

**SOT-23 BIPOLAR TRANSISTORS  
TRANSISTOR(NPN)**

**FEATURES**

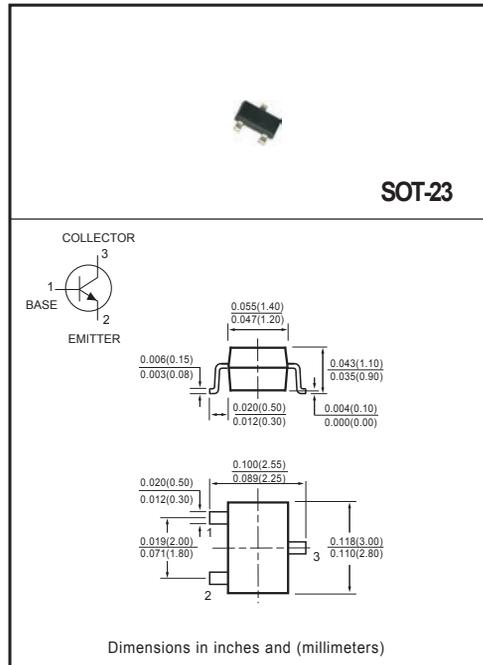
- \* High breakdown voltage
- \* Low collector-emitter saturation voltage
- \* Complementary to MMBTA92 (NPN)

**MECHANICAL DATA**

- \* Case: Molded plastic
- \* Epoxy: UL 94V-O rate flame retardant
- \* Lead: MIL-STD-202E method 208C guaranteed
- \* Mounting position: Any
- \* Weight: 0.008 gram

**MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS**

Ratings at 25 °C ambient temperature unless otherwise specified.  
Single phase, half wave, 60 Hz, resistive or inductive load.  
For capacitive load, derate current by 20%.



**MAXIMUM RATINGS** ( @ TA = 25°C unless otherwise noted )

RATINGS	SYMBOL	VALUE	UNITS
Collector Current-Continuous	I <sub>C</sub>	0.3	A
Collector Power Dissipation	P <sub>C</sub>	350	mW
Max. Operating Temperature Range	T <sub>J</sub>	150	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to +150	°C

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

CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNITS
Collector-base breakdown voltage (I <sub>C</sub> =100uA, I <sub>E</sub> =0)	V <sub>(BR)CBO</sub>	300	-	-	V
Collector-emitter breakdown voltage (I <sub>C</sub> =1mA, I <sub>B</sub> =0)	V <sub>(BR)CEO</sub>	300	-	-	V
Emitter-Base breakdown voltage (I <sub>E</sub> =100uA, I <sub>C</sub> =0)	V <sub>(BR)EBO</sub>	5	-	-	V
Collector cut-off current (V <sub>CE</sub> =200V, I <sub>E</sub> =0)	I <sub>CBO</sub>	-	-	0.25	uA
Emitter cut-off current (V <sub>EB</sub> =5V, I <sub>C</sub> =0)	I <sub>EBO</sub>	-	-	0.1	uA
DC current gain	(V <sub>CE</sub> =10V, I <sub>C</sub> =1mA)	h <sub>FE(1)</sub>	60	-	-
	(V <sub>CE</sub> =10V, I <sub>C</sub> =10mA)	h <sub>FE(2)</sub>	100	-	200
	(V <sub>CE</sub> =10V, I <sub>C</sub> =30mA)	h <sub>FE(3)</sub>	60	-	-
Collector-emitter saturation voltage (I <sub>C</sub> =20mA, I <sub>B</sub> =2mA)	V <sub>CE(sat)</sub>	-	-	0.2	V
Base-emitter saturation voltage (I <sub>C</sub> =20mA, I <sub>B</sub> =2mA)	V <sub>BE(sat)</sub>	-	-	0.9	V
Transition frequency (V <sub>CE</sub> =20V, I <sub>C</sub> =10mA, f=30MHz)	f <sub>T</sub>	50	-	-	MHz

Note: "Fully ROHS Compliant", "100% Sn plating (Pb-free)".

## RATING AND CHARACTERISTICS CURVES ( MMBTA42 )

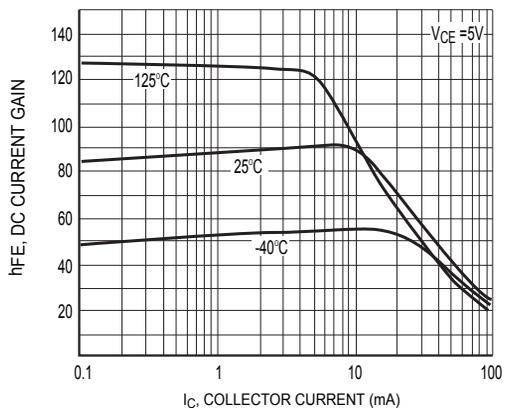


Figure 1 DC Current Gain vs. Collector Current

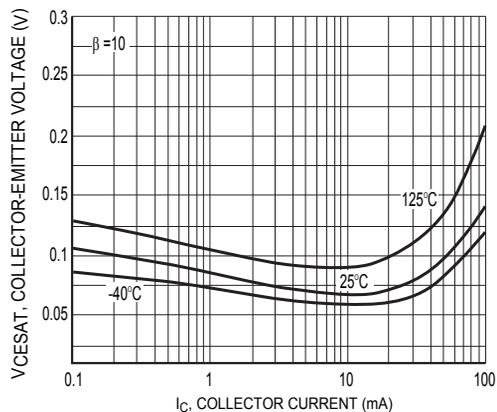


Figure 2 Collector-Emitter Saturation Voltage vs. Collector Current

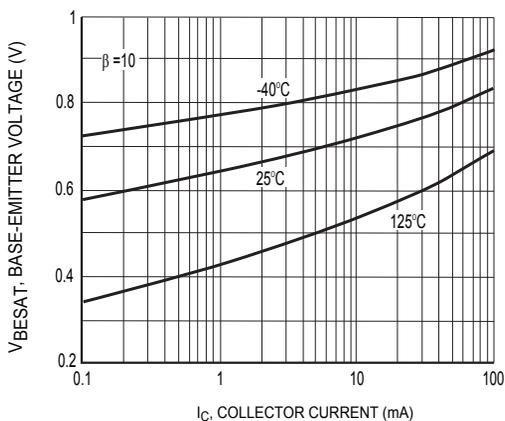


Figure 3. Base-Emitter Saturation Voltage vs. Collector Current

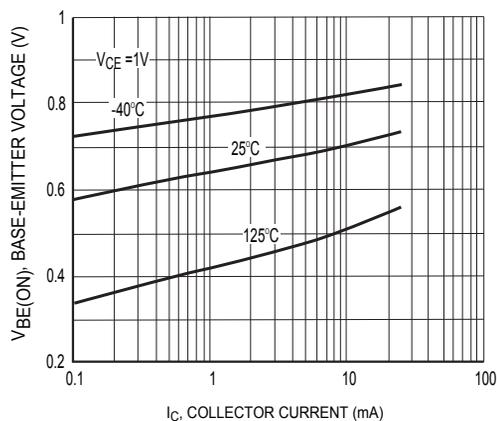
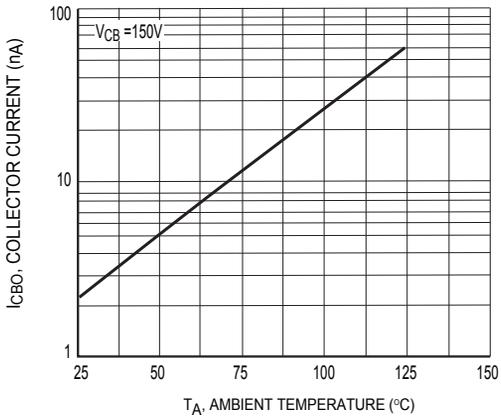
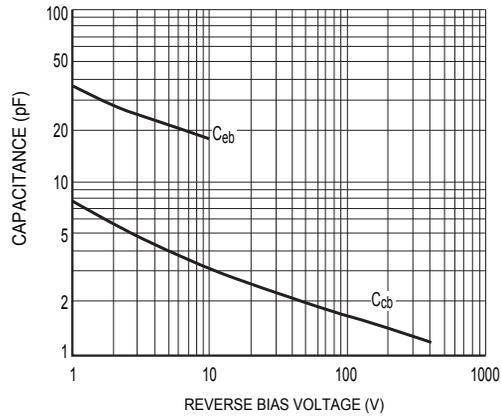


Figure 4 Base-Emitter ON Voltage vs. Collector Current

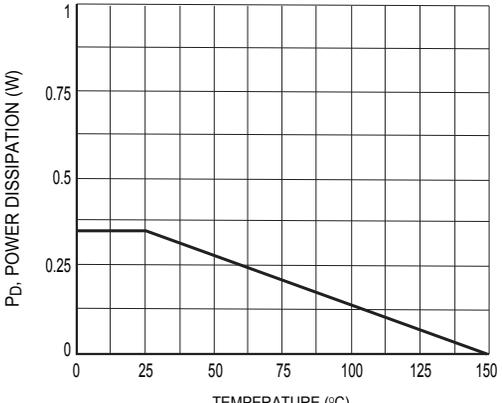
# RATING AND CHARACTERISTICS CURVES ( MMBTA42 )



**Figure 5 Collector-Cut off Current vs. Ambient Temperature**



**Figure 6 Collector-Base and Emitter-Base Capacitance vs. Reverse Bias Voltage**



**Figure 7 Power dissipation vs. Ambient Temperature**

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