

ZXT690BK

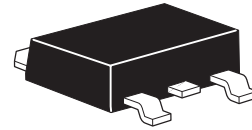
45V NPN MEDIUM POWER HIGH GAIN TRANSISTOR IN D-PAK

SUMMARY

$BV_{CEO} = 45V$; $R_{SAT} = 77m\Omega$; $I_C = 3A$

DESCRIPTION

Packaged in the D-Pak outline this high gain 45V NPN transistor offers low on state losses making it ideal for use in DC-DC circuits and various driving and power management functions.



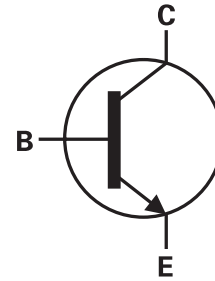
DPAK

FEATURES

- 3 Amps continuous current
- Up to 6 Amps peak current
- Low saturation voltages
- High gain

APPLICATIONS

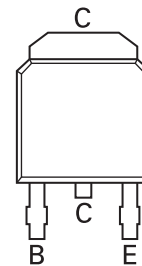
- DC - DC Converters
- MOSFET gate drivers
- Charging circuits
- Power switches
- Siren drivers



ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXT690BKTC	13"	16mm embossed	2500 units

PINOUT



DEVICE MARKING

- ZXT690B

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ABSOLUTE MAXIMUM RATINGS

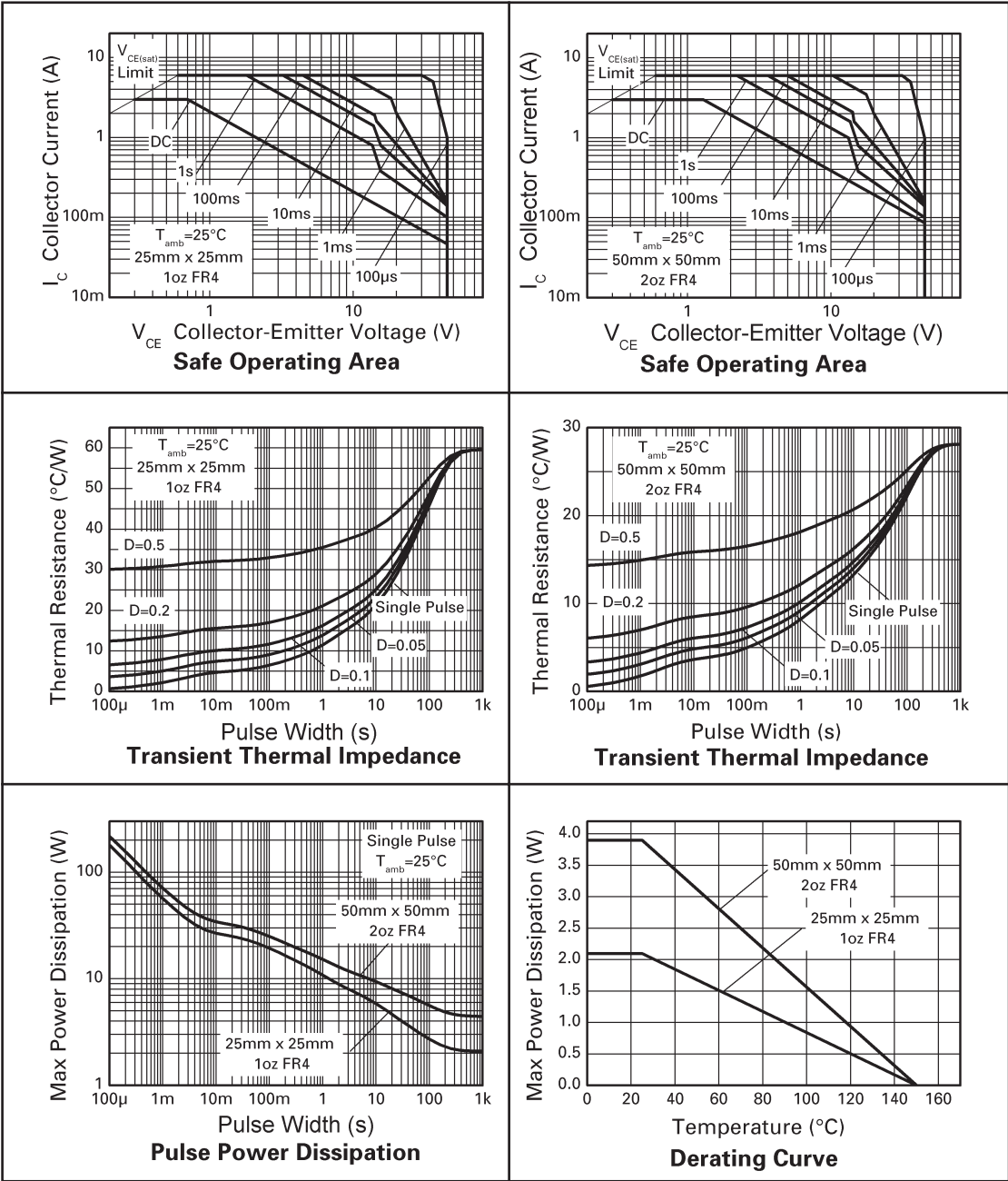
PARAMETER	SYMBOL	LIMIT	UNIT
Collector-Base Voltage	BV_{CBO}	60	V
Collector-Emitter Voltage	BV_{CEO}	45	V
Emitter-Base Voltage	BV_{EBO}	5	V
Continuous Collector Current	I_C	3	A
Peak Pulse Current	I_{CM}	6	A
Base Current	I_B	0.5	A
Power Dissipation at $T_A = 25^\circ\text{C}$ ^(a)	P_D	2.1	W
Linear Derating Factor		16.8	mW/°C
Thermal Resistance Junction to Ambient		59	°C/W
Power Dissipation at $T_A = 25^\circ\text{C}$ ^(b)	P_D	3.0	W
Linear Derating Factor		24.4	mW/°C
Thermal Resistance Junction to Ambient		41	°C/W
Power Dissipation at $T_A = 25^\circ\text{C}$ ^(c)	P_D	3.9	W
Linear Derating Factor		30.9	mW/°C
Thermal Resistance Junction to Ambient		32	°C/W
Operating and Storage Temperature Range	T_j, T_{stg}	-55 to +150	°C

NOTES

- For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.
- For a device surface mounted on 50mm x 50mm FR4 PCB with high coverage of single sided 1oz copper in still air conditions.
- For a device surface mounted on 50mm x 50mm FR4 PCB with high coverage of single sided 2oz copper in still air conditions.

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TYPICAL CHARACTERISTICS



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

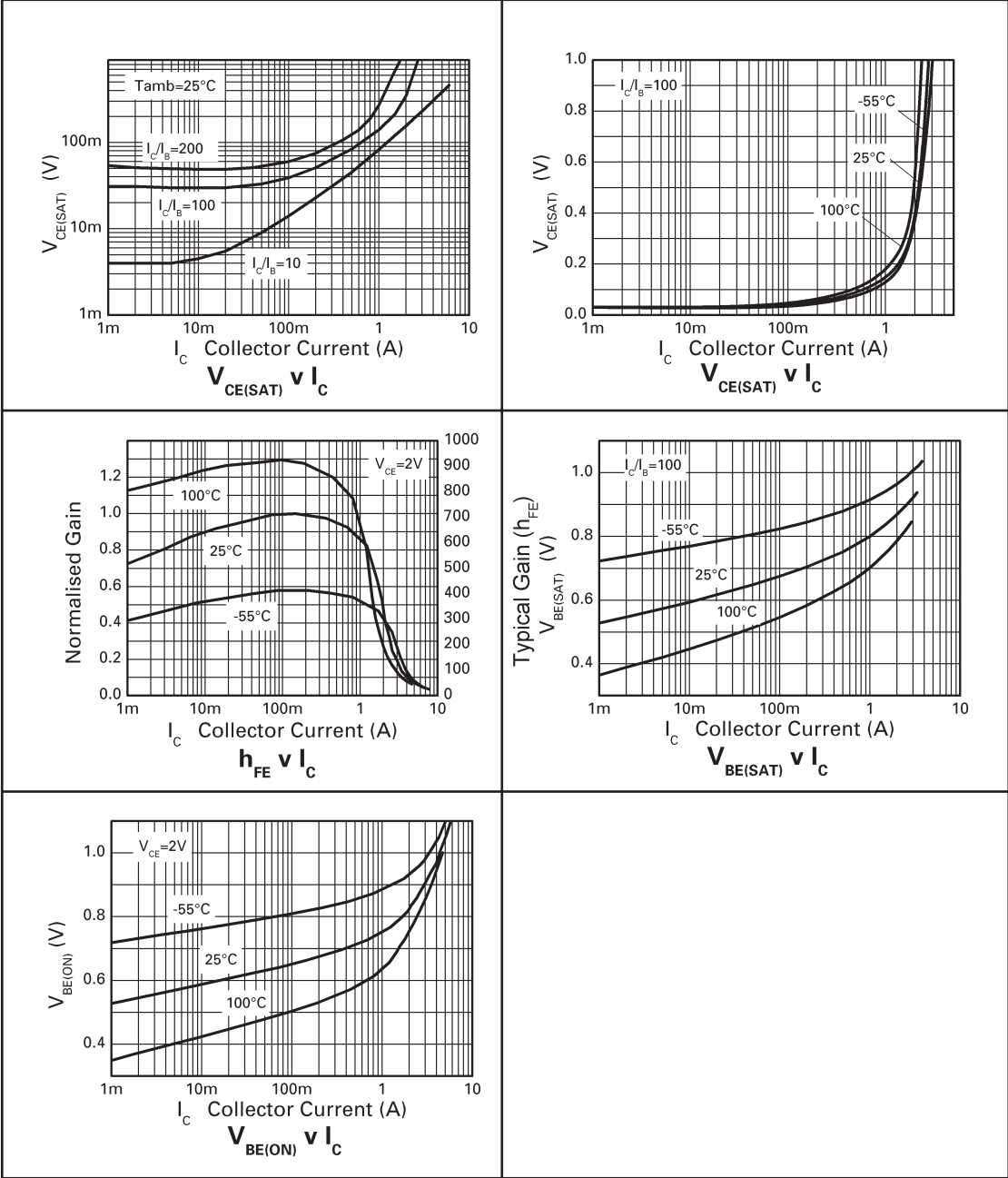
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Collector-Base Breakdown Voltage	BV_{CBO}	60	145		V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage	BV_{CEO}	45	65		V	$I_C = 10\text{mA}$ ⁽¹⁾
Emitter-Base Breakdown Voltage	BV_{EBO}	5	8.2		V	$I_E = 100\mu\text{A}$
Collector Cut-Off Current	I_{CBO}		<1	20	nA	$V_{CB} = 35\text{V}$
Collector Cut-Off Current	I_{CES}		<1	20	nA	$V_{CB} = 35\text{V}$
Emitter Cut-Off Current	I_{EBO}		<1	20	nA	$V_{EB} = 4\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$		50	85	mV	$I_C = 0.1\text{A}, I_B = 0.5\text{mA}$ ⁽¹⁾
			240	360	mV	$I_C = 1\text{A}, I_B = 5\text{mA}$ ⁽¹⁾
			210	320	mV	$I_C = 2\text{A}, I_B = 40\text{mA}$ ⁽¹⁾
			230	350	mV	$I_C = 3\text{A}, I_B = 150\text{mA}$
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$		1.0	1.2	mV	$I_C = 3\text{A}, I_B = 150\text{mA}$ ⁽¹⁾
Base-Emitter Turn-On Voltage	$V_{BE(ON)}$		0.9	1.1	mV	$I_C = 3\text{A}, V_{CE} = 2\text{V}$ ⁽¹⁾
Static Forward Current Transfer Ratio	h_{FE}	500				$I_C = 100\text{mA}, V_{CE} = 2\text{V}$ ⁽¹⁾
		400				$I_C = 1\text{A}, V_{CE} = 2\text{V}$ ⁽¹⁾
		150				$I_C = 2\text{A}, V_{CE} = 2\text{V}$ ⁽¹⁾
		60				$I_C = 3\text{A}, V_{CE} = 2\text{V}$ ⁽¹⁾
Transition Frequency	f_T	150			MHz	$I_C = 50\text{mA}, V_{CE} = 5\text{V}$ $f = 50\text{MHz}$
Output Capacitance	C_{OBO}		16		pF	$V_{CB} = 10\text{V}, f = 1\text{MHz}$ ⁽¹⁾
Switching Times	t_{ON}		33		ns	$I_C = 500\text{mA}, V_{CC} = 10\text{V},$
	t_{OFF}		1300		ns	$I_{B1} = I_{B2} = 50\text{mA}$

NOTES

⁽¹⁾ Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$; duty cycle $\leq 2\%$.

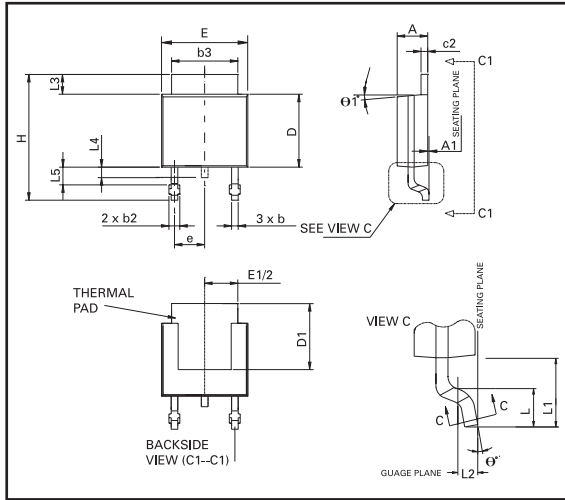
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TYPICAL CHARACTERISTICS



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PACKAGE OUTLINE



Controlling dimensions are in millimetres.
Approximate conversions are given in inches

DIM	MILLIMETRES		INCHES	
	MIN	MAX	MIN	MAX
A	2.18	2.38	0.086	0.094
A1	—	0.127	—	0.005
b	0.635	0.89	0.025	0.035
b2	0.762	1.114	0.030	0.045
b3	5.20	5.46	0.205	0.215
c	0.457	0.609	0.018	0.024
c2	0.457	0.584	0.018	0.023
D	5.97	6.22	0.235	0.245
D1	5.20	—	0.205	—
E	6.35	6.73	0.250	0.265
E1	4.32	—	0.170	—
e	2.30 BSC		0.090 BSC	
H	9.40	10.41	0.370	0.410
L	1.40	1.78	0.055	0.070
L1	2.74 REF		0.108 REF	
L2	0.051 BSC		0.020 BSC	
L3	0.89	1.27	0.035	0.050
L4	0.635	1.01	0.025	0.040
L5	1.14	1.52	0.045	0.060
θ1°	0°	10°	0°	10°
θ°	0°	15°	0°	15°

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ISSUE 1 - JUNE 2003