EPITAXIAL-BASE NPN/PNP

BDV64 BDV65
BDV64A BDV65A
BDV64B BDV65B

POWER DARLINGTONS

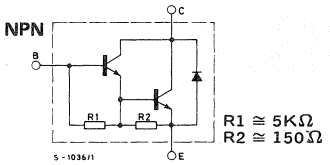
The BDV65, BDV65A, BDV65B, are silicon epitaxial-base NPN transistors in monolithic Darlington configuration and are mounted in SOT-93 plastic package. They are intended for use in power linear and switching applications.
The complementary PNP types are BDV64, BDV64A, BDV64B respectively.

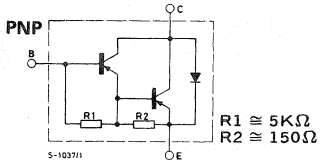
ABSOLUTE MAXIMUM RATINGS

		* PNP / NPN	BDV64 / BDV65	BDV64A / BDV65A	BDV64B / BDV65B
V_{CBO}	Collector-base voltage ($I_E = 0$)		60V	80V	100V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)		60V	80V	100V
V_{EBO}	Emitter-base voltage ($I_C = 0$)		5V		
I_C	Collector current		12A		
I_{CM}	Collector peak current (repetitive)		20A		
I_B	Base current		0.5A		
P_{tot}	Total power dissipation at $T_{case} \leqslant 25°C$		125W		
T_{stg}	Storage temperature		-65 to 150°C		
T_j	Junction temperature		150°C		

* For PNP types voltage and current values are negative

INTERNAL SCHEMATIC DIAGRAMS

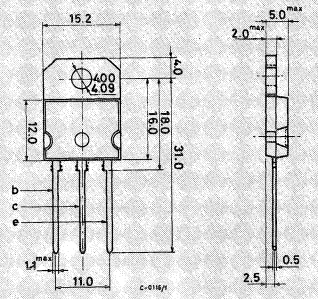




MECHANICAL DATA

Dimensions in mm

Collector connected to tab.



(sim. to **TO-218**) **SOT-93**

THERMAL DATA

$R_{th\ j\text{-}case}$	Thermal resistance junction-case	max. 1	°C/W

ELECTRICAL CHARACTERISTICS (T_{case} = 25°C unless otherwise specified)

	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cutoff current (I_E = 0)	for **BDV64/5** V_{CB} = 60V			400	μA
		for **BDV64A/5A** V_{CB} = 80V			400	μA
		for **BDV64B/5B** V_{CB} = 100V			400	μA
		T_{case} = 150°C				
		for **BDV64/65** V_{CB} = 30V			2	mA
		for **BDV64A/5A** V_{CB} = 40V			2	mA
		for **BDV64B/5B** V_{CB} = 50V			2	mA
I_{CEO}	Collector cutoff current (I_B = 0)	for **BDV64/65** V_{CE} = 30V			1	mA
		for **BDV64A/5A** V_{CE} = 40V			1	mA
		for **BDV64B/5B** V_{CE} = 50V			1	mA
I_{EBO}	Emitter cutoff current (I_C = 0)	V_{EBO} = 5V			5	mA
$V_{CEO(sus)}$*	Collector-emitter sustaining voltage (I_B = 0)	I_C = 30mA				
		for **BDV64/65**	60			V
		for **BDV64A/5A**	80			V
		for **BDV64B/5B**	100			V
$V_{CE(sat)}$*	Collector-emitter saturation voltage	I_C = 5A I_B = 20mA			2	V
V_{BE}*	Base-emitter voltage	I_C = 5A V_{CE} = 4V			2.5	V
h_{FE}*	DC current gain	I_C = 1A V_{CE} = 4V	2500			–
		I_C = 5A V_{CE} = 4V	1000			–
		I_C = 10A V_{CE} = 4V			500	–
V_F	Parallel diode forward voltage	I_F = 5A			1.2	V

ELECTRICAL CHARACTERISTICS (continued)

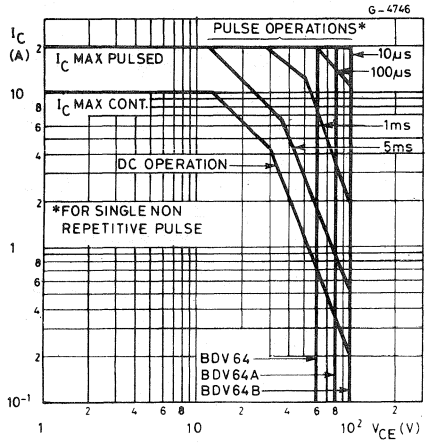
Parameter		Test conditions		Min.	Typ.	Max.	Unit
h_{fe}	Small signal current gain	$I_C = 5A$ $f = 1$ MHz	$V_{CE} = 4V$		60		–
C_{CBO}	Collector-base capacitance	$V_{CB} = 10V$ $f = 1$ MHz	$I_E = 0$		100		pF
t_{on}	Turn-on time	$I_C = 5A$ $I_{B2} = 20A$	$I_{B1} = 20mA$ $V_{CC} = 16V$		0.5		μs
t_s	Storage time				1.1 1.3	** 	μs μs
t_f	Fall time				2.5 1.0	** 	μs μs

* Pulsed: pulse duration = 300 μs duty cycle = 1.5%

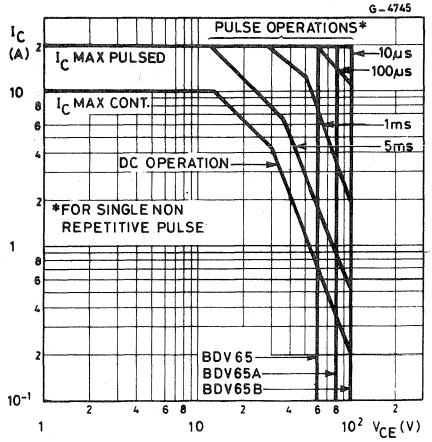
** For PNP types

For PNP types voltage and current values are negative

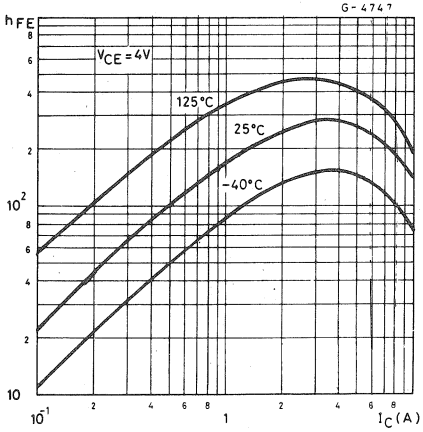
Safe operating areas



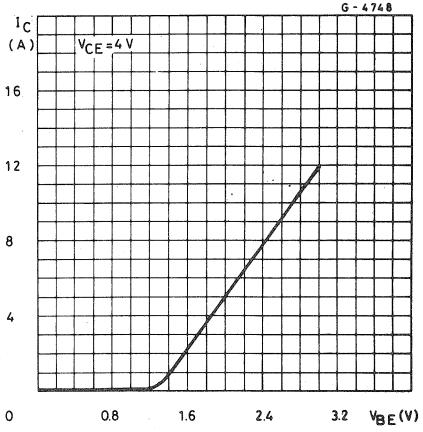
Safe operating areas



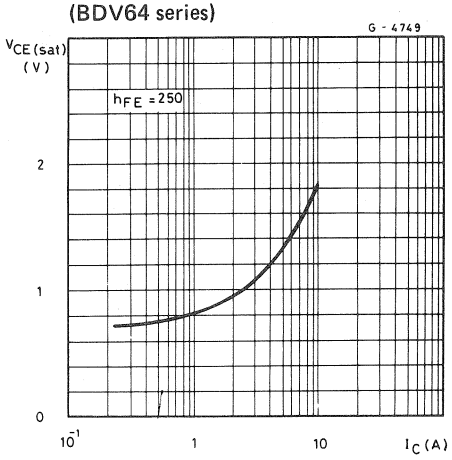
DC current gain (BDV64 series)



DC transconductance (BDV64 series)



Collector-emitter saturation voltage (BDV64 series)



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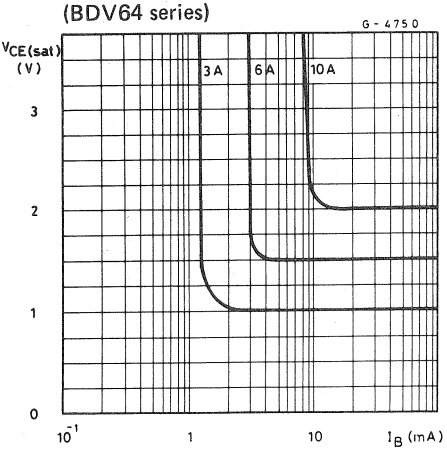
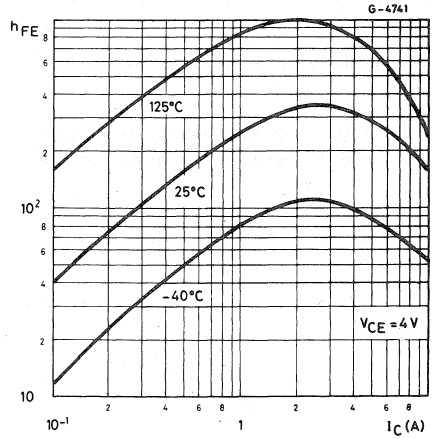
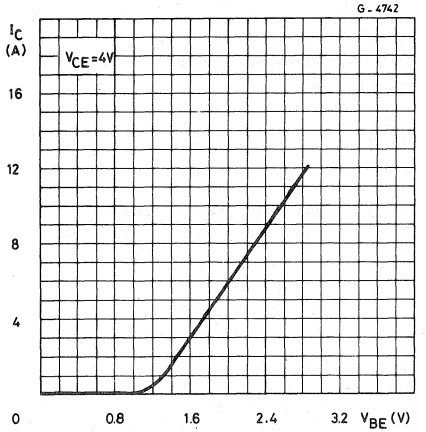


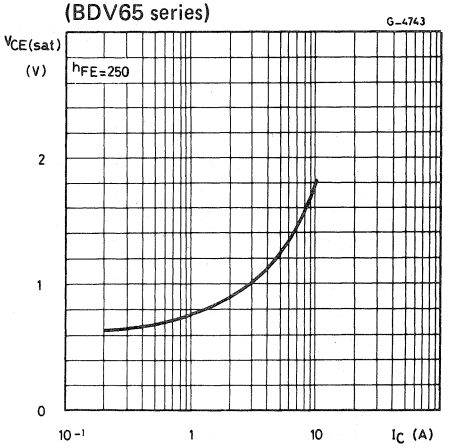
DC current gain (BDV65 series)



DC transconductance (BDV65 series)



Collector-emitter saturation voltage (BDV65 series)



Collector-emitter saturation voltage (BDV65 series)