

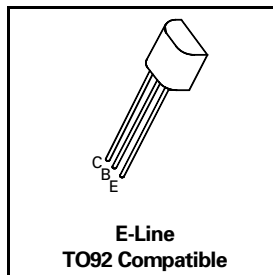
NPN SILICON PLANAR MEDIUM POWER DARLINGTON TRANSISTORS

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



ABSOLUTE MAXIMUM RATINGS.

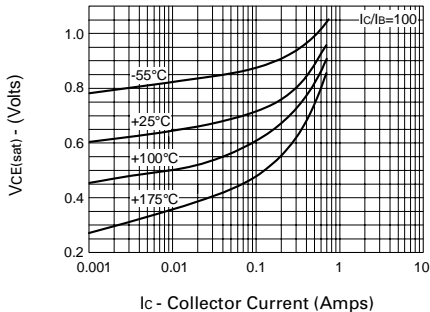
PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	80	V
Collector-Emitter Voltage	V_{CEO}	60	V
Emitter-Base Voltage	V_{EBO}	10	V
Peak Pulse Current	I_{CM}	2	A
Continuous Collector Current	I_C	800	mA
Power Dissipation at $T_{amb}=25^\circ\text{C}$	P_{tot}	1	W
Operating and Storage Temperature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

ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^\circ\text{C}$).

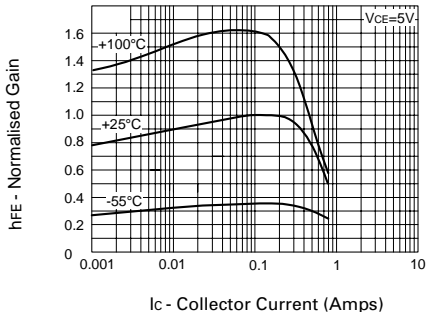
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	80			V	$I_C=10\mu\text{A}, I_E=0$
Collector-Emitter Sustaining Voltage	$V_{CEO(sus)}$	60			V	$I_C=10\text{mA}, I_B=0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	10			V	$I_E=10\mu\text{A}, I_C=0$
Collector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

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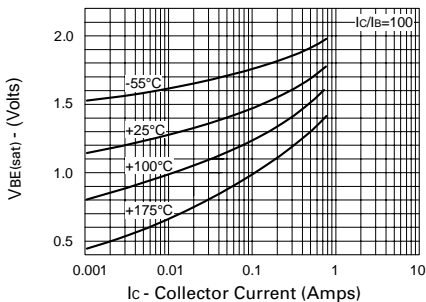
TYPICAL CHARACTERISTICS



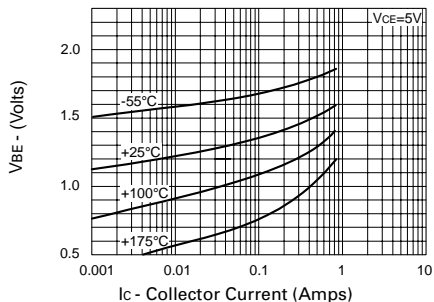
$V_{CE(sat)}$ v I_C



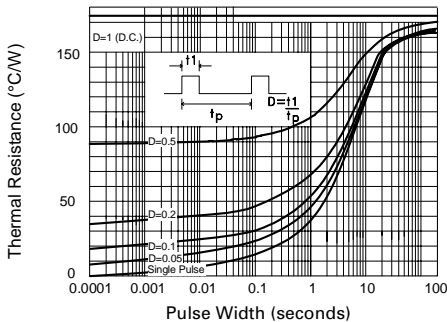
h_{FE} v I_C



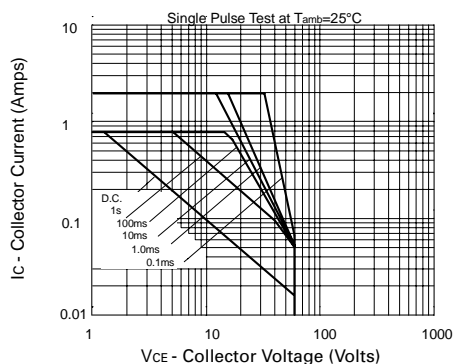
$V_{BE(sat)}$ v I_C



$V_{BE(on)}$ v I_C

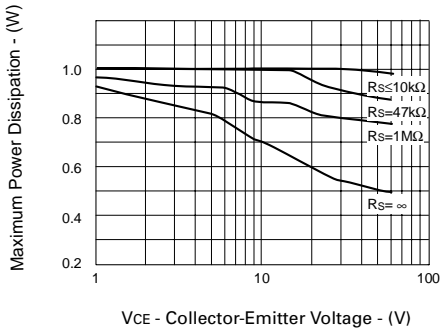


Maximum transient thermal impedance



Safe Operating Area

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

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

$T_{amb(max)}$ = 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