



CHENMKO ENTERPRISE CO.,LTD

Halogens free devices

**SMALL FLAT
PNP Epitaxial Transistor**

VOLTAGE 50 Volts CURRENT 2 Ampere

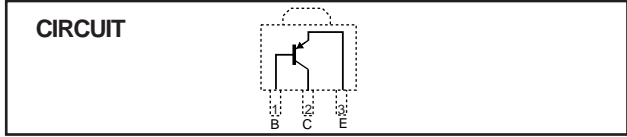
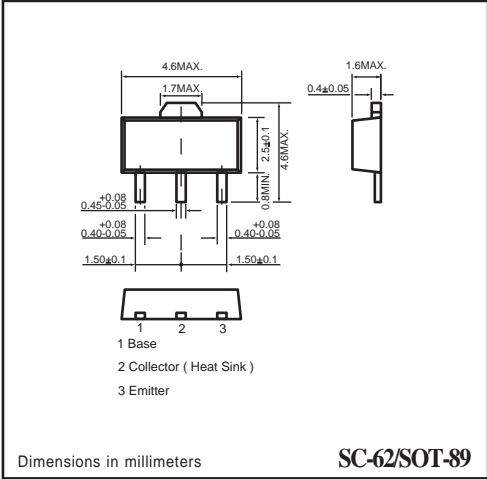
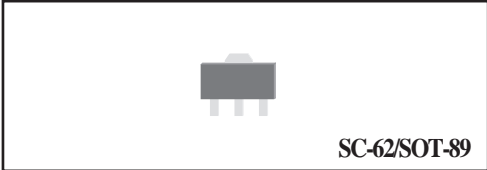
2SA1213GP

APPLICATION
* Power amplifier .

FEATURE
* Small flat package. (SC-62/SOT-89)
* Low saturation voltage $V_{CE(sat)} = -0.5V(\text{max.})(I_c = -1A)$
* 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
* PNP Switching Transistor

MARKING
* HFE(O):NO
* HFE(Y):NY



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		I_{CM}	-	-2	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%.

RATING CHARACTERISTIC (2SA1213GP)

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	- -	240 -	
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 O: 70 to 140, Y: 120 to 240

RATING CHARACTERISTIC CURVES (2SA1213GP)

Typical Electrical Characteristics

Figure 1. $V_{CE} - I_c$

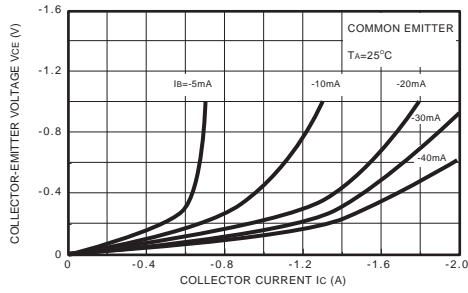


Figure 2. $V_{CE} - I_c$

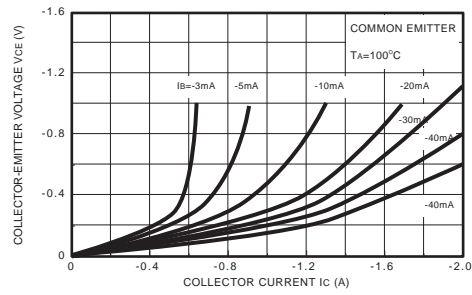


Figure 3. $V_{CE} - I_c$

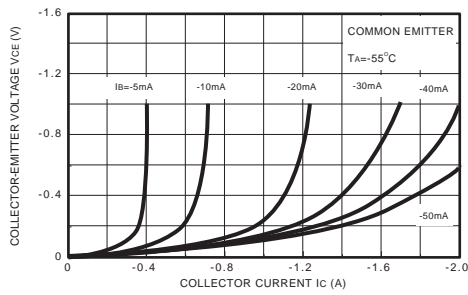


Figure 4. $h_{FE} - I_c$

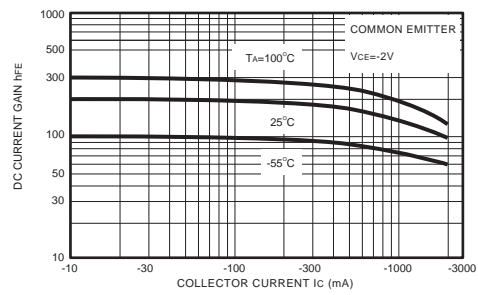


Figure 5. $V_{CE(sat)} - I_c$

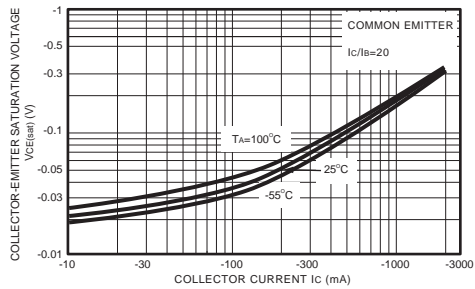
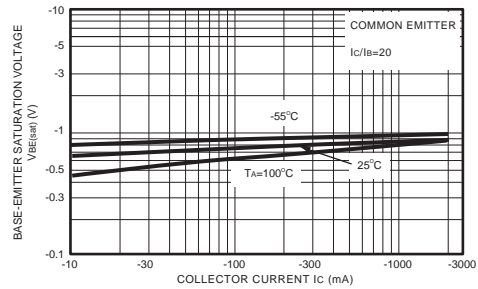


Figure 6. $V_{BE(sat)} - I_c$



RATING CHARACTERISTIC CURVES (2SA1213GP)

Typical Electrical Characteristics

Figure 7. $I_c - V_{BE}$

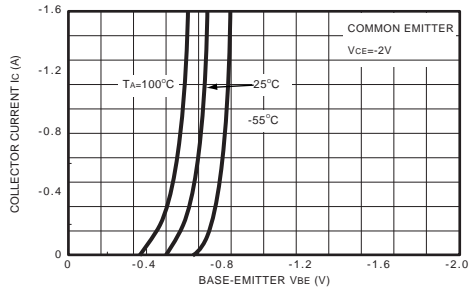


Figure 8. $P_c - T_A$

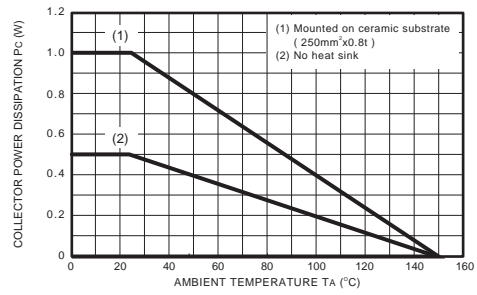


Figure 9. Safe Operation Area

