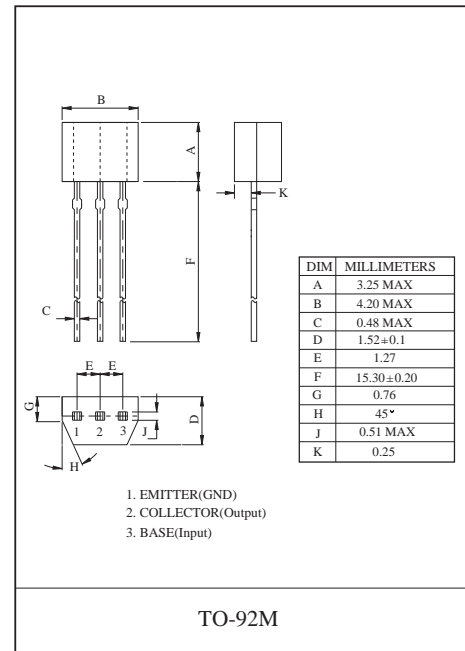


# Bias Resistor Transistor

## NPN Silicon Surface Mount Transistor with Monolithic Bias Resistor Network

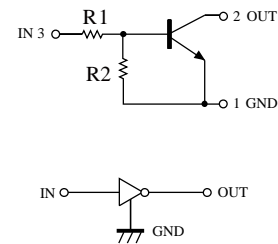
This new series of digital transistors is designed to replace a single device and its external resistor bias network. The BRT (Bias Resistor Transistor) contains a single transistor with a monolithic bias network resistor. The BRT eliminates these individual components by integrating them into a single device. The use of a BRT can reduce both system cost and board space.

- Simplifies Circuit Design
- Reduces Board Space and Component Count



### Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Value	Unit
Supply voltage	$V_{CC}$	50	V
Input voltage	$V_{IN}$	-10~40	V
Output current	$I_o$	50	mA
	$I_{C(MAX)}$	100	
Power dissipation	$P_d$	300	mW
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-55~150	°C



### Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ	Max.	Unit	Conditions
Input voltage	$V_{(off)}$			0.5	V	$V_{CC}=5V, I_o=100\mu A$
	$V_{(on)}$	3				$V_o=0.3V, I_o=10 mA$
Output voltage	$V_{O(on)}$			0.3	V	$I_o/I_i=10mA/0.5mA$
Input current	$I_i$			0.88	mA	$V_i=5V$
Output current	$I_{O(off)}$			0.5	$\mu A$	$V_{CC}=50V, V_i=0$
DC current gain	$G_I$	30				$V_o=5V, I_o=5mA$
Input resistance	$R_1$	7	10	13	K $\Omega$	
Resistance ratio	$R_2/R_1$	0.8	1	1.2		
Transition frequency	$f_T$		250		MHz	$V_o=10V, I_o=5mA, f=100MHz$

## Typical Characteristics

### ● Electrical characteristic curves

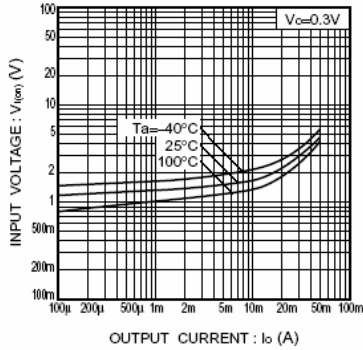


Fig.1 Input voltage vs. output current (ON characteristics)

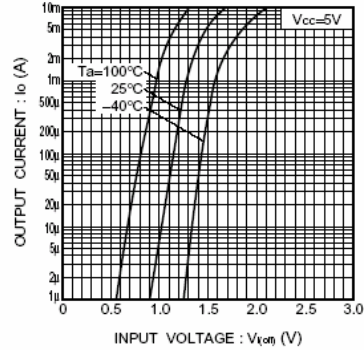


Fig.2 Output current vs. input voltage (OFF characteristics)

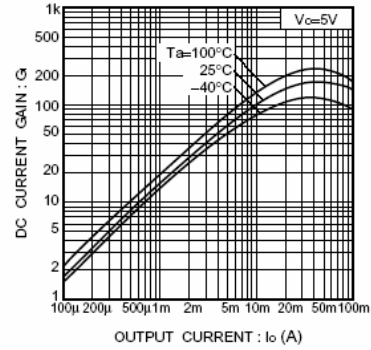


Fig.3 DC current gain vs. output current

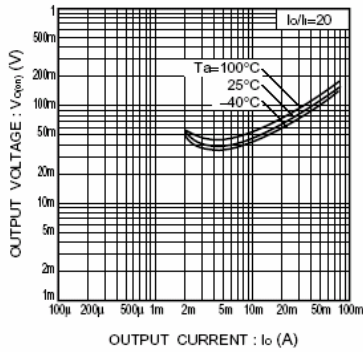


Fig.4 Output voltage vs. output current