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September 2015

2N6520

PNP Epitaxial Silicon Transistor

Features

- High Voltage Transistor
- Collector-Emitter Voltage: $V_{CEO} = -350$ V
- Collector Dissipation: P_C (max) = 625 mW
- Complement to 2N6517



Ordering Information

Part Number	Top Mark	Package	Packing Method
2N6520TA	2N6520	TO-92 3L	Ammo

Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. 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	$^\circ\text{C}$

Thermal Characteristics⁽¹⁾

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

Symbol	Parameter	Max.	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	$^\circ\text{C}/\text{W}$

Note:

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.

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 ⁽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 ⁽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		
$V_{CE(sat)}$	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	
$V_{BE(sat)}$	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	
$V_{BE(on)}$	Base-Emitter On Voltage	$V_{CE} = -10\ \text{V}$, $I_C = -100\ \text{mA}$		-2	V
f_T	Current Gain Bandwidth Product ⁽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	$V_{BE(off)} = -2\ \text{V}$, $V_{CC} = -100\ \text{V}$, $I_C = -50\ \text{mA}$, $I_{B1} = -10\ \text{mA}$		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

Note:

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

Typical Performance Characteristics

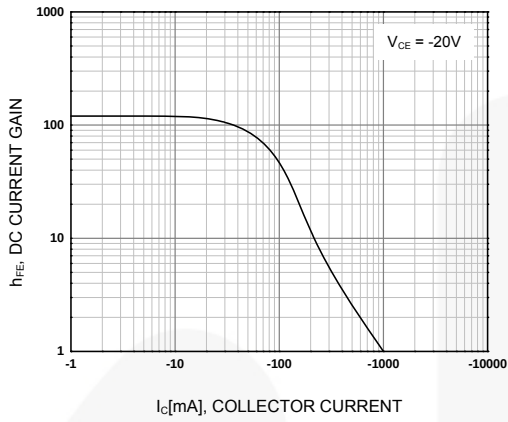


Figure 1. DC Current Gain

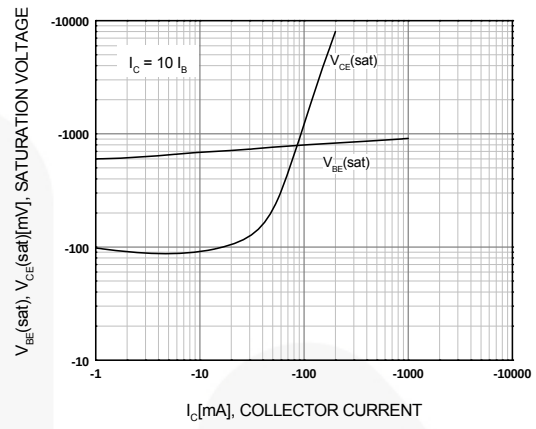


Figure 2. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

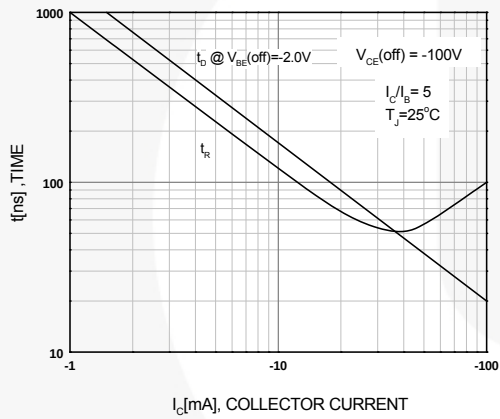


Figure 3. Turn-On Time

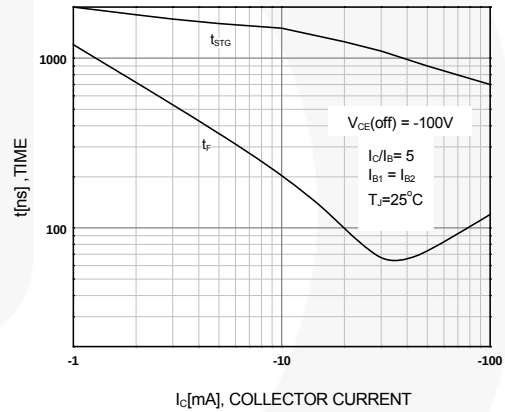


Figure 4. Turn-Off Time

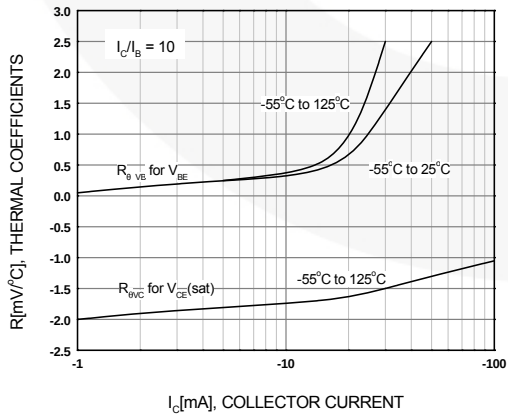


Figure 5. Temperature Coefficients

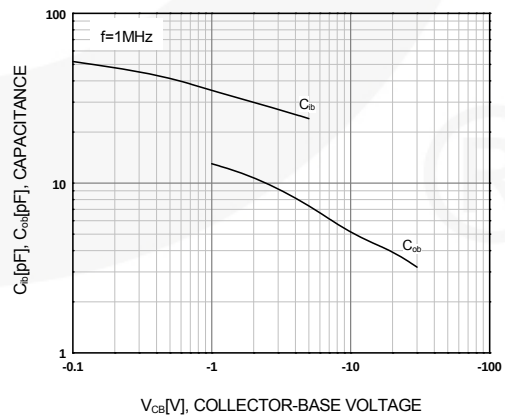


Figure 6. Capacitance

Typical Performance Characteristics (Continued)

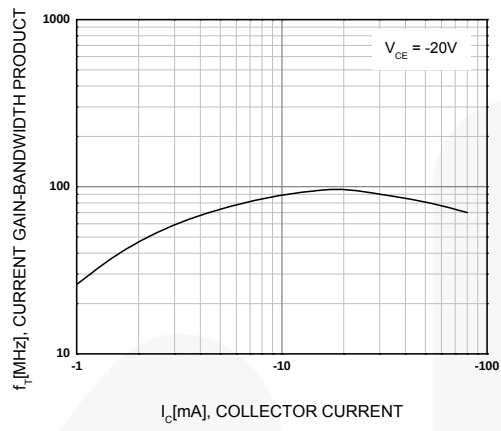
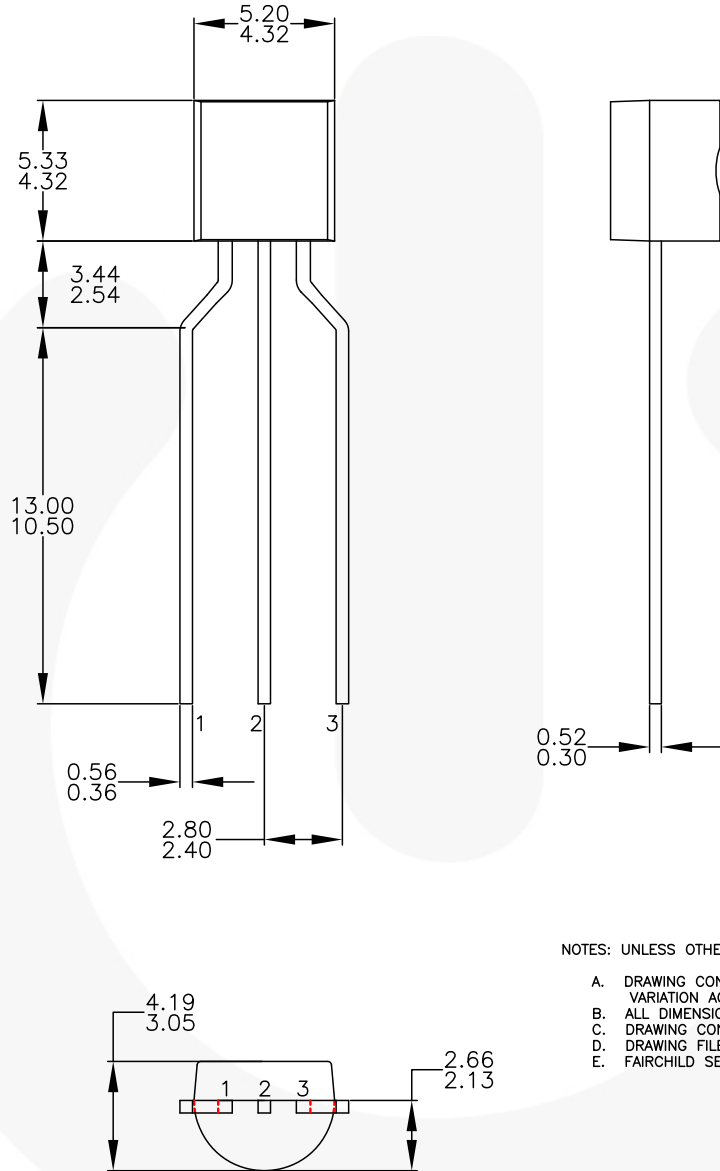


Figure 7. Current Gain Bandwidth Product

Physical Dimensions



NOTES: UNLESS OTHERWISE SPECIFIED

- DRAWING CONFORMS TO JEDEC MS-013, VARIATION AC.
- ALL DIMENSIONS ARE IN MILLIMETERS.
- DRAWING CONFORMS TO ASME Y14.5M-2009.
- DRAWING FILENAME: MKT-ZA03FREV3.
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Figure 8. 3-Lead, TO-92, Molded, 0.2 In Line Spacing Lead Form, Ammo Type



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