

SOT-323 BIPOLAR TRANSISTORS
TRANSISTOR (NPN)

FEATURES

- * Power dissipation
Pcm: 0.2 W (Tamb=25°C)
- * Collector current
Icm: 0.2 A
- * Collector-base voltage
V(BR)CBO: 60 V
- * Operating and storage junction temperature range
Tj,Tstg: -55°C to +150°C

MECHANICAL DATA

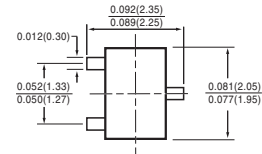
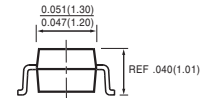
- * Case: Molded plastic
- * Epoxy: UL 94V-O rate flame retardant
- * Lead: MIL-STD-202E method 208C guaranteed
- * Mounting position: Any
- * Weight: 0.006 gram

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25 °C ambient temperature unless otherwise specified.



SOT-323



Dimensions in inches and (millimeters)

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

RATINGS	SYMBOL	VALUE	UNITS
Zener Current (see Table "Characteristics")	-	-	-
Max. Steady State Power Dissipation (1)	P _D	200	mW
Max. Operating Temperature Range	T _J	150	°C
Storage Temperature Range	T _{STG}	-55 to +150	°C

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

CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNITS
Thermal Resistance Junction to Ambient (1)	R θ _{JA}	-	-	625	°C/W
Max. Instantaneous Forward Voltage at I _F = 10mA	V _F	-	-	-	Volts

NOTES : 1.Valid provided that terminals are kept at ambient temperature.

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

Chatacteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS (2)

Collector-Emitter Breakdown Voltage ($I_C= 1.0\text{mA}$, $I_B= 0$)	$V_{(BR)CEO}$	40	-	Vdc
Collector-Base Breakdown Voltage ($I_C= 10\mu\text{A}$, $I_E= 0$)	$V_{(BR)CBO}$	60	-	Vdc
Emitter-Base Breakdown Voltage ($I_E= 10\mu\text{A}$, $I_C= 0$)	$V_{(BR)EBO}$	5.0	-	Vdc
Collector Cutoff Current ($V_{CE}= 40\text{Vdc}$, $I_B=0$)	I_{CEO}	-	0.1	nAdc
Collector Cutoff Current ($V_{CB}= 60\text{Vdc}$, $I_E= 0$)	I_{CBO}	-	0.1	μAdc
Emitter Cutoff Current ($V_{EB}= 5\text{Vdc}$, $I_C= 0$)	I_{EBO}	-	0.1	μAdc
Base Cutoff Current ($V_{CE}= 60\text{Vdc}$, $V_{EB(off)}= 3.0\text{Vdc}$)	I_{BL}	-	50	nAdc

ON CHARACTERISTICS (2)

DC Current Gain ($I_C= 100\mu\text{A}$, $V_{CE}= 1.0\text{Vdc}$)	hFE	40	-	-
($I_C= 1.0\text{mA}$, $V_{CE}= 1.0\text{Vdc}$)		70	-	
($I_C= 10\text{mA}$, $V_{CE}= 1.0\text{Vdc}$)		100	300	
($I_C= 50\text{mA}$, $V_{CE}= 1.0\text{Vdc}$)		60	-	
($I_C= 100\text{mA}$, $V_{CE}= 1.0\text{Vdc}$)		30	-	
Collector-Emitter Saturation Voltage ($I_C= 10\text{mA}$, $I_B= 1.0\text{mA}$)	$V_{CE(sat)}$	-	0.25	Vdc
($I_C= 50\text{mA}$, $I_B= 5.0\text{mA}$)		-	0.30	
Base-Emitter Saturation Voltage ($I_C= 10\text{mA}$, $I_B= 1.0\text{mA}$)	$V_{BE(sat)}$	0.65	0.85	Vdc
($I_C= 50\text{mA}$, $I_B= 5.0\text{mA}$)		-	0.95	

SMALL-SIGNAL CHARACTERISTICS

Current-Gain-Bandwidth Product (3) ($I_C= 10\text{mA}$, $V_{CE}= 20\text{Vdc}$, $f= 100\text{MHz}$)	f_T	250	-	MHz
Output Capacitance ($V_{CE}=0.5\text{Vdc}$, $I_C= 0$, $f= 1.0\text{MHz}$)	C_{obo}	-	4.0	pF
Input Capacitance ($V_{EB}=0.5\text{Vdc}$, $I_C= 0$, $f= 1.0\text{MHz}$)	C_{ibo}	-	8.0	pF
Input Impedance ($I_C= 1.0\text{mA}$, $V_{CE}=10\text{Vdc}$, $f=1.0\text{kHz}$)	h_{ie}	1.0	10	k Ω
Voltage Feedback Ratio ($I_C= 1.0\text{mA}$, $V_{CE}= 10\text{Vdc}$, $f= 1.0\text{kHz}$)	h_{re}	0.5	8.0	$\times 10^{-4}$
Small-Signal Current Gain ($I_C= 1.0\text{mA}$, $V_{CE}= 10\text{Vdc}$, $f= 1.0\text{kHz}$)	h_{fe}	100	400	-
Output Admittance ($I_C= 10\text{mA}$, $V_{CE}= 10\text{Vdc}$, $f= 1.0\text{kHz}$)	h_{oe}	1.0	40	μs
Noise Figure ($I_C= 100\mu\text{A}$, $V_{CE}= 5.0\text{Vdc}$, $R_S= 1.0\text{k}\Omega$, $f= 1.0\text{kHz}$)	NF	-	5.0	dB

SWITCHING CHARACTERISTICS

Delay Time	$(V_{CC}= 3\text{Vdc}$, $V_{BE}= 0.5\text{Vdc}$, $I_C= 10\text{mA}$, $I_{B1}= 1\text{mA}$)	t_d	-	35	ns
Rise Time		t_r	-	35	
Storage Time	$(V_{CC}= 3\text{Vdc}$, $I_C= 10\text{mA}$, $I_{B1}= I_{B2}= 1\text{mA}$)	t_s	-	200	ns
Fall Time		t_f	-	50	

NOTES : 2. Pulse Test: Pulse Width \leq 300 μs , Duty Cycle \leq 2.0%