

BUX85G

Switch-mode 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

- 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	I_C	2	Adc
Collector Current – Peak (Note 1)	I_{CM}	3.0	Adc
Base Current – Continuous	I_B	0.75	Adc
Base Current – Peak (Note 1)	I_{BM}	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 0.4	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +150	$^\circ\text{C}$

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.

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

THERMAL CHARACTERISTICS

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

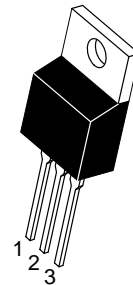
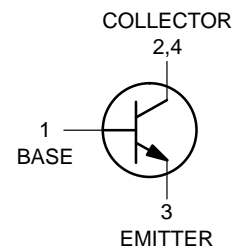
*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



ON Semiconductor®

www.onsemi.com

2.0 AMPERES POWER TRANSISTOR NPN SILICON 450 VOLTS, 50 WATTS



**TO-220
CASE 221A
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

BUX85G

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

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

OFF CHARACTERISTICS (Note 2)

Collector–Emitter Sustaining Voltage (I _C = 100 mAdc, (L = 25 mH) See Figure 1	V _{CEO(sus)}	450	–	–	Vdc
Collector Cutoff Current (V _{CEs} = Rated Value) (V _{CEs} = Rated Value, T _C = 125°C)	I _{CES}	–	–	0.2 1.5	mAdc
Emitter Cutoff Current (V _{EB} = 5 Vdc, I _C = 0)	I _{EBO}	–	–	1	mAdc

ON CHARACTERISTICS (Note 2)

DC Current Gain (I _C = 0.1 Adc, V _{CE} = 5 V)	h _{FE}	30	50	–	–
Collector–Emitter Saturation Voltage (I _C = 0.3 Adc, I _B = 30 mAdc) (I _C = 1 Adc, I _B = 200 mAdc)	V _{CE(sat)}	–	–	0.8 1	Vdc
Base–Emitter Saturation Voltage (I _C = 1 Adc, I _B = 0.2 Adc)	V _{BE(sat)}	–	–	1.1	Vdc

DYNAMIC CHARACTERISTICS

Current–Gain – Bandwidth Product (I _C = 500 mAdc, V _{CE} = 1.0 Vdc, f = 1 MHz)	f _T	4	–	–	MHz
---	----------------	---	---	---	-----

SWITCHING CHARACTERISTICS

Turn–on Time	V _{CC} = 250 Vdc, I _C = 1 A I _{B1} = 0.2 A, I _{B2} = 0.4 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°C	t _f	–	–	1.4

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.

2. Pulse Test: PW = 300 μs, Duty Cycle ≤2%.

BUX85G

TYPICAL CHARACTERISTICS

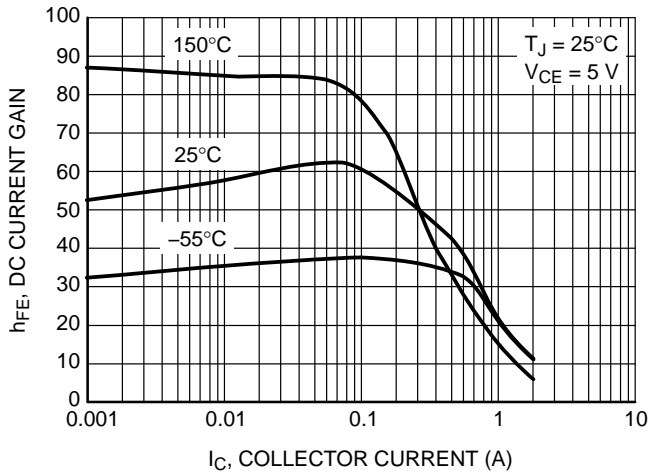


Figure 1. DC Current Gain

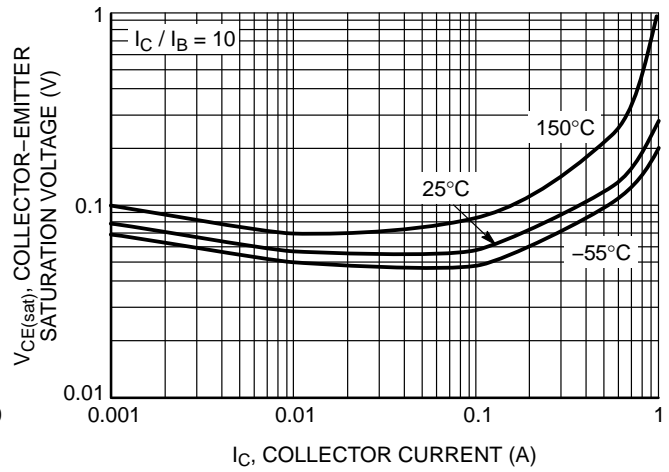


Figure 2. $V_{CE(sat)}$, Collector Emitter Saturation Voltage

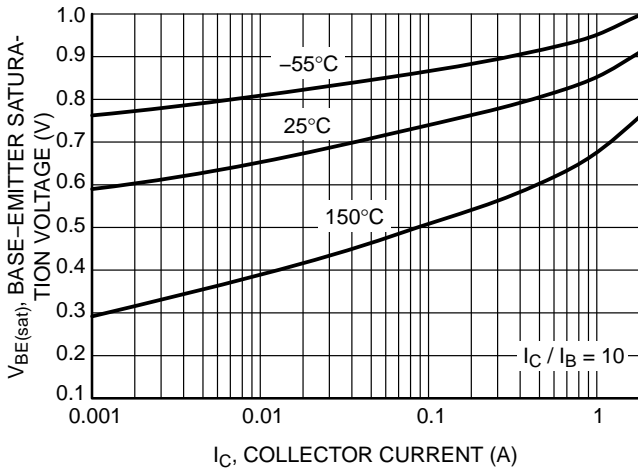


Figure 3. $V_{BE(sat)}$, Base Emitter Saturation Voltage

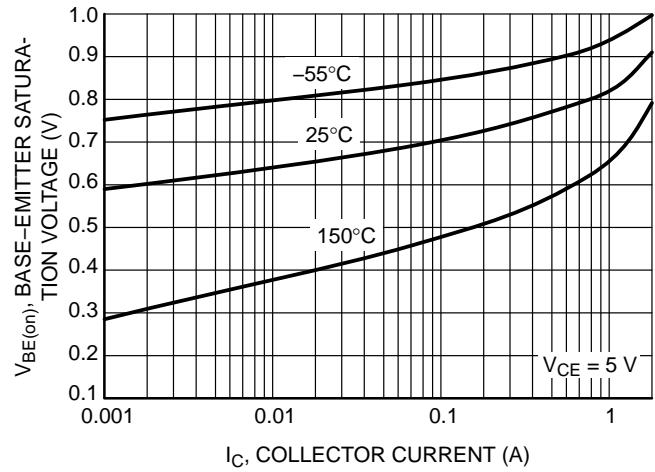


Figure 4. $V_{BE(on)}$, Base Emitter On Voltage

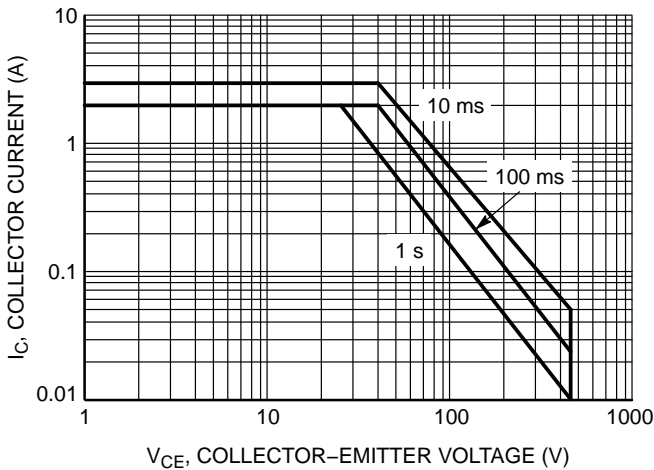


Figure 5. Safe Operating Area (SOA)

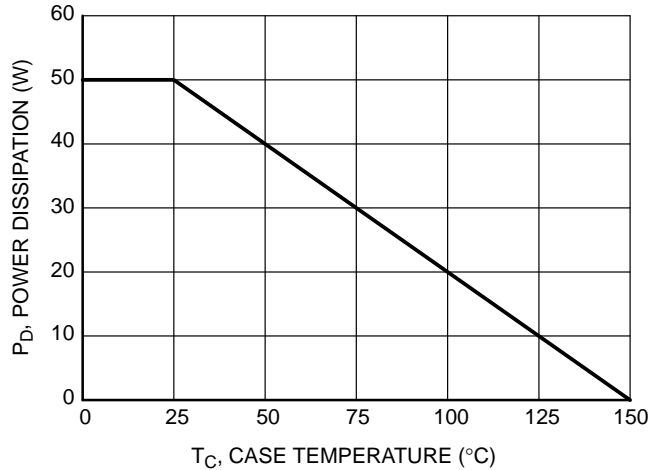


Figure 6. Power Derating

BUX85G

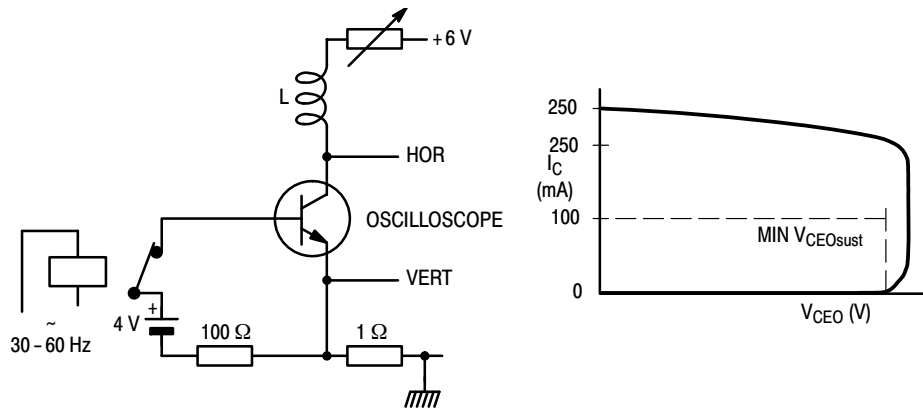


Figure 1. Test Circuit for $V_{CEOsust}$

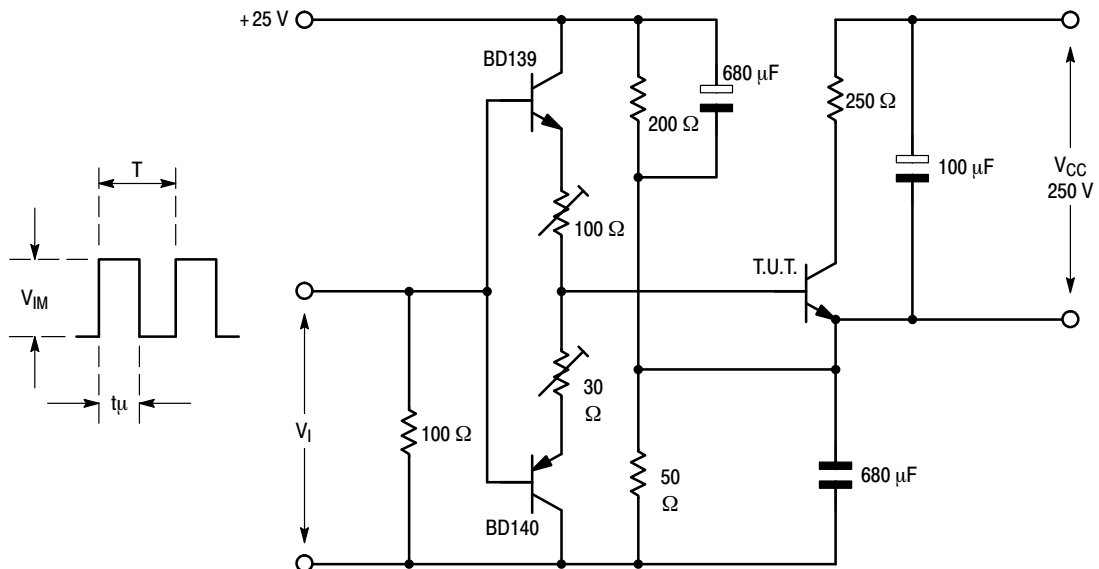
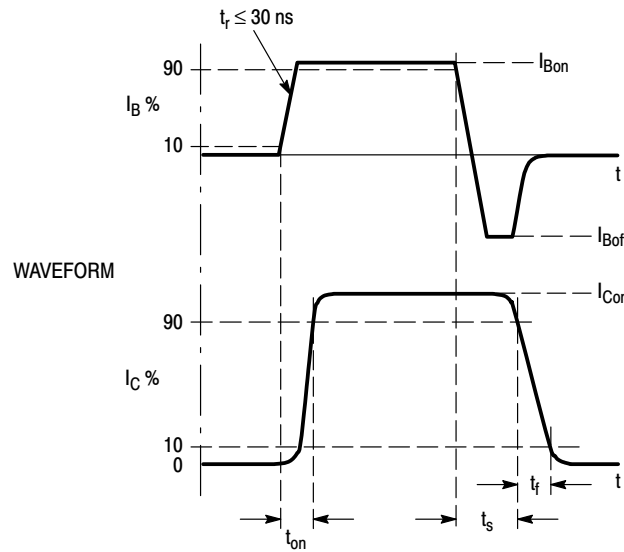


Figure 2. Switching Times/Test Circuit

onsemi, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** 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. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** 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. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** 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 **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:



Technical Library: www.onsemi.com/design/resources/technical-documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support

For additional information, please contact your local Sales Representative at www.onsemi.com/support/sales

Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

-  [View BUX85 on WIN SOURCE](#)
-  [ON Semiconductor Information](#)

Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management