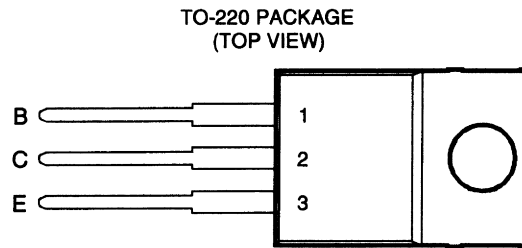


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**BDT60, BDT60A, BDT60B, BDT60C  
 PNP SILICON POWER DARLINGTONS**

- **Designed for Complementary Use with BDT61, BDT61A, BDT61B and BDT61C**
- **50 W at 25°C Case Temperature**
- **4 A Continuous Collector Current**
- **Minimum  $h_{FE}$  of 750 at 1.5 V, 3 A**

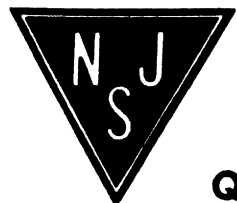


Pin 2 is in electrical contact with the mounting base.

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

RATING		SYMBOL	VALUE	UNIT
Collector-base voltage ( $I_E = 0$ )	BDT60	$V_{CBO}$	-60	V
	BDT60A		-80	
	BDT60B		-100	
	BDT60C		-120	
Collector-emitter voltage ( $I_B = 0$ )	BDT60	$V_{CEO}$	-60	V
	BDT60A		-80	
	BDT60B		-100	
	BDT60C		-120	
Emitter-base voltage		$V_{EBO}$	-5	V
Continuous collector current		$I_C$	-4	A
Continuous base current		$I_B$	-0.1	A
Continuous device dissipation at (or below) 25°C case temperature (see Note 1)		$P_{tot}$	50	W
Continuous device dissipation at (or below) 25°C free air temperature (see Note 2)		$P_{tot}$	2	W
Operating junction temperature range		$T_j$	-65 to +150	°C
Storage temperature range		$T_{stg}$	-65 to +150	°C
Operating free-air temperature range		$T_A$	-65 to +150	°C

NOTES: 1. Derate linearly to 150°C case temperature at the rate of 0.4 W/°C.  
 2. Derate linearly to 150°C free air temperature at the rate of 16 mW/°C.



**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 3)	BDT60				
				BDT60A	-60			
				BDT60B	-80			
				BDT60C	-100			
$I_{CEO}$ Collector-emitter cut-off current	$V_{CE} = -30 \text{ V}$	$I_B = 0$		BDT60			-0.5	
				BDT60A			-0.5	
				BDT60B			-0.5	
				BDT60C			-0.5	
$I_{CBO}$ Collector cut-off current	$V_{CB} = -60 \text{ V}$	$I_E = 0$		BDT60			-0.2	
				BDT60A			-0.2	
				BDT60B			-0.2	
				BDT60C			-0.2	
	$V_{CB} = -30 \text{ V}$	$I_E = 0$		$T_C = 150^\circ\text{C}$	BDT60			-2.0
					BDT60A			-2.0
					BDT60B			-2.0
					BDT60C			-2.0
$V_{CB} = -40 \text{ V}$	$I_E = 0$		$T_C = 150^\circ\text{C}$	BDT60			-2.0	
				BDT60A			-2.0	
				BDT60B			-2.0	
				BDT60C			-2.0	
$V_{CB} = -50 \text{ V}$	$I_E = 0$		$T_C = 150^\circ\text{C}$	BDT60			-2.0	
				BDT60A			-2.0	
				BDT60B			-2.0	
				BDT60C			-2.0	
$I_{EBO}$ Emitter cut-off current	$V_{EB} = -5 \text{ V}$	$I_C = 0$					-5	
$h_{FE}$ Forward current transfer ratio	$V_{CE} = -3 \text{ V}$	$I_C = -1.5 \text{ A}$	(see Notes 3 and 4)		750			
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = -6 \text{ mA}$	$I_C = -1.5 \text{ A}$	(see Notes 3 and 4)			-2.5	V	
$V_{BE(on)}$ Base-emitter voltage	$V_{CE} = -3 \text{ V}$	$I_C = -1.5 \text{ A}$	(see Notes 3 and 4)			-2.5	V	
$V_{EC}$ Parallel diode forward voltage	$I_E = -1.5 \text{ A}$	$I_B = 0$				-2.0	V	

NOTES: 3. These parameters must be measured using pulse techniques,  $t_p = 300 \mu\text{s}$ , duty cycle  $\leq 2\%$ .  
 4. 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			2.5	$^\circ\text{C/W}$
$R_{\theta JA}$ 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	$I_C = -2 \text{ A}$	$I_{B(on)} = -8 \text{ mA}$	$I_{B(off)} = 8 \text{ mA}$		1		$\mu\text{s}$
$t_{off}$ Turn-off time				$V_{BE(off)} = 5 \text{ V}$	$R_L = 20 \Omega$		4.5

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

