

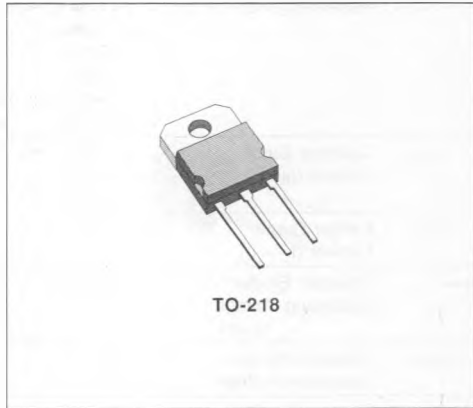
## HIGH CURRENT POWER DARLINGTON

- HIGH CURRENT
- HIGH GAIN

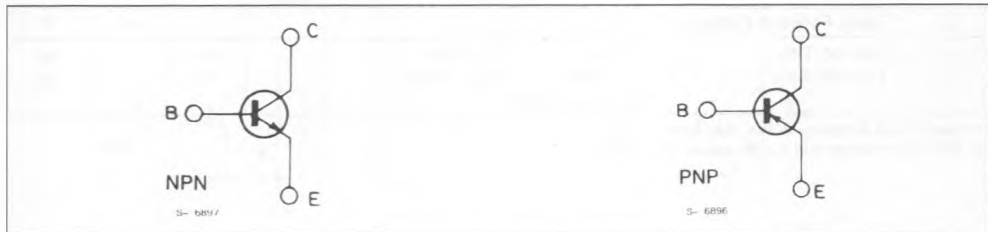
### DESCRIPTION

The BDW83A/B/C are silicon epitaxial base NPN power monolithic Darlington mounted in TO-218 plastic package. They are intended for use in power linear and switching applications.

The complementary PNP types are BDW84A/B/C respectively.



### INTERNAL SCHEMATIC DIAGRAM



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	NPN PNP	Value			Unit
			BDW83A BDW84A	BDW83B BDW84B	BDW83C BDW84C	
$V_{CBO}$	Collector-base Voltage ( $I_E = 0$ )		60	80	100	V
$V_{CEO}$	Collector-emitter Voltage ( $I_B = 0$ )		60	80	100	V
$V_{EBO}$	Emitter-base Voltage ( $I_C = 0$ )		5			V
$I_C$	Collector Current		15			A
$I_{CM}$	Collector Peak Current		40			A
$I_B$	Base Current		0.5			A
$P_{Tot}$	Total Dissipation at $T_c < 25^\circ\text{C}$		130			W
$T_{stg}$	Storage Temperature		- 65 to 150			$^\circ\text{C}$
$T_j$	Max. Operating Junction Temperature		150			$^\circ\text{C}$

For PNP types voltage and current values are negative.

## THERMAL DATA

$R_{th\ j-case}$	Thermal Resistance Junction-case	Max	0.96	$^{\circ}C/W$
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ELECTRICAL CHARACTERISTICS ( $T_j = 25^{\circ}C$  unless otherwise specified)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit	
$I_{CBO}$	Collector Cutoff Current ( $I_E = 0$ )	$V_{CB} = 60V$	for <b>BDW83A/84A</b>			0.5	mA	
		$V_{CB} = 80V$	for <b>BDW83B/84B</b>			0.5	mA	
		$V_{CB} = 100V$	for <b>BDW83C/84C</b>			0.5	mA	
		$T_c = 150^{\circ}C$						
		$V_{CB} = 60V$	for <b>BDW83A/84A</b>			5	mA	
		$V_{CB} = 80V$	for <b>BDW83B/84B</b>			5	mA	
		$V_{CB} = 100V$	for <b>BDW83C/84C</b>	5	mA			
$I_{CEO}$	Collector Cutoff Current ( $I_B = 0$ )	$V_{CE} = 30V$	for <b>BDW83A/84A</b>			1	mA	
		$V_{CE} = 40V$	for <b>BDW83B/84B</b>			1	mA	
		$V_{CE} = 40V$	for <b>BDW83C/84C</b>			1	mA	
$I_{EBO}$	Emitter Cutoff Current ( $I_C = 0$ )	$V_{EB} = 5V$				2	mA	
Space 1	Collector Emitter Sustaining Voltage	$I_C = 30mA$	for <b>BDW83A/84A</b>				V	
			for <b>BDW83B/84B</b>				80	V
			for <b>BDW83C/84C</b>				100	V
$V_{CE(sat)}^*$	Collector-emitter Saturation Voltage	$I_C = 6A$	$I_B = 12mA$			2.5	V	
		$I_C = 15A$	$I_B = 150mA$			4	V	
$V_{BE(on)}^*$	Base-emitter Voltage	$I_C = 6A$	$V_{CE} = 3V$			2.5	V	
$h_{FE}^*$	DC Current Gain	$I_C = 6A$	$V_{CE} = 3V$			20K		
		$I_C = 15A$	$V_{CE} = 3V$				750	
				100				
$V_f^*$	Diode Forward Voltage	$I_F = 10A$				4	V	
$t_{on}$	Turn-on Time	$V_{CC} = 30V$	$I_C = 10A$			0.9	$\mu s$	
$t_{off}$	Turn-off Time	$R_{B1} = 300\Omega$	$R_{B2} = 150\Omega$				6	$\mu s$
		$I_{B1} = - I_{B2} = 40mA$						

\* Pulsed : Pulse duration = 300 $\mu s$ , duty cycle = 1.5%.

For PNP types voltage and current values are negative.