

NPN Power Transistors

These devices are high voltage, high speed transistors for horizontal deflection output stages of TV's and CRT's.

- High Voltage: $V_{CEV} = 330$ or 400 V
- Fast Switching Speed: $t_f = 750$ ns (max)
- Low Saturation Voltage: $V_{CE(sat)} = 1$ V (max) @ 5 A
- Packaged in Compact JEDEC TO-220AB
- "D" Suffix w/Integral Damper Diode

BU406,D
BU407,D

7 AMPERES
NPN SILICON
POWER TRANSISTORS
60 WATTS
150 and 200 VOLTS

MAXIMUM RATINGS

Rating	Symbol	BU406,D	BU407,D	Unit
Collector-Emitter Voltage	V_{CEO}	200	150	Vdc
Collector-Emitter Voltage	V_{CEV}	400	330	Vdc
Collector-Base Voltage	V_{CBO}	400	330	Vdc
Emitter Base Voltage	V_{EBO}	6		Vdc
Collector Current — Continuous	I_C	7		Adc
Peak Repetitive		10		
Peak (10 ms)		15		
Base Current	I_B	4		Adc
Total Device Dissipation, $T_C = 25^\circ\text{C}$ Derate above $T_C = 25^\circ\text{C}$	P_D	60	0.48	Watts W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to 150		°C

THERMAL CHARACTERISTICS

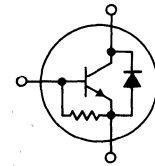
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.08	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	70	°C/W
Lead Temperature for Soldering Purposes: 1/8" from Case for 5 Seconds	T_L	275	°C

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

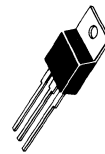
Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Sustaining Voltage ⁽¹⁾ ($I_C = 100$ mAdc, $I_B = 0$)	BU406,D BU407,D	$V_{CEO(sus)}$	200 150	— —	Vdc
Collector Cutoff Current ($V_{CE} = \text{Rated } V_{CEV}, V_{BE} = 0$) ($V_{CE} = \text{Rated } V_{CEO} + 50$ Vdc, $V_{BE} = 0$) ($V_{CE} = \text{Rated } V_{CEO} + 50$ Vdc, $V_{BE} = 0, T_C = 150^\circ\text{C}$)		I_{CES}	— — —	— — —	mAdc
Emitter Cutoff Current ($V_{EB} = 6$ Vdc, $I_C = 0$)	BU406, BU407 BU406D, BU407D	I_{EBO}	— —	— —	mAdc
ON CHARACTERISTICS(1)					
Collector-Emitter Saturation Voltage ($I_C = 5$ Adc, $I_B = 0.5$ Adc)		$V_{CE(sat)}$	—	—	1 Vdc
Base-Emitter Saturation Voltage ($I_C = 5$ Adc, $I_B = 0.5$ Adc)		$V_{BE(sat)}$	—	—	1.2 Vdc
Forward Diode Voltage ($I_{EC} = 5$ Adc) "D" only		V_{EC}	—	—	2 Volts

(1) Pulse Test: Pulse Width ≤ 300 μs , Duty Cycle $\leq 1\%$.

(continued)



"D" SUFFIX ONLY



CASE 221A-04
TO-220AB

BU406,D • BU407,D

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

Characteristic	Symbol	Min	Typ	Max	Unit
DYNAMIC CHARACTERISTICS					
Current-Gain — Bandwidth Product ($I_C = 0.5 \text{ Adc}$, $V_{CE} = 10 \text{ Vdc}$, $f_{\text{test}} = 20 \text{ MHz}$)	f_T	10	—	—	MHz
Output Capacitance ($V_{CB} = 10 \text{ Vdc}$, $I_E = 0$, $f = 1 \text{ MHz}$)	C_{ob}	—	80	—	pF
SWITCHING CHARACTERISTICS					
Inductive Load Crossover Time ($V_{CC} = 40 \text{ Vdc}$, $I_C = 5 \text{ Adc}$, $I_{B1} = I_{B2} = 0.5 \text{ Adc}$, $L = 150 \mu\text{H}$)	t_c	—	—	0.75	μs

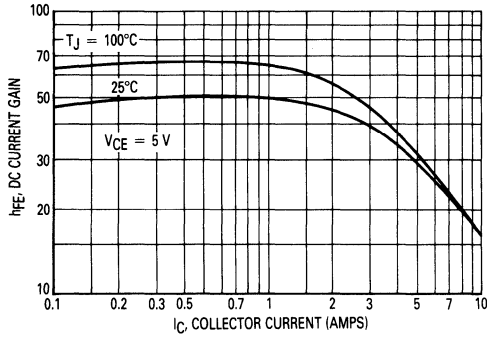


Figure 1. DC Current Gain

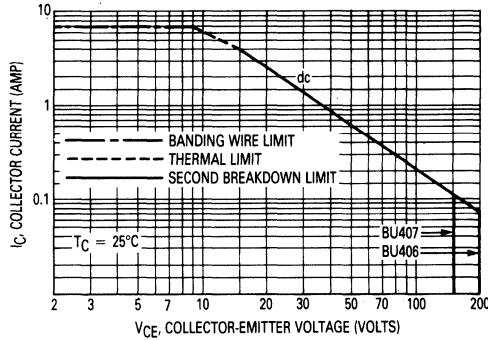


Figure 2. Maximum Rated Forward Bias Safe Operating Area

OUTLINE DIMENSIONS

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982
2. CONTROLLING DIMENSION: INCH.
3. DIM Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

STYLE 1:

PIN 1: BASE
2: COLLECTOR
3: EMITTER
4: COLLECTOR

**CASE 221A-04
TO-220AB**

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	14.48	15.75	0.570	0.620
B	9.66	10.28	0.380	0.405
C	4.07	4.82	0.160	0.190
D	0.84	0.88	0.025	0.035
F	3.81	3.72	0.142	0.147
G	2.42	2.66	0.095	0.105
H	2.80	3.93	0.110	0.155
J	0.46	0.71	0.018	0.028
K	12.70	14.27	0.500	0.562
L	1.15	1.39	0.045	0.055
N	4.83	5.33	0.190	0.210
Q	2.54	3.04	0.100	0.120
R	2.04	2.79	0.080	0.110
S	1.15	1.39	0.045	0.055
T	5.97	6.47	0.235	0.255
U	0.80	1.27	0.030	0.050
V	1.15	—	0.045	—
Z	—	2.04	—	0.080

