

BUX85G

SWITCHMODE NPN Silicon Power Transistors

The BUX85G is designed for high voltage, high speed power switching applications like converters, inverters, switching regulators, motor control systems.

Features

- $V_{CEO(sus)}$ – 450 V
- $V_{CES(sus)}$ – 1000 V
- Fall time = 0.3 μ s (typ) at $I_C = 1.0$ A
- $V_{CE(sat)}$ = 1.0 V (max) at $I_C = 1.0$ A, $I_B = 0.2$ A
- These Devices are Pb-Free and are RoHS Compliant*

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CEO(sus)}$	450	Vdc
Collector-Emitter Voltage	V_{CES}	1000	Vdc
Emitter-Base Voltage	V_{EBO}	5	Vdc
Collector Current – Continuous – Peak (Note 1)	I_C I_{CM}	2 3.0	Adc
Base Current – Continuous – Peak (Note 1)	I_B I_{BM}	0.75 1.0	Adc
Reverse Base Current – Peak	I_{BM}	1	Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	50 400	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.5	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62.5	$^\circ\text{C}/\text{W}$
Maximum Lead Temperature for Soldering Purposes 1/8" from Case for 5 Seconds	T_L	275	$^\circ\text{C}$

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.

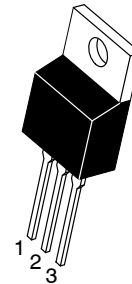
1. Pulse Test: Pulse Width = 5 ms, Duty Cycle \leq 10%.



ON Semiconductor®

<http://onsemi.com>

**2.0 AMPERES
POWER TRANSISTOR
NPN SILICON
450 VOLTS, 50 WATTS**



TO-220AB
CASE 221A-09
STYLE 1

MARKING DIAGRAM



BUX85 = Device Code
A = Assembly Location
Y = Year
WW = Work Week
G = Pb-Free Package

ORDERING INFORMATION

Device	Package	Shipping
BUX85G	TO-220 (Pb-Free)	50 Units / Rail

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

BUX85G

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

Characteristic	Symbol	Min	Typ	Max	Unit
----------------	--------	-----	-----	-----	------

OFF CHARACTERISTICS (Note 2)

Collector–Emitter Sustaining Voltage ($I_C = 100\text{ mA}$, $L = 25\text{ mH}$) See Figure 1	$V_{CEO(sus)}$	450	–	–	Vdc
Collector Cutoff Current ($V_{CES} = \text{Rated Value}$) ($V_{CES} = \text{Rated Value}$, $T_C = 125^\circ\text{C}$)	I_{CES}	–	–	0.2 1.5	mAdc
Emitter Cutoff Current ($V_{EB} = 5\text{ Vdc}$, $I_C = 0$)	I_{EBO}	–	–	1	mAdc

ON CHARACTERISTICS (Note 2)

DC Current Gain ($I_C = 0.1\text{ Adc}$, $V_{CE} = 5\text{ V}$)	h_{FE}	30	50	–	–
Collector–Emitter Saturation Voltage ($I_C = 0.3\text{ Adc}$, $I_B = 30\text{ mAdc}$) ($I_C = 1\text{ Adc}$, $I_B = 200\text{ mAdc}$)	$V_{CE(sat)}$	–	–	0.8 1	Vdc
Base–Emitter Saturation Voltage ($I_C = 1\text{ Adc}$, $I_B = 0.2\text{ Adc}$)	$V_{BE(sat)}$	–	–	1.1	Vdc

DYNAMIC CHARACTERISTICS

Current–Gain – Bandwidth Product ($I_C = 500\text{ mAdc}$, $V_{CE} = 1.0\text{ Vdc}$, $f = 1\text{ MHz}$)	f_T	4	–	–	MHz
--	-------	---	---	---	-----

SWITCHING CHARACTERISTICS

Turn-on Time	$V_{CC} = 250\text{ Vdc}$, $I_C = 1\text{ A}$ $I_{B1} = 0.2\text{ A}$, $I_{B2} = 0.4\text{ A}$ See Figure 2	t_{on}	–	0.3	0.5	μs
Storage Time		t_s	–	2	3.5	μs
Fall Time		t_f	–	0.3	–	μs
Fall Time		Same above cond. at $T_C = 95^\circ\text{C}$	t_f	–	–	1.4

2. Pulse Test: PW = 300 μs , Duty Cycle $\leq 2\%$.

BUX85G

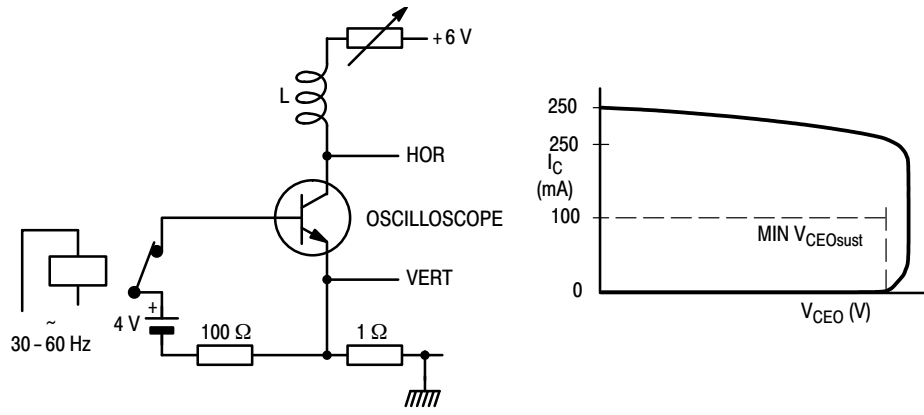


Figure 1. Test Circuit for $V_{CEOsust}$

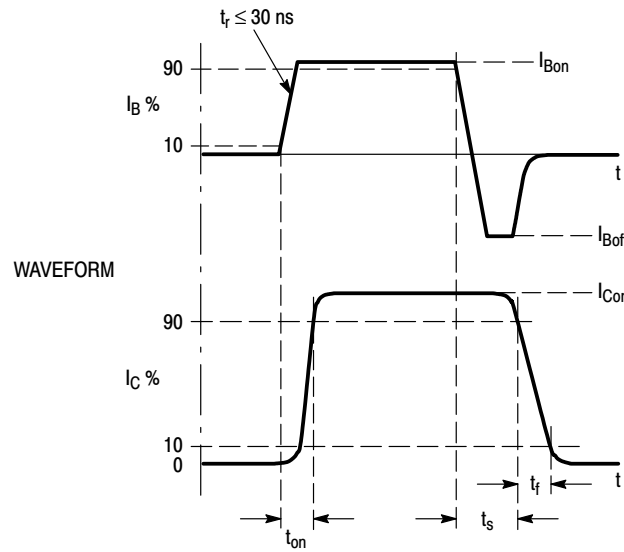
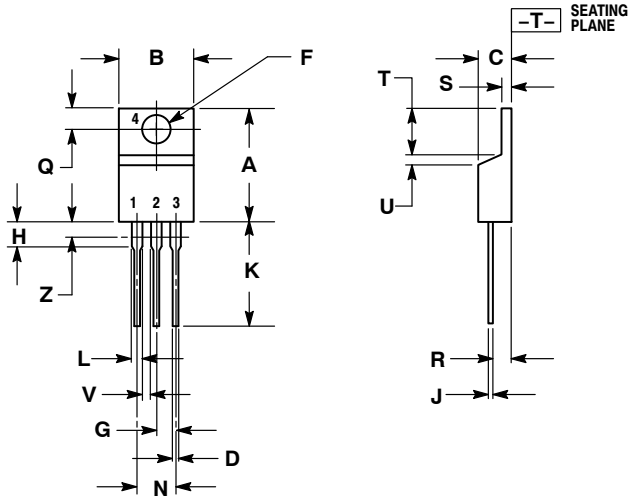


Figure 2. Switching Times/Test Circuit

BUX85G

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:

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

ON Semiconductor and are registered 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. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

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: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81-3-5817-1050

ON Semiconductor Website: www.onsemi.com
Order Literature: <http://www.onsemi.com/orderlit>
For additional information, please contact your local Sales Representative