BDV65B (NPN), BDV64B (PNP)

Complementary Silicon Plastic Power Darlingtons

. . . 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°C Derate above 25°C	P_D	125 1.0	W W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction−to−Case	$R_{\theta JC}$	1.0	°C/W

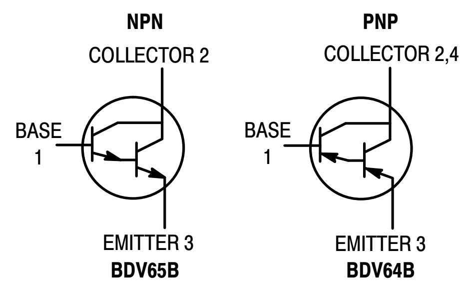
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

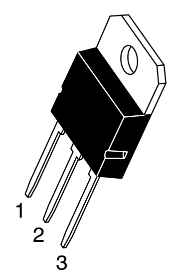
*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

ON Semiconductor®

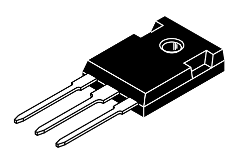
http://onsemi.com

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





SOT−93 (TO−218) CASE 340D



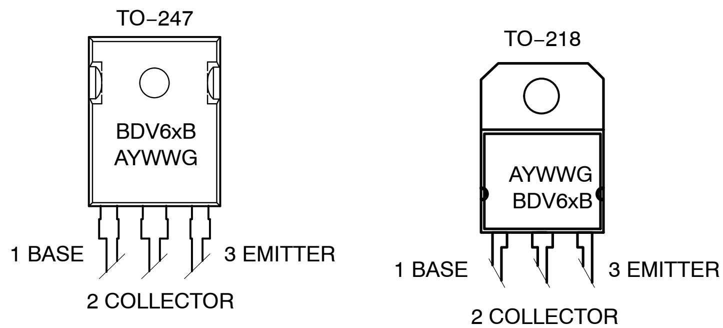
TO−247 CASE 340L STYLE 3

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 2 of this data sheet.

MARKING DIAGRAMS



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

ORDERING INFORMATION

Device Order Number	Package Type	Shipping
BDV65BG	TO−218 (Pb−Free)	30 Units / Rail
BDV64BG	TO−218 (Pb−Free)	30 Units / Rail
BDV65BG	TO−247 (Pb−Free)	30 Units / Rail
BDV64BG	TO−247 (Pb−Free)	30 Units / Rail

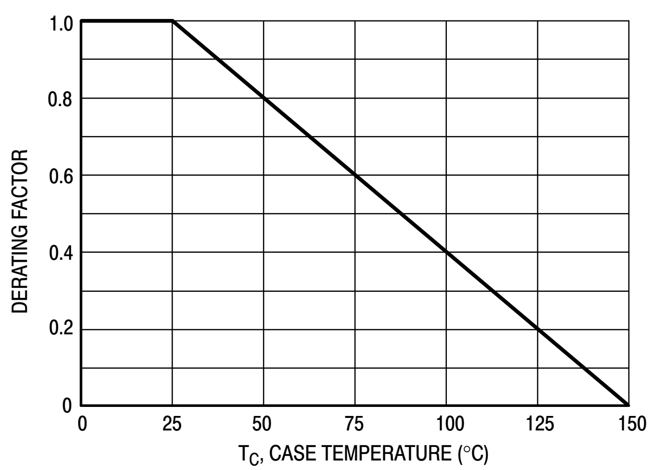


Figure 1. Power Derating

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector−Emitter Sustaining Voltage (1) (I_C = 30 mAdc, I_B = 0)	$V_{CEO(sus)}$	100	–	Vdc
Collector Cutoff Current (V_{CE} = 50 Vdc, I_B = 0)	I_{CEO}	–	1.0	mAdc
Collector Cutoff Current (V_{CB} = 100 Vdc, I_E = 0)	I_{CBO}	–	0.4	mAdc
Collector Cutoff Current (V_{CB} = 50 Vdc, I_E = 0, T_C = 150°C)	I_{CBO}	–	2.0	mAdc
Emitter Cutoff Current (V_{BE} = 5.0 Vdc, I_C = 0)	I_{EBO}	–	5.0	mAdc
ON CHARACTERISTICS				
DC Current Gain (I_C = 5.0 Adc, V_{CE} = 4.0 Vdc)	h_{FE}	1000	–	–
Collector−Emitter Saturation Voltage (I_C = 5.0 Adc, I_B = 0.02 Adc)	$V_{CE(sat)}$	–	2.0	Vdc
Base−Emitter Saturation Voltage (I_C = 5.0 Adc, V_{CE} = 4.0 Vdc)	$V_{BE(on)}$	–	2.5	Vdc

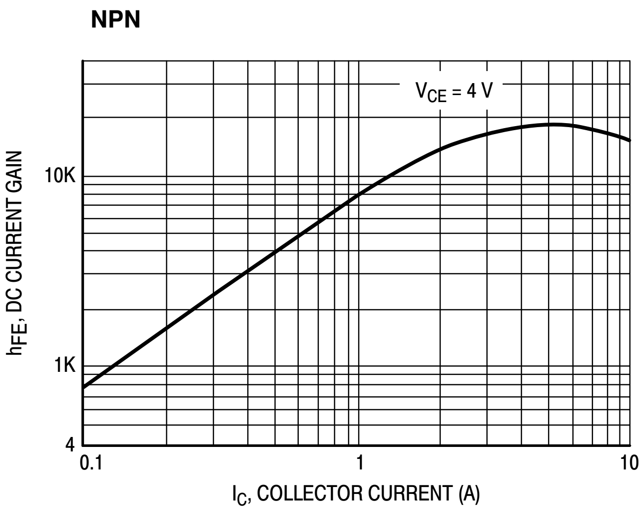


Figure 2. DC Current Gain

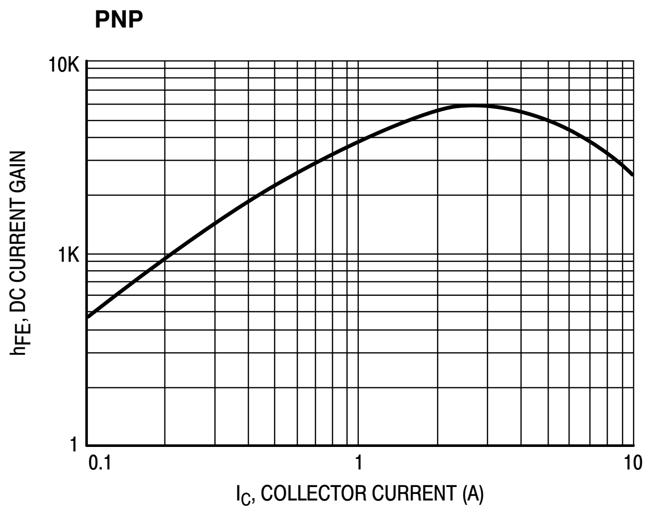


Figure 3. DC Current Gain

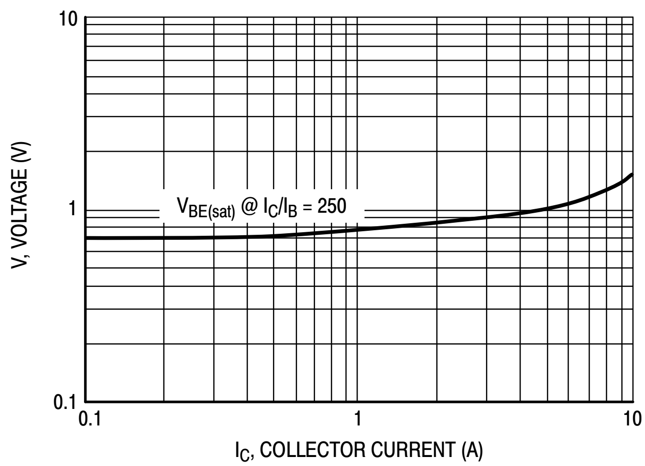


Figure 4. "On" Voltages

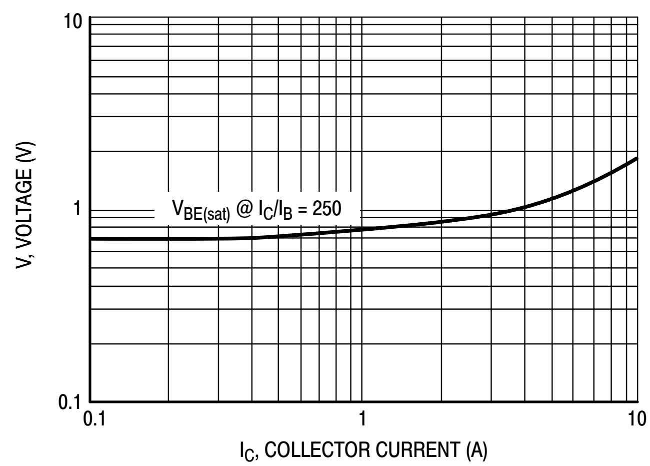


Figure 5. "On" Voltages

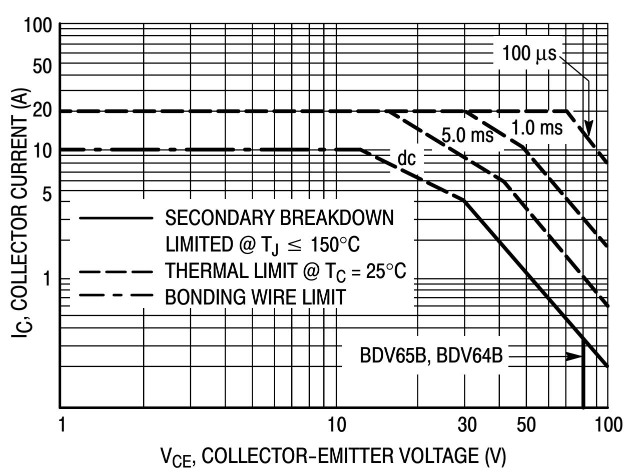


Figure 6. Active Region Safe Operating Area

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°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°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.

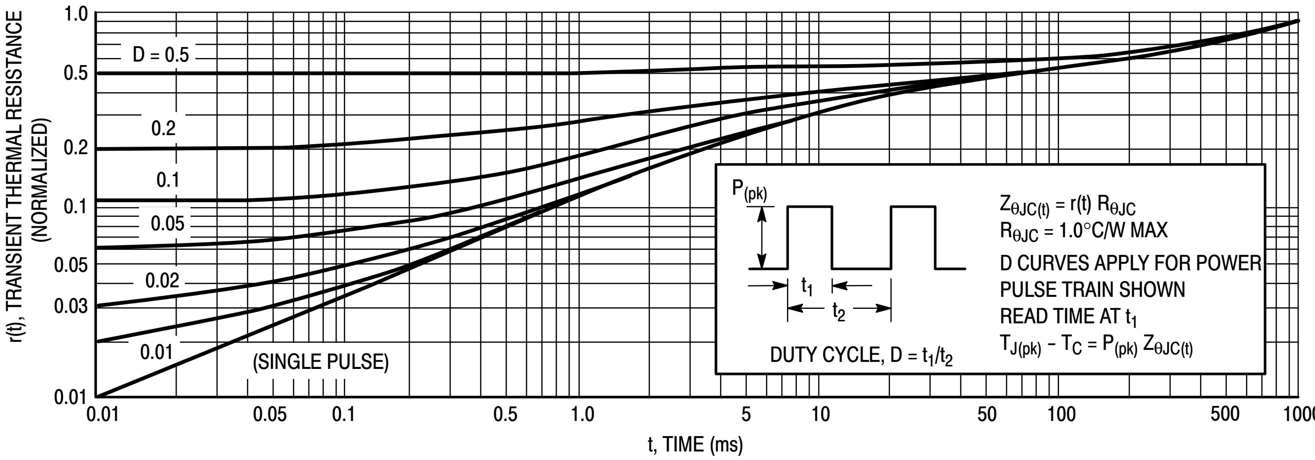
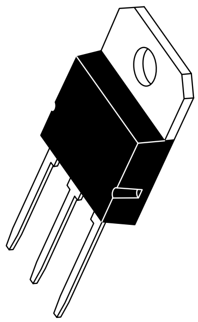


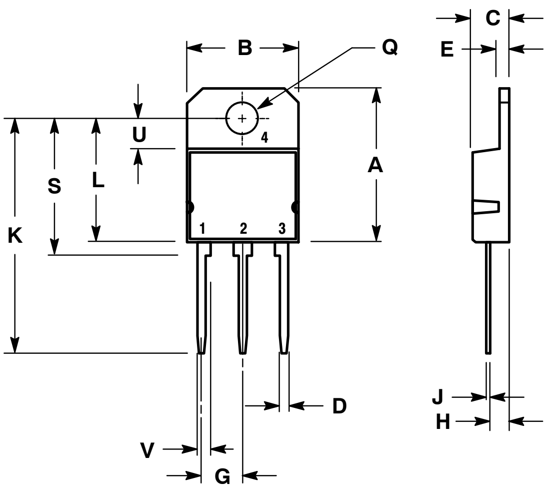
Figure 7. Thermal Response



SOT−93 (TO−218)
CASE 340D−02
ISSUE E

DATE 01/03/2002

SCALE 1:1



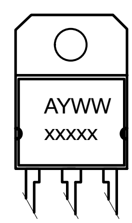
NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.

	MILLIMETERS		INCHES	
DIM	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	

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

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

MARKING DIAGRAM



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

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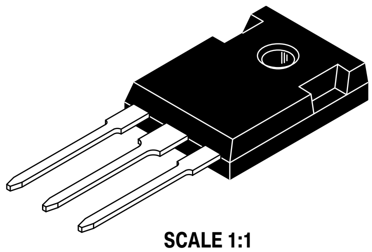
TO−247
CASE 340L
ISSUE G

DATE 06 OCT 2021



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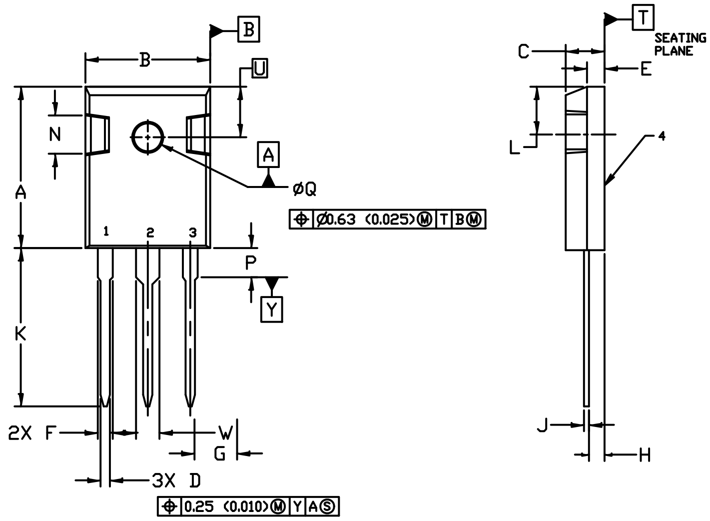
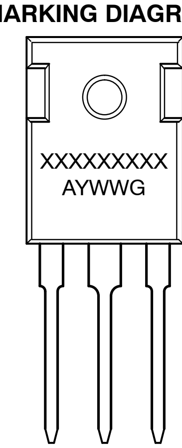


NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER

	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*



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.

STYLE 1:
PIN 1. GATE
2. DRAIN
3. SOURCE
4. DRAIN

STYLE 2:
PIN 1. ANODE
2. CATHODE (S)
3. ANODE 2
4. CATHODES (S)

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

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

STYLE 5:
PIN 1. CATHODE
2. ANODE
3. GATE
4. ANODE

STYLE 6:
PIN 1. MAIN TERMINAL 1
2. MAIN TERMINAL 2
3. GATE
4. MAIN TERMINAL 2

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