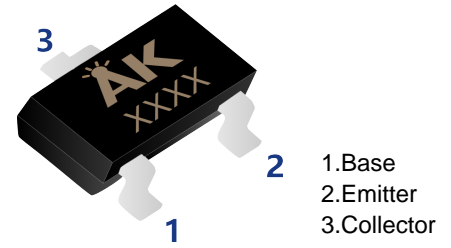


### ■ PNP Silicon Epitaxial Transistor

#### ■ Features

- High DC Current Gain:  $h_{FE} = 200$  TYP. ( $V_{CE} = -6.0$  V,  $I_C = -1.0$  mA)
- High Voltage:  $V_{CEO} = -50$  V



#### ■ Simplified outline(SOT-23)

#### ■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Collector to base voltage	$V_{CBO}$	-60	V
Collector to emitter voltage	$V_{CEO}$	-50	V
Emitter to base voltage	$V_{EBO}$	-5.0	V
Collector current (DC)	$I_C$	-100	mA
power dissipation	$P_C$	200	mW
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature range	$T_{stg}$	-55 to +150	$^\circ\text{C}$

#### ■ Electrical Characteristics $T_a = 25^\circ\text{C}$

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Collector cutoff current	$I_{CBO}$	$V_{CB} = -60$ V, $I_E = 0$ A			-0.1	$\mu\text{A}$
Emitter cutoff current	$I_{EBO}$	$V_{EB} = -5.0$ V, $I_C = 0$ A			-0.1	$\mu\text{A}$
DC current gain *	$h_{FE}$	$V_{CE} = -6.0$ V, $I_C = -1.0$ mA	90	200	600	
Collector saturation voltage	$V_{CE(sat)}$	$I_C = -100$ mA, $I_B = -10$ mA		-0.18	-0.3	V
Base to emitter voltage	$V_{BE}$	$V_{CE} = 6.0$ V, $I_C = -1.0$ mA	-0.58	-0.62	-0.68	V
Output capacitance	$C_{ob}$	$V_{CE} = -10$ V, $I_E = 0$ A, $f = 1.0$ MHz		4.5		pF
Transition frequency	$f_T$	$V_{CE} = -6.0$ V, $I_E = 10$ mA		180		MHz

\* Pulsed:  $PW \leq 350 \mu\text{s}$ , Duty Cycle  $\leq 2\%$

#### ■ $h_{FE}$ Classification

Marking	M4	M5	M6	M7
$h_{FE}$	90~180	135~270	200~400	300~600

■ Typical Characteristics

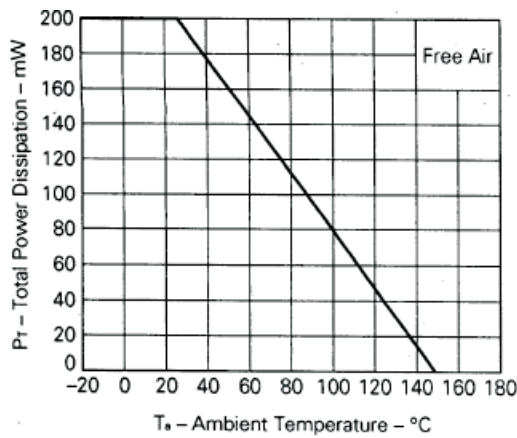


Fig.1 Total Power Dissipation vs. Ambient Temperature

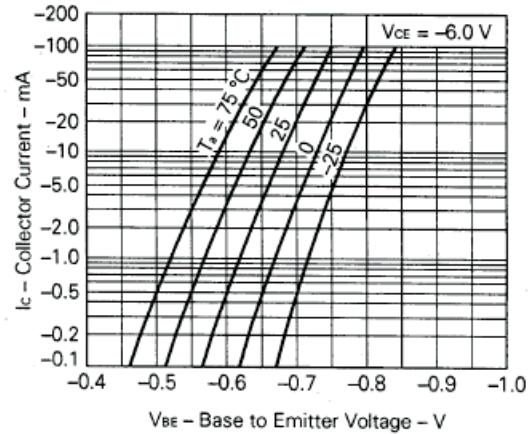


Fig.2 Collector Current vs. Base to Emitter Voltage

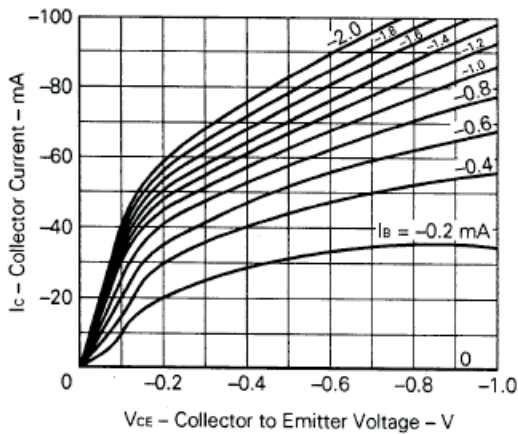


Fig.3 Collector Current vs. Collector to Emitter Voltage

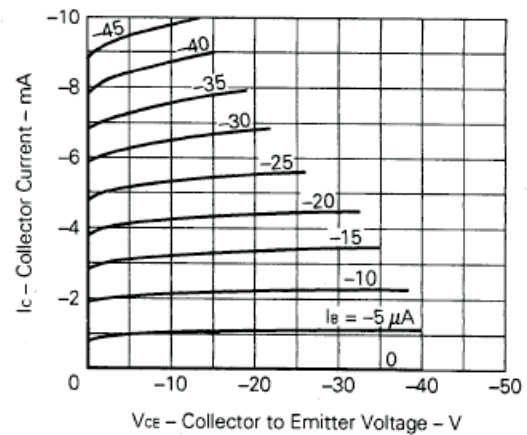


Fig.4 Collector Current vs. Collector to Emitter Voltage

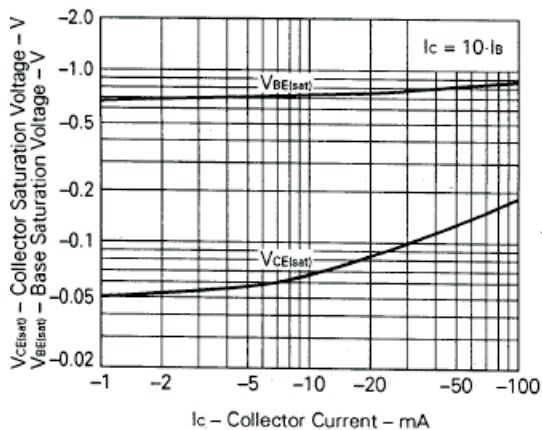


Fig.5 Base and Collector Saturation Voltage vs. Collector Current

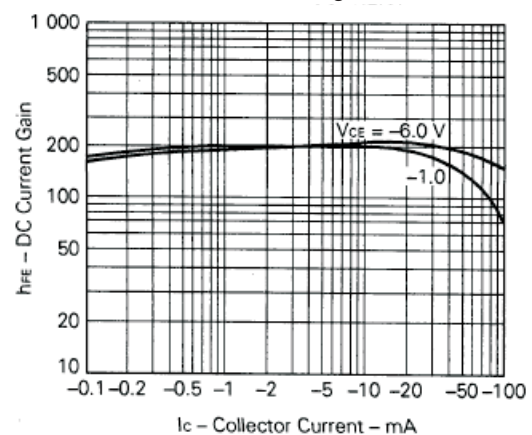
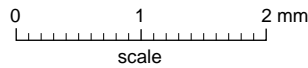
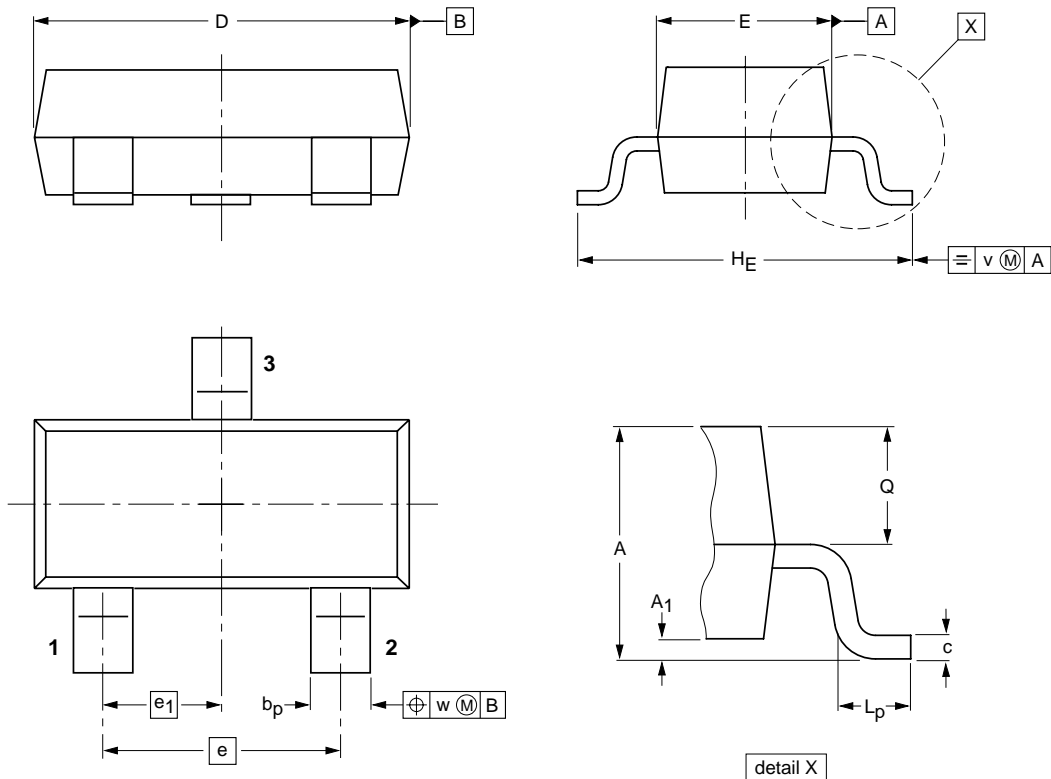


Fig.6 DC Current Gain vs. Collector Current

**Package Outline**
**SOT-23**

**DIMENSIONS (mm are the original dimensions)**

UNIT	A	A <sub>1</sub> max.	b <sub>p</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

**Summary of Packing Options**

Package	Packing Description	Packing Quantity	Industry Standard
SOT-23	Tape/Reel, 7" reel	3000	EIA-481-1