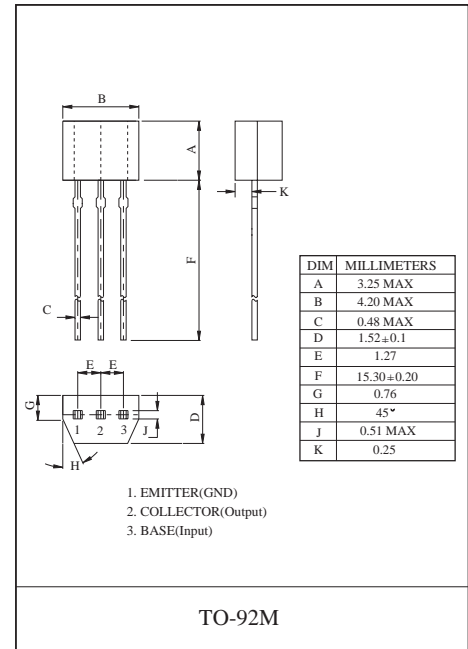


# Bias Resistor Transistor

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

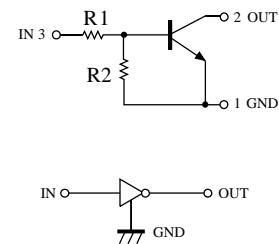
This new series of digital transistors is designed to replace a single device and its external resistor bias network. The BRT (Bias Resistor Transistor) contains a single transistor with a monolithic bias network resistor. The BRT eliminates these individual components by integrating them into a single 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	$I_O$	100	mA
	$I_{C(MAX)}$	100	
Power dissipation	$P_d$	300	mW
Junction temperature	$T_j$	150	°C
Storage temperature	$T_{stg}$	-55~150	°C



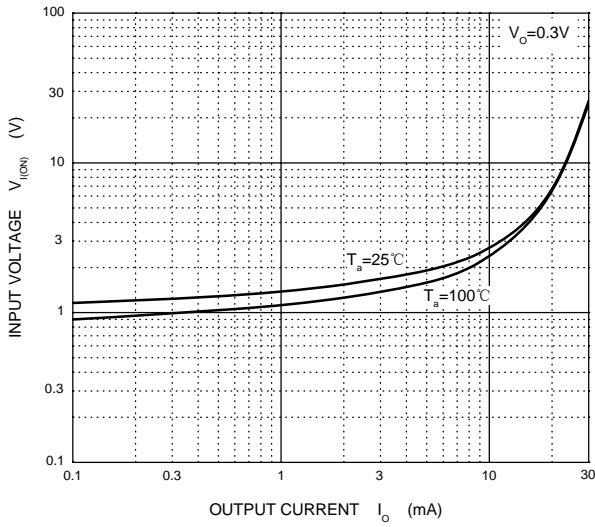
### Electrical characteristics (Ta=25°C)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input voltage	$V_{I(off)}$	$V_{CC}=5V, I_O=100\mu A$	0.5			V
	$V_{I(on)}$	$V_O=0.3V, I_O=2mA$			3	V
Output voltage	$V_{O(on)}$	$I_O/I_I=10mA/0.5mA$			0.3	V
Input current	$I_I$	$V_I=5V$			0.18	mA
Output current	$I_{O(off)}$	$V_{CC}=50V, V_I=0$			0.5	$\mu A$
DC current gain	$G_I$	$V_O=5V, I_O=5mA$	68			
Input resistance	$R_1$		32.9	47	61.1	k $\Omega$
Resistance ratio	$R_2/R_1$		0.8	1	1.2	
Transition frequency	$f_T$	$V_O=10V, I_O=5mA, f=100MHz$		250		MHz

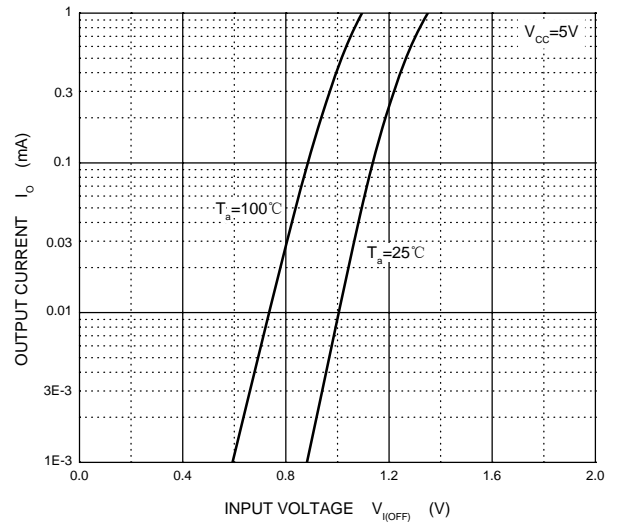


# Typical Characteristics

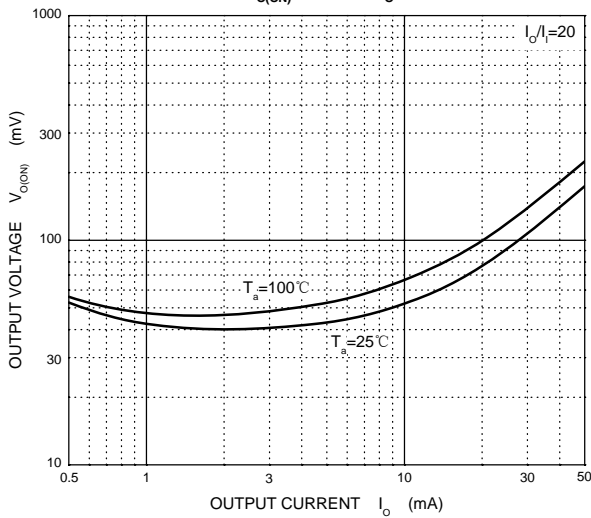
ON Characteristics



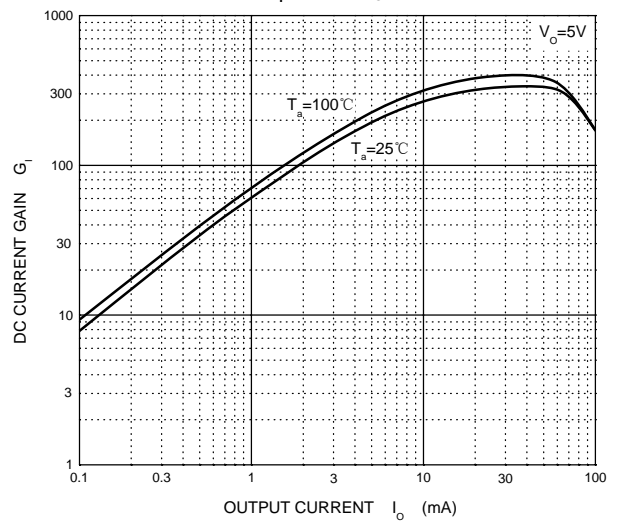
OFF Characteristics



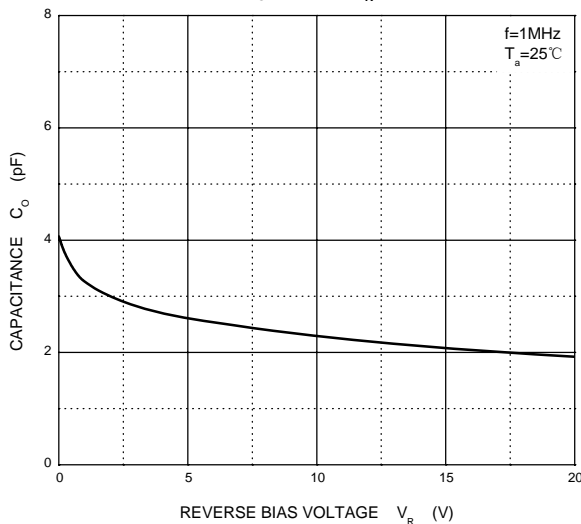
$V_{O(ON)}$  —  $I_o$



$G_1$  —  $I_o$



$C_o$  —  $V_R$



$P_D$  —  $T_a$

