

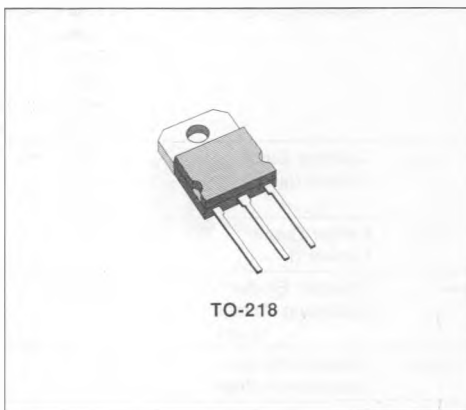
HIGH CURRENT POWER DARLINGTON

- HIGH CURRENT
- HIGH GAIN

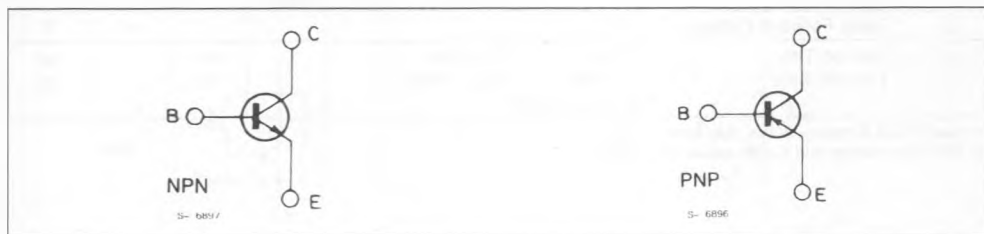
DESCRIPTION

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	$^{\circ}C/W$
------------------	----------------------------------	-----	------	---------------

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 BDW83A/84A			0.5	mA	
		$V_{CB} = 80V$	for BDW83B/84B			0.5	mA	
		$V_{CB} = 100V$	for BDW83C/84C			0.5	mA	
		$T_c = 150^{\circ}C$						
		$V_{CB} = 60V$	for BDW83A/84A			5	mA	
		$V_{CB} = 80V$	for BDW83B/84B			5	mA	
I_{CEO}	Collector Cutoff Current ($I_B = 0$)	$V_{CE} = 30V$	for BDW83A/84A			1	mA	
		$V_{CE} = 40V$	for BDW83B/84B			1	mA	
		$V_{CE} = 40V$	for BDW83C/84C			1	mA	
I_{EBO}	Emitter Cutoff Current ($I_C = 0$)	$V_{EB} = 5V$				2	mA	
Space	Collector Emitter Sustaining Voltage	$I_C = 30mA$	for BDW83A/84A	60			V	
			for BDW83B/84B	80			V	
			for BDW83C/84C	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	$I_C = 6A$	$V_{CE} = 3V$	750		20K		
		$I_C = 15A$	$V_{CE} = 3V$	100				
V_f^*	Diode Forward Voltage	$I_f = 10A$				4	V	
t_{on}	Turn-on Time	$V_{CC} = 30V$	$I_C = 10A$		0.9		μs	
t_{off}	Turn-off Time	$R_{B1} = 300\Omega$	$R_{B2} = 150\Omega$		6		μs	
		$I_{B1} = - I_{B2} = 40mA$						

* Pulsed : Pulse duration = 300 μs , duty cycle = 1.5%.

For PNP types voltage and current values are negative.