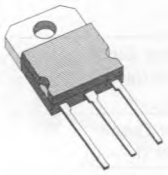
SGS-THOMSON MICROELECTRONICS

BDW83A/B/C
BDW84A/B/C

HIGH CURRENT POWER DARLINGTON

- HIGH CURRENT
- HIGH GAIN



TO-218

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°C		130			W
T_{stg}	Storage Temperature		– 65 to 150			°C
T_j	Max. Operating Junction Temperature		150			°C

For PNP types voltage and current values are negative.

THERMAL DATA

$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	0.96	°C/W

ELECTRICAL CHARACTERISTICS (T_j = 25°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°C					
		V_{CB} = 60V	for **BDW83A/84A**			5	mA
		V_{CB} = 80V	for **BDW83B/84B**			5	mA
		V_{CB} = 100V	for **BDW83C/84C**			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} = 300Ω	R_{B2} = 150Ω		6		µs
		$I_{B1} = -I_{B2}$ = 40mA					

* Pulsed : Pulse duration = 300µs, duty cycle = 1.5%.
For PNP types voltage and current values are negative.