

Complementary Silicon Plastic Power Darlington

BDV65B (NPN), BDV64B (PNP)

...for use as output devices in complementary general purpose amplifier applications.

Features

- High DC Current Gain – HFE = 1000 (min) @ 5 Adc
- Monolithic Construction with Built-in Base Emitter Shunt Resistors
- These are Pb-Free Devices*

MAXIMUM RATINGS

Rating	Symbol	Max	Unit
Collector-Emitter Voltage	V_{CEO}	100	Vdc
Collector-Base Voltage	V_{CB}	100	Vdc
Emitter-Base Voltage	V_{EB}	5.0	Vdc
Collector Current – Continuous – Peak	I_C	10 20	Adc
Base Current	I_B	0.5	Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	125 1.0	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +150	$^\circ\text{C}$

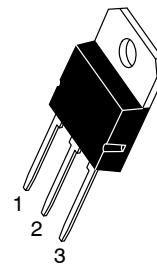
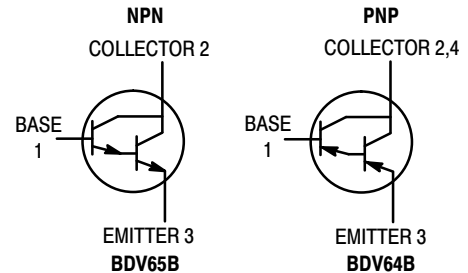
THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.0	$^\circ\text{C/W}$

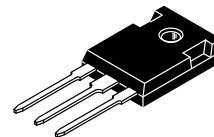
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

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

10 AMPERE DARLINGTON COMPLEMENTARY SILICON POWER TRANSISTORS 60–80–100–120 VOLTS, 125 WATTS



SOT-93
(TO-218)
CASE 340D



TO-247
CASE 340L
STYLE 3

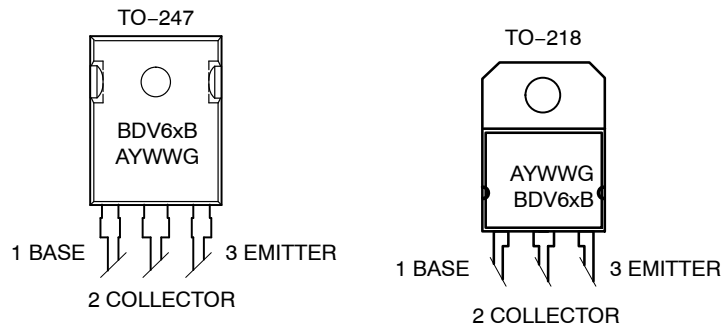
NOTE: Effective June 2012 this device will be available only in the TO-247 package. Reference FPCN# 16827.

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 5 of this data sheet.

BDV65B (NPN), BDV64B (PNP)

MARKING DIAGRAMS



BDV6xB = Device Code
x = 4 or 5
A = Assembly Location
Y = Year
WW = Work Week
G = Pb-Free Package

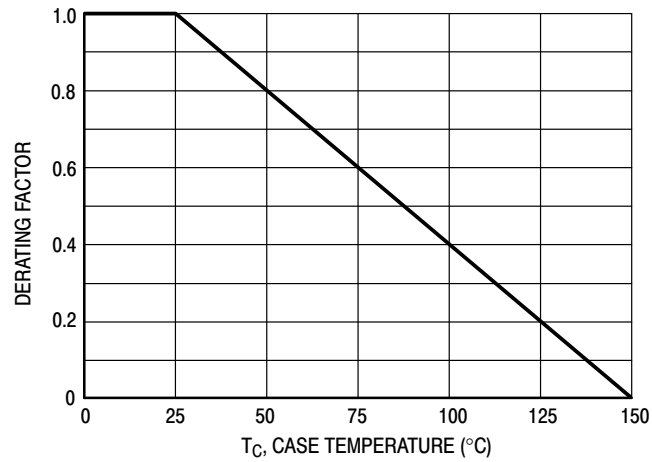


Figure 1. Power Derating

BDV65B (NPN), BDV64B (PNP)

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector–Emitter Sustaining Voltage (1) ($I_C = 30 \text{ mAdc}$, $I_B = 0$)	$V_{CEO(sus)}$	100	–	Vdc
Collector Cutoff Current ($V_{CE} = 50 \text{ Vdc}$, $I_B = 0$)	I_{CEO}	–	1.0	mAdc
Collector Cutoff Current ($V_{CB} = 100 \text{ Vdc}$, $I_E = 0$)	I_{CBO}	–	0.4	mAdc
Collector Cutoff Current ($V_{CB} = 50 \text{ Vdc}$, $I_E = 0$, $T_C = 150^\circ\text{C}$)	I_{CBO}	–	2.0	mAdc
Emitter Cutoff Current ($V_{BE} = 5.0 \text{ Vdc}$, $I_C = 0$)	I_{EBO}	–	5.0	mAdc

ON CHARACTERISTICS

DC Current Gain ($I_C = 5.0 \text{ Adc}$, $V_{CE} = 4.0 \text{ Vdc}$)	h_{FE}	1000	–	–
Collector–Emitter Saturation Voltage ($I_C = 5.0 \text{ Adc}$, $I_B = 0.02 \text{ Adc}$)	$V_{CE(sat)}$	–	2.0	Vdc
Base–Emitter Saturation Voltage ($I_C = 5.0 \text{ Adc}$, $V_{CE} = 4.0 \text{ Vdc}$)	$V_{BE(on)}$	–	2.5	Vdc

BDV65B (NPN), BDV64B (PNP)

NPN

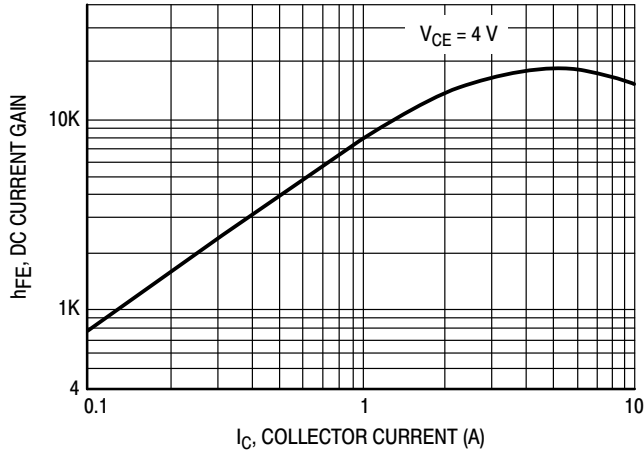


Figure 2. DC Current Gain

PNP

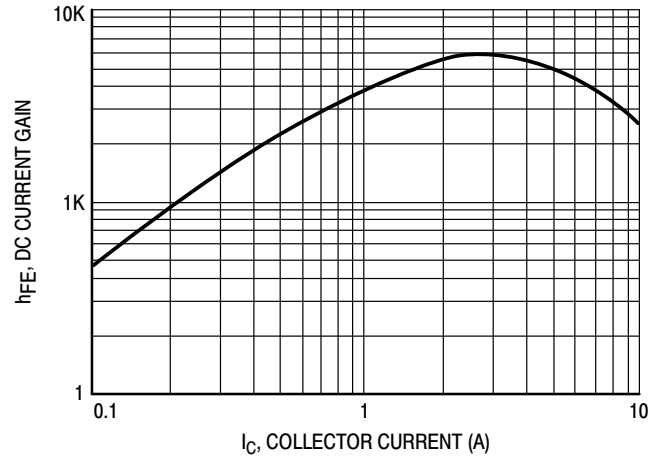


Figure 3. DC Current Gain

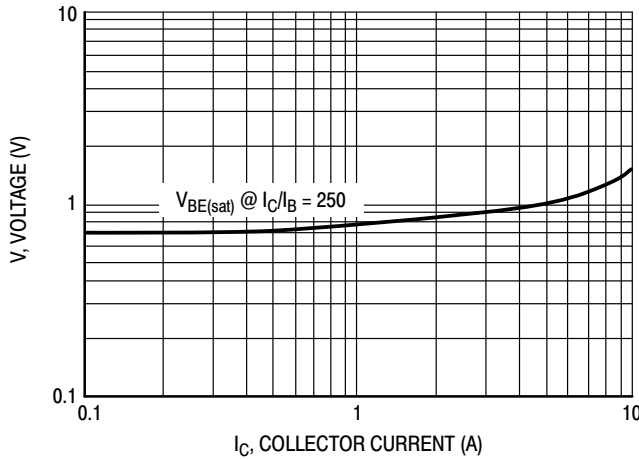


Figure 4. "On" Voltages

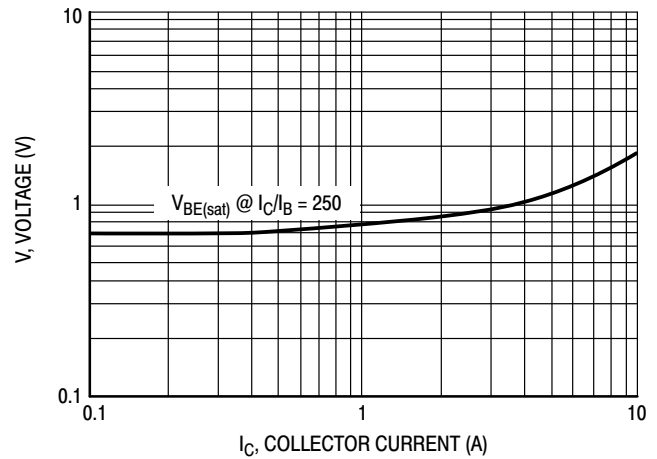


Figure 5. "On" Voltages

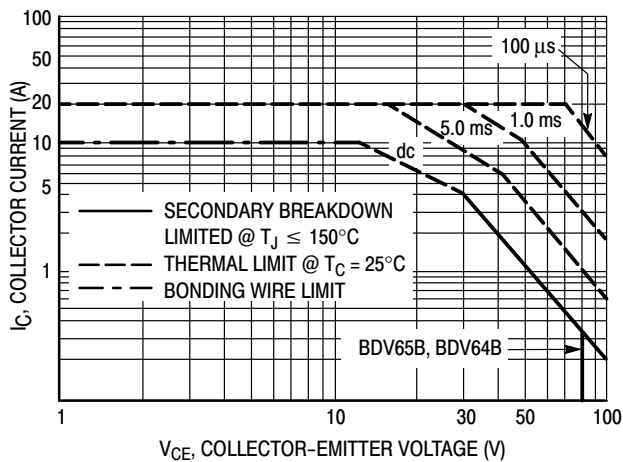


Figure 6. Active Region Safe Operating Area

There are two limitations on the power handling ability of a transistor: average junction temperature and second breakdown. Safe operating area curves indicate $I_C - V_{CE}$ limits of the transistor that must be observed for reliable operation i.e., the transistor must not be subjected to greater dissipation than the curves indicate.

The data of Figure 6 is based on $T_{J(pk)} = 150^\circ\text{C}$, T_C is variable depending on conditions. Second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(pk)} \leq 150^\circ\text{C}$. $T_{J(pk)}$ may be calculated from the data in Figure 7. At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

BDV65B (NPN), BDV64B (PNP)

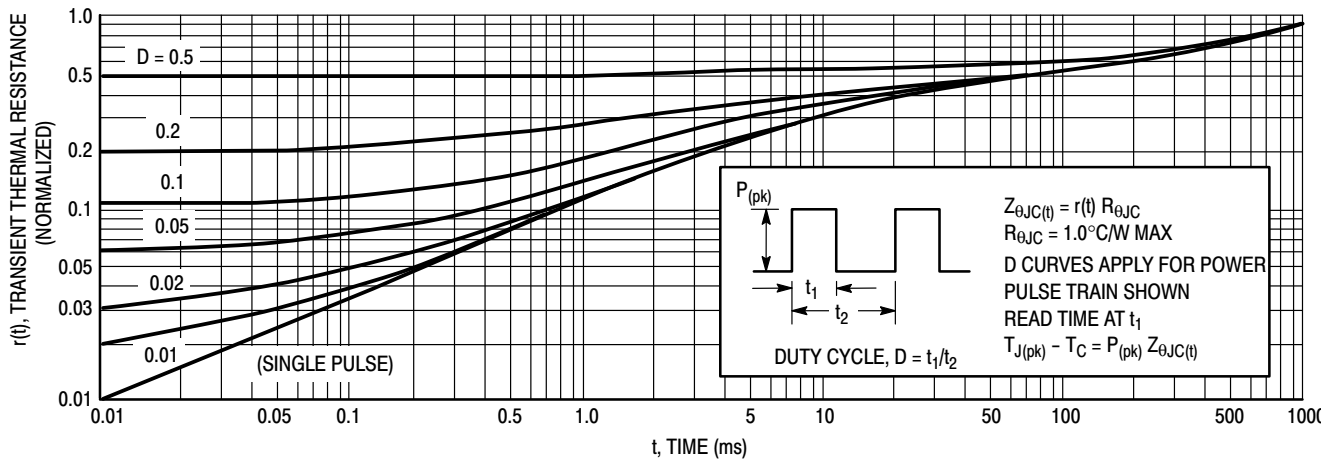


Figure 7. Thermal Response

ORDERING INFORMATION

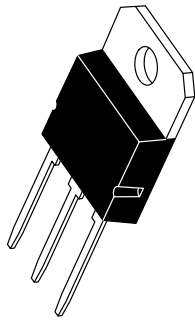
Device Order Number	Package Type	Shipping [†]
BDV64BG	TO-247 (Pb-Free)	30 Units / Rail

DISCONTINUED (Note 1)

BDV65B	TO-218	30 Units / Rail
BDV65BG	TO-247 (Pb-Free)	30 Units / Rail
BDV64B	TO-218	30 Units / Rail

[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

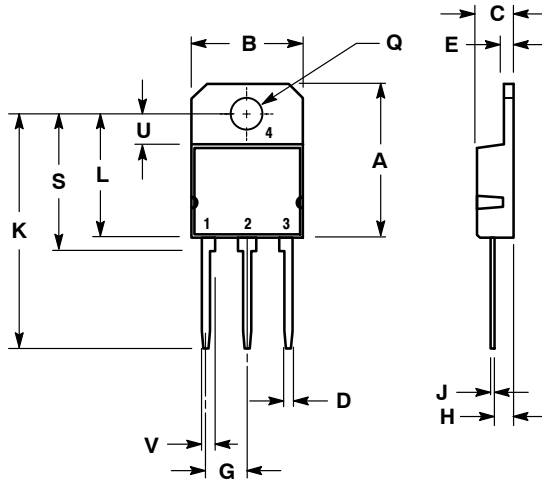
1. **DISCONTINUED:** These devices are not recommended for new design. Please contact your **onsemi** representative for information. The most current information on these devices may be available on www.onsemi.com.



SCALE 1:1

SOT-93 (TO-218)
CASE 340D-02
ISSUE E

DATE 03 JAN 2002



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

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

- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	---	20.35	---	0.801
B	14.70	15.20	0.579	0.598
C	4.70	4.90	0.185	0.193
D	1.10	1.30	0.043	0.051
E	1.17	1.37	0.046	0.054
G	5.40	5.55	0.213	0.219
H	2.00	3.00	0.079	0.118
J	0.50	0.78	0.020	0.031
K	31.00 REF		1.220 REF	
L	---	16.20	---	0.638
Q	4.00	4.10	0.158	0.161
S	17.80	18.20	0.701	0.717
U	4.00 REF		0.157 REF	
V	1.75 REF		0.069	

GENERIC
MARKING DIAGRAM*

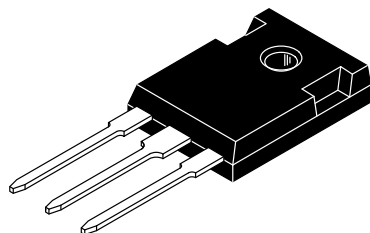


A = Assembly Location
Y = Year
WW = Work Week
XXXXX = Device Code

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

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DESCRIPTION:	SOT-93 (TO-218)	PAGE 1 OF 1

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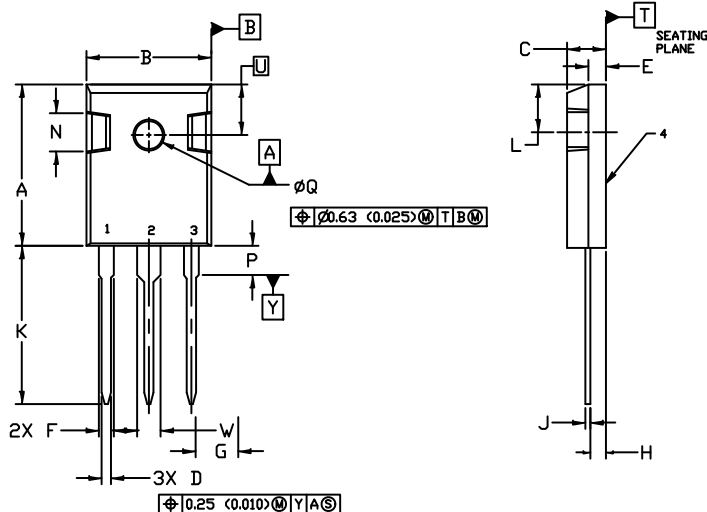
SCALE 1:1

TO-247
CASE 340L
ISSUE G

DATE 06 OCT 2021

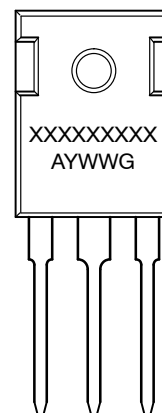
NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER



	MILLIMETERS		INCHES	
DIM	MIN.	MAX.	MIN.	MAX.
A	20.32	21.08	0.800	0.830
B	15.75	16.26	0.620	0.640
C	4.70	5.30	0.185	0.209
D	1.00	1.40	0.040	0.055
E	1.90	2.60	0.075	0.102
F	1.65	2.13	0.065	0.084
G	5.45	BSC	0.215	BSC
H	1.50	2.49	0.059	0.098
J	0.40	0.80	0.016	0.031
K	19.81	20.83	0.780	0.820
L	5.40	6.20	0.212	0.244
N	4.32	5.49	0.170	0.216
P	----	4.50	----	0.177
Q	3.55	3.65	0.140	0.144
U	6.15	BSC	0.242	BSC
W	2.87	3.12	0.113	0.123

GENERIC MARKING DIAGRAM*



- | | | | |
|----------------|------------------------|--------------|--------------|
| STYLE 1: | STYLE 2: | STYLE 3: | STYLE 4: |
| PIN 1. GATE | PIN 1. ANODE | PIN 1. BASE | PIN 1. GATE |
| 2. DRAIN | 2. CATHODE (S) | 2. COLLECTOR | 2. COLLECTOR |
| 3. SOURCE | 3. ANODE 2 | 3. EMITTER | 3. EMITTER |
| 4. DRAIN | 4. CATHODES (S) | 4. COLLECTOR | 4. COLLECTOR |
| | | | |
| STYLE 5: | STYLE 6: | | |
| PIN 1. CATHODE | PIN 1. MAIN TERMINAL 1 | | |
| 2. ANODE | 2. MAIN TERMINAL 2 | | |
| 3. GATE | 3. GATE | | |
| 4. ANODE | 4. MAIN TERMINAL 2 | | |

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

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "•", may or may not be present. Some products may not follow the Generic Marking.

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DESCRIPTION:	TO-247	PAGE 1 OF 1

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