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_A = 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	$R_{\theta JA}$ $R_{\theta JC}$	.175 .020	°C/W
Operating Junction Temperature Storage Temperature	T_J T_{STG}	-65 to +200	°C

ELECTRICAL CHARACTERISTICS

characteristics specified at T_A = 25°C

Off Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Collector-Emitter Breakdown Voltage	$V_{(BR)CBO}$	I_C = 100 mA	70			Volts
Collector-Base Cutoff Current	I_{CBO1} I_{CBO2}	V_{CB} = 100 Volts V_{CB} = 80 Volts,			10 100	µA nA
Collector-Emitter Cutoff Current	I_{CEO}	V_{CE} = 60 Volts			10	µA
Collector-Emitter Cutoff Current	I_{CEX1} I_{CEX2}	V_{CE} = 60Volts, V_{EB}= .5Volts V_{CE} = 60Volts, V_{EB}= .5Volts, T_A = 150°C			10 100	µA
Emitter-Base Cutoff Current	I_{EBO1} I_{EBO2}	V_{EB} = 7 Volts V_{EB} = 5 Volts			10 100	µA nA

On Characteristics (Pulse Test: PW ≤ 300 µs, Duty Cycle ≤ 2%)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
DC Current Gain	h_{FE1} h_{FE2} h_{FE3} h_{FE4}	I_C = 1 A, V_{CE} = 5 Volts I_C = 5 A, V_{CE} = 5 Volts I_C = 10 A, V_{CE} = 5 Volts I_C = 5 A, V_{CE} = 5 Volts T_A = -55°C	50 40 10 20		200 120	
Base-Emitter Saturation Voltage	V_{BEsat1} V_{BEsat2}	I_C = 5 A, I_B = 500 mA I_C = 10 A, I_B = 1 A			1.5 2.5	Volts
Collector-Emitter Saturation Voltage	V_{CEsat1} V_{CEsat2}	I_C = 5 A, I_B = 500 mA I_C = 10 A, I_B = 1 A			0.6 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

Delay Time Rise Time	t_d t_r	I_C = 5 A, I_B = 500 mA,			50 500	ns
Storage Time Fall Time	t_s t_f	I_C = 5 A, I_{B1} = -I_{B2} = 500 mA			1.5 500	µs ns