

# ZXT790AK

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## 40V PNP MEDIUM POWER HIGH GAIN TRANSISTOR IN D-PAK

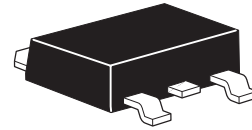
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### SUMMARY

$BV_{CEO} = -40V$  ;  $R_{SAT} = 83m\Omega$ ;  $I_C = -3A$

### DESCRIPTION

Packaged in the D-Pak outline this high gain 40V PNP transistor offers low on state losses making it ideal for use in DC-DC circuits and various driving and power management functions.



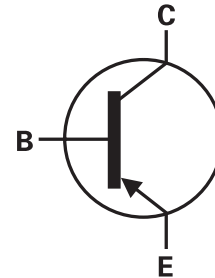
DPAK

### FEATURES

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

### APPLICATIONS

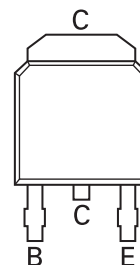
- DC - DC Converters
- MOSFET gate drivers
- Charging circuits
- Power switches
- Siren drivers



### ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXT790AKTC	13"	16mm embossed	2500 units

### PINOUT



### DEVICE MARKING

- ZXT790A

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## ABSOLUTE MAXIMUM RATINGS

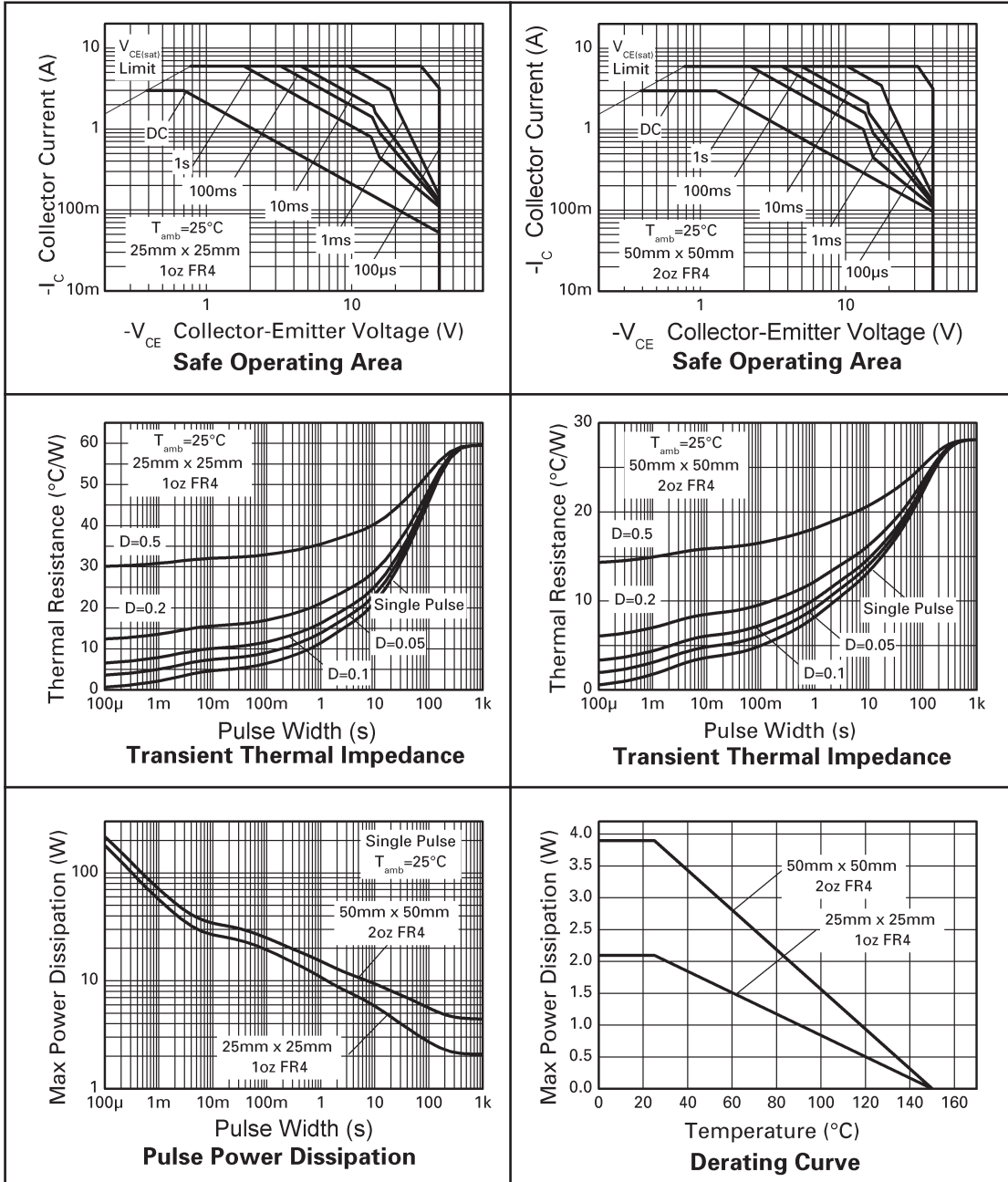
PARAMETER	SYMBOL	LIMIT	UNIT
Collector-Base Voltage	$BV_{CBO}$	-50	V
Collector-Emitter Voltage	$BV_{CEO}$	-40	V
Emitter-Base Voltage	$BV_{EBO}$	-5	V
Continuous Collector Current	$I_C$	-3	A
Peak Pulse Current	$I_{CM}$	-6	A
Base Current	$I_B$	-0.5	A
Power Dissipation at $T_A = 25^\circ\text{C}$ <sup>(a)</sup>	$P_D$	2.1	W
Linear Derating Factor		16.8	mW/°C
Thermal Resistance Junction to Ambient		59	°C/W
Power Dissipation at $T_A = 25^\circ\text{C}$ <sup>(b)</sup>	$P_D$	3.0	W
Linear Derating Factor		24.4	mW/°C
Thermal Resistance Junction to Ambient		41	°C/W
Power Dissipation at $T_A = 25^\circ\text{C}$ <sup>(c)</sup>	$P_D$	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

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



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

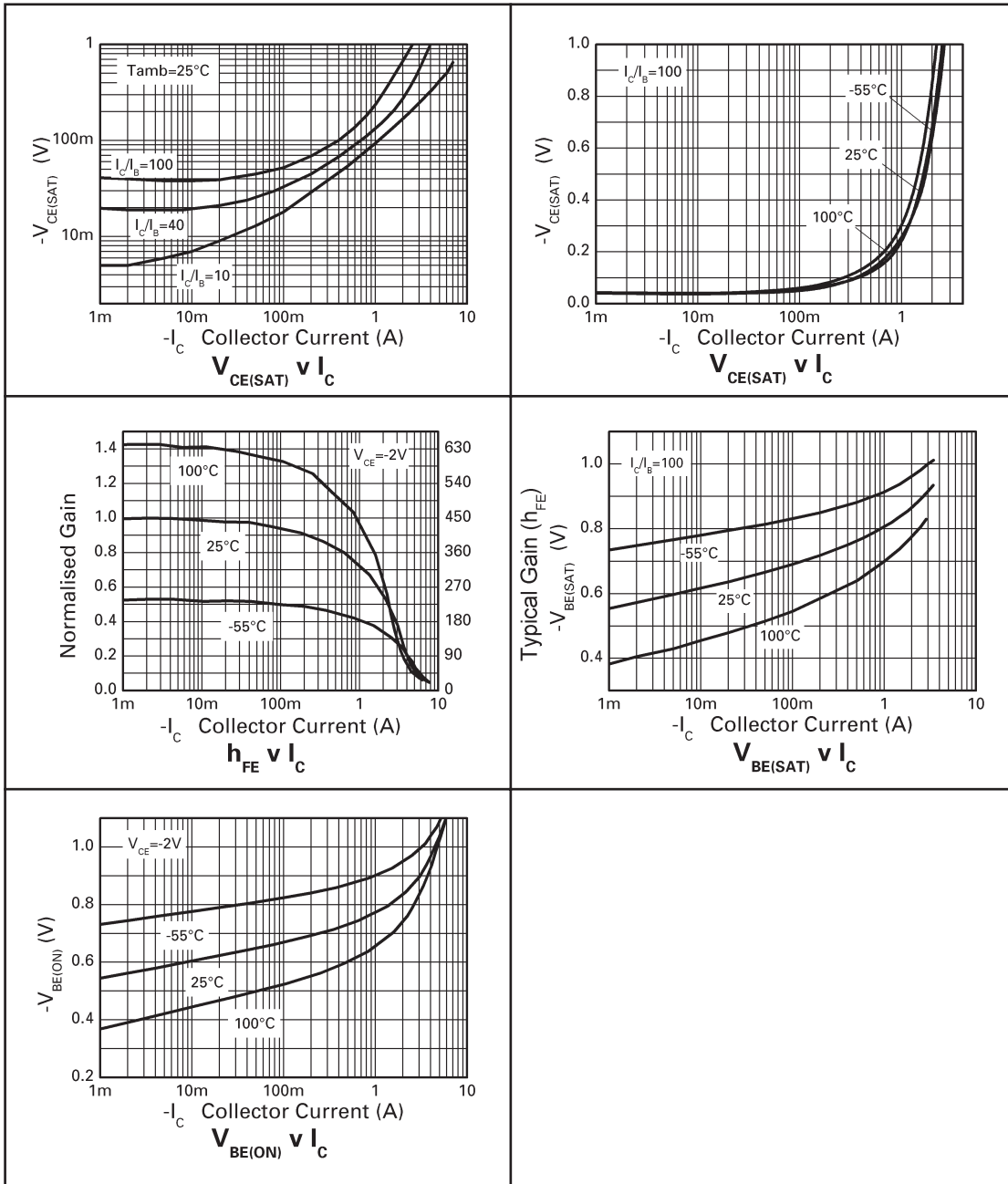
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Collector-Base Breakdown Voltage	$BV_{CBO}$	-50	-70		V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	-40	-60		V	$I_C = -10\text{mA}$ <sup>(1)</sup>
Emitter-Base Breakdown Voltage	$BV_{EBO}$	-5	-8.3		V	$I_E = -100\mu\text{A}$
Collector Cut-Off Current	$I_{CBO}$		<1	-20	nA	$V_{CB} = -30\text{V}$
Collector Cut-Off Current	$I_{CES}$		<1	-20	nA	$V_{CB} = -30\text{V}$
Emitter Cut-Off Current	$I_{EBO}$		<1	-20	nA	$V_{EB} = -4\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$		-110	-170	mV	$I_C = -0.5\text{A}, I_B = -5\text{mA}$ <sup>(1)</sup>
			-220	-350	mV	$I_C = -1\text{A}, I_B = -10\text{mA}$ <sup>(1)</sup>
			-260	-450	mV	$I_C = -2\text{A}, I_B = -50\text{mA}$ <sup>(1)</sup>
			-250	-450	mV	$I_C = -3\text{A}, I_B = -300\text{mA}$ <sup>(1)</sup>
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$		-1.05	-1.15	V	$I_C = -3\text{A}, I_B = -300\text{mA}$ <sup>(1)</sup>
Base-Emitter Turn-On Voltage	$V_{BE(ON)}$		-0.9	-1.0	V	$I_C = -3\text{A}, V_{CE} = -2\text{V}$ <sup>(1)</sup>
Static Forward Current Transfer Ratio	$h_{FE}$	300	450	800		$I_C = -10\text{mA}, V_{CE} = -2\text{V}$ <sup>(1)</sup>
		250	390			$I_C = -500\text{mA}, V_{CE} = -2\text{V}$ <sup>(1)</sup>
		200	350			$I_C = -1\text{A}, V_{CE} = -2\text{V}$ <sup>(1)</sup>
		150	280			$I_C = -2\text{A}, V_{CE} = -2\text{V}$ <sup>(1)</sup>
		80	170			$I_C = -3\text{A}, V_{CE} = -2\text{V}$ <sup>(1)</sup>
Transition Frequency	$f_T$	100			MHz	$I_C = -50\text{mA}, V_{CE} = -5\text{V}$ $f = 50\text{MHz}$
Output Capacitance	$C_{OBO}$		24		pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}$ <sup>(1)</sup>
Switching Times	$t_{ON}$		35		ns	$I_C = -500\text{mA}, V_{CC} = -10\text{V},$
	$t_{OFF}$		600		ns	$I_{B1} = I_{B2} = -50\text{mA}$

### NOTES

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

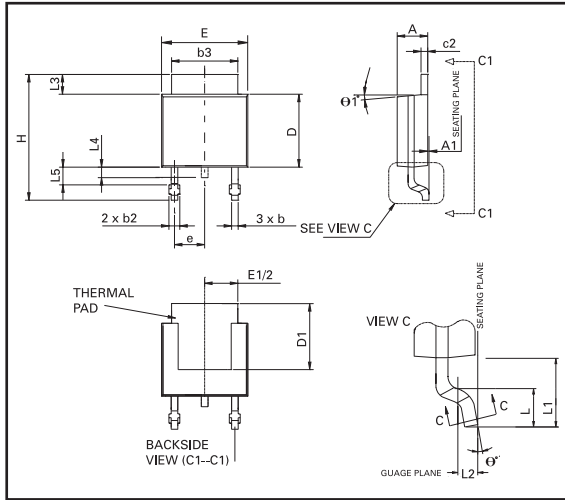
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## TYPICAL CHARACTERISTICS



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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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