

BU406, BU407

NPN Power Transistors

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

Features

- High Voltage
- Fast Switching Speed
- Low Saturation Voltage
- These Devices are Pb-Free and are RoHS Compliant*

MAXIMUM RATINGS

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

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

THERMAL CHARACTERISTICS

Characteristics	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	$^\circ\text{C/W}$
Maximum Lead Temperature for Soldering Purposes 1/8" from Case for 5 Seconds	T_L	260	$^\circ\text{C}$

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

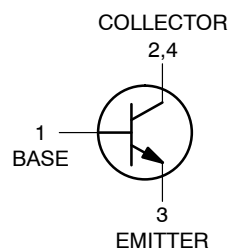


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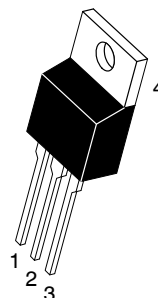
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NPN SILICON POWER TRANSISTORS 7 AMPERES – 60 WATTS 150 AND 200 VOLTS

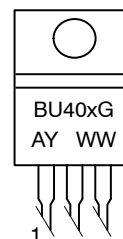
SCHEMATIC



MARKING DIAGRAM



TO-220AB
CASE 221A
STYLE 1



BU40x = Specific Device Code
x = 6 or 7
A = Assembly Location
Y = Year
WW = Work Week
G = Pb-Free Package

ORDERING INFORMATION

Device	Package	Shipping
BU406G	TO-220AB (Pb-Free)	50 Units / Rail
BU407G	TO-220AB (Pb-Free)	50 Units / Rail

BU406, BU407

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Sustaining Voltage (Note 1) ($I_C = 100\text{ mA}$, $I_B = 0$)	$V_{CEO(sus)}$	200 150	– –	– –	Vdc
Collector Cutoff Current ($V_{CE} = \text{Rated } V_{CEV}$, $V_{BE} = 0$) ($V_{CE} = \text{Rated } V_{CEO} + 50\text{ Vdc}$, $V_{BE} = 0$) ($V_{CE} = \text{Rated } V_{CEO} + 50\text{ Vdc}$, $V_{BE} = 0$, $T_C = 150^\circ\text{C}$)	I_{CES}	– – –	– – –	5 0.1 1	mA
Emitter Cutoff Current ($V_{EB} = 6\text{ Vdc}$, $I_C = 0$)	I_{EBO}	–	–	1	mA
ON CHARACTERISTICS (Note 1)					
Collector-Emitter Saturation Voltage ($I_C = 5\text{ A}$, $I_B = 0.5\text{ A}$)	$V_{CE(sat)}$	–	–	1	Vdc
Base-Emitter Saturation Voltage ($I_C = 5\text{ A}$, $I_B = 0.5\text{ A}$)	$V_{BE(sat)}$	–	–	1.2	Vdc
Forward Diode Voltage ($I_{EC} = 5\text{ A}$) "D" only	V_{EC}	–	–	2	Volts
DYNAMIC CHARACTERISTICS					
Current-Gain – Bandwidth Product ($I_C = 0.5\text{ A}$, $V_{CE} = 10\text{ Vdc}$, $f_{test} = 20\text{ MHz}$)	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 ($V_{CC} = 40\text{ Vdc}$, $I_C = 5\text{ A}$, $I_{B1} = I_{B2} = 0.5\text{ A}$, $L = 150\text{ }\mu\text{H}$)	t_c	–	–	0.75	μs

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

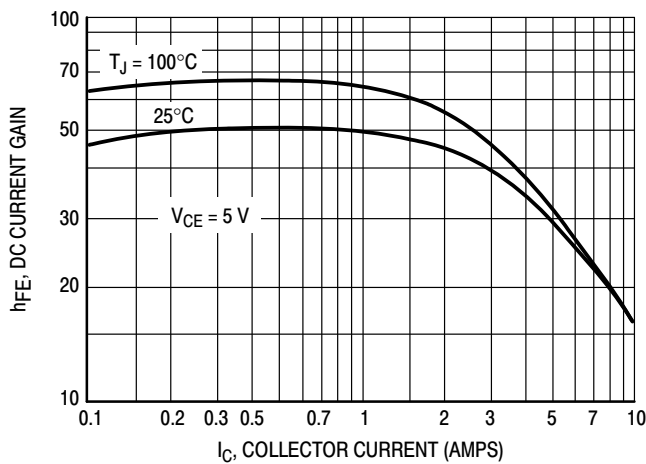


Figure 1. DC Current Gain

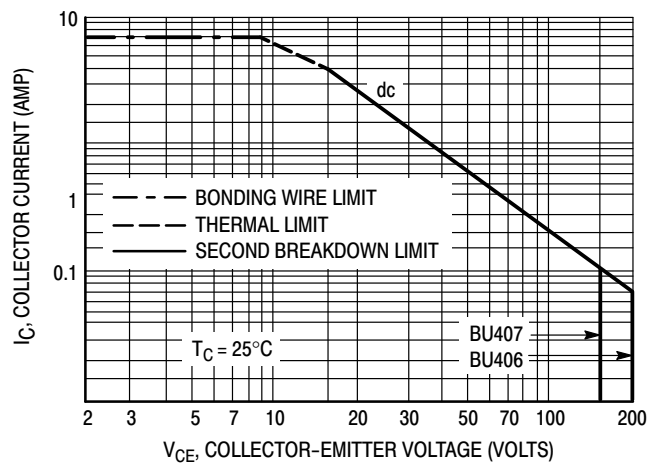
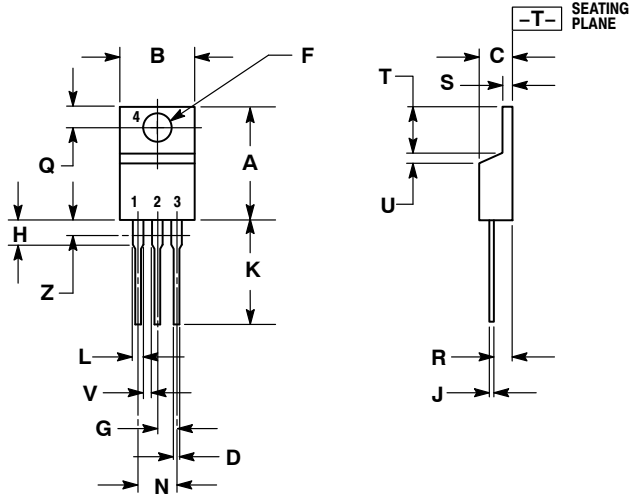


Figure 2. Maximum Rated Forward Bias Safe Operating Area

BU406, BU407

PACKAGE DIMENSIONS

TO-220
CASE 221A-09
ISSUE AG




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	0.036	0.64	0.91
F	0.142	0.161	3.61	4.09
G	0.095	0.105	2.42	2.66
H	0.110	0.161	2.80	4.10
J	0.014	0.025	0.36	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:

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

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