

Bias Resistor Transistors

NPN Silicon Surface Mount Transistors with Monolithic

Bias Resistor Network

FEATURES

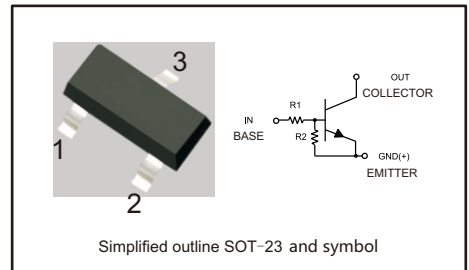
- Reduces board space
- Simplifies Circuit Design
- Reduces Board Space and Component Count

Mechanical Data

- Case: SOT-23
- $R_1 = 10K\Omega$ (Typ) , $R_2 = 10K\Omega$ (Typ)

PINNING

PIN	DESCRIPTION
1	BASE
2	EMITTER
3	COLLECTOR



MAXIMUM RATINGS (Ta =25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CB0}	50	V
Collector-Emitter Voltage	V_{CEO}	50	V
Output current	I_c	500	mA
Power dissipation	P_D	200	mW
Thermal Resistance – Junction-to-Ambient	$R_{\theta JA}$	625	°C/W
Junction temperature	T_J	-55~ +150	°C
Range of storage temperature	T_{stg}	-55~ +150	°C

ELECTRICAL CHARACTERISTICS (TA = 25°C unless otherwise noted.)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CB0}$	$I_c = 10\mu A$, $I_E = 0$	50			V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_c = 2mA$, $I_B = 0$	50			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = 1mA$, $I_c = 0$	10			V
Collector-Base Cut off Current	I_{CB0}	$V_{CB} = 50V$, $I_E = 0$			100	nA
Collector-Emitter Cut off Current	I_{CEO}	$V_{CE} = 50V$, $I_B = 0$			0.5	μA
Emitter-Base Cut off Current	I_{EBO}	$V_{EB} = 5V$, $I_c = 0$			0.5	mA
DC Current Gain	h_{FE}	$V_{CE} = 5V$, $I_c = 50mA$	56			
Output Voltage (on)	V_{OL}	$V_{CE} = 5.0V$, $V_{BE} = 2.5V$, $R_L = 1.0K\Omega$			0.2	V
Output Voltage (on)	V_{OH}	$V_{CE} = 5.0V$, $V_{BE} = 0.5V$, $R_L = 1.0K\Omega$	4.9			V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_c = 50mA$, $I_B = 2.5mA$			0.3	V
Input Voltage (off)	$V_{I(off)}$	$V_{CE} = 5V$, $I_c = 100\mu A$	0.5			V
Input Voltage (on)	$V_{I(on)}$	$V_{CE} = 0.3V$, $I_c = 10mA$			3	V
Input resistance	R_1		7	10	13	$K\Omega$
Input resistance	R_2		7	10	13	$K\Omega$
Resistance ratio	R_2 / R_1		0.8	1	1.2	



Typical Performance Characteristics

Fig 1. HFE vs. IC

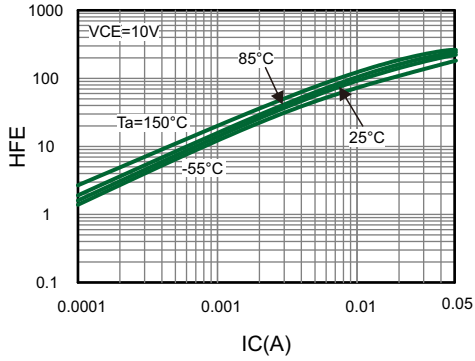


Fig 2. Vin vs. IC

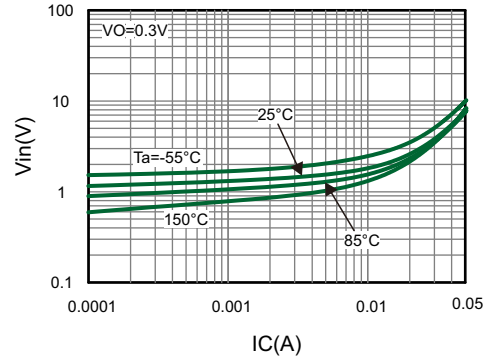


Fig 3. IC vs. Vin

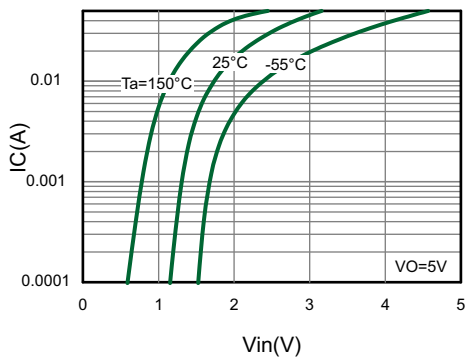


Fig 4. VCE(sat) vs. IC

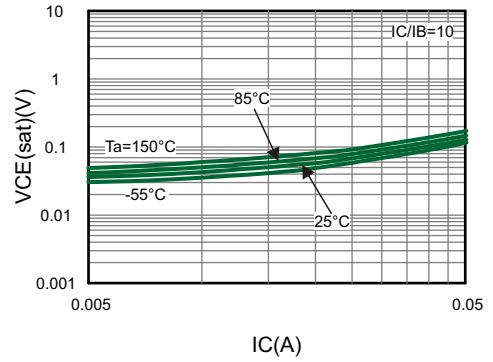
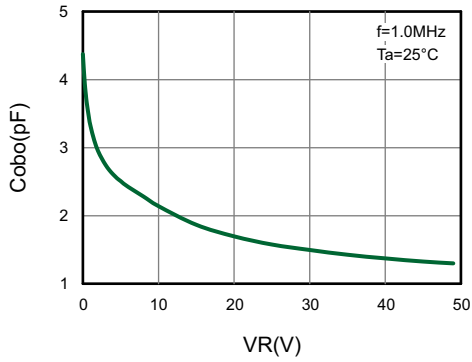
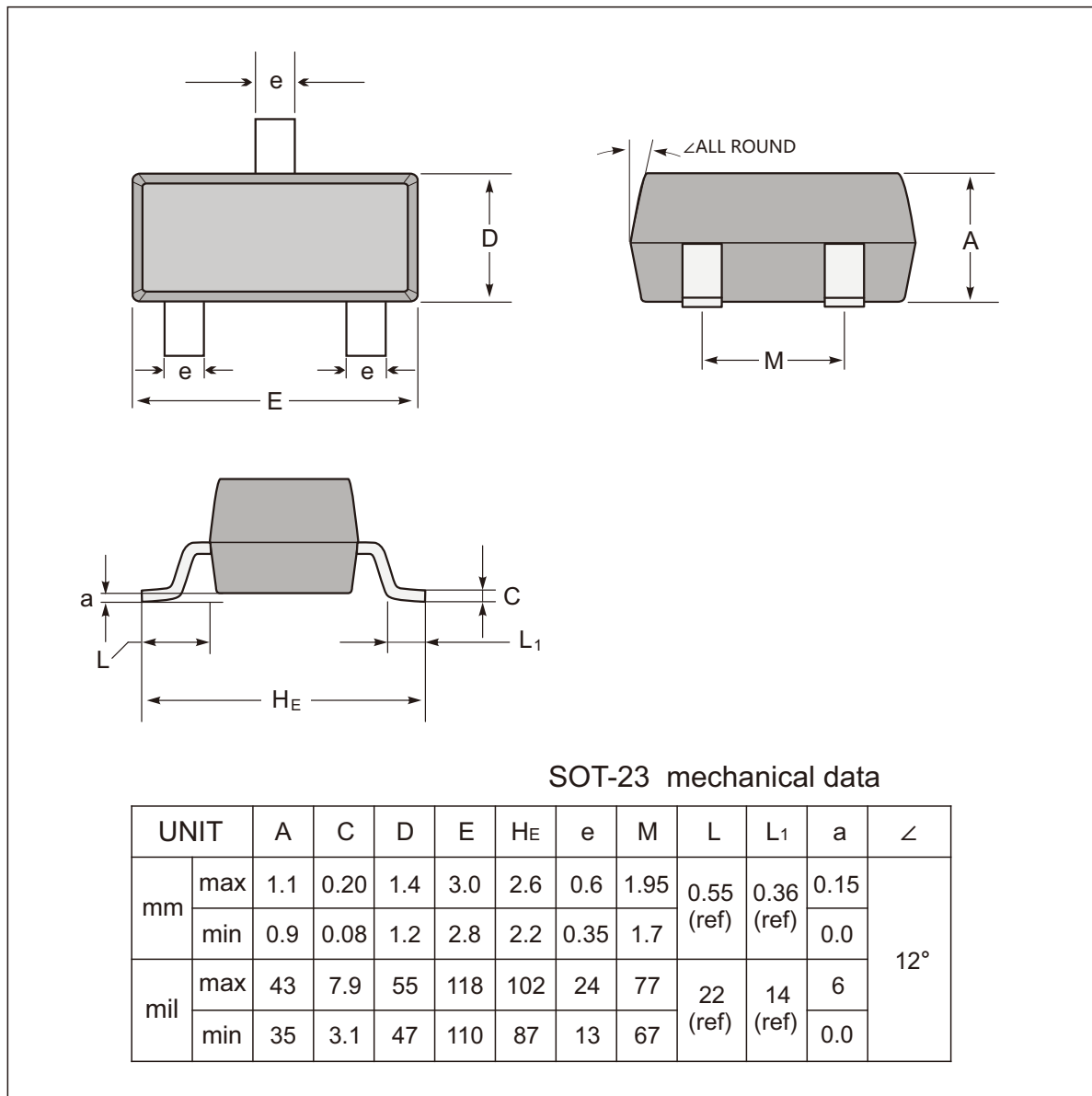


Fig 5. Capacitance

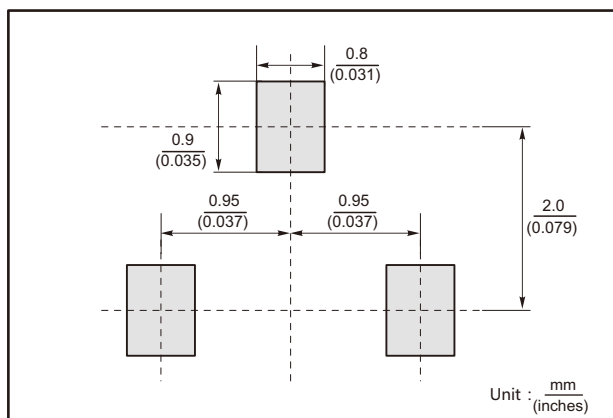




SOT-23 Package Outline Dimensions



The recommended mounting pad size



Marking

Type number	Marking code
JDTD114EWD	14E



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