

PNP Epitaxial Silicon Transistor

2N6520

Features

- High Voltage Transistor
- Collector–Emitter Voltage: $V_{CBO} = -350$ V
- Collector Dissipation: P_C (max) = 625 mW
- Complement to 2N6517
- This is a Pb–Free Device



TO–92 3 4.83x4.76
LEADFORMED
CASE 135AR

ABSOLUTE MAXIMUM RATINGS

(Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector–Base Voltage	–350	V
V_{CEO}	Collector–Emitter Voltage	–350	V
V_{EBO}	Emitter–Base Voltage	–5	V
I_C	Collector Current	–500	mA
I_B	Base Current	–250	mA
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature	–55 to 150	$^\circ\text{C}$

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

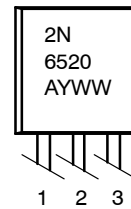
THERMAL CHARACTERISTICS (Note 1)

(Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.)

Symbol	Parameter	Value	Unit
P_C	Collector Power Dissipation	625	mW
	Derate Above 25°C	5.0	mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction–to–Ambient	200	$^\circ\text{C}/\text{W}$

1. PCB size: FR–4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.

MARKING DIAGRAM



1: Emitter
 2: Base
 3: Collector

2N6520 = Device Code
 A = Assembly Code
 YWW = Date Code

ORDERING INFORMATION

Device	Package	Shipping
2N6520TA	TO–92 3 (Pb–Free)	2000 Units / Fan–Fold

2N6520

ELECTRICAL CHARACTERISTICS

(Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.)

Symbol	Parameter	Conditions	Min.	Max.	Unit
BV_{CBO}	Collector-Base Breakdown Voltage	$I_C = -100 \mu\text{A}, I_E = 0$	-350	-	V
BV_{CEO}	Collector-Emitter Breakdown Voltage (Note 2)	$I_C = -1 \text{ mA}, I_B = 0$	-350	-	V
BV_{EBO}	Emitter-Base Breakdown Voltage	$I_E = -10 \mu\text{A}, I_C = 0$	-5	-	V
I_{CBO}	Collector Cut-Off Current	$V_{CB} = -250 \text{ V}, I_E = 0$	-	-50	nA
I_{EBO}	Emitter Cut-Off Current	$V_{EB} = -4 \text{ V}, I_C = 0$	-	-50	nA
h_{FE}	DC Current Gain (Note 2)	$V_{CE} = -10 \text{ V}, I_C = -1 \text{ mA}$	20	-	
		$V_{CE} = -10 \text{ V}, I_C = -10 \text{ mA}$	30	-	
		$V_{CE} = -10 \text{ V}, I_C = -30 \text{ mA}$	30	200	
		$V_{CE} = -10 \text{ V}, I_C = -50 \text{ mA}$	20	200	
		$V_{CE} = -10 \text{ V}, I_C = -100 \text{ mA}$	15	-	
$V_{CE(\text{sat})}$	Collector-Emitter Saturation Voltage	$I_C = -10 \text{ mA}, I_B = -1 \text{ mA}$	-	-0.30	V
		$I_C = -20 \text{ mA}, I_B = -2 \text{ mA}$	-	-0.35	
		$I_C = -30 \text{ mA}, I_B = -3 \text{ mA}$	-	-0.50	
		$I_C = -50 \text{ mA}, I_B = -5 \text{ mA}$	-	-1.00	
$V_{BE(\text{sat})}$	Base-Emitter Saturation Voltage	$I_C = -10 \text{ mA}, I_B = -1 \text{ mA}$	-	-0.75	V
		$I_C = -20 \text{ mA}, I_B = -2 \text{ mA}$	-	-0.85	
		$I_C = -30 \text{ mA}, I_B = -3 \text{ mA}$	-	-0.90	
$V_{BE(\text{on})}$	Base-Emitter On Voltage	$V_{CE} = -10 \text{ V}, I_C = -100 \text{ mA}$	-	-2	V
f_T	Current Gain Bandwidth Product (Note 2)	$V_{CE} = -20 \text{ V}, I_C = -10 \text{ mA},$ $f = 20 \text{ MHz}$	40	200	MHz
C_{ob}	Output Capacitance	$V_{CB} = -20 \text{ V}, I_E = 0, f = 1 \text{ MHz}$	-	6	pF
C_{EB}	Emitter-Base Capacitance	$V_{EB} = -0.5 \text{ V}, I_C = 0, f = 1 \text{ MHz}$	-	100	pF
t_{ON}	Turn-On Time	$V_{BE(\text{off})} = -2 \text{ V}, V_{CC} = -100 \text{ V},$ $I_C = -50 \text{ mA}, I_{B1} = -10 \text{ mA}$	-	200	ns
t_{OFF}	Turn-Off Time	$V_{CC} = -100 \text{ V}, I_C = -50 \text{ mA},$ $I_{B1} = I_{B2} = -10 \text{ mA}$	-	3.5	ns

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

2. Pulse test: pulse width $\leq 300 \mu\text{s}$, duty cycle $\leq 2\%$

TYPICAL PERFORMANCE CHARACTERISTICS

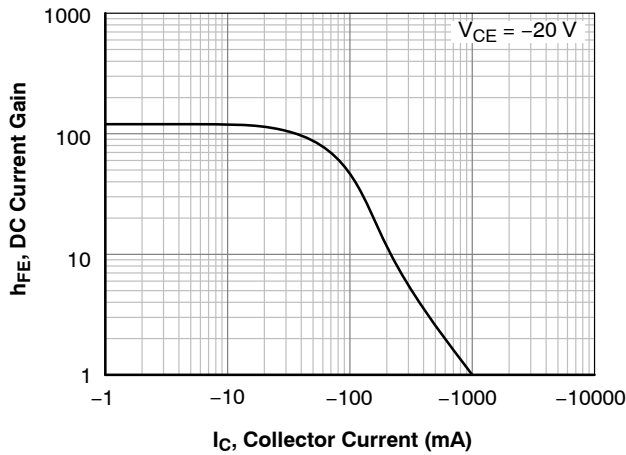


Figure 1. DC Current Gain

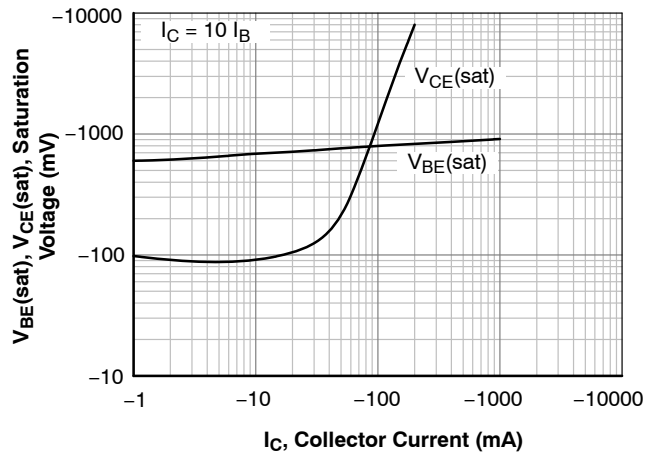


Figure 2. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

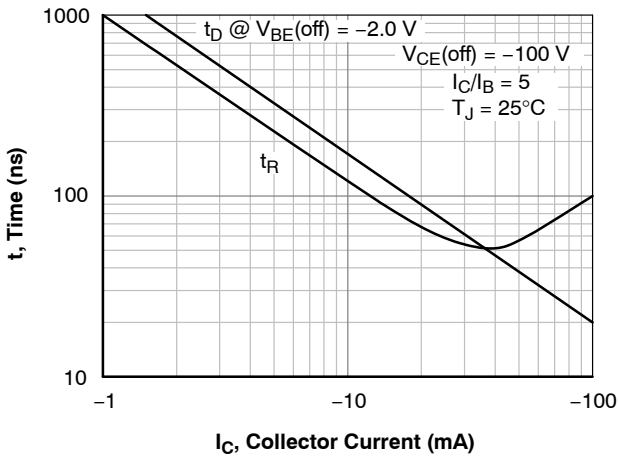


Figure 3. Turn-On Time

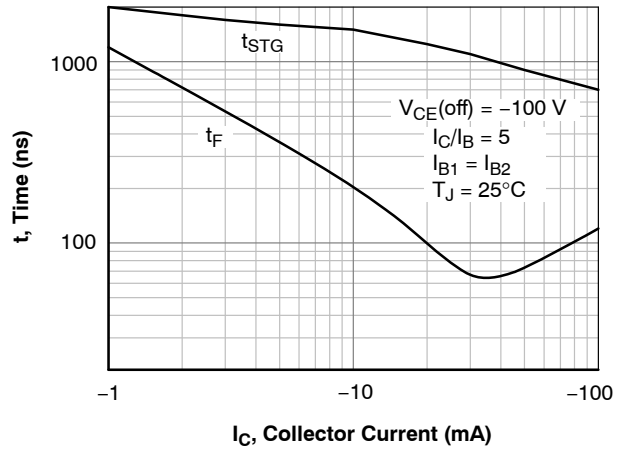


Figure 4. Turn-Off Time

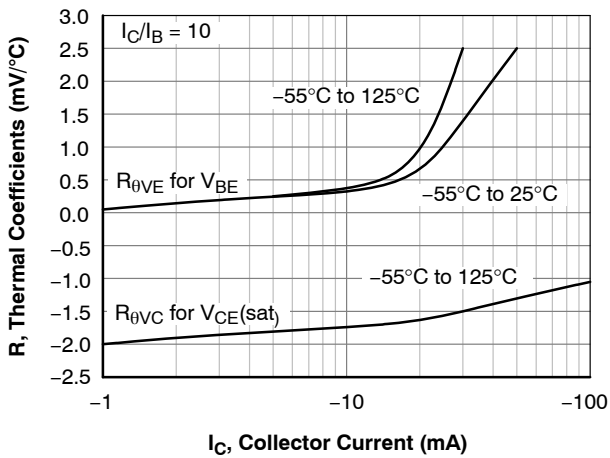


Figure 5. Temperature Coefficient

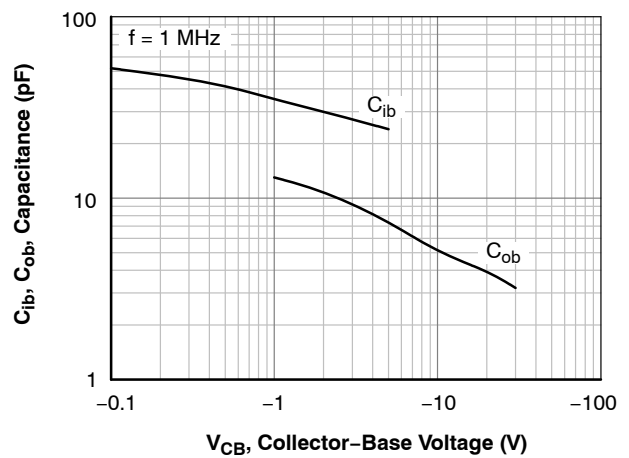


Figure 6. Capacitance

TYPICAL PERFORMANCE CHARACTERISTICS (continued)

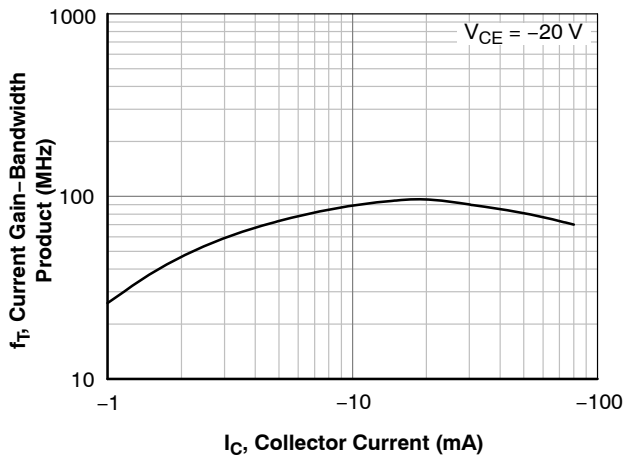
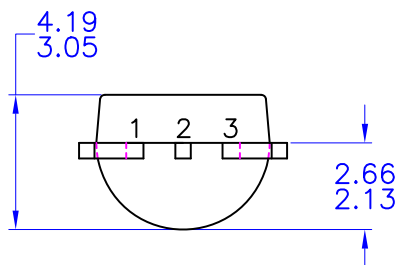
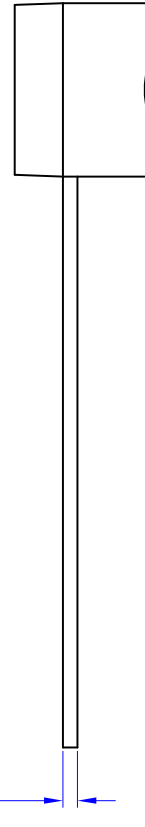
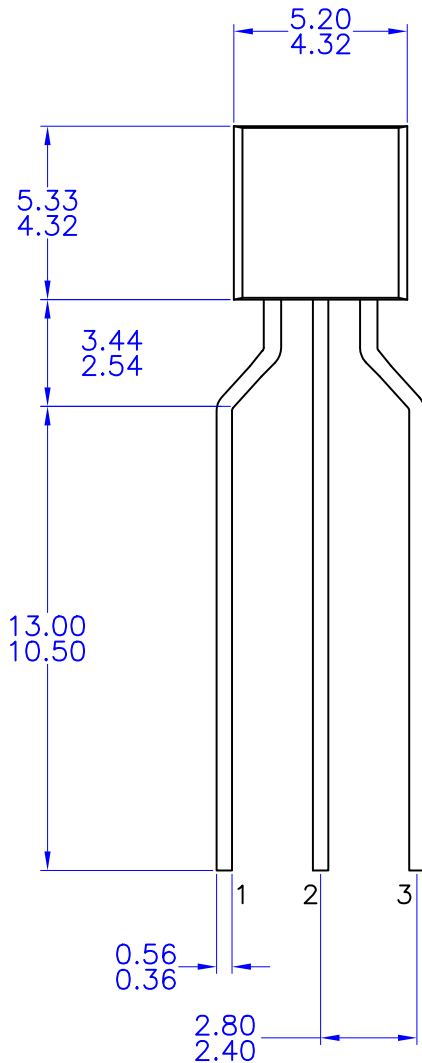


Figure 7. Current Gain Bandwidth Product

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NOTES: UNLESS OTHERWISE SPECIFIED

- A) DRAWING WITH REFERENCE TO JEDEC TO-92 RECOMMENDATIONS.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DRAWING CONFORMS TO ASME Y14.5M-1994

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