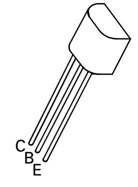
NPN SILICON PLANAR MEDIUM POWER DARLINGTON TRANSISTORS

BCX38A/B/C

ISSUE 1 – MARCH 94

FEATURES

- 60 Volt V_{CEO}
- Gain of 10K at I_C=0.5 Amp
- P_{tot}=1 Watt



E-Line
TO92 Compatible

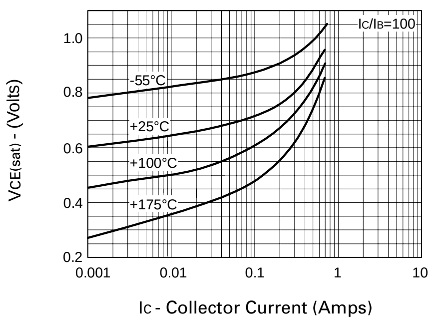
ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	80	V
Collector-Emitter Voltage	V_{CEO}	60	V
Emitter-Base Voltage	V_{EBO}	10	V
Peak Pulse Current	I_{CM}	2	A
Continuous Collector Current	I_C	800	mA
Power Dissipation at T_{amb}=25°C	P_{tot}	1	W
Operating and Storage Temperature Range	T_j:T_{stg}	-55 to +200	°C

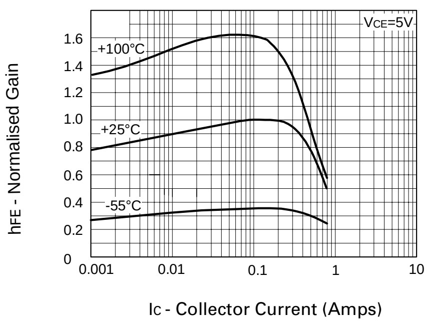
ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C).

PARAMETER		SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage		$V_{(BR)CBO}$	80			V	I_C=10μA, I_E=0
Collector-Emitter Sustaining Voltage		$V_{CEO(sus)}$	60			V	I_C=10mA, I_B=0
Emitter-Base Breakdown Voltage		$V_{(BR)EBO}$	10			V	I_E=10μA, I_C=0
Collector Cut-Off Current		I_{CBO}			100	nA	V_{CB}=60V, I_E=0
Emitter Cut-Off Current		I_{EBO}			100	nA	V_{EB}=8V, I_C=0
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$			1.25	V	I_C=800mA, I_B=8mA*
Base-Emitter Turn-on Voltage		$V_{BE(on)}$			1.8	V	I_C=800mA, V_{CE}=5V*
Static Forward Current Transfer Ratio	BCX38A	h_{FE}	500 1000				I_C=100mA, V_{CE}=5V* I_C=500mA, V_{CE}=5V*
	BCX38B		2000 4000				I_C=100mA, V_{CE}=5V* I_C=500mA, V_{CE}=5V*
	BCX38C		5000 10000				I_C=100mA, V_{CE}=5V* I_C=500mA, V_{CE}=5V*

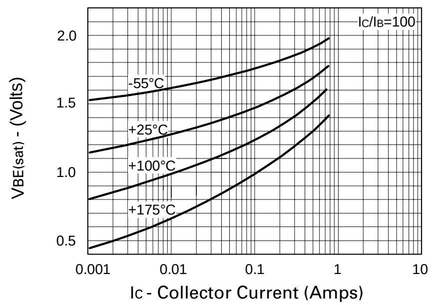
TYPICAL CHARACTERISTICS



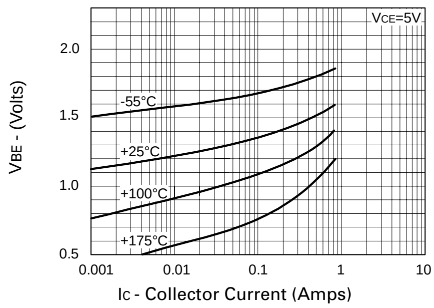
$V_{CE(sat)}$ v I_C



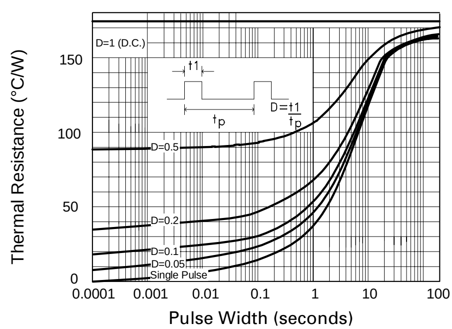
h_{FE} v I_C



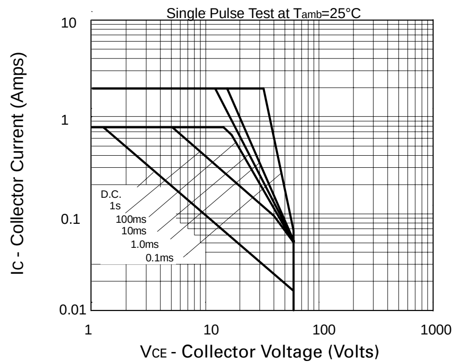
$V_{BE(sat)}$ v I_C



$V_{BE(on)}$ v I_C



Maximum transient thermal impedance



Safe Operating Area

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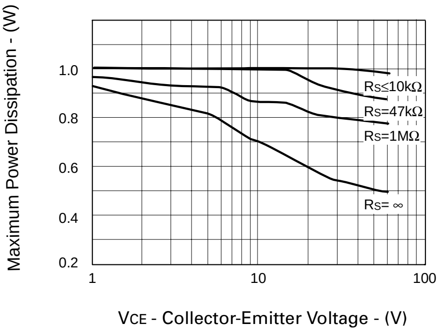

The maximum permissable operational temperature can be obtained using the equation:

$$T_{amb(max)} = \frac{Power(max) - Power(actual)}{0.0057} + 25°C$$

$T_{amb(max)}$= Maximum operating ambient temperature

Power (max) = Maximum power dissipation figure, for a given V_{CE} and source resistance (R_S)

Power (actual) = Actual power dissipation in users circuit