

NPN SILICON PLANAR MEDIUM POWER HIGH GAIN TRANSISTOR

ZTX690B

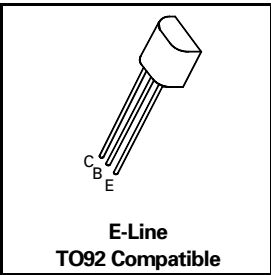
ISSUE 1 – MAY 94

FEATURES

- * 45 Volt V_{CEO}
- * Gain of 400 at $I_C=1$ Amp
- * Very low saturation voltage

APPLICATIONS

- * Darlington replacement
- * Siren Drivers
- * Battery powered circuits
- * Motor drivers



ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	45	V
Collector-Emitter Voltage	V_{CEO}	45	V
Emitter-Base Voltage	V_{EBO}	5	V
Peak Pulse Current	I_{CM}	6	A
Continuous Collector Current	I_C	2	A
Practical Power Dissipation*	P_{totp}	1.5	W
Power Dissipation at $T_{amb}=25^{\circ}C$ derate above $25^{\circ}C$	P_{tot}	1 5.7	W mW/ $^{\circ}C$
Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +200	$^{\circ}C$

*The power which can be dissipated assuming the device is mounted in a typical manner on a P.C.B. with copper equal to 1 inch square minimum

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	45			V	$I_C=100\mu A$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	45			V	$I_C=10mA^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5			V	$I_E=100\mu A$
Collector Cut-Off Current	I_{CBO}			0.1	μA	$V_{CB}=35V$
Emitter Cut-Off Current	I_{EBO}			0.1	μA	$V_{EB}=4V$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			0.1 0.5	V V	$I_C=0.1A, I_B=0.5mA^*$ $I_C=1A, I_B=5mA^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			0.9	V	$I_C=1A, I_B=10mA^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$			0.9	V	$I_C=1A, V_{CE}=2V^*$
Static Forward Current Transfer Ratio	h_{FE}	500 400 150				$I_C=100mA, V_{CE}=2V^*$ $I_C=1A, V_{CE}=2V^*$ $I_C=2A, V_{CE}=2V^*$

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

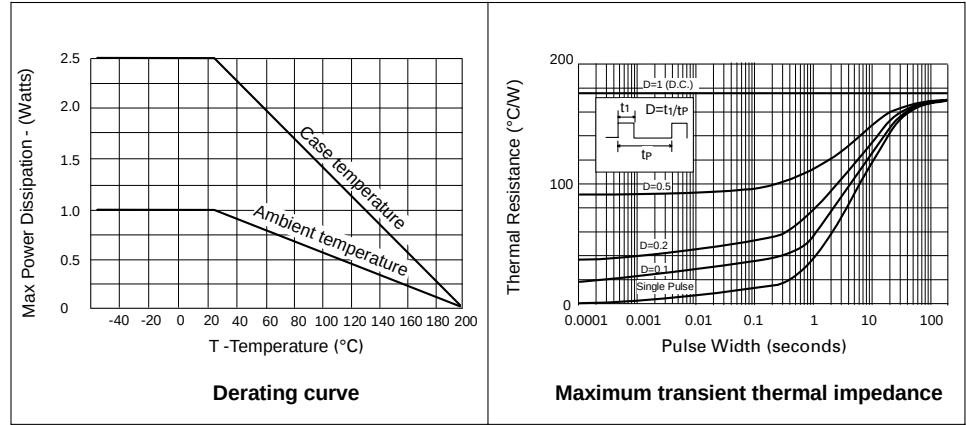
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Transition Frequency	f _T	150			MHz	I _C =50mA, V _{CE} =5V f=50MHz
Input Capacitance	C _{ibo}		200		pF	V _{EB} =0.5V, f=1MHz
Output Capacitance	C _{obo}		16		pF	V _{CB} =10V, f=1MHz
Switching Times	t _{on} t _{off}		33 1300		ns ns	I _C =500mA, I _B =50mA I _{B2} =50mA, V _{CC} =10V

*Measured under pulsed conditions. Pulse width=300μs. Duty cycle ≤2%

THERMAL CHARACTERISTICS

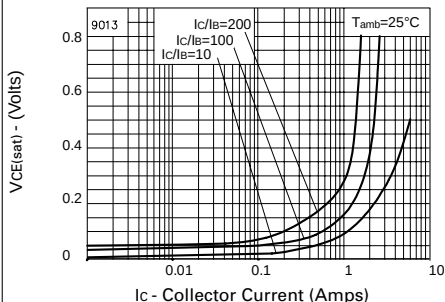
PARAMETER	SYMBOL	MAX.	UNIT
Thermal Resistance: Junction to Ambient ₁	R _{th(j-amb)1}	175	°C/W
Junction to Ambient ₂	R _{th(j-amb)2} †	116	°C/W
Junction to Case	R _{th(j-case)}	70	°C/W

† Device mounted on P.C.B. with copper equal to 1 sq. Inch minimum.

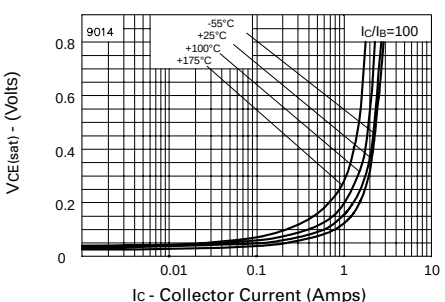


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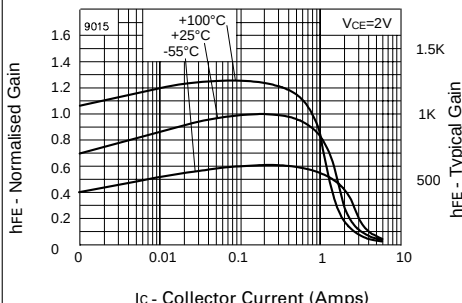
TYPICAL CHARACTERISTICS



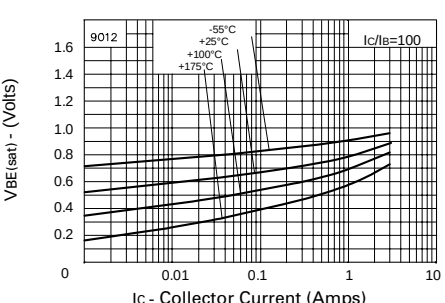
$V_{CE(sat)}$ v I_C



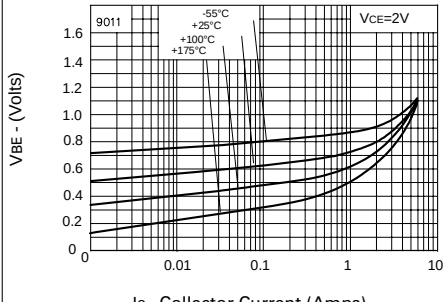
$V_{CE(sat)}$ v I_C



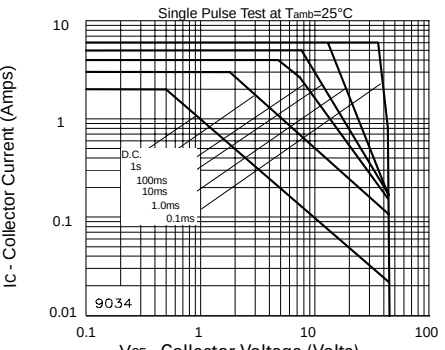
h_{FE} v I_C



$V_{BE(sat)}$ v I_C



$V_{BE(on)}$ v I_C



Safe Operating Area