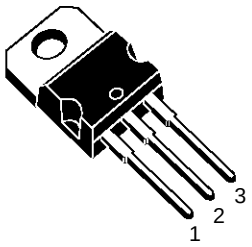
SGS-THOMSON MICROELECTRONICS

BDX53A/53B/53C
BDX54B/54C

COMPLEMENTARY SILICON POWER DARLINGTON TRANSISTORS

- BDX53B, BDX53C, BDX54B AND BDX54C ARE SGS-THOMSON PREFERRED SALESTYPES



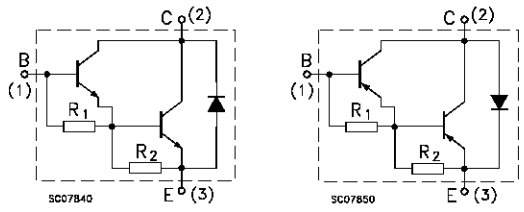
TO-220

APPLICATIONS
- AUDIO AMPLIFIERS
- LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT

DESCRIPTION
The BDX53A, BDX53B and BDX53C are silicon epitaxial-base NPN power transistors in monolithic Darlington configuration and are mounted in Jedec TO-220 plastic package. They are intented for use in hammer drivers, audio amplifiers and other medium power linear and switching applications.

The complementary PNP types for BDX53B and BDX53C are the BDX54B and BDX54C respectively.

INTERNAL SCHEMATIC DIAGRAM



R_1 Typ. = 10 KΩ R_2 Typ. = 150 Ω

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value			Unit
		NPN	BDX53A	BDX53B	BDX53C	
		PNP		BDX54B	BDX54C	
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		8			A
I_{CM}	Collector Peak Current (repetitive)		12			A
I_B	Base Current		0.2			A
P_{tot}	Total Dissipation at $T_c \leq 25\ ^oC$		60			W
T_{stg}	Storage Temperature		-65 to 150			^oC
T_j	Max. Operating Junction Temperature		150			^oC

THERMAL DATA

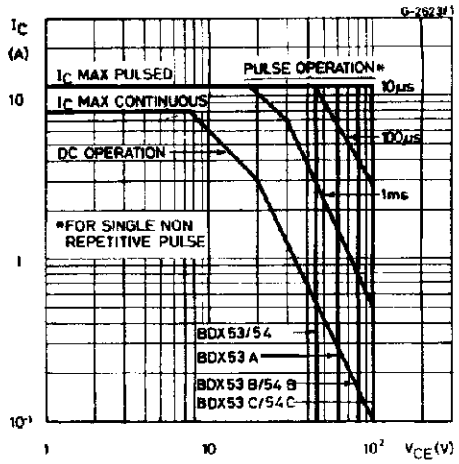
$R_{thj\text{-}case}$	Thermal Resistance Junction-case Max	2.08	°C/W
$R_{thj\text{-}amb}$	Thermal Resistance Junction-ambient Max	70	°C/W

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

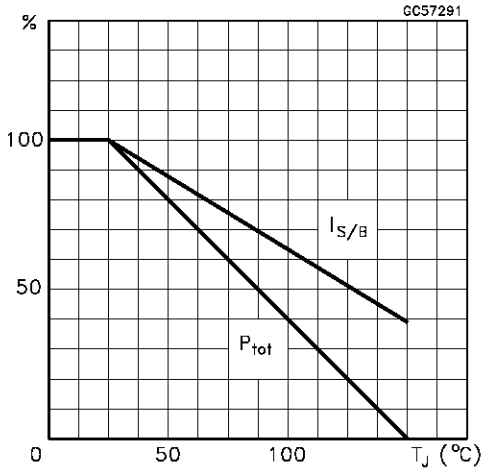
Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current (I_E = 0)	for **BDX53A**	V_{CB} = 60 V			0.2	mA
		for **BDX53B/54B**	V_{CB} = 80 V			0.2	mA
		for **BDX53C/54C**	V_{CB} = 100V			0.2	mA
I_{CEO}	Collector Cut-off Current (I_B = 0)	for **BDX53A**	V_{CB} = 30 V			0.5	mA
		for **BDX53B/54B**	V_{CB} = 40 V			0.5	mA
		for **BDX53C/54C**	V_{CB} = 50V			0.5	mA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 5 V				2	mA
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage (I_B = 0)	I_C = 100 mA	for **BDX53A**	60			V
			for **BDX53B/54B**	80			V
			for **BDX53C/54C**	100			V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = 3 A	I_B =12 mA			2	V
$V_{BE(sat)}$*	Base-emitter Saturation Voltage	I_C = 3 A	I_B =12 mA			2.5	V
h_{FE}*	DC Current Gain	I_C = 3 A	V_{CE} = 3 V	750			
V_F*	Parallel-diode Forward Voltage	I_F = 3 A			1.8	2.5	V
		I_F = 8 A			2.5		V

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

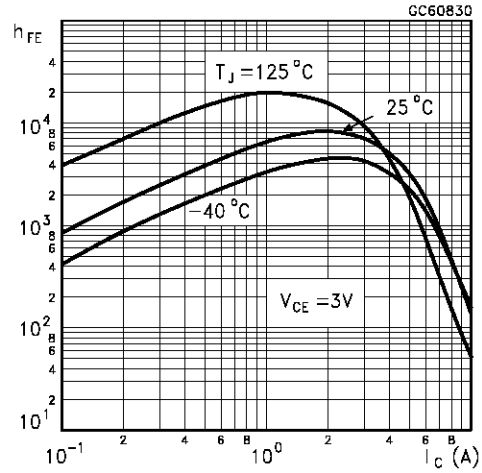
Safe Operating Area



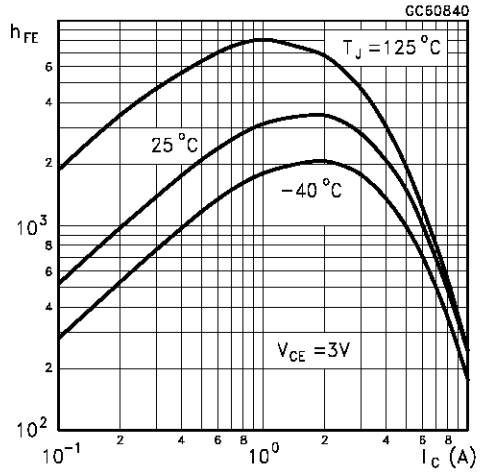
Derating Curve



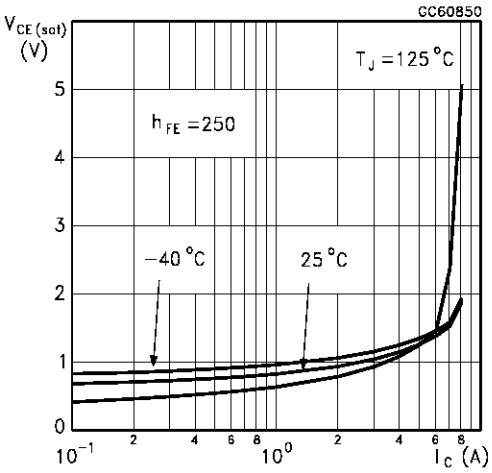
DC Current Gain (NPN type)



DC Current Gain (PNP type)



Collector Emitter Saturation Voltage (NPN type)



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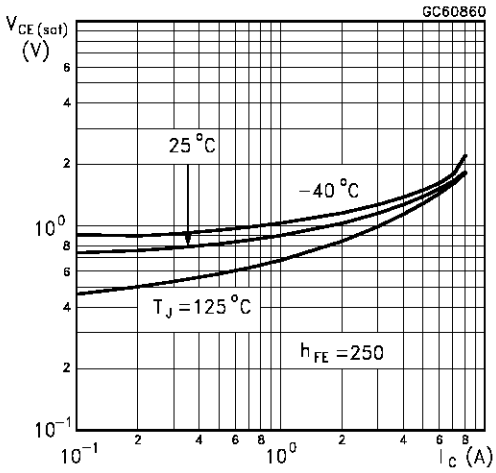
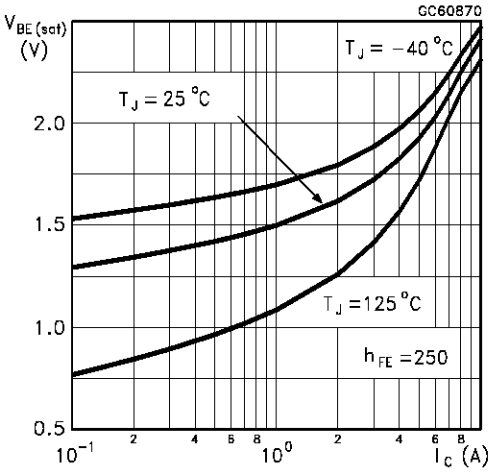


Base Emitter Saturation Voltage (NPN type)



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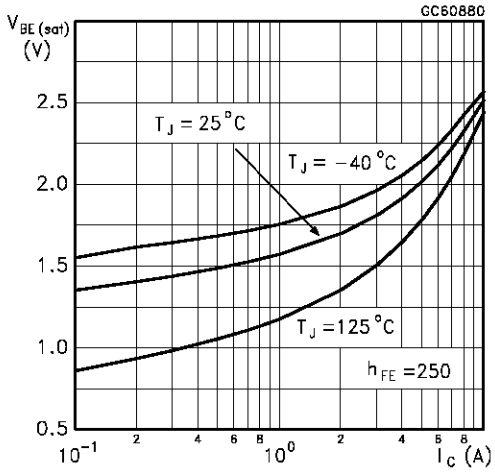
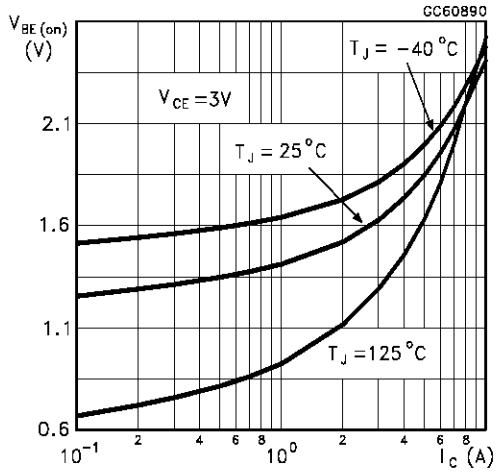


Base Emitter On Voltage (NPN type)



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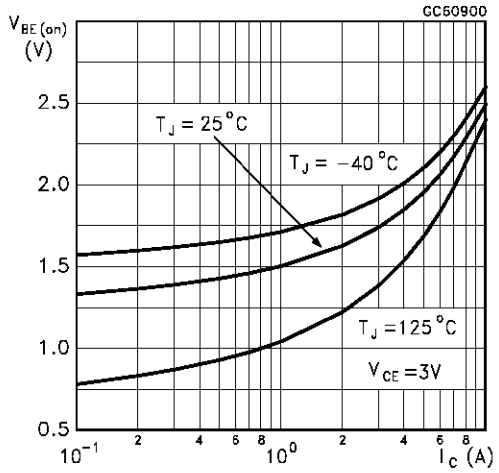
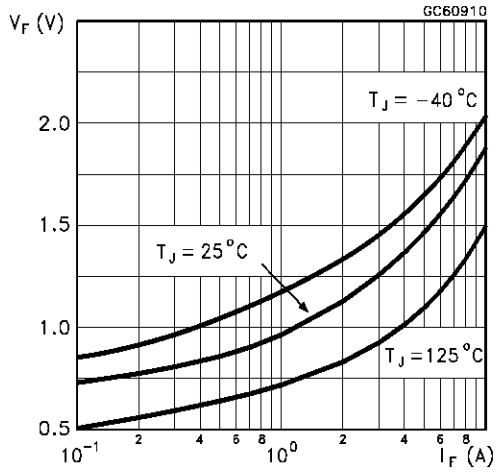
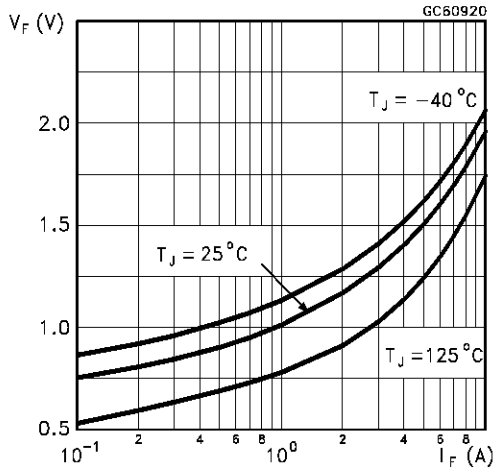


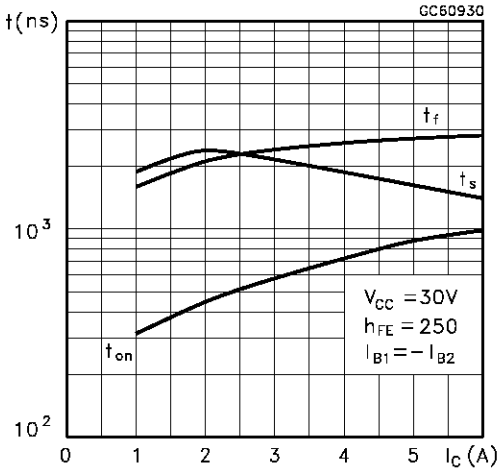
Freewheel Diode Forward Voltage (NPN type)



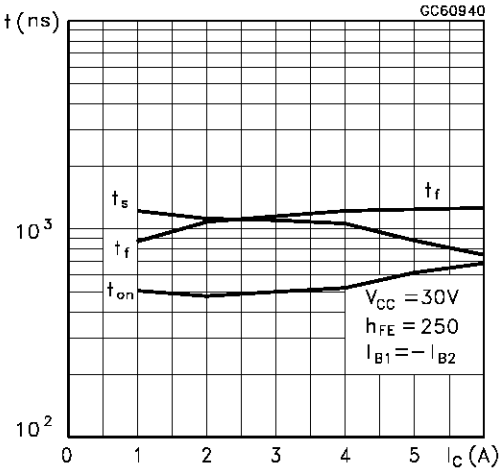
Freewheel Diode Forward Voltage (PNP type)



Switching Time Resistive Load (NPN type)

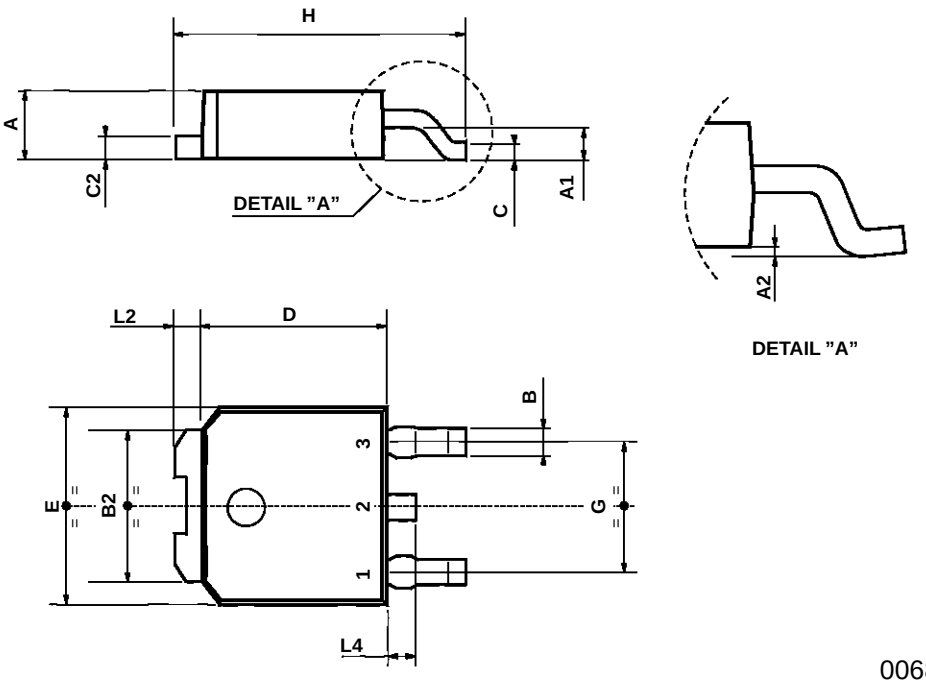


Switching Time resistive Load (PNP type)



TO-252 (DPAK) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	2.2		2.4	0.086		0.094
A1	0.9		1.1	0.035		0.043
A2	0.03		0.23	0.001		0.009
B	0.64		0.9	0.025		0.035
B2	5.2		5.4	0.204		0.212
C	0.45		0.6	0.017		0.023
C2	0.48		0.6	0.019		0.023
D	6		6.2	0.236		0.244
E	6.4		6.6	0.252		0.260
G	4.4		4.6	0.173		0.181
H	9.35		10.1	0.368		0.397
L2		0.8			0.031	
L4	0.6		1	0.023		0.039



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