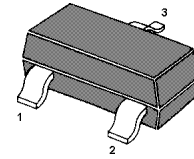
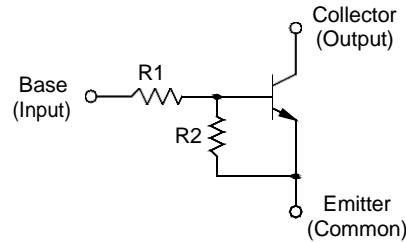


NPN Silicon Epitaxial Planar Transistor

for switching, interface circuit and drive circuit applications

Features

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



1. Base 2. Emitter 3. Collector
SOT-23 Plastic Package

Resistor Values

Type	R1 (KΩ)	R2 (KΩ)
DTC116	1	10
DTC117	2.2	2.2
DTC118	2.2	10
DTC119	4.7	10
DTC120	10	4.7
DTC121	47	10
DTC122	100	100

Absolute Maximum Ratings (T_a = 25 °C)

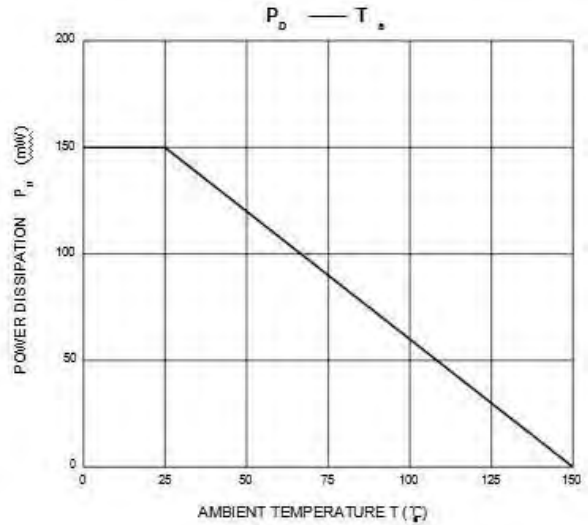
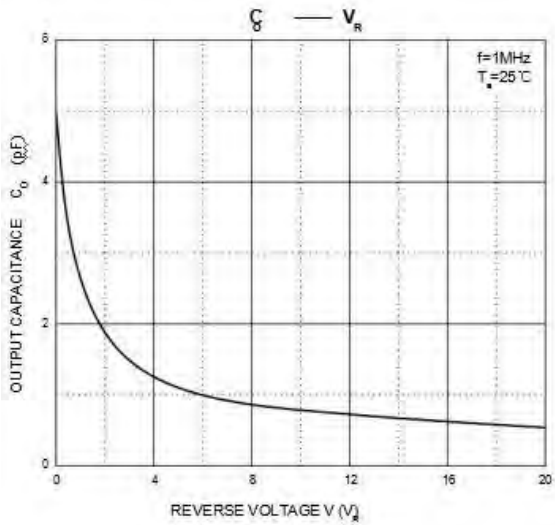
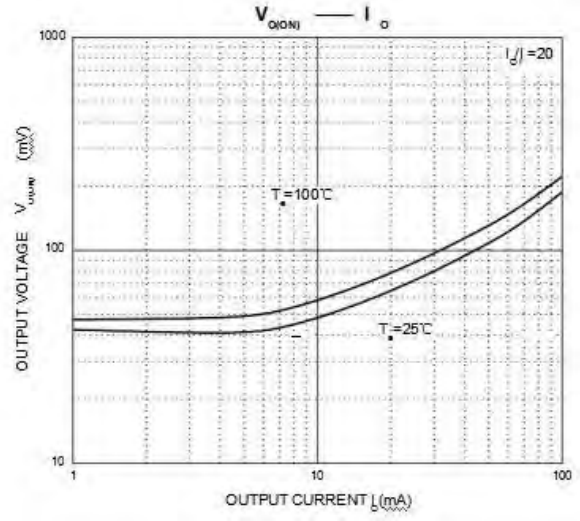
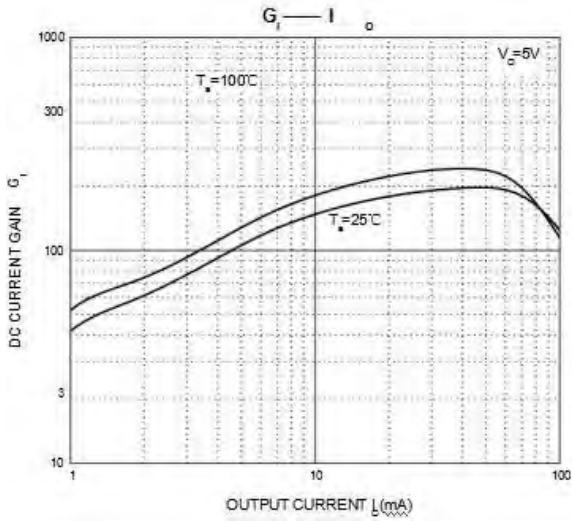
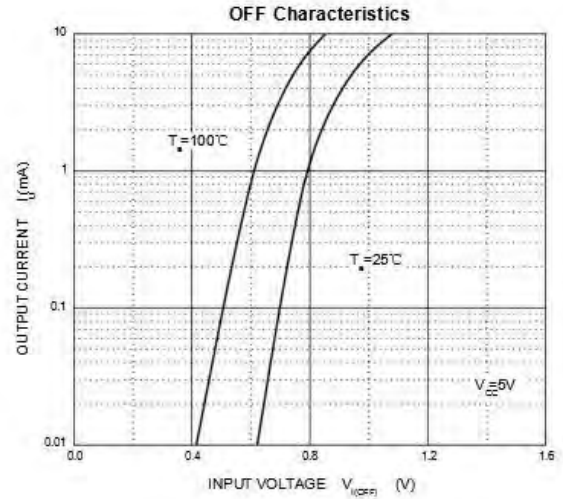
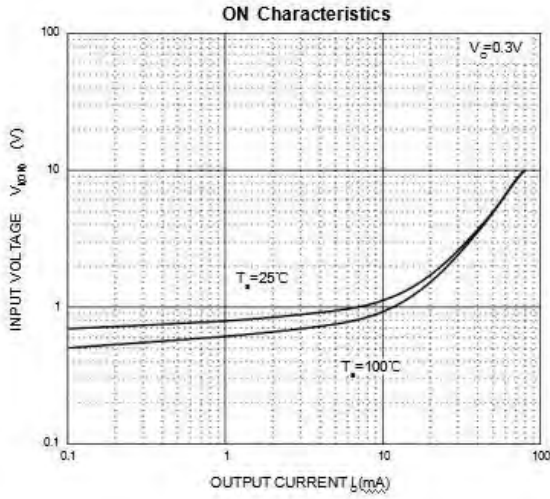
Parameter		Symbol	Value	Unit
Output Voltage		V _o	50	V
Input Voltage	DTC116	V _i	10, - 5	V
	DTC117		12, - 10	
	DTC118		12, - 5	
	DTC119		20, - 7	
	DTC120		30, - 10	
	DTC121		40, - 15	
	DTC122		40, - 10	
Output Current		I _o	100	mA
Total Power Dissipation		P _{tot}	200	mW
Junction Temperature		T _j	150	°C
Storage Temperature Range		T _s	- 55 to + 150	°C

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

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain					
at $V_o = 5\text{ V}$, $I_o = 5\text{ mA}$	DTC116	33	-	-	-
at $V_o = 5\text{ V}$, $I_o = 20\text{ mA}$	DTC117	20	-	-	-
at $V_o = 5\text{ V}$, $I_o = 10\text{ mA}$	DTC118	33	-	-	-
at $V_o = 5\text{ V}$, $I_o = 10\text{ mA}$	DTC119	30	-	-	-
at $V_o = 5\text{ V}$, $I_o = 10\text{ mA}$	DTC120	24	-	-	-
at $V_o = 5\text{ V}$, $I_o = 5\text{ mA}$	DTC121	33	-	-	-
at $V_o = 5\text{ V}$, $I_o = 5\text{ mA}$	DTC122	62	-	-	-
Output Cutoff Current at $V_o = 50\text{ V}$	$I_{O(OFF)}$	-	-	500	nA
Input Current at $V_i = 5\text{ V}$					
	DTC116	-	-	7.2	mA
	DTC117	-	-	3.8	
	DTC118	-	-	3.8	
	DTC119	-	-	1.8	
	DTC120	-	-	0.88	
	DTC121	-	-	0.16	
	DTC122	-	-	0.15	
Output Voltage					
at $I_o = 10\text{ mA}$, $I_i = 0.5\text{ mA}$	DTC116	-	-	0.3	V
at $I_o = 10\text{ mA}$, $I_i = 0.5\text{ mA}$	DTC117	-	-	0.3	
at $I_o = 10\text{ mA}$, $I_i = 0.5\text{ mA}$	DTC118	-	-	0.3	
at $I_o = 10\text{ mA}$, $I_i = 0.5\text{ mA}$	DTC119	-	-	0.3	
at $I_o = 10\text{ mA}$, $I_i = 0.5\text{ mA}$	DTC120	-	-	0.3	
at $I_o = 10\text{ mA}$, $I_i = 0.5\text{ mA}$	DTC121	-	-	0.3	
at $I_o = 5\text{ mA}$, $I_i = 0.25\text{ mA}$	DTC122	-	-	0.3	
Input Voltage (ON)					
at $V_o = 0.3\text{ V}$, $I_o = 20\text{ mA}$	DTC116	-	-	3	V
at $V_o = 0.3\text{ V}$, $I_o = 20\text{ mA}$	DTC117	-	-	3	
at $V_o = 0.3\text{ V}$, $I_o = 20\text{ mA}$	DTC118	-	-	3	
at $V_o = 0.3\text{ V}$, $I_o = 20\text{ mA}$	DTC119	-	-	2.5	
at $V_o = 0.3\text{ V}$, $I_o = 2\text{ mA}$	DTC120	-	-	3	
at $V_o = 0.3\text{ V}$, $I_o = 2\text{ mA}$	DTC121	-	-	5	
at $V_o = 0.3\text{ V}$, $I_o = 1\text{ mA}$	DTC122	-	-	3	
Input Voltage (OFF)					
at $V_{CC} = 5\text{ V}$, $I_o = 100\text{ }\mu\text{A}$	DTC116	0.3	-	-	V
	DTC117	0.5	-	-	
	DTC118	0.3	-	-	
	DTC119	0.3	-	-	
	DTC120	0.8	-	-	
	DTC121	1	-	-	
	DTC122	0.5	-	-	
Transition Frequency at $V_o = 10\text{ V}$, $I_o = 5\text{ mA}$	$f_T^{1)}$	-	250	-	MHz

1) Characteristic of transistor only.

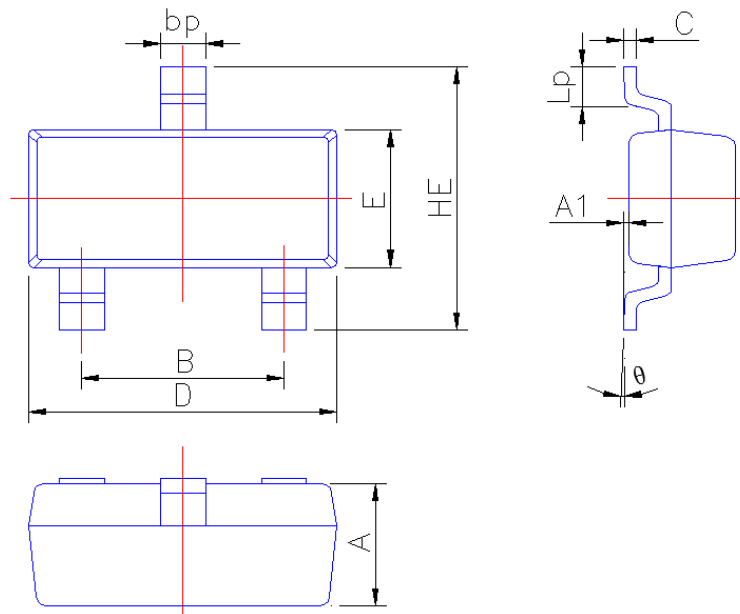
Typical Characteristics



PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



Symbol	Dimension in Millimeters	
	Min	Max
A	0.90	1.10
A1	0.013	0.100
B	1.80	2.00
bp	0.35	0.50
C	0.09	0.150
D	2.80	3.00
E	1.20	1.40
HE	2.20	2.80
Lp	0.20	0.50
θ	0°	5°