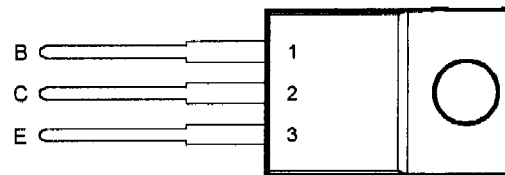


BDW64, BDW64A, BDW64B, BDW64C, BDW64D
PNP SILICON POWER DARLINGTONS

- Designed for Complementary Use with BDW63, BDW63A, BDW63B, BDW63C and BDW63D
- 60 W at 25°C Case Temperature
- 6 A Continuous Collector Current
- Minimum h_{FE} of 750 at 3 V, 2 A

TO-220 PACKAGE
(TOP VIEW)

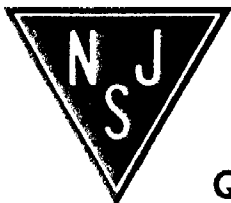


Pin 2 is in electrical contact with the mounting base.

absolute maximum ratings at 25°C case temperature (unless otherwise noted)

RATING		SYMBOL	VALUE	UNIT
Collector-base voltage ($I_E = 0$)	BDW64	V_{CBO}	-45	V
	BDW64A		-60	
	BDW64B		-80	
	BDW64C		-100	
	BDW64D		-120	
Collector-emitter voltage ($I_B = 0$) (see Note 1)	BDW64	V_{CEO}	-45	V
	BDW64A		-60	
	BDW64B		-80	
	BDW64C		-100	
	BDW64D		-120	
Emitter-base voltage		V_{EBO}	-5	V
Continuous collector current		I_C	-6	A
Continuous base current		I_B	-0.1	A
Continuous device dissipation at (or below) 25°C case temperature (see Note 2)		P_{tot}	60	W
Continuous device dissipation at (or below) 25°C free air temperature (see Note 3)		P_{tot}	2	W
Unclamped inductive load energy (see Note 4)		$\frac{1}{2}LI_C^2$	50	mJ
Operating junction temperature range		T_J	-65 to +150	°C
Operating temperature range		T_{stg}	-65 to +150	°C
Operating free-air temperature range		T_A	-65 to +150	°C

- NOTES: 1. These values apply when the base-emitter diode is open circuited.
2. Derate linearly to 150°C case temperature at the rate of 0.48 W/°C.
3. Derate linearly to 150°C free air temperature at the rate of 16 mW/°C.
4. This rating is based on the capability of the transistor to operate safely in a circuit of: $L = 20$ mH, $I_{B(on)} = -5$ mA, $R_{BE} = 100 \Omega$, $V_{BE(off)} = 0$, $R_S = 0.1 \Omega$, $V_{CC} = -20$ V.



NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

Quality Semi-Conductors

BDW64, BDW64A, BDW64B, BDW64C, BDW64D

PNP SILICON POWER DARLINGTONS

electrical characteristics at 25°C case temperature (unless otherwise noted)

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
$V_{(BR)CEO}$ Collector-emitter breakdown voltage	$I_C = -30\text{ mA}$ $I_B = 0$ (see Note 5)	BDW64		-45	V
		BDW64A		-60	
		BDW64B		-80	
		BDW64C		-100	
		BDW64D		-120	
I_{CEO} Collector-emitter cut-off current	$V_{CE} = -30\text{ V}$ $I_B = 0$ $V_{CE} = -30\text{ V}$ $I_B = 0$ $V_{CE} = -40\text{ V}$ $I_B = 0$ $V_{CE} = -50\text{ V}$ $I_B = 0$ $V_{CE} = -60\text{ V}$ $I_B = 0$	BDW64		-0.5	mA
		BDW64A		-0.5	
		BDW64B		-0.5	
		BDW64C		-0.5	
		BDW64D		-0.5	
I_{CBO} Collector cut-off current	$V_{CB} = -45\text{ V}$ $I_E = 0$ $V_{CB} = -60\text{ V}$ $I_E = 0$ $V_{CB} = -80\text{ V}$ $I_E = 0$ $V_{CB} = -100\text{ V}$ $I_E = 0$ $V_{CB} = -120\text{ V}$ $I_E = 0$ $V_{CB} = -45\text{ V}$ $I_E = 0$ $T_C = 150^\circ\text{C}$ $V_{CB} = -60\text{ V}$ $I_E = 0$ $T_C = 150^\circ\text{C}$ $V_{CB} = -80\text{ V}$ $I_E = 0$ $T_C = 150^\circ\text{C}$ $V_{CB} = -100\text{ V}$ $I_E = 0$ $T_C = 150^\circ\text{C}$ $V_{CB} = -120\text{ V}$ $I_E = 0$ $T_C = 150^\circ\text{C}$	BDW64		-0.2	mA
		BDW64A		-0.2	
		BDW64B		-0.2	
		BDW64C		-0.2	
		BDW64D		-0.2	
		BDW64		-5	
		BDW64A		-5	
		BDW64B		-5	
		BDW64C		-5	
		BDW64D		-5	
I_{EBO} Emitter cut-off current	$V_{EB} = -5\text{ V}$ $I_C = 0$			-2	mA
h_{FE} Forward current transfer ratio	$V_{CE} = -3\text{ V}$ $I_C = -2\text{ A}$ (see Notes 5 and 6) $V_{CE} = -3\text{ V}$ $I_C = -6\text{ A}$	750		20000	
		100			
$V_{BE(on)}$ Base-emitter voltage	$V_{CE} = -3\text{ V}$ $I_C = -2\text{ A}$ (see Notes 5 and 6)			-2.5	V
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = -12\text{ mA}$ $I_C = -2\text{ A}$ (see Notes 5 and 6) $I_B = -60\text{ mA}$ $I_C = -6\text{ A}$			-2.5	V
				-4	
V_{EC} Parallel diode forward voltage	$I_E = -6\text{ A}$ $I_B = 0$			-3.5	V

NOTES: 5. These parameters must be measured using pulse techniques, $t_p = 300\ \mu\text{s}$, duty cycle $\leq 2\%$.

6. These parameters must be measured using voltage-sensing contacts, separate from the current carrying contacts.

thermal characteristics

PARAMETER	MIN	TYP	MAX	UNIT
$R_{\theta JC}$ Junction to case thermal resistance			2.08	$^\circ\text{C/W}$
$R_{\theta JA}$ Junction to free air thermal resistance			62.5	$^\circ\text{C/W}$

resistive-load-switching characteristics at 25°C case temperature

PARAMETER	TEST CONDITIONS †	MIN	TYP	MAX	UNIT
t_{on} Turn-on time	$I_C = -3\text{ A}$ $I_{B(on)} = -12\text{ mA}$ $I_{B(off)} = 12\text{ mA}$		1		μs
t_{off} Turn-off time	$V_{BE(off)} = 4.5\text{ V}$ $R_L = 10\ \Omega$ $t_p = 20\ \mu\text{s}$, dc $\leq 2\%$		5		μs

† Voltage and current values shown are nominal; exact values vary slightly with transistor parameters.