

Medium-Power Plastic PNP Silicon Transistors

... 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 @ $T_C = 25^\circ\text{C}$
- Excellent Safe Operating Area
- Gain Specified to $I_C = 1.0$ Amp
- Complement to NPN 2N4921, 2N4922, 2N4923

*MAXIMUM RATINGS

Ratings	Symbol	2N4918	2N4919	2N4920	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	I_B		1.0		Adc
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D		30 0.24		Watts $\text{W}/^\circ\text{C}$
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

*Indicates JEDEC Registered Data for 2N4918 Series.

(1) The 1.0 Amp maximum I_C value is based upon JEDEC current gain requirements.

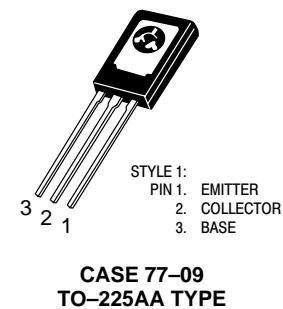
The 3.0 Amp maximum value is based upon actual current-handling capability of the device (See Figure 5).

(2) Recommend use of thermal compound for lowest thermal resistance.

**2N4918
thru
2N4920***

*ON Semiconductor Preferred Device

**3 AMPERE
GENERAL-PURPOSE
POWER TRANSISTORS
40-80 VOLTS
30 WATTS**



Preferred devices are ON Semiconductor recommended choices for future use and best overall value.

2N4918 thru 2N4920

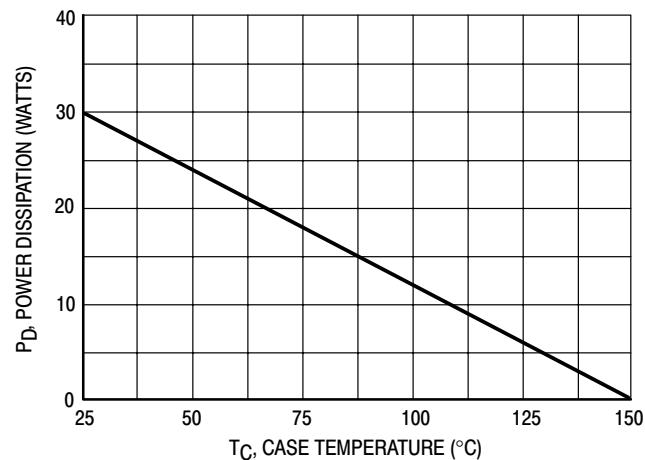


Figure 1. Power Derating

2N4918 thru 2N4920

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage (1) ($I_C = 0.1 \text{ Adc}$, $I_B = 0$)	$V_{CEO(\text{sus})}$	2N4918 2N4919 2N4920	40 60 80	— — —
Collector Cutoff Current ($V_{CE} = 20 \text{ Vdc}$, $I_B = 0$) ($V_{CE} = 30 \text{ Vdc}$, $I_B = 0$) ($V_{CE} = 40 \text{ Vdc}$, $I_B = 0$)	I_{CEO}	2N4918 2N4919 2N4920	— — —	0.5 0.5 0.5
Collector Cutoff Current ($V_{CE} = \text{Rated } V_{CEO}$, $V_{BE(\text{off})} = 1.5 \text{ Vdc}$) ($V_{CE} = \text{Rated } V_{CEO}$, $V_{BE(\text{off})} = 1.5 \text{ Vdc}$, $T_C = 125^\circ\text{C}$)	I_{CEX}	— —	0.1 0.5	mAdc
Collector Cutoff Current ($V_{CB} = \text{Rated } V_{CB}$, $I_E = 0$)	I_{CBO}	—	0.1	mAdc
Emitter Cutoff Current ($V_{BE} = 5.0 \text{ Vdc}$, $I_C = 0$)	I_{EBO}	—	1.0	mAdc

ON CHARACTERISTICS

DC Current Gain (1) ($I_C = 50 \text{ mAdc}$, $V_{CE} = 1.0 \text{ Vdc}$) ($I_C = 500 \text{ mAdc}$, $V_{CE} = 1.0 \text{ Vdc}$) ($I_C = 1.0 \text{ Adc}$, $V_{CE} = 1.0 \text{ Vdc}$)	h_{FE}	40 30 10	— 150 —	—
Collector-Emitter Saturation Voltage (1) ($I_C = 1.0 \text{ Adc}$, $I_B = 0.1 \text{ Adc}$)	$V_{CE(\text{sat})}$	—	0.6	Vdc
Base-Emitter Saturation Voltage (1) ($I_C = 1.0 \text{ Adc}$, $I_B = 0.1 \text{ Adc}$)	$V_{BE(\text{sat})}$	—	1.3	Vdc
Base-Emitter On Voltage (1) ($I_C = 1.0 \text{ Adc}$, $V_{CE} = 1.0 \text{ Vdc}$)	$V_{BE(\text{on})}$	—	1.3	Vdc

SMALL-SIGNAL CHARACTERISTICS

Current-Gain — Bandwidth Product ($I_C = 250 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$, $f = 1.0 \text{ MHz}$)	f_T	3.0	—	MHz
Output Capacitance ($V_{CB} = 10 \text{ Vdc}$, $I_E = 0$, $f = 100 \text{ kHz}$)	C_{ob}	—	100	pF
Small-Signal Current Gain ($I_C = 250 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$, $f = 1.0 \text{ kHz}$)	h_{fe}	25	—	—

*Indicates JEDEC Registered Data.

(1) Pulse Test: $PW \approx 300 \mu\text{s}$, Duty Cycle $\approx 2.0\%$

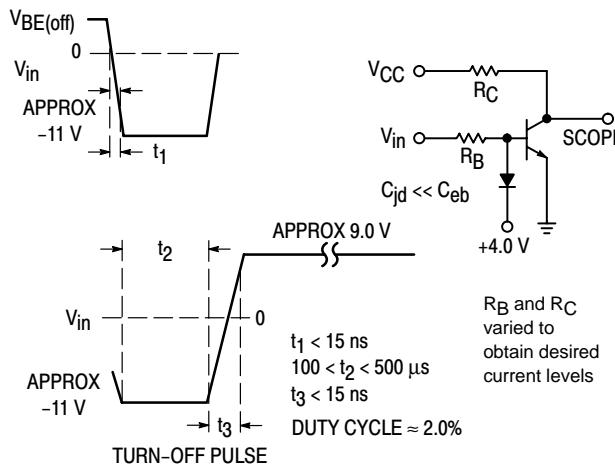


Figure 2. Switching Time Equivalent Test Circuit

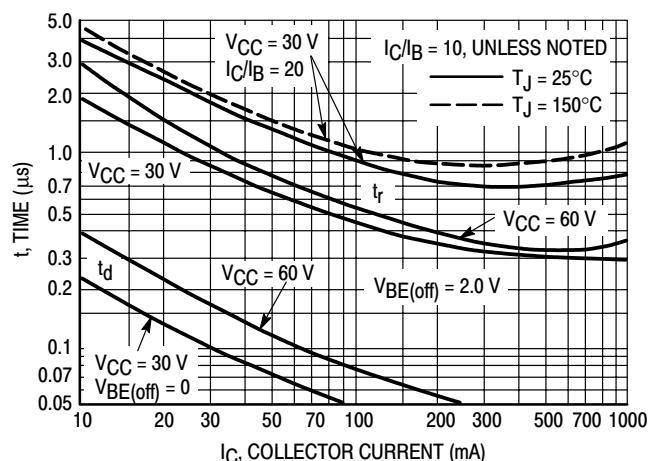


Figure 3. Turn-On Time

2N4918 thru 2N4920

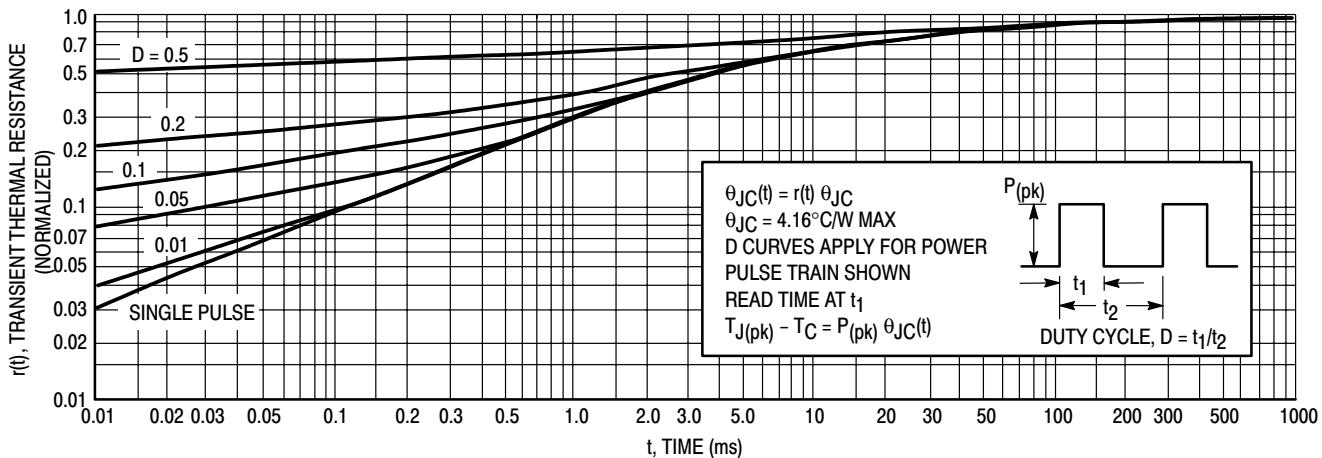


Figure 4. Thermal Response

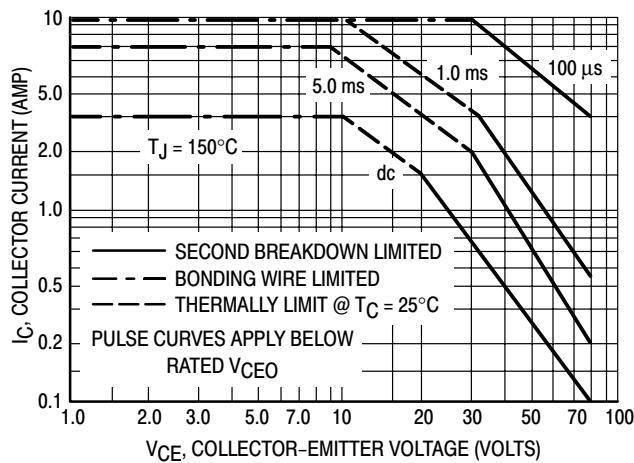


Figure 5. Active-Region Safe Operating Area

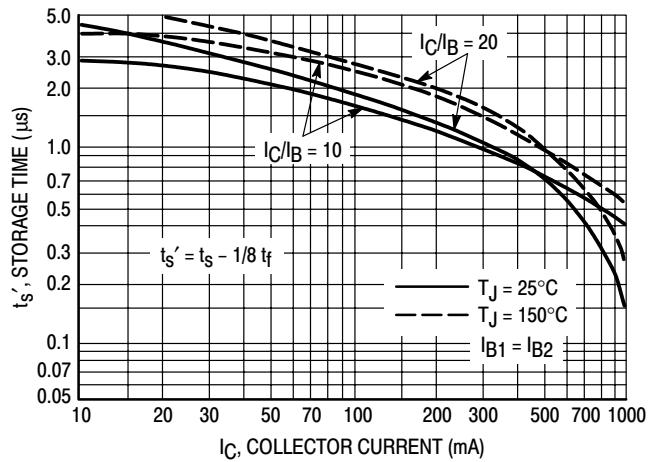


Figure 6. Storage Time

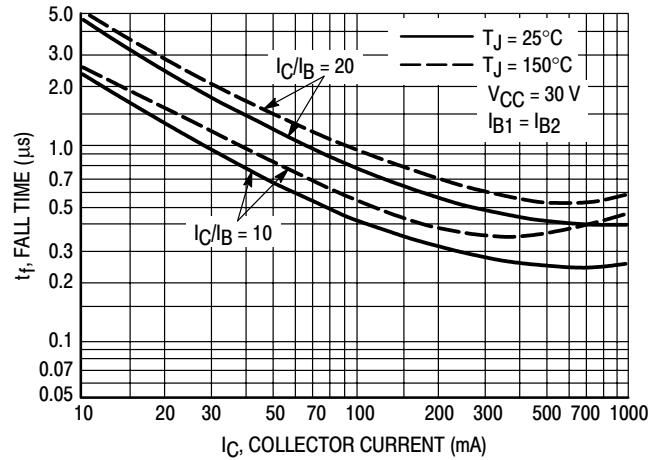


Figure 7. Fall Time

TYPICAL DC CHARACTERISTICS

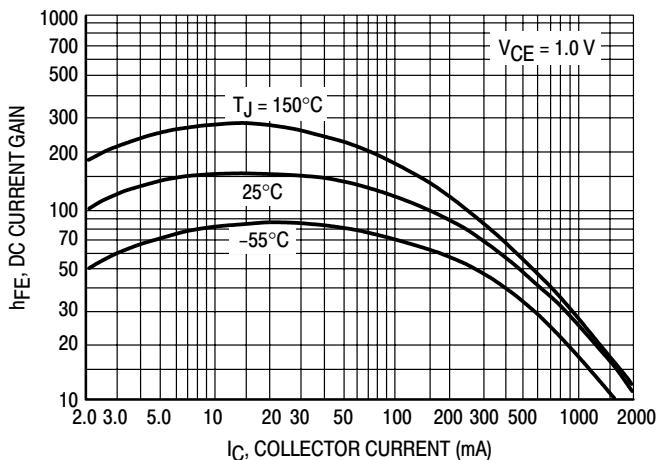


Figure 8. Current Gain

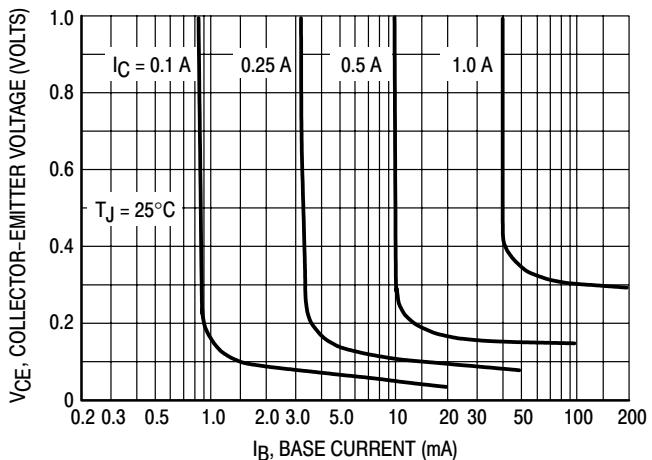


Figure 9. Collector Saturation Region

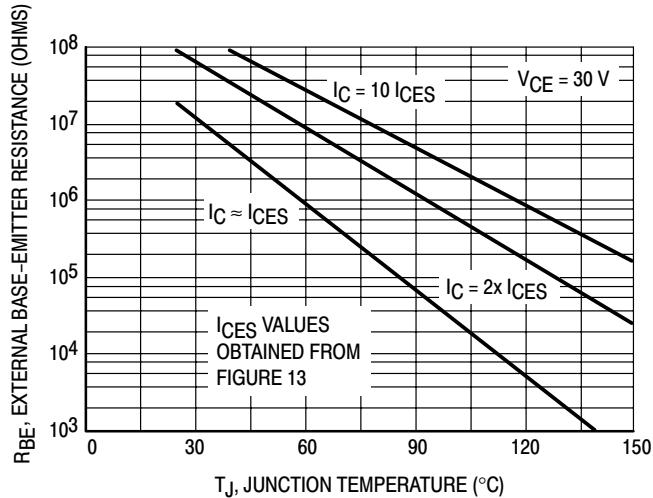


Figure 10. Effects of Base-Emitter Resistance

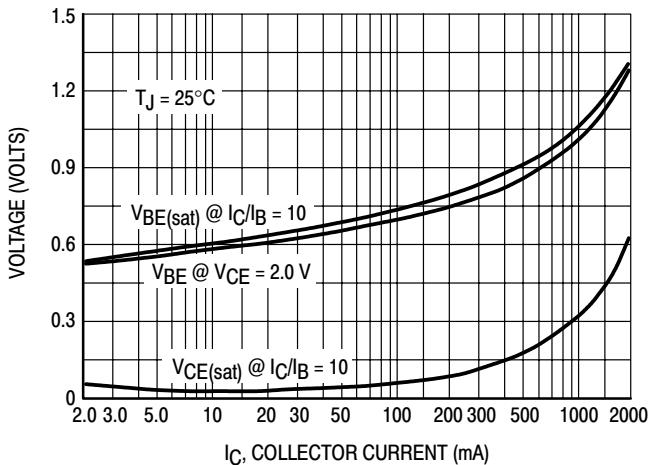


Figure 11. "On" Voltage

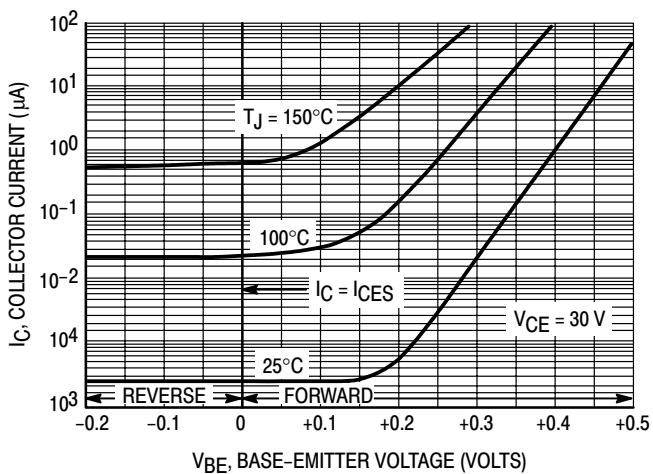


Figure 12. Collector Cut-Off Region

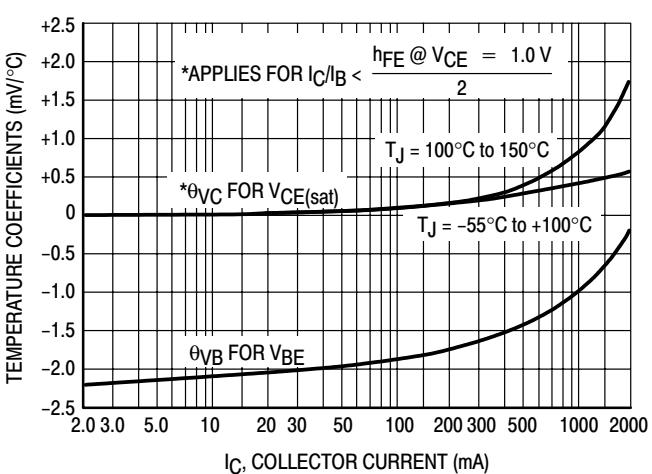
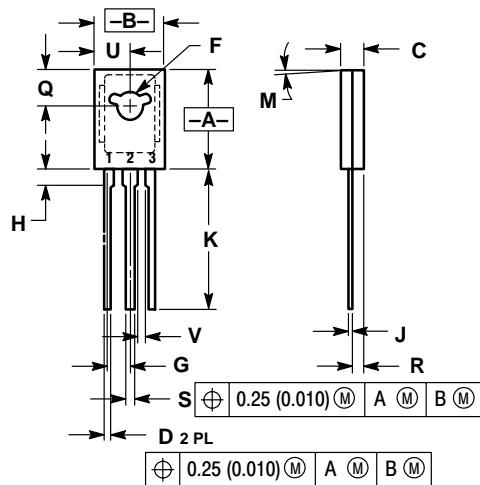


Figure 13. Temperature Coefficients

PACKAGE DIMENSIONS

TO-225AA
CASE 77-09
ISSUE W

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.425	0.435	10.80	11.04
B	0.295	0.305	7.50	7.74
C	0.095	0.105	2.42	2.66
D	0.020	0.026	0.51	0.66
F	0.115	0.130	2.93	3.30
G	0.094	BSC	2.39	BSC
H	0.050	0.095	1.27	2.41
J	0.015	0.025	0.39	0.63
K	0.575	0.655	14.61	16.63
M	5° TYP		5° TYP	
Q	0.148	0.158	3.76	4.01
R	0.045	0.065	1.15	1.65
S	0.025	0.035	0.64	0.88
U	0.145	0.155	3.69	3.93
V	0.040	---	1.02	---

STYLE 1:
PIN 1. Emitter
2. Collector
3. Base

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