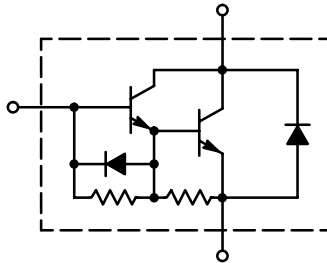


NPN Darlington Power Transistor

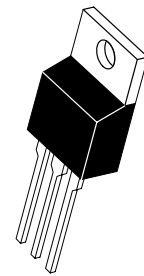
This Darlington transistor is a high voltage, high speed device for use in horizontal deflection circuits in TV's and CRT's.

- High Voltage:
 $V_{CEV} = 330$ or 400 V
- Fast Switching Speed:
 $t_c = 1.0 \mu s$ (max)
- Low Saturation Voltage:
 $V_{CE(sat)} = 1.5$ V (max)
- Packaged in JEDEC TO-220AB
- Damper Diode V_F is specified.
 $V_F = 2.0$ V (max)



BU806

**8.0 AMPERE
DARLINGTON
NPN POWER
TRANSISTORS
60 WATTS
200 VOLTS**



**CASE 221A-09
TO-220AB**

MAXIMUM RATINGS

Rating	Symbol	BU806	Unit
Collector–Emitter Voltage	V_{CEO}	200	Vdc
Collector–Emitter Voltage	V_{CEV}	400	Vdc
Collector–Base Voltage	V_{CBO}	400	Vdc
Emitter–Base Voltage	V_{EBO}	6.0	Vdc
Collector Current — Continuous — Peak	I_C	8.0 15	Adc
Emitter–Collector Diode Current	I_F	10	Adc
Base Current	I_B	2.0	Adc
Total Device Dissipation, $T_C = 25^\circ C$ Derate above $T_C = 25^\circ C$	P_D	60 0.48	Watts W/ $^\circ C$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to 150	$^\circ C$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.08	$^\circ C/W$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	70	$^\circ C/W$
Lead Temperature for Soldering Purposes, 1/8" from Case for 5.0 Seconds	T_L	275	$^\circ C$

BU806

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Sustaining Voltage (1) ($I_C = 100\text{ mAdc}$, $I_B = 0$)	$V_{CE(sus)}$	200	—	—	Vdc
Collector Cutoff Current ($V_{CE} = \text{Rated } V_{CBO}$, $V_{BE} = 0$)	I_{CES}	—	—	100	μAdc
Collector Cutoff Current ($V_{CE} = \text{Rated } V_{CEV}$, $V_{BE(off)} = 6.0\text{ Vdc}$)	I_{CEV}	—	—	100	μAdc
Emitter Cutoff Current ($V_{EB} = 6.0\text{ Vdc}$, $I_C = 0$)	I_{EBO}	—	—	3.0	mAdc

ON CHARACTERISTICS (1)

Collector–Emitter Saturation Voltage ($I_C = 5.0\text{ Adc}$, $I_B = 50\text{ mAdc}$)	$V_{CE(sat)}$	—	—	1.5	Vdc
Base–Emitter Saturation Voltage ($I_C = 5.0\text{ Adc}$, $I_B = 50\text{ mAdc}$)	$V_{BE(sat)}$	—	—	2.4	Vdc
Emitter–Collector Diode Forward Voltage ($I_F = 4.0\text{ Adc}$)	V_F	—	—	2.0	Vdc

SWITCHING CHARACTERISTICS

Turn–On Time	(Resistive Load, $V_{CC} = 100\text{ Vdc}$, $I_C = 5.0\text{ Adc}$, $I_{B1} = 50\text{ mAdc}$, $I_{B2} = 500\text{ mAdc}$)	t_{on}	—	0.35	—	μs
Storage Time		t_s	—	0.55	—	μs
Fall Time		t_f	—	0.20	—	μs
Crossover Time ($I_C = 5.0\text{ Adc}$, $I_{B1} = 50\text{ mAdc}$, $V_{BE(off)} = 4.0\text{ Vdc}$, $V_{clamp} = 200\text{ Vdc}$, $L = 500\text{ }\mu\text{H}$)		t_c	—	0.40	1.0	μs

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

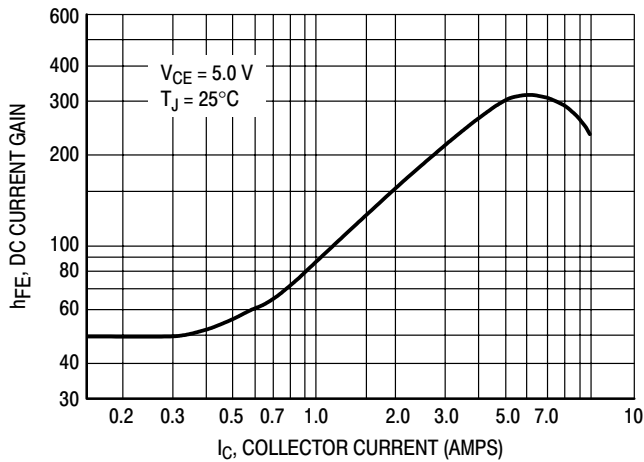


Figure 1. DC Current Gain

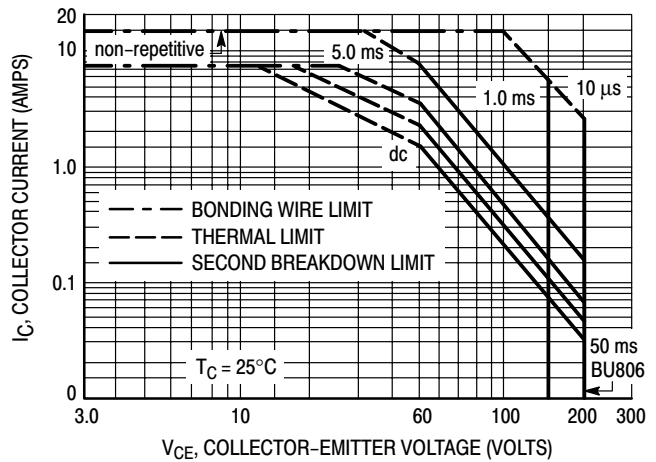
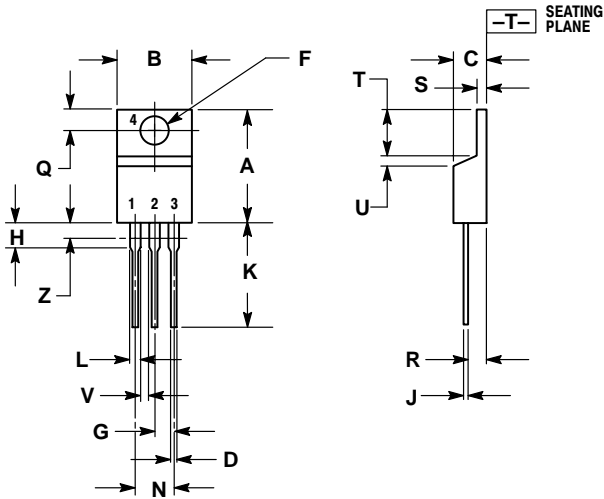


Figure 2. Safe Operating Area (FBSOA)

BU806

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.

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

ON Semiconductor and  are trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer.

PUBLICATION ORDERING INFORMATION

NORTH AMERICA Literature Fulfillment:

Literature Distribution Center for ON Semiconductor
 P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: ONlit@hibbertco.com
 Fax Response Line: 303-675-2167 or 800-344-3810 Toll Free USA/Canada

N. American Technical Support: 800-282-9855 Toll Free USA/Canada

EUROPE: LDC for ON Semiconductor – European Support

German Phone: (+1) 303-308-7140 (Mon-Fri 2:30pm to 7:00pm CET)
Email: ONlit-german@hibbertco.com
French Phone: (+1) 303-308-7141 (Mon-Fri 2:00pm to 7:00pm CET)
Email: ONlit-french@hibbertco.com
English Phone: (+1) 303-308-7142 (Mon-Fri 12:00pm to 5:00pm GMT)
Email: ONlit@hibbertco.com

EUROPEAN TOLL-FREE ACCESS*: 00-800-4422-3781
 *Available from Germany, France, Italy, UK, Ireland

CENTRAL/SOUTH AMERICA:

Spanish Phone: 303-308-7143 (Mon-Fri 8:00am to 5:00pm MST)
Email: ONlit-spanish@hibbertco.com
Toll-Free from Mexico: Dial 01-800-288-2872 for Access –
 then Dial 866-297-9322

ASIA/PACIFIC: LDC for ON Semiconductor – Asia Support
Phone: 1-303-675-2121 (Tue-Fri 9:00am to 1:00pm, Hong Kong Time)

Toll Free from Hong Kong & Singapore:
001-800-4422-3781

Email: ONlit-asia@hibbertco.com

JAPAN: ON Semiconductor, Japan Customer Focus Center
 4-32-1 Nishi-Gotanda, Shinagawa-ku, Tokyo, Japan 141-0031

Phone: 81-3-5740-2700
Email: r14525@onsemi.com

ON Semiconductor Website: <http://onsemi.com>

For additional information, please contact your local Sales Representative.