

NPN
2N6515, 2N6517
PNP
2N6519, 2N6520

Features

- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Through Hole Package
- 150 C Junction Temperature
- Voltage and Current are negative for PNP transistors
- Halogen free available upon request by adding suffix "-HF"

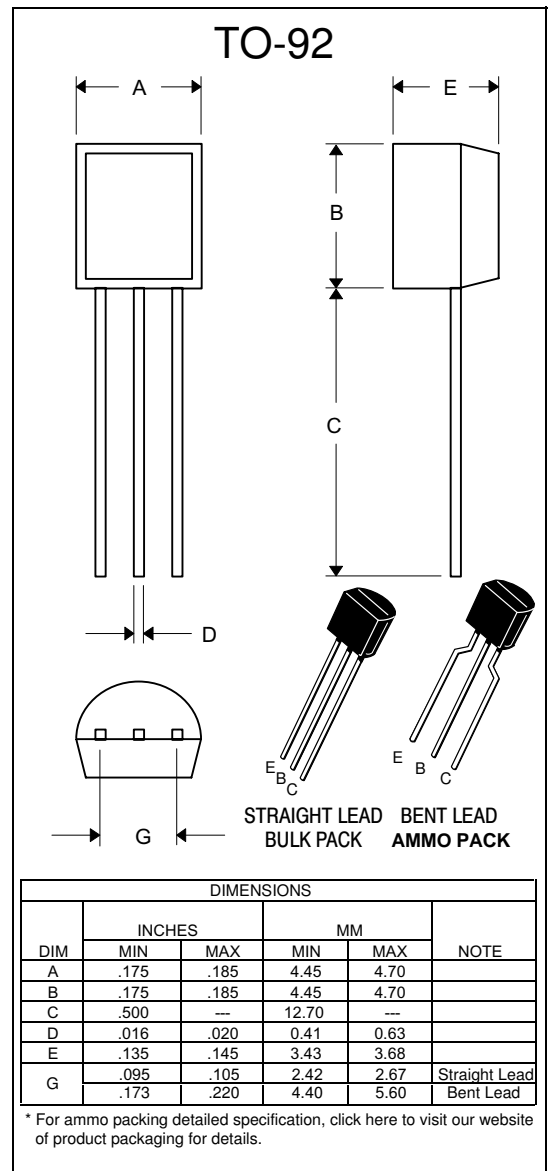
Mechanical Data

- Case: TO-92, Molded Plastic
- Polarity: indicated as above.

Maximum Ratings @ 25°C Unless Otherwise Specified

Charateristic	Symbol	Value	Unit
Collector-Emitter Voltage 2N6515 2N6519 2N6517, 2N6520	V_{CEO}	250 300 350	V
Collector-Base Voltage 2N6515 2N6519 2N6517, 2N6520	V_{CBO}	250 300 350	V
Emitter-Base Voltage 2N6515-6517 2N6519-6520	V_{EBO}	6.0 5.0	V
Base Current	I_B	250	mA
Collector Current(DC)	I_C	500	mA
Power Dissipation@TA=25°C	P_d	0.625 5.0	W mW/°C
Power Dissipation@TC=25°C	P_d	1.5 12	W mW/°C
Thermal Resistance, Junction to Ambient Air	$R_{\theta JA}$	200	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	83.3	°C/W
Operating & Storage Temperature	T_j, T_{STG}	-55~150	°C

High Voltage
Transistor
625mW



NPN 2N6515 2N6517 PNP 2N6519 2N6520



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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector–Emitter Breakdown Voltage ⁽¹⁾ (I _C = 1.0 mA, I _B = 0)	V _{(BR)CEO}	250 300 350	— — —	Vdc
Collector–Base Breakdown Voltage (I _C = 100 μA, I _E = 0)	V _{(BR)CBO}	250 300 350	— — —	Vdc
Emitter–Base Breakdown Voltage (I _E = 10 μA, I _C = 0)	V _{(BR)EBO}	6.0 5.0	— —	Vdc
Collector Cutoff Current (V _{CB} = 150 Vdc, I _E = 0) (V _{CB} = 200 Vdc, I _E = 0) (V _{CB} = 250 Vdc, I _E = 0)	I _{CBO}	— — —	50 50 50	nA
Emitter Cutoff Current (V _{EB} = 5.0 Vdc, I _C = 0) (V _{EB} = 4.0 Vdc, I _C = 0)	I _{EBO}	— —	50 50	nA
ON CHARACTERISTICS⁽¹⁾				
DC Current Gain (I _C = 1.0 mA, V _{CE} = 10 Vdc)	h _{FE}	35 30 20	— — —	—
(I _C = 10 mA, V _{CE} = 10 Vdc)		50 45 30	— — —	
(I _C = 30 mA, V _{CE} = 10 Vdc)		50 45 30	300 270 200	
(I _C = 50 mA, V _{CE} = 10 Vdc)		45 40 20	220 200 200	
(I _C = 100 mA, V _{CE} = 10 Vdc)		25 20 15	— — —	
Collector–Emitter Saturation Voltage (I _C = 10 mA, I _B = 1.0 mA) (I _C = 20 mA, I _B = 2.0 mA) (I _C = 30 mA, I _B = 3.0 mA) (I _C = 50 mA, I _B = 5.0 mA)	V _{CE(sat)}	— — — —	0.30 0.35 0.50 1.0	Vdc
Base–Emitter Saturation Voltage (I _C = 10 mA, I _B = 1.0 mA) (I _C = 20 mA, I _B = 2.0 mA) (I _C = 30 mA, I _B = 3.0 mA)	V _{BE(sat)}	— — —	0.75 0.85 0.90	Vdc
Base–Emitter On Voltage (I _C = 100 mA, V _{CE} = 10 Vdc)	V _{BE(on)}	—	2.0	Vdc

1. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

NPN 2N6515 2N6517
PNP 2N6519 2N6520

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

Characteristic	Symbol	Min	Max	Unit
SMALL-SIGNAL CHARACTERISTICS				
Current-Gain — Bandwidth Product ⁽¹⁾ ($I_C = 10 \text{ mAdc}$, $V_{CE} = 20 \text{ Vdc}$, $f = 20 \text{ MHz}$)	f_T	40	200	MHz
Collector-Base Capacitance ($V_{CB} = 20 \text{ Vdc}$, $I_E = 0$, $f = 1.0 \text{ MHz}$)	C_{cb}	—	6.0	pF
Emitter-Base Capacitance ($V_{EB} = 0.5 \text{ Vdc}$, $I_C = 0$, $f = 1.0 \text{ MHz}$)	C_{eb}	—	80	pF
			100	
SWITCHING CHARACTERISTICS				
Turn-On Time ($V_{CC} = 100 \text{ Vdc}$, $V_{BE(off)} = 2.0 \text{ Vdc}$, $I_C = 50 \text{ mAdc}$, $I_{B1} = 10 \text{ mAdc}$)	t_{on}	—	200	μs
Turn-Off Time ($V_{CC} = 100 \text{ Vdc}$, $I_C = 50 \text{ mAdc}$, $I_{B1} = I_{B2} = 10 \text{ mAdc}$)	t_{off}	—	3.5	μs

1. Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$.

NPN 2N6515 2N6517
PNP 2N6519 2N6520



Micro Commercial Components

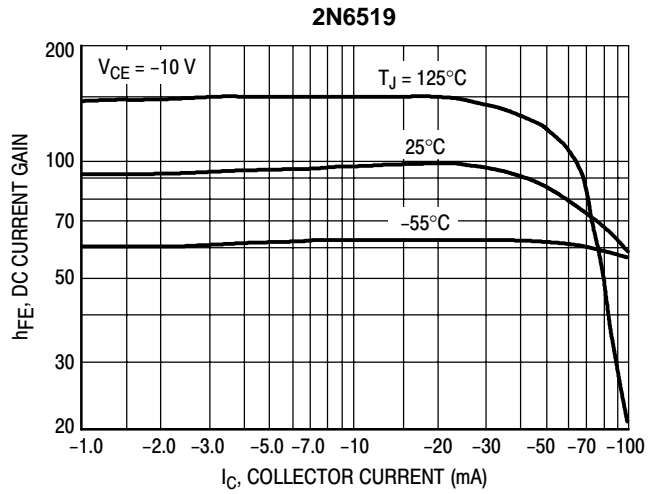
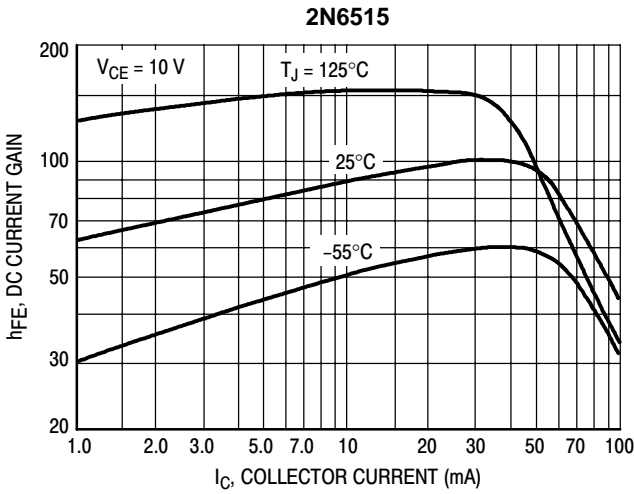


Figure 1. DC Current Gain

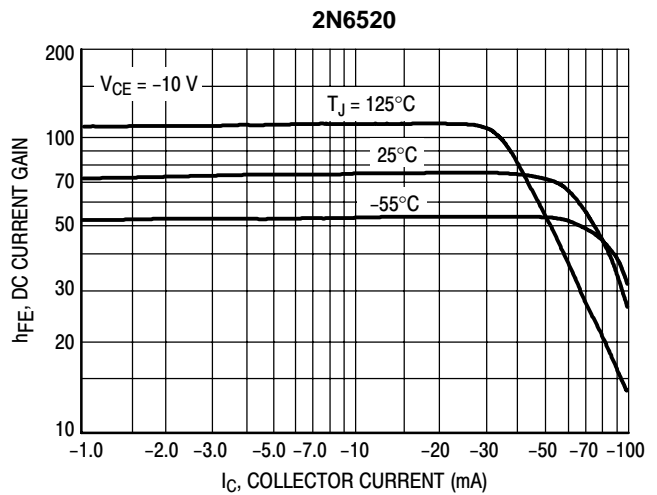
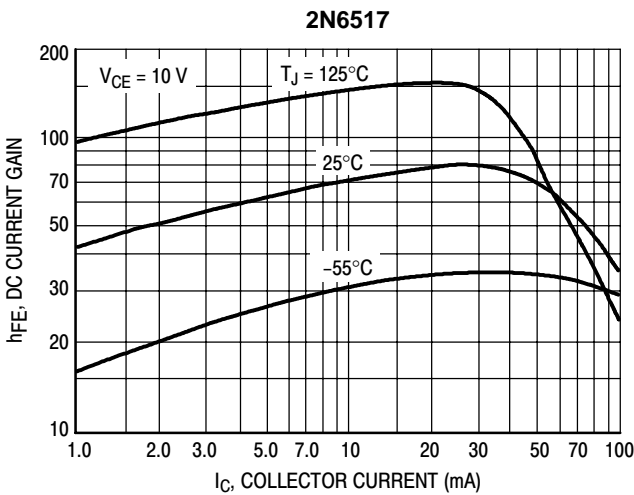


Figure 2. DC Current Gain

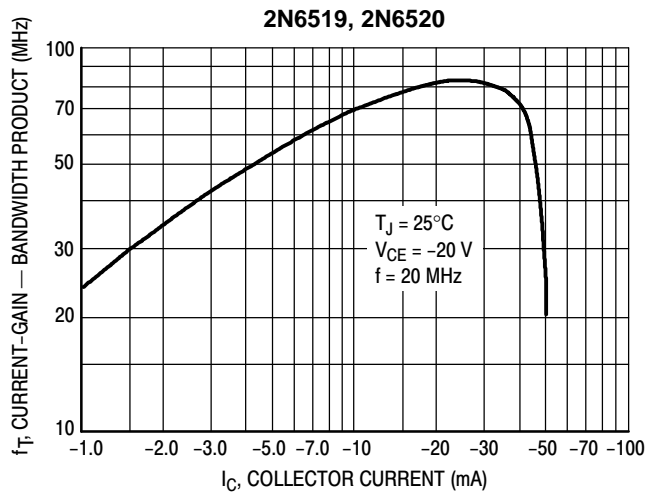
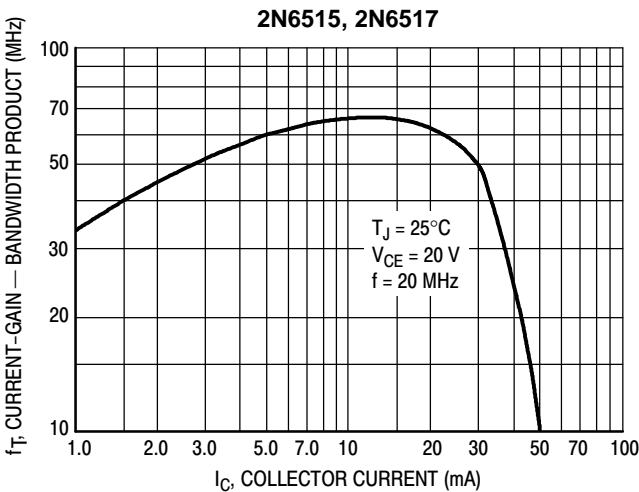


Figure 3. Current-Gain — Bandwidth Product

NPN 2N6515 2N6517
PNP 2N6519 2N6520



Micro Commercial Components

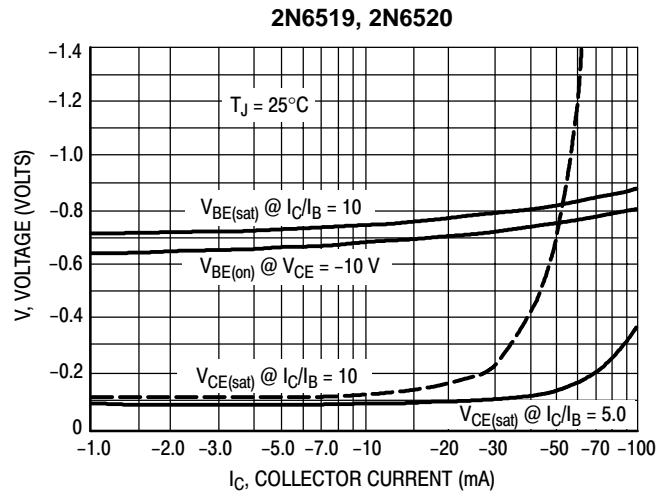
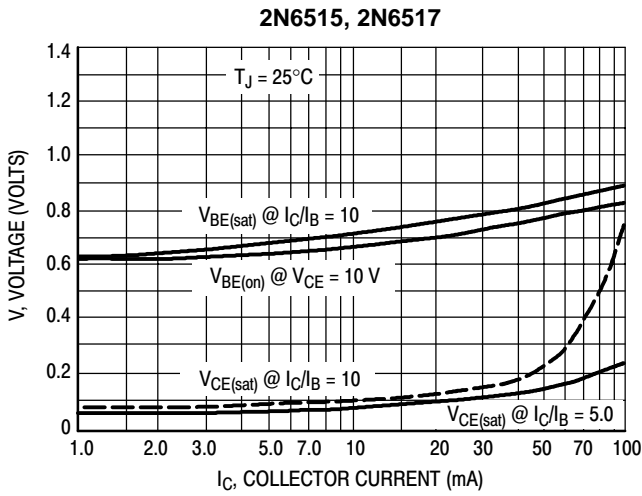


Figure 4. "On" Voltages

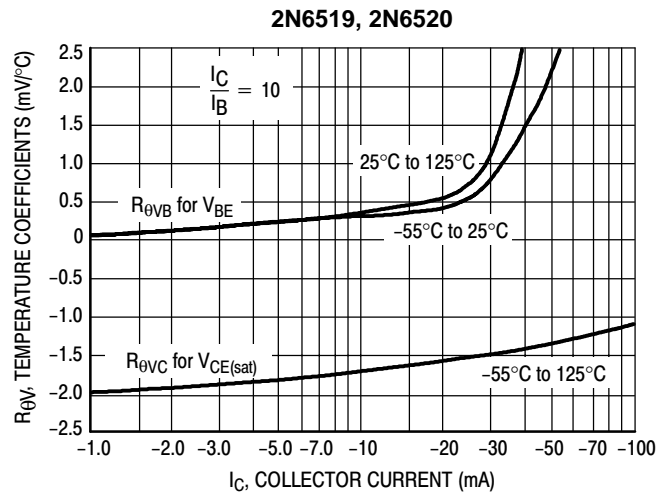
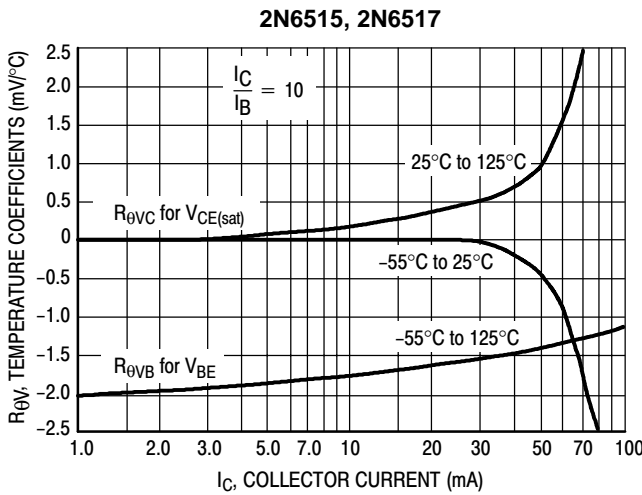


Figure 5. Temperature Coefficients

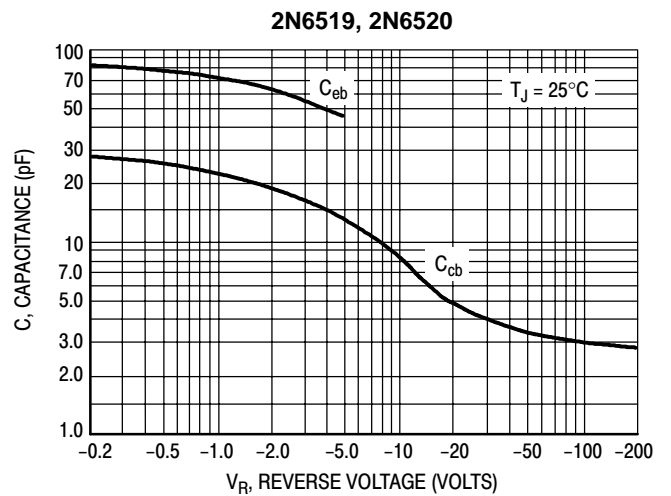
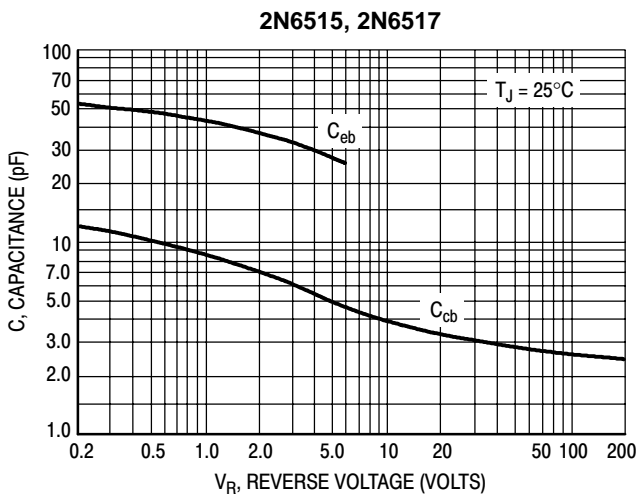


Figure 6. Capacitance

NPN 2N6515 2N6517
 PNP 2N6519 2N6520

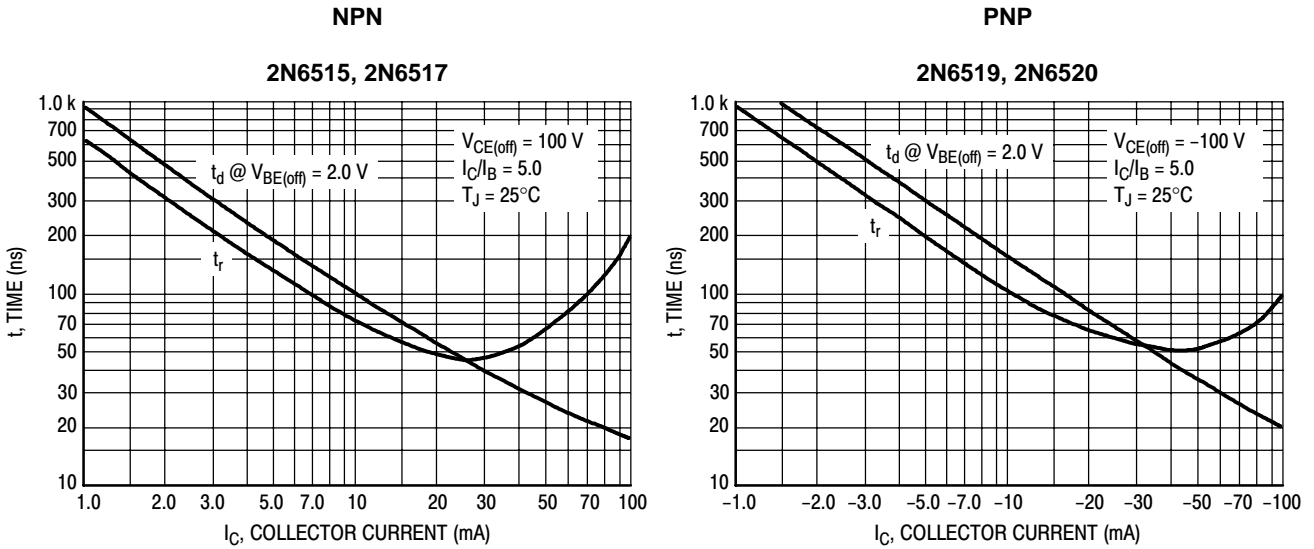


Figure 7. Turn-On Time

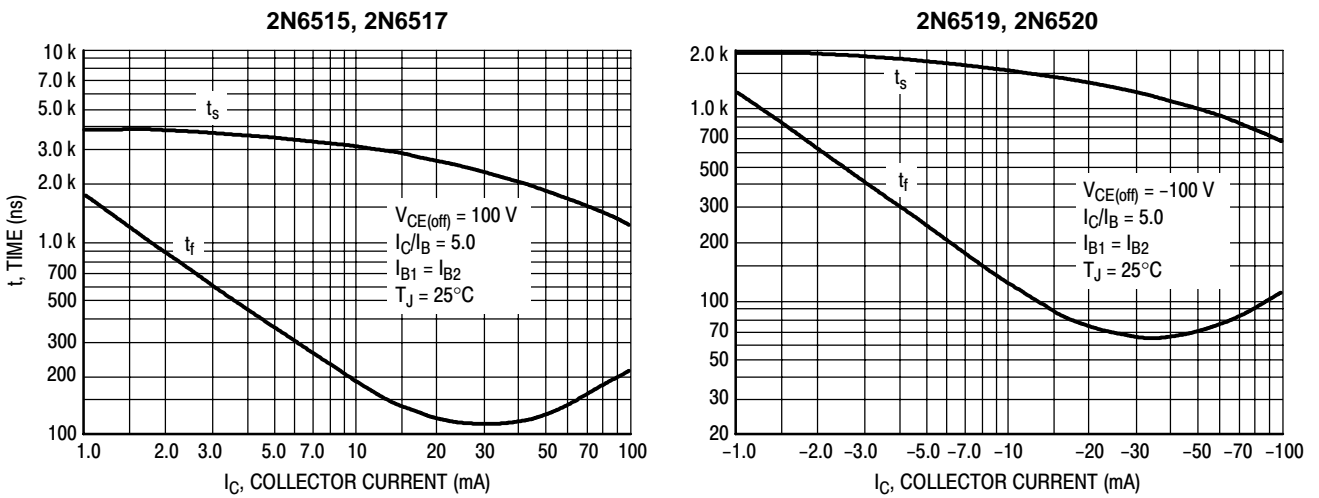


Figure 8. Turn-Off Time



Micro Commercial Components

Ordering Information :

Device	Packing
Part Number-AP	Ammo Packing: 20Kpcs/Carton
Part Number-BP	Bulk: 100Kpcs/Carton

Note : Adding "-HF" suffix for halogen free, eg. Part Number-BP-HF

*****IMPORTANT NOTICE*****

Micro Commercial Components Corp. reserves the right to make changes without further notice to any product herein to make corrections, modifications, enhancements, improvements, or other changes. **Micro Commercial Components Corp.** does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others. The user of products in such applications shall assume all risks of such use and will agree to hold **Micro Commercial Components Corp.** and all the companies whose products are represented on our website, harmless against all damages.

*****LIFE SUPPORT*****

MCC's products are not authorized for use as critical components in life support devices or systems without the express written approval of Micro Commercial Components Corporation.

*****CUSTOMER AWARENESS*****

Counterfeiting of semiconductor parts is a growing problem in the industry. Micro Commercial Components (MCC) is taking strong measures to protect ourselves and our customers from the proliferation of counterfeit parts. MCC strongly encourages customers to purchase MCC parts either directly from MCC or from Authorized MCC Distributors who are listed by country on our web page cited below. Products customers buy either from MCC directly or from Authorized MCC Distributors are genuine parts, have full traceability, meet MCC's quality standards for handling and storage. **MCC will not provide any warranty coverage or other assistance for parts bought from Unauthorized Sources.** MCC is committed to combat this global problem and encourage our customers to do their part in stopping this practice by buying direct or from authorized distributors.

www.mccsemi.com