NPN SILICON PLANAR AVALANCHE TRANSISTOR

ZTX413

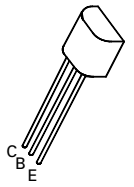
PROVISIONAL DATASHEET ISSUE 2 – MARCH 94

FEATURES

* Avalanche mode operation
* 50A Peak avalanche current
* Low inductance packaging

APPLICATIONS

* Laser LED drivers
* Fast edge generation
* High speed pulse generators



E-Line
TO92 Compatible

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	150	V
Collector-Emitter Voltage	V_{CEO}	50	V
Emitter-Base Voltage	V_{EBO}	6	V
Continuous Collector Current	I_C	200	mA
Peak Collector Current (25ns Pulse Width)	I_{CM}	50	A
Power Dissipation	P_{tot}	500	mW
Operating and Storage Temperature Range	T_j:T_{stg}	-55 to +200	°C

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Emitter Breakdown Voltage	$V_{(BR)CES}$	150			V	I_C=100μA
Collector-Emitter Breakdown Voltage	$V_{CEO(sus)}$	50			V	I_C=10mA
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6			V	I_E=100μA
Collector Cut-Off Current	I_{CBO}			0.1	μA	V_{CB}=120V
Emitter Cut-Off Current	I_{EBO}			0.1	μA	V_{EB}=4V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			0.15	V	I_C=10mA, I_B=1mA
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			0.8	V	I_C=10mA, I_B=1mA
Current in Second Breakdown (Pulsed)	I_{USB}	22 31			A A	VC=110V, C_{CE}=4.7nF* V_C=130V, C_{CE}=4.7nF*
Static Forward Current Transfer Ratio	h_{FE}	50				I_C=10mA, V_{CE}=10V

*Measured within a circuit possessing an approximate loop inductance of 12nH. The $I_{(USB)}$ monitor circuitry reflects 0.15 Ohm into the Collector-Emitter Discharge Loop

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ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Emitter Inductance	L_e		6		nH	With 3mm leads
Transition Frequency	f_T		150		MHz	I_C=10mA, V_{CE}=5V f=20MHz
Collector-Base Capacitance	C_{cb}		2		pF	V_{CB}=10V, I_E=0 f=1MHz

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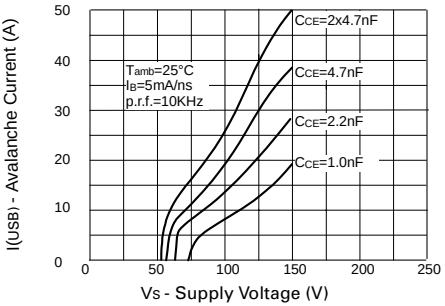
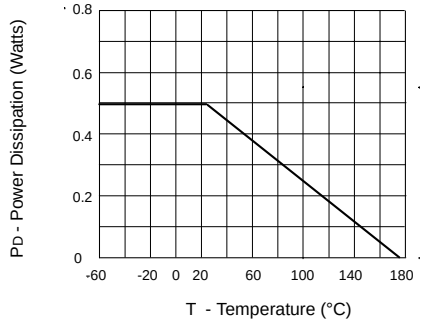
TYPICAL CHARACTERISTICS



Avalanche Current v Supply Voltage



Derating Curve