MOTOROLA
SEMICONDUCTOR
TECHNICAL DATA

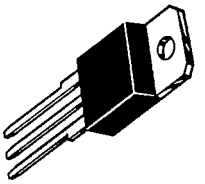
NPN	PNP
BDV65	BDV64
BDV65A	BDV64A
BDV65B	BDV64B
BDV65C	BDV64C

COMPLEMENTARY SILICON PLASTIC POWER DARLINGTONS

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

- High DC Current Gain
  HFE = 1000 (min.) @ 5 Adc
- Monolithic Construction with Built-in
  Base Emitter Shunt Resistors

DARLINGTONS
10 AMPERES
COMPLEMENTARY SILICON POWER TRANSISTORS
60-80-100-120 VOLTS
125 WATTS

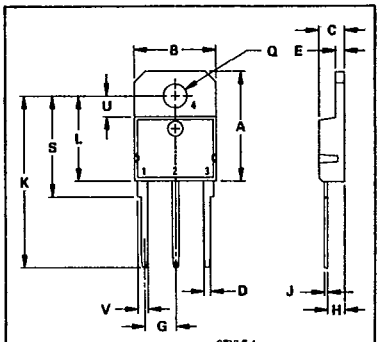


MAXIMUM RATINGS

Rating	Symbol	BDV 65 BDV 64	BDV 65A BDV 64A	BDV 65B BDV 64B	BDV 65C BDV 64C	Unit
Collector-Emitter Voltage	V_{CEO}	60	80	100	120	V_{dc}
Collector-Base Voltage	V_{CB}	60	80	100	120	V_{dc}
Emitter-Base Voltage	V_{EB}	5				V_{dc}
Collector Current – Continuous – Peak	I_C	10 20				A_{dc}
Base Current	I_B	0.5				A_{dc}
Total Device Dissipation @ Tc = 25 C Derate above 25 C	P_D	125 1				Watts 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	θ_{JC}	1	°C/W



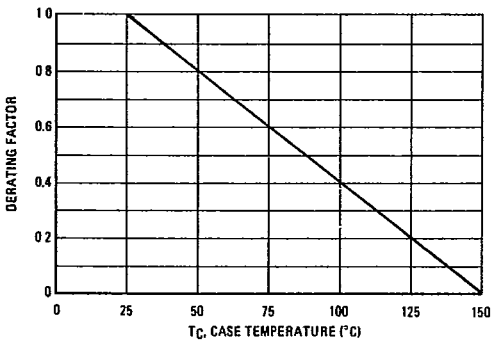
STYLE 1:
PIN 1. BASE
2. COLLECTOR
3 EMITTER
4. COLLECTOR

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

DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	19.00	19.60	0.749	0.771
B	14.00	14.50	0.551	0.570
C	4.20	4.70	0.165	0.185
D	1.00	1.30	0.040	0.051
E	1.45	1.65	0.058	0.064
G	5.21	5.72	0.206	0.225
H	2.60	3.00	0.103	0.118
J	0.40	0.60	0.016	0.023
K	28.50	32.00	1.123	1.259
L	14.70	15.30	0.579	0.602
Q	4.00	4.25	0.158	0.167
S	17.50	18.10	0.689	0.712
U	3.40	3.80	0.134	0.149
V	1.50	2.00	0.060	0.078

CASE 340D-01
TO-218 TYPE

FIGURE 1 – POWER DERATING



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NPN-BDV65A, B, C
PNP-BDV64A, B, C

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ELECTRICAL CHARACTERISTICS

Characteristic		Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS					
Collector-Emitter Sustaining Voltage (1)		$V_{CEO(sus)}$			Vdc
(I_C = 30 mAdc, I_B = 0)	BDV65 -BDV64		60		
	BDV65A-BDV64A		80		
	BDV65B-BDV64B		100		
	BDV65C-BDV64C		120		
Collector Cutoff Current		I_{CEO}			mAdc
(V_{CE} = 30 Vdc, I_B = 0)	BDV65 -BDV64			1	
(V_{CE} = 40 Vdc, I_B = 0)	BDV65A-BDV64A			1	
(V_{CE} = 50 Vdc, I_B = 0)	BDV65B-BDV64B			1	
(V_{CE} = 60 Vdc, I_B = 0)	BDV65C-BDV64C			1	
Collector Cutoff Current		I_{CBO}			mAdc
(V_{CB} = 60 Vdc, I_E = 0)	BDV65 -BDV64			.4	
(V_{CB} = 80 Vdc, I_E = 0)	BDV65A-BDV64A			.4	
(V_{CB} = 100 Vdc, I_E = 0)	BDV65B-BDV64B			.4	
(V_{CB} = 120 Vdc, I_E = 0)	BDV65C-BDV64C			.4	
Collector Cutoff Current		I_{CBO}			mAdc
(V_{CB} = 30 Vdc, I_E = 0, T_C = 150°C)	BDV65 -BDV64			2	
(V_{CB} = 40 Vdc, I_E = 0, T_C = 150°C)	BDV65A-BDV64A			2	
(V_{CB} = 50 Vdc, I_E = 0, T_C = 150°C)	BDV65B-BDV64B			2	
(V_{CB} = 60 Vdc, I_E = 0, T_C = 150°C)	BDV65C-BDV64C			2	
Emitter Cutoff Current		I_{EBO}		5	mAdc
(V_{BE} = 5 Vdc, I_C = 0)					
ON CHARACTERISTICS					
DC Current Gain					
(I_C = 5 Adc, V_{CE} = 4 Vdc)		HFE	1000		
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$		2	Vdc
(I_C = 5 Adc, I_B = 0.02 Adc)					
Base-Emitter Saturation Voltage		$V_{BE(on)}$		2.5	Vdc
(I_C = 5 Adc, V_{CE} = 4 Vdc)					

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BDV65, BDV65A, BDV65B NPN
BDV64, BDV64A, BDV64B PNP

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NPN

PNP

FIGURE 2 – DC CURRENT GAIN

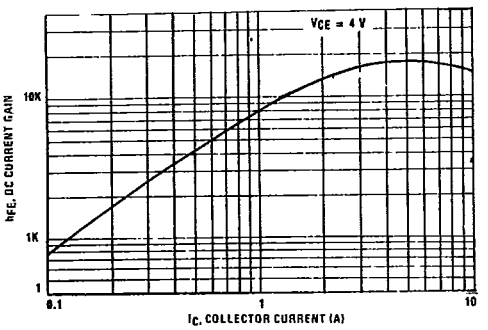

FIGURE 3 – DC CURRENT GAIN

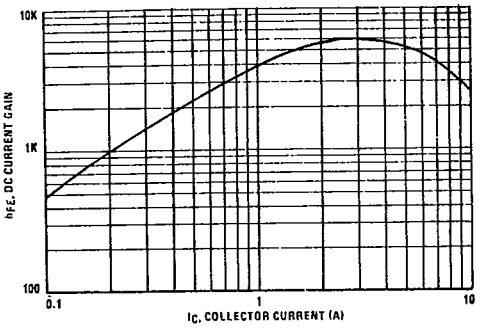

FIGURE 4 – "ON" VOLTAGES

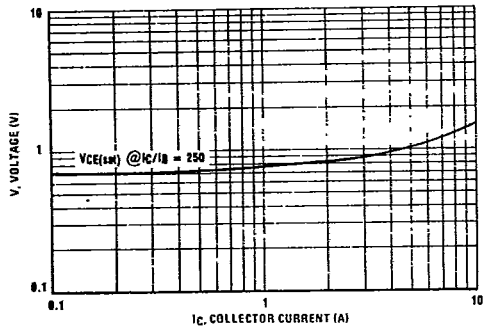

FIGURE 5 – "ON" VOLTAGES

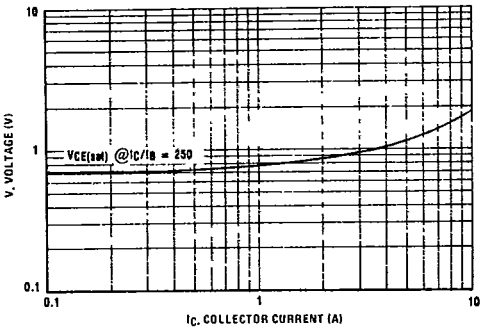

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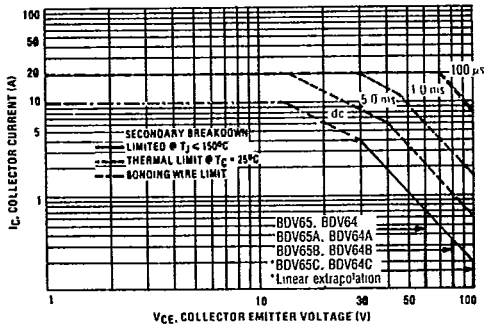
FIGURE 6 – ACTIVE REGION SAFE OPERATING AREA



There are two limitations on the power handling ability of a transistor: average junction temperature and second breakdown. Safe operating area curves indicate IC-VCE 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. (See AN 415A)

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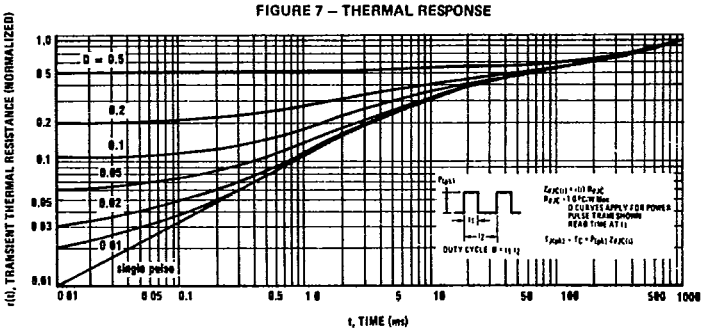
FIGURE 7 – THERMAL RESPONSE



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