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°C Derate above 25°C		P_D	60 0.48	W W/°C
Operating and Storage Junction Temperature Storage		T_J, T_{stg}	−65 to 150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

Characteristics	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
Maximum Lead Temperature for Soldering Purposes1/8″ from Case for 5 Seconds	T_L	260	°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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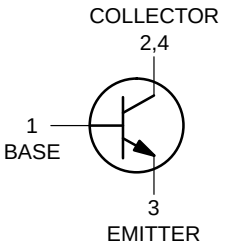
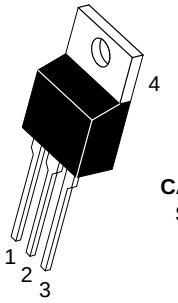
NPN SILICON POWER TRANSISTORS 7 AMPERES − 60 WATTS 150 AND 200 VOLTS

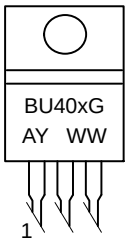
SCHEMATIC





TO−220
CASE 221A
STYLE 1

MARKING DIAGRAM



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

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

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector−Emitter Sustaining Voltage (Note 1) (I_C = 100 mAdc, I_B = 0)	BU406 BU407	$V_{CEO(sus)}$	200 150	− −	− −	Vdc
Collector Cutoff Current (V_{CE} = Rated V_{CEV}, V_{BE} = 0) (V_{CE} = Rated V_{CEO} + 50 Vdc, V_{BE} = 0) (V_{CE} = Rated V_{CEO} + 50 Vdc, V_{BE} = 0, T_C = 150°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 (Note 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
DYNAMIC CHARACTERISTICS						
Current−Gain − Bandwidth Product (I_C = 0.5 Adc, V_{CE} = 10 Vdc, f_{test} = 20 MHz)		f_T	10	−	−	MHz
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 1 MHz)		C_{ob}	−	80	−	pF
SWITCHING CHARACTERISTICS						
Inductive Load Crossover Time (V_{CC} = 40 Vdc, I_C = 5 Adc, I_{B1} = I_{B2} = 0.5 Adc, L = 150 μH)		t_c	−	−	0.75	μs

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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

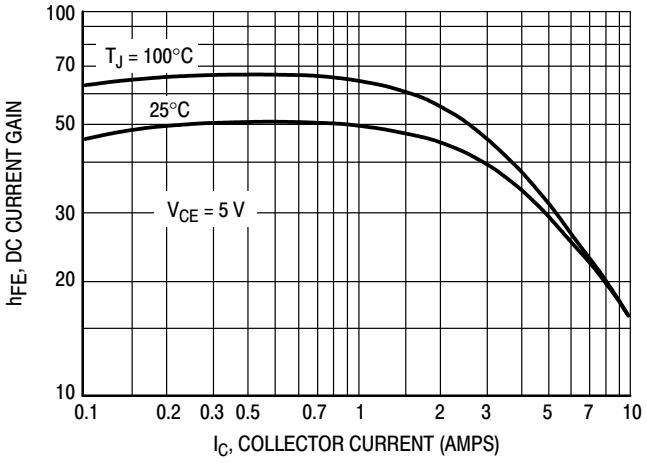


Figure 1. DC Current Gain

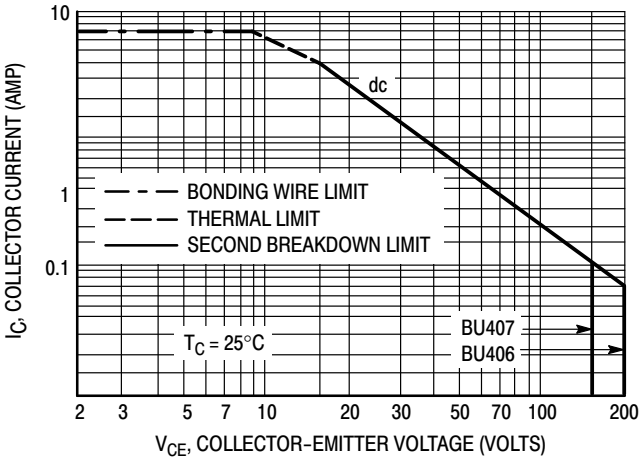


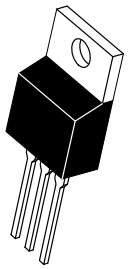
Figure 2. Maximum Rated Forward Bias Safe Operating Area

MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

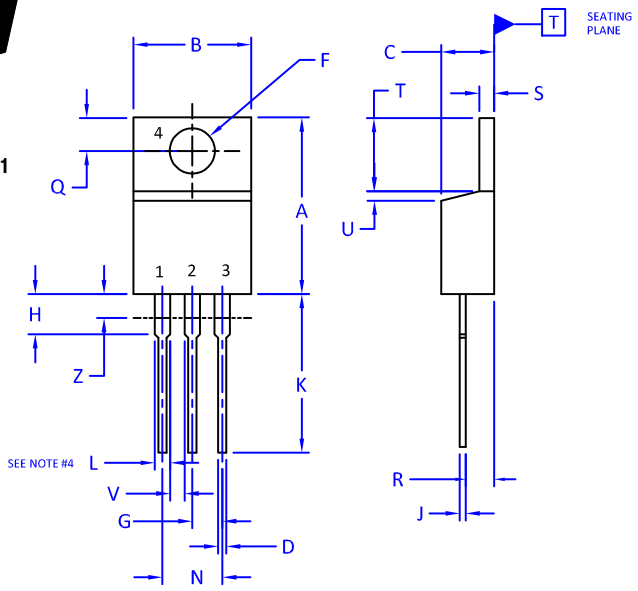
ON Semiconductor®

TO−220
CASE 221A−09
ISSUE AJ

DATE 05 NOV 2019



SCALE 1:1



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 2009.
2. CONTROLLING DIMENSION: INCHES
3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.
4. MAX WIDTH FOR F102 DEVICE = 1.35MM

	INCHES		MILLIMETERS	
DIM	MIN.	MAX.	MIN.	MAX.
A	0.570	0.620	14.48	15.75
B	0.380	0.415	9.66	10.53
C	0.160	0.190	4.07	4.83
D	0.025	0.038	0.64	0.96
F	0.142	0.161	3.60	4.09
G	0.095	0.105	2.42	2.66
H	0.110	0.161	2.80	4.10
J	0.014	0.024	0.36	0.61
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	1.41
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

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

STYLE 3:
PIN 1. CATHODE
2. ANODE
3. GATE
4. ANODE

STYLE 4:
PIN 1. MAIN TERMINAL 1
2. MAIN TERMINAL 2
3. GATE
4. MAIN TERMINAL 2

STYLE 5:
PIN 1. GATE
2. DRAIN
3. SOURCE
4. DRAIN

STYLE 6:
PIN 1. ANODE
2. CATHODE
3. ANODE
4. CATHODE

STYLE 7:
PIN 1. CATHODE
2. ANODE
3. CATHODE
4. ANODE

STYLE 8:
PIN 1. CATHODE
2. ANODE
3. EXTERNAL TRIP/DELAY
4. ANODE

STYLE 9:
PIN 1. GATE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

STYLE 10:
PIN 1. GATE
2. SOURCE
3. DRAIN
4. SOURCE

STYLE 11:
PIN 1. DRAIN
2. SOURCE
3. GATE
4. SOURCE

STYLE 12:
PIN 1. MAIN TERMINAL 1
2. MAIN TERMINAL 2
3. GATE
4. NOT CONNECTED

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