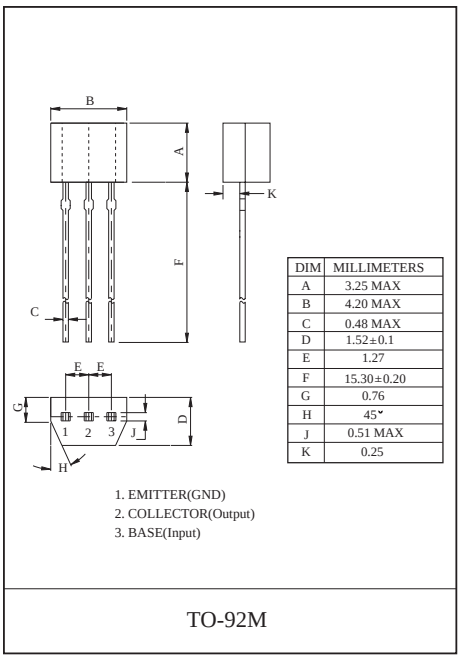
Bias Resistor Transistor

NPN Silicon Surface Mount Transistor with Monolithic Bias Resistor Network

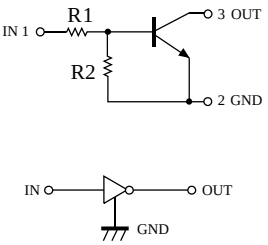
This new series of digital transistors is designed to replace a single device and its external resistor bias network. The BRT (Bias Resistor Transistor) contains a single transistor with a monolithic bias network resistor. The BRT eliminates these individual components by integrating them into a single 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}	-5~30	V
Output current	I_O	100	mA
	$I_{C(MAX)}$	100	
Power dissipation	Pd	300	mW
Junction temperature	Tj	150	℃
Storage temperature	Tstg	-55~150	℃

Electrical characteristics (Ta=25℃)

Parameter	Symbol	Min.	Typ	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$			0.5	V	V_{CC}=5V ,I_O=100μA
	$V_{I(on)}$	1.3				V_O=0.3V ,I_O=5 mA
Output voltage	$V_{O(on)}$		0.1	0.3	V	I_O/I_I=5mA/0.25mA
Input current	I_I			1.8	mA	V_I=5V
Output current	$I_{O(off)}$			0.5	μA	V_{CC}=50V ,V_I=0
DC current gain	G_I	80				V_O=5V ,I_O=10mA
Input resistance	R_1	3.29	4.7	6.11	KΩ	
Resistance ratio	R_2/R_1	8	10	12		
Transition frequency	f_T		250		MHz	V_{CE}=10V ,I_E=-5mA,f=100MHz

Typical Characteristics

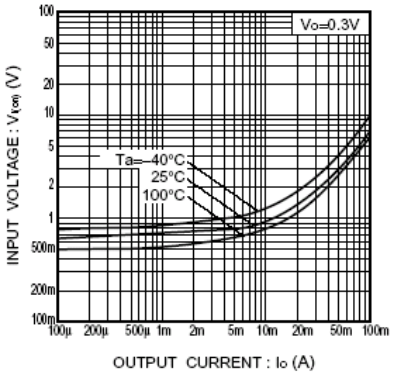


Fig.1 Input voltage vs. output current (ON characteristics)

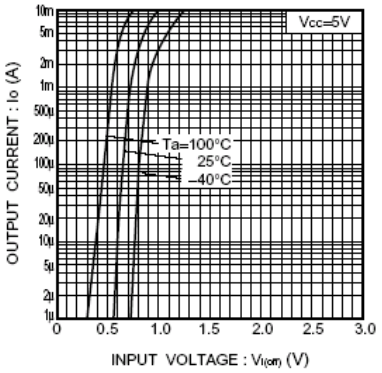


Fig.2 Output current vs. input voltage (OFF characteristics)

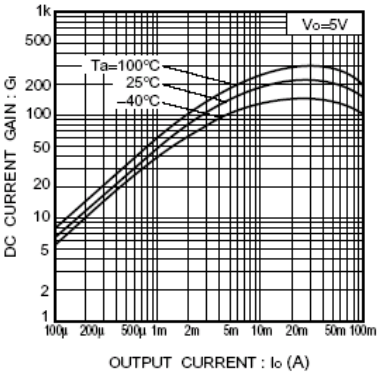


Fig.3 DC current gain vs. output current

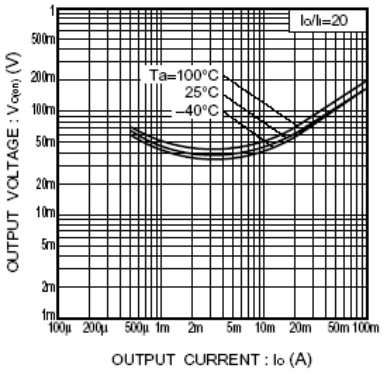


Fig.4 Output voltage vs. output current