

New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.
 SPRINGFIELD, NEW JERSEY 07081
 U.S.A.

TELEPHONE: (973) 376-2922
 (212) 227-6005
 FAX: (973) 376-8960

2N4150

Silicon NPN Transistor
 Hermetically sealed TO-5 metal can

Absolute Maximum Ratings		T _c = 25°C unless otherwise specified	
Parameter	Symbol	Rating	Unit
Collector-Emitter Voltage	V _{CEO}	70	Volts
Collector-Base Voltage	V _{CBO}	100	Volts
Emitter-Base Voltage	V _{EBO}	10	Volts
Collector Current, Continuous	I _C	10	A
Power Dissipation, T _A = 25°C Derate linearly above 25°C	P _T	1 5.7	W mW/°C
Power Dissipation, T _C = 25°C Derate linearly above 100°C	P _T	5 50	W mW/°C
Thermal Resistance	R _{θJA} R _{θJC}	.175 .020	°C/W
Operating Junction Temperature	T _J	-65 to +200	°C
Storage Temperature	T _{STG}		

ELECTRICAL CHARACTERISTICS

characteristics specified at T_A = 25°C

Off Characteristics						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	I _C = 100 mA	70			Volts
Collector-Base Cutoff Current	I _{CBO1}	V _{CB} = 100 Volts			10	μA
	I _{CBO2}	V _{CB} = 80 Volts,			100	nA
Collector-Emitter Cutoff Current	I _{CEO}	V _{CE} = 60 Volts			10	μA
Collector-Emitter Cutoff Current	I _{CEX1}	V _{CE} = 60 Volts, V _{EB} = .5 Volts			10	μA
	I _{CEX2}	V _{CE} = 60 Volts, V _{EB} = .5 Volts, T _A = 150°C			100	μA
Emitter-Base Cutoff Current	I _{EBO1}	V _{EB} = 7 Volts			10	μA
	I _{EBO2}	V _{EB} = 5 Volts			100	nA

On Characteristics						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
DC Current Gain	h _{FE1}	I _C = 1 A, V _{CE} = 5 Volts	50		200	
	h _{FE2}	I _C = 5 A, V _{CE} = 5 Volts	40		120	
	h _{FE3}	I _C = 10 A, V _{CE} = 5 Volts	10			
	h _{FE4}	I _C = 5 A, V _{CE} = 5 Volts T _A = -55°C	20			
Base-Emitter Saturation Voltage	V _{BEsat1}	I _C = 5 A, I _B = 500 mA			1.5	Volts
	V _{BEsat2}	I _C = 10 A, I _B = 1 A			2.5	Volts
Collector-Emitter Saturation Voltage	V _{CEsat1}	I _C = 5 A, I _B = 500 mA			0.6	Volts
	V _{CEsat2}	I _C = 10 A, I _B = 1 A			2.5	Volts

Dynamic Characteristics						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Magnitude - Common Emitter, Short Circuit Forward Current Transfer Ratio	h _{FE}	V _{CE} = 10 Volts, I _C = 200 mA, f = 10 MHz	1.5		7.5	
Small Signal Short Circuit Forward Current Transfer Ratio	h _{FE}	V _{CE} = 5 Volts, I _C = 50 mA, f = 1 kHz	40		160	
Open Circuit Output Capacitance	C _{OBO}	V _{CB} = 10 Volts, I _E = 0 mA, 100 kHz < f < 1 MHz			350	pF

Switching Characteristics						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Delay Time	t _d	I _C = 5 A, I _B = 500 mA,			50	ns
Rise Time	t _r				500	ns
Storage Time	t _s	I _C = 5 A, I _{B1} = -I _{B2} = 500 mA			1.5	μs
Fall Time	t _f				500	ns

Quality Semi-Conductors