

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

MAXIMUM RATINGS

Rating	Symbol	BU406	BU407	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 Peak Repetitive Peak (10 ms)	I _C	7 10 15		Adc
Base Current	I _B	4		Adc
Total Device Dissipation, T _C = 25°C Derate above T _C = 25°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	$^\circ\text{C/W}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	70	$^\circ\text{C/W}$
Lead Temperature for Soldering Purposes: 1/8" from Case for 5 Seconds	T_L	275	$^\circ\text{C}$

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

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Sustaining Voltage ⁽¹⁾ ($I_C = 100$ mAdc, $I_B = 0$)	BU406 BU407	$V_{CEO(sus)}$	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}	— — —	— — —	5 0.1 1	mAdc
Emitter Cutoff Current ($V_{EB} = 6$ Vdc, $I_C = 0$)	BU406, BU407	I_{EBO}	—	—	1	mAdc

ON CHARACTERISTICS (1)

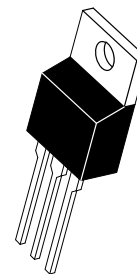
Collector-Emitter Saturation Voltage ($I_C = 5$ Adc, $I_B = 0.5$ Adc)	$V_{CE(sat)}$	—	—	1	Vdc
Base-Emitter Saturation Voltage ($I_C = 5$ Adc, $I_B = 0.5$ Adc)	$V_{BE(sat)}$	—	—	1.2	Vdc
Forward Diode Voltage ($I_{EC} = 5$ Adc) "D" only	V_{EC}	—	—	2	Volts

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

(continued)

BU406
BU407

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



CASE 221A-06
TO-220AB

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 ($V_{CC} = 40\text{ Vdc}$, $I_C = 5\text{ Adc}$, $I_{B1} = I_{B2} = 0.5\text{ Adc}$, $L = 150\text{ }\mu\text{H}$)	t_c	—	—	0.75	μs

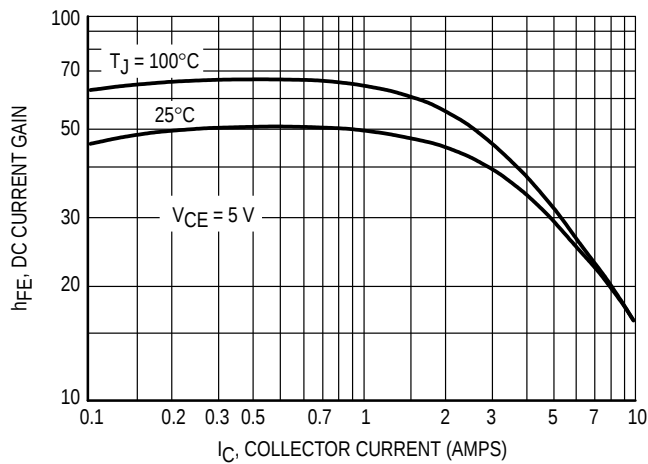


Figure 1. DC Current Gain

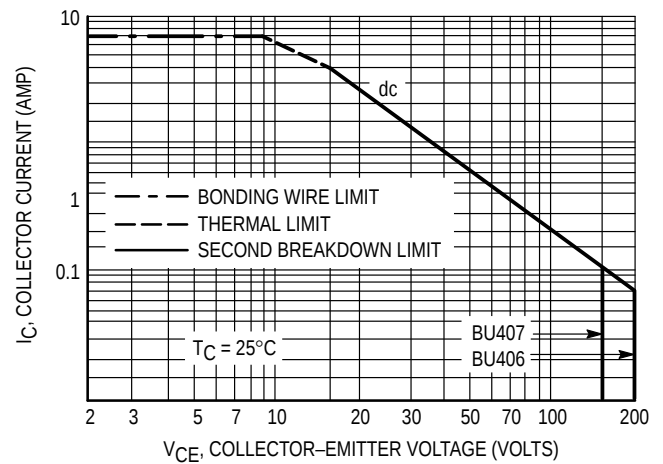
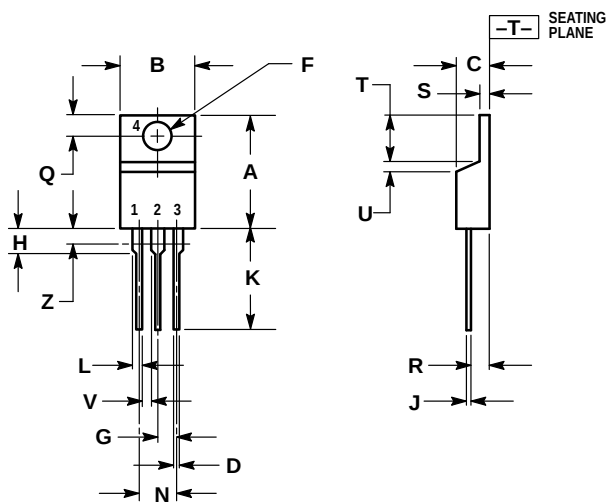


Figure 2. Maximum Rated Forward Bias Safe Operating Area

PACKAGE DIMENSIONS



NOTES:

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

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.405	9.66	10.28
C	0.160	0.190	4.07	4.82
D	0.025	0.035	0.64	0.88
F	0.142	0.147	3.61	3.73
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.018	0.025	0.46	0.64
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	0.190	0.210	4.83	5.33
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.15	1.39
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	—	1.15	—
Z	—	0.080	—	2.04

STYLE 1:

- PIN 1. BASE
 2. COLLECTOR
 3. EMITTER
 4. COLLECTOR

CASE 221A-06
 TO-220AB
 ISSUE Y

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**MOTOROLA****BU406/D**