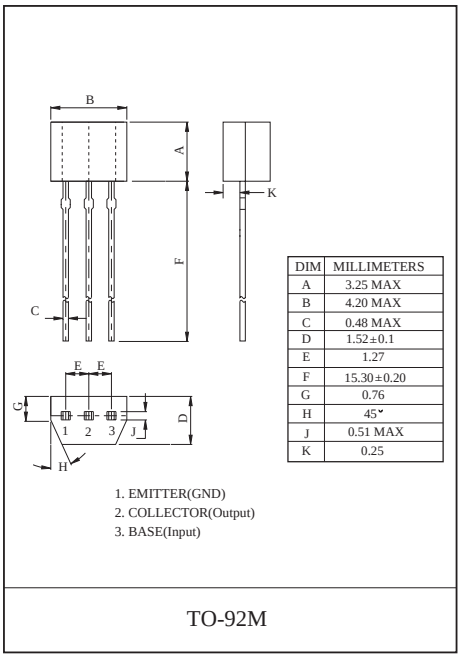
Bias Resistor Transistor

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

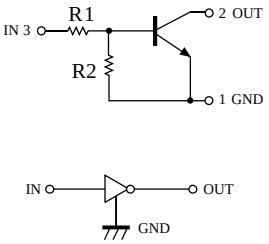


DIM	MILLIMETERS
A	3.25 MAX
B	4.20 MAX
C	0.48 MAX
D	1.52±0.1
E	1.27
F	15.30±0.20
G	0.76
H	45˚
J	0.51 MAX
K	0.25

TO-92M

Absolute maximum ratings(Ta=25℃)

Parameter	Symbol	Value	Unit
Supply voltage	V_{CC}	50	V
Input voltage	V_{IN}	-5 ~ 12	V
Output current	I_O	100	mA
	$I_{C(MAX)}$	100	
Power dissipation	Pd	300	mW
Junction temperature	T_j	150	℃
Storage temperature	Tstg	-55~150	℃

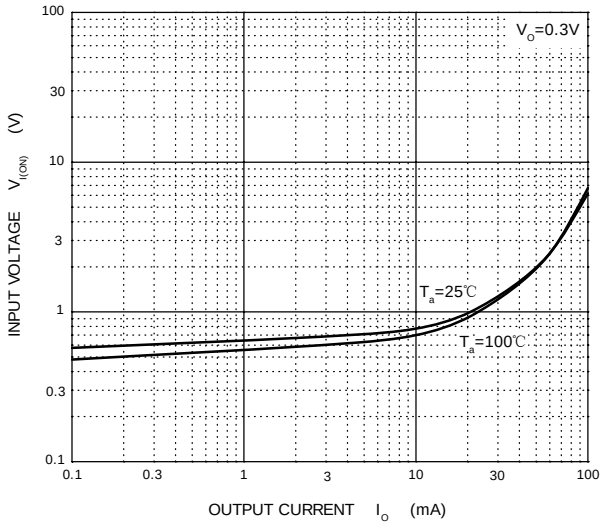


Electrical characteristics (Ta=25℃)

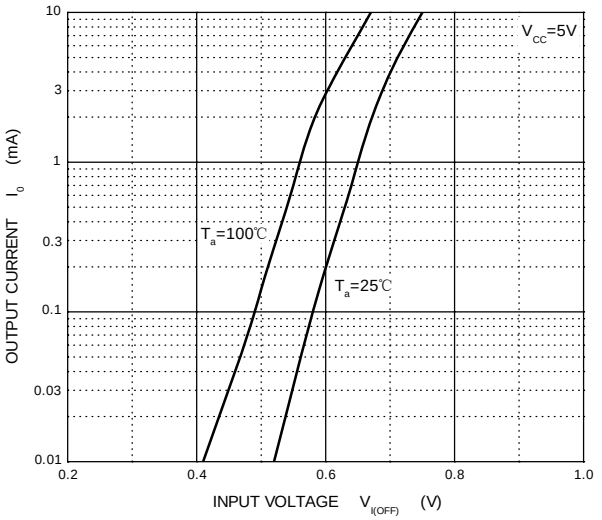
Parameter	Symbol	Min.	Typ	Max.	Unit	Conditions
Input voltage	$V_{(off)}$	0.5			V	V_{CC}=5V ,I_O=100μA
	$V_{(on)}$			1.1		V_O=0.3V ,I_O=5mA
Output voltage	$V_{O(on)}$		0.1	0.3	V	Io/I_I=5mA/0.25mA
Input current	I_I			3.6	mA	Vi=5V
Output current	$I_{O(off)}$			0.5	μA	V_{CC}=50V ,Vi=0
DC current gain	G_I	80				Vo =5V ,I_O=5mA
Input resistance	R_1	1.54	2.2	2.86	kΩ	
Resistance ratio	R_2/R_1	17	21	26		
Transition frequency	f_T		250		MHz	V_O=10V ,Io=5mA,f=100MHz

Typical Characteristics

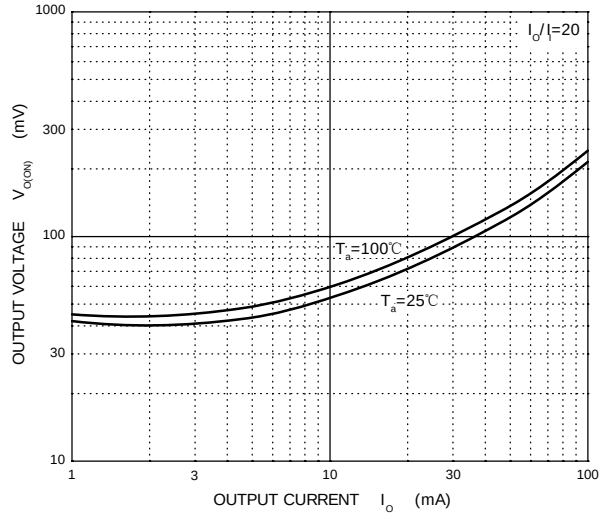
ON Characteristics



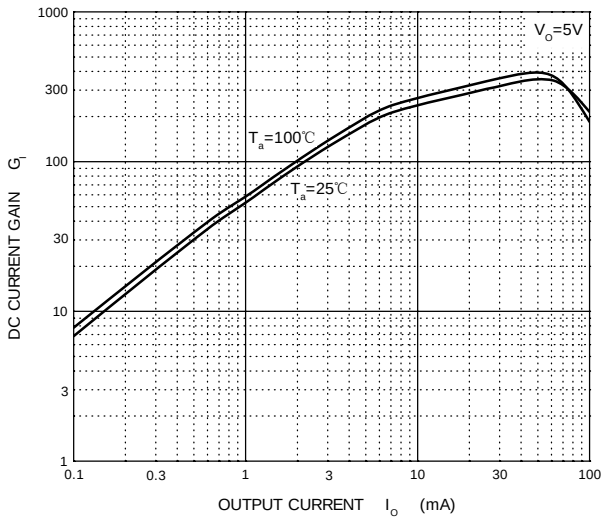
OFF Characteristics



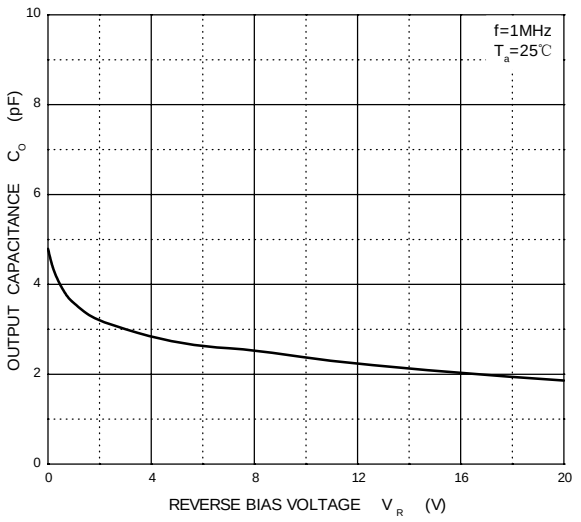
$V_{O(ON)}$ — I_O



G_I — I_O



C_O — V_R



P_D — T_a