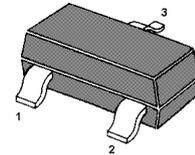
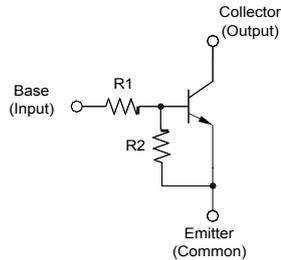


## NPN Silicon

### Features

- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process

**MARKING:** E23



SOT-23-3L Plastic Package

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

Parameter	Symbol	Value	Unit
Collector Emitter Voltage	$V_{CEO}$	50	V
Input Voltage	$V_I$	- 5 to + 30	V
Collector Current	$I_C$	100	mA
Power Dissipation	$P_{tot}$	200	mW
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	- 55 to + 150	$^\circ\text{C}$

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

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $V_{CE} = 5\text{ V}$ , $I_C = 10\text{ mA}$	$h_{FE}$	80	-	-	-
Collector Base Cutoff Current at $V_{CB} = 50\text{ V}$	$I_{CBO}$	-	-	0.5	$\mu\text{A}$
Emitter Base Cutoff Current at $V_{EB} = 5\text{ V}$	$I_{EBO}$	-	-	1.8	mA
Collector Emitter Saturation Voltage at $I_C = 5\text{ mA}$ , $I_B = 0.25\text{ mA}$	$V_{CE(sat)}$	-	-	0.3	V
Input on Voltage at $V_{CE} = 0.3\text{ V}$ , $I_C = 5\text{ mA}$	$V_{I(on)}$	-	-	1.3	V
Input off Voltage at $V_{CE} = 5\text{ V}$ , $I_C = 100\text{ }\mu\text{A}$	$V_{I(off)}$	0.5	-	-	V
Transition frequency at $V_{CE} = 10\text{ V}$ , $-I_E = 5\text{ mA}$ , $f = 100\text{ MHz}$	$f_T$	-	250	-	MHz
Input Resistance	$R_1$	3.29	4.7	6.11	$\text{K}\Omega$
Resistance Ratio	$R_2 / R_1$	8	10	12	-

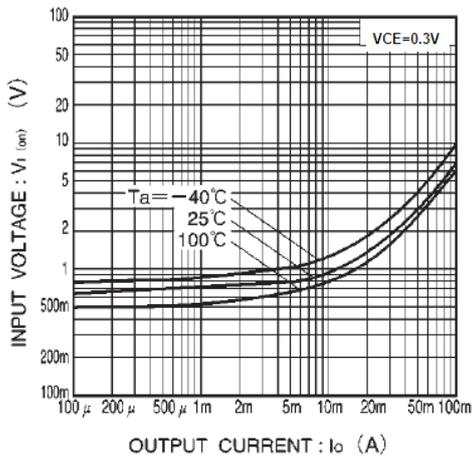
**Typical Characteristics**


Fig.1 Input voltage vs. output current (ON characteristics)

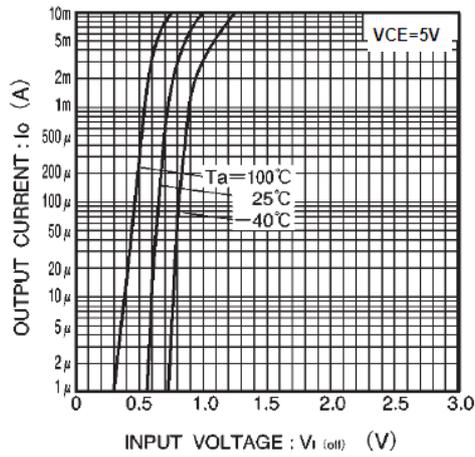


Fig.2 Output current vs. input voltage (OFF characteristics)

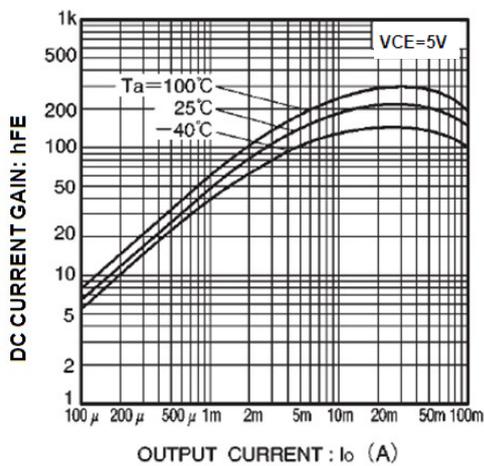


Fig.3 DC current gain vs. output current

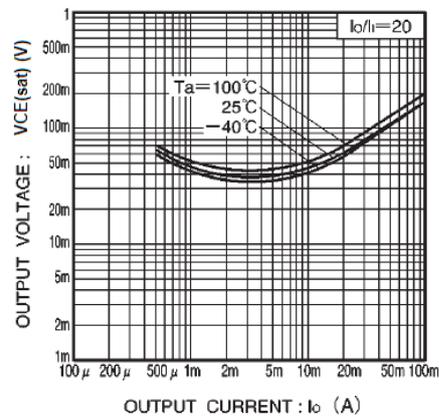


Fig.4 Output voltage vs. output current