance | $I_E=I_C=0; V_{CB}=-10\text{V}$; $f=1\text{MHz}$ | C_C | - | 40 | - | pF |
| Transition Frequency | $I_C=0.5\text{A}; V_{CE}=2\text{V}$; $f=100\text{MHz}$ | f_T | - | 120 | - | MHz |

SWITCHING TIMES (Between 10% and 90% levels)

| PARAMETERS | CONDITION | SYMBOL | MIN. | TYPE | MAX. | UNITS |
|--------------|-----------|----------|------|------|------|-----------------|
| Turn-on Time | | t_{on} | - | 0.1 | - | μSec |
| Storage Time | | t_s | - | 1.0 | - | μSec |
| Fall Time | | t_f | - | 0.1 | - | μSec |

Note :

1. Pulse test: $t_p \leq 300\mu\text{Sec}$; $\delta \leq 0.02$.
2. $h_{FE}(1)$ Classification P:82 to 180 Q: 120 to 270, Y: 180 to 390

RATING CHARACTERISTIC CURVES (2SC1766GP)

Typical Electrical Characteristics

Figure 1. $V_{CE} - I_C$

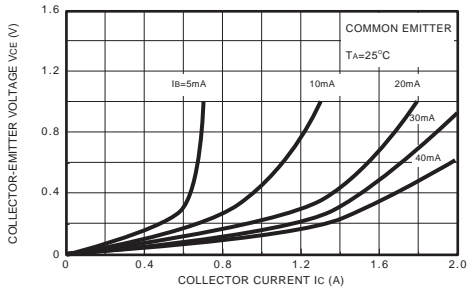


Figure 2. $V_{CE} - I_C$

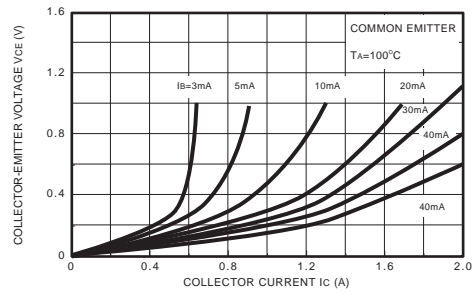


Figure 3. $V_{CE} - I_C$

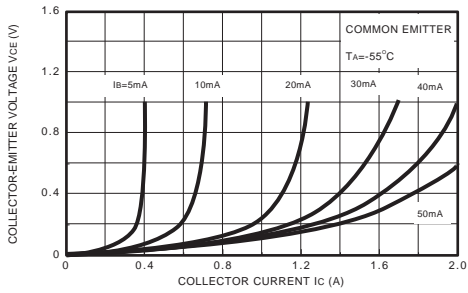


Figure 4. $h_{FE} - I_C$

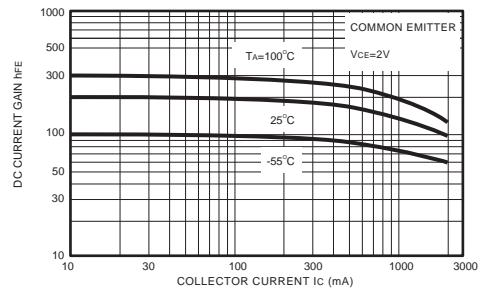


Figure 5. $V_{CE(sat)} - I_C$

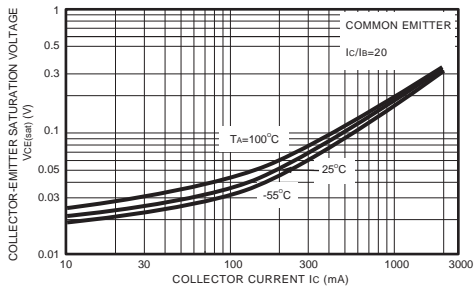
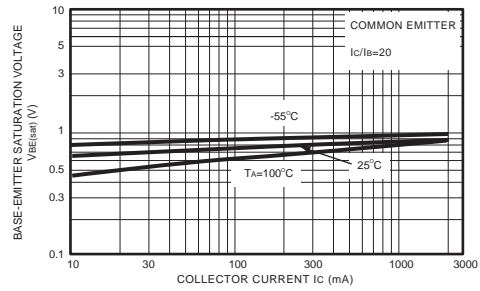


Figure 6. $V_{BE(sat)} - I_C$



RATING CHARACTERISTIC CURVES (2SC1766GP)

Typical Electrical Characteristics

Figure 7. $I_c - V_{BE}$

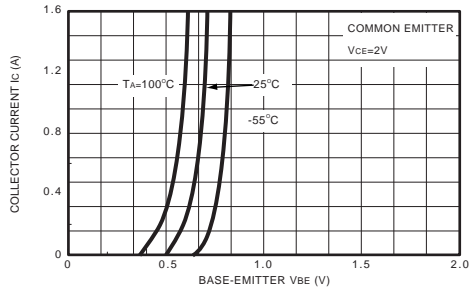


Figure 8. $P_c - T_A$

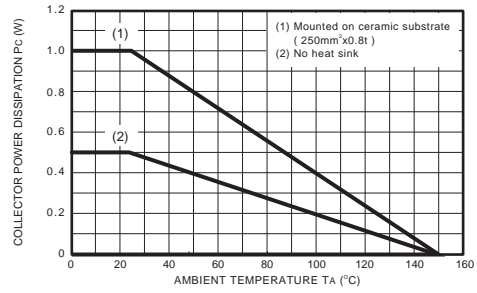


Figure 9. Safe Operation Area

