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: 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
- Pb−Free Packages are Available*

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 − Peak (10 ms)		I_C	7 10 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

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	2675	°C

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

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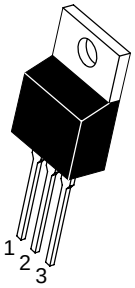
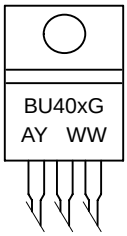
NPN SILICON POWER TRANSISTORS 7 AMPERES − 60 WATTS 150 AND 200 VOLTS



TO−220AB
CASE 221A−09
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
BU406	TO−220AB	50 Units / Rail
BU406G	TO−220AB (Pb−Free)	50 Units / Rail
BU407	TO−220AB	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

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

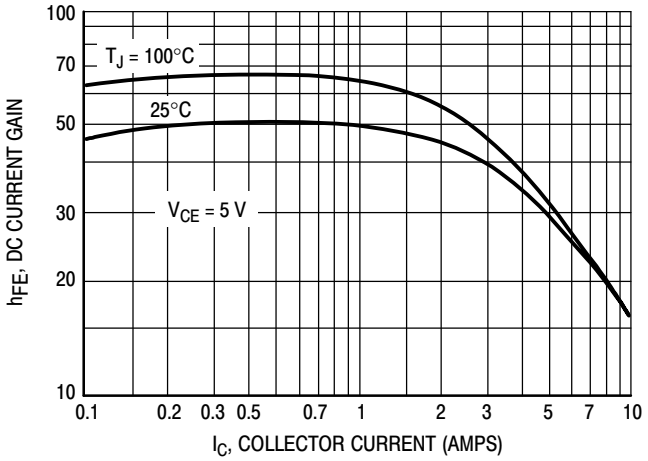


Figure 1. DC Current Gain

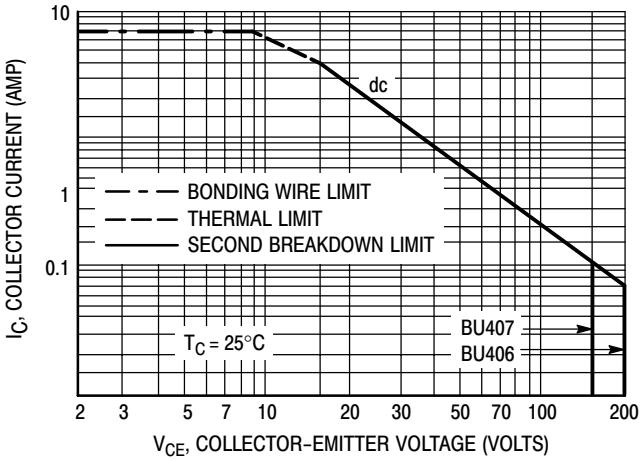
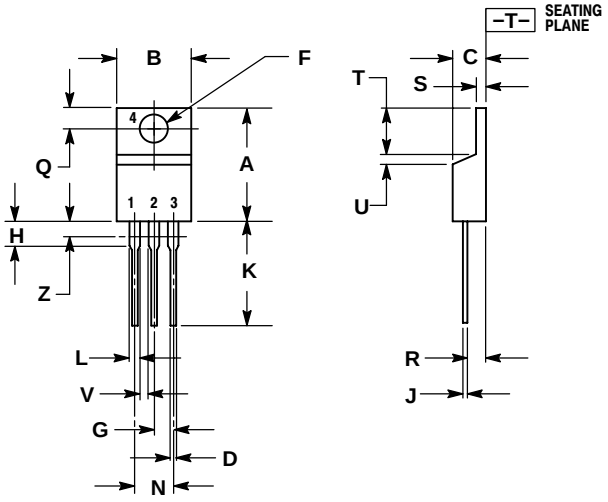


Figure 2. Maximum Rated Forward Bias Safe Operating Area

PACKAGE DIMENSIONS

TO−220AB
CASE 221A−09
ISSUE AA



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.

	INCHES		MILLIMETERS	
DIM	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

PUBLICATION ORDERING INFORMATION

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