New Jersey Semi-Conductor Products, Inc.

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Medium-Power Plastic NPN Silicon Transistors

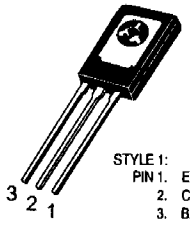
2N4921 thru 2N4923 *

*ON Semiconductor Preferred Device

1 AMPERE GENERAL–PURPOSE POWER TRANSISTORS 40–80 VOLTS 30 WATTS

. . . designed for driver circuits, switching, and amplifier applications. These high–performance plastic devices feature:

- Low Saturation Voltage — $V_{CE(sat)}$ = 0.6 Vdc (Max) @ I_C = 1.0 Amp
- Excellent Power Dissipation Due to Thermopad Construction — P_D = 30 W @ T_C = 25°C
- Excellent Safe Operating Area
- Gain Specified to I_C = 1.0 Amp
- Complement to PNP 2N4918, 2N4919, 2N4920



TO–225AA TYPE

***MAXIMUM RATINGS**

Rating	Symbol	2N4921	2N4922	2N4923	Unit
Collector–Emitter Voltage	V_{CEO}	40	60	80	Vdc
Collector–Base Voltage	V_{CB}	40	60	80	Vdc
Emitter–Base Voltage	V_{EB}		5.0		Vdc
Collector Current — Continuous (1)	I_C		1.0 3.0		Adc
Base Current — Continuous	I_B		1.0		Adc
Total Power Dissipation @ T_C = 25°C Derate above 25°C	P_D		30 0.24		Watts W/°C
Operating & Storage Junction Temperature Range	T_J, T_{stg}		–65 to +150		°C

THERMAL CHARACTERISTICS (2)

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	4.16	°C/W

(1) The 1.0 Amp maximum I_C value is based upon JEDEC current gain requirements. The 3.0 Amp maximum value is based upon actual current handling capability of the device (see Figures 5 and 6).

(2) Recommend use of thermal compound for lowest thermal resistance.
*Indicates JEDEC Registered Data.

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Sustaining Voltage (3) (I_C = 0.1 Adc, I_B = 0)	2N4921 2N4922 2N4923	$V_{CEO(sus)}$	 40 60 80	 — — —	Vdc
Collector Cutoff Current (V_{CE} = 20 Vdc, I_B = 0) (V_{CE} = 30 Vdc, I_B = 0) (V_{CE} = 40 Vdc, I_B = 0)	2N4921 2N4922 2N4923	I_{CEO}	 — — —	 0.5 0.5 0.5	mAdc
Collector Cutoff Current (V_{CE} = Rated V_{CEO}, $V_{EB(off)}$ = 1.5 Vdc) (V_{CE} = Rated V_{CEO}, $V_{EB(off)}$ = 1.5 Vdc, T_C = 125°C)		I_{CEX}	 — —	 0.1 0.5	mAdc
Collector Cutoff Current (V_{CB} = Rated V_{CB}, I_E = 0)		I_{CBO}	—	0.1	mAdc
Emitter Cutoff Current (V_{EB} = 5.0 Vdc, I_C = 0)		I_{EBO}	—	1.0	mAdc
ON CHARACTERISTICS					
DC Current Gain (3) (I_C = 50 mAdc, V_{CE} = 1.0 Vdc) (I_C = 500 mAdc, V_{CE} = 1.0 Vdc) (I_C = 1.0 Adc, V_{CE} = 1.0 Vdc)		h_{FE}	 40 30 10	 — 150 —	—
Collector–Emitter Saturation Voltage (3) (I_C = 1.0 Adc, I_B = 0.1 Adc)		$V_{CE(sat)}$	—	0.6	Vdc
Base–Emitter Saturation Voltage (3) (I_C = 1.0 Adc, I_B = 0.1 Adc)		$V_{BE(sat)}$	—	1.3	Vdc
Base–Emitter On Voltage (3) (I_C = 1.0 Adc, V_{CE} = 1.0 Vdc)		$V_{BE(on)}$	—	1.3	Vdc
SMALL–SIGNAL CHARACTERISTICS					
Current–Gain — Bandwidth Product (I_C = 250 mAdc, V_{CE} = 10 Vdc, f = 1.0 MHz)		f_T	3.0	—	MHz
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 100 kHz)		C_{ob}	—	100	pF
Small–Signal Current Gain (I_C = 250 mAdc, V_{CE} = 10 Vdc, f = 1.0 kHz)		h_{fe}	25	—	—

(3) Pulse Test: PW = 300 μs, Duty Cycle = 2.0%.
*Indicates JEDEC Registered Data.

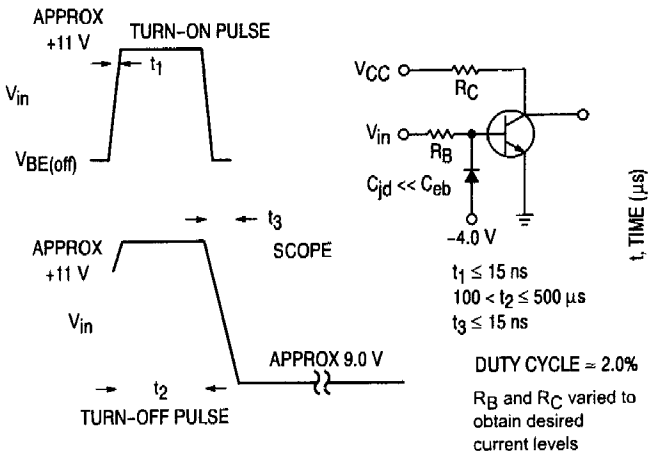


Figure 2. Switching Time Equivalent Circuit

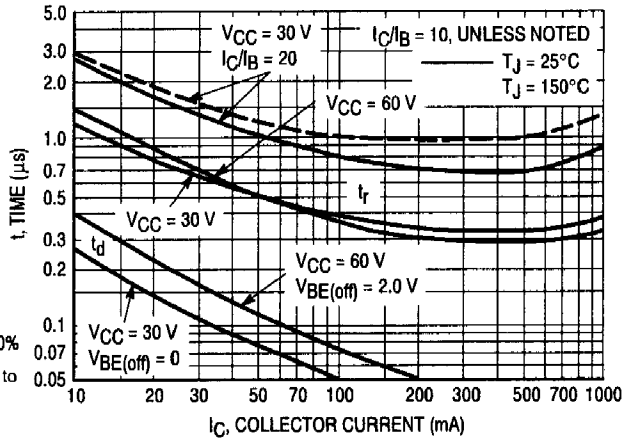


Figure 3. Turn–On Time