

New Jersey Semi-Conductor Products, Inc.

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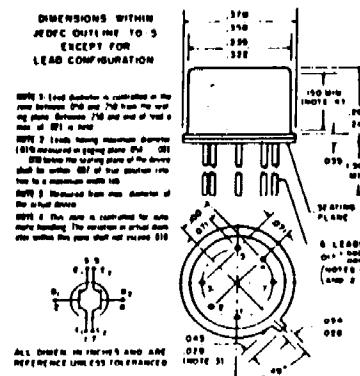
Silicon Transistor

2N2223

absolute maximum ratings: (25°C) (unless otherwise specified)

Voltages

Collector to Base	V_{CBO}	100	volts
Collector to Emitter ($R_{BE} = 10$ ohms)	V_{CE}	80	volts
Collector to Emitter	V_{CEO}	.60	volts
Emitter to Base	V_{EBO}	7	volts
Temperatures			
Storage	T_{STG}	-65 to +300	°C
Operating Junction	T_J	-65 to +200	°C



Dissipation

	One Side Only	Both Sides
Unit at 25°C Case Temperature (1)	1.6 w	3.0 w
Unit at 100°C Case Temperature (1)	.91 w	1.7 w
Unit in 25°C Ambient (2)	0.5 w	0.6 w

- (1) Derate 9.1 mw/°C (one side only) and 17.2 mw/°C (both sides) for operation above 25°C case temp.
- (2) Derate 2.86 mw/°C (one side only) and 3.43 mw/°C (both sides) for operation above 25°C ambient.

electrical characteristics: (25°C) (unless otherwise specified)

DC CHARACTERISTICS

Collector Base Voltage ($I_C = 100\text{ua}$, $I_E = 0$)	V_{CBO}	100	volts
Collector Emitter Voltage ($I_C = 100\text{ma}$, $R_{BE} = 10$)	V_{CE}	80	volts
Collector Emitter Voltage ($I_C = 30\text{ma}$, $I_B = 0$)	V_{CEO}	60	volts
Emitter Base Voltage ($I_E = 100\text{ua}$, $I_C = 0$)	V_{EBO}	7	volts
Forward Current Transfer Ratio ($I_C = 0.01\text{ma}$, $V_{CE} = 5\text{V}$)	h_{FE}	15	
Forward Current Transfer Ratio ($I_C = 0.1\text{ma}$, $V_{CE} = 5\text{V}$)	h_{FE}	25	
Forward Current Transfer Ratio ($I_C = 10\text{ma}$, $V_{CE} = 5\text{V}$)	h_{FE}	50	
DC Current Gain Ratio ($I_C = 0.1\text{ma}$, $V_{CE} = 5\text{V}$)	h_{FE1}/h_{FE2}	0.8	1.0
Collector Saturation Voltage ($I_C = 50\text{ma}$, $I_B = 5\text{ma}$)	$V_{CE(SAT)}$		1.2
Base Saturation Voltage ($I_C = 50\text{ma}$, $I_B = 5\text{ma}$)	$V_{BE(SAT)}$		0.9
Base Voltage Differential ($I_C = 0.1\text{ma}$, $V_{CE} = 5\text{V}$)	$V_{BE1} - V_{BE2}$		15
Voltage Differential Charge $I_C = 0.1\text{ma}$, $V_{CE} = 5\text{V}$, $T_A = -55$ to +125°C	$\Delta V_{BE1} - V_{BE2} $	25	uv/°C

CUTOFF CHARACTERISTICS

Collector Leakage Current ($V_{CB} = 80\text{V}$, $I_E = 0$)	I_{CBO}	10	mua
Collector Leakage Current ($V_{CB} = 80\text{V}$, $I_E = 0$, $T_A = 150^\circ\text{C}$)	I_{CBO}	15	ua
Emitter Leakage Current ($V_{EB} = 5\text{V}$, $I_C = 0$)	I_{EBO}	10	mua

SMALL SIGNAL CHARACTERISTICS

Current Transfer Ratio ($V_{CE} = 5\text{V}$, $I_C = 1\text{ma}$, $f = 1\text{kc}$)	h_{fe}	40	200
Input Resistance ($V_{CB} = 5\text{V}$, $I_C = 1\text{ma}$, $f = 1\text{kc}$)	h_{ib}	20	30
Output Conductance ($V_{CB} = 5\text{V}$, $I_C = 1\text{ma}$, $f = 1\text{kc}$)	h_{ob}	0.5	ohms umho

HIGH FREQUENCY CHARACTERISTICS

Current Transfer Ratio ($I_C = 50\text{ma}$, $V_{CE} = 10\text{V}$, $F = 20\text{mc}$)	h_{fe}	2.5	
Output Capacitance ($V_{CB} = 10\text{V}$, $I_E = 0$)	C_{ob}	15	pf
Input Capacitance ($V_{EB} = 0.5\text{V}$, $I_E = 0$)	C_{ib}	85	pf