

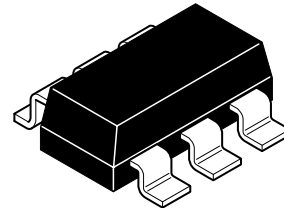
# ZXTC2045E6

## Dual 40V complementary transistors in SOT23-6

### Summary

$BV_{CEV} = 40V$

$BV_{CEO} = 30V$

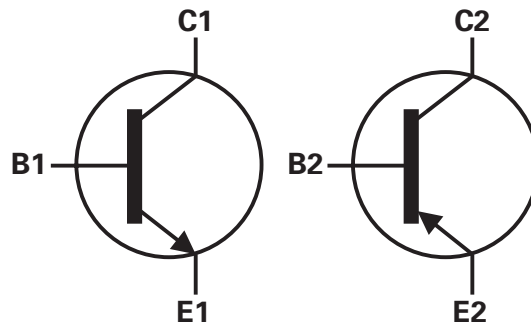


### Features

- 40V complementary device
- Up to 5 amps peak current
- High  $h_{FE}$
- SOT236 package

### Applications

- MOSFET and IGBT gate driving



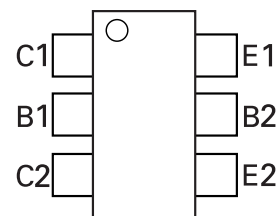
### Ordering information

Device	Reel size	Tape width	Quantity per reel
ZXTC2045E6TA	7"	8mm embossed	3,000
ZXTC2045E6TC	13"	8mm embossed	10,000

### Device marking

2045

### Pin out - top view



# ZXTC2045E6

## Absolute maximum ratings (each transistor)

Parameter	Symbol	Limit		Unit
		NPN	PNP	
Collector-base voltage	$BV_{CBO}$	40	-40	V
Collector-emitter voltage	$BV_{CEV}$	40	-40	V
Collector-emitter voltage	$BV_{CEO}$	30	-30	V
Emitter-base voltage	$BV_{EBO}$	7	-7	V
Peak pulse current	$I_{CM}$	5	-5	A
Continuous collector current <sup>(a)</sup>	$I_C$	1.5	-1.5	A
Base current	$I_B$	1	-1	A
Power dissipation at $T_A = 25^\circ\text{C}$ <sup>(a) (c)</sup> Linear derating factor	$P_D$	0.9 7.2		W mW/°C
Power dissipation at $T_A = 25^\circ\text{C}$ <sup>(a) (d)</sup> Linear derating factor	$P_D$	1.1 8.8		W mW/°C
Power dissipation at $T_A = 25^\circ\text{C}$ <sup>(b) (c)</sup> Linear derating factor	$P_D$	1.7 13.6		W mW/°C
Operating and storage temperature range	$T_j, T_{stg}$	-55 to +150		°C

## Thermal resistance

Parameter	Symbol	Value	Unit
Junction to ambient <sup>(a) (c)</sup>	$R_{\theta JA}$	139	°C/W
Junction to ambient <sup>(b) (c)</sup>	$R_{\theta JA}$	73	°C/W
Junction to ambient <sup>(a) (d)</sup>	$R_{\theta JC}$	113	°C/W

### NOTES:

- (a) For a device surface mounted on 25mm x 25mm x 0.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.  
 (b) As above measured at  $t < 5$  seconds.  
 (c) For device with one active die.  
 (d) For device with two active dice running at equal power.

# ZXTC2045E6

## Electrical characteristics (at $T_{AMB} = 25^{\circ}\text{C}$ unless otherwise stated)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	$BV_{CBO}$	$(-)40^{(*)}$			V	$I_C = (-)100\mu\text{A}$
Collector-emitter breakdown voltage	$BV_{CEV}$	$(-)40^{(*)}$			V	$I_C = (-)1\mu\text{A}$ $0.25\text{V} > V_{BE} > 1.0\text{V}$ ( $0.25\text{V} < V_{BE} < 1.0\text{V}$ )
Collector-emitter breakdown voltage	$BV_{CEO}$	$(-)30^{(*)}$			V	$I_C = (-)10\text{mA}^{(†)}$
Emitter-base breakdown voltage	$BV_{EBO}$	$(-)7^{(*)}$	$(-)8.5^{(*)}$		V	$I_E = (-)100\mu\text{A}$
Collector cut-off current	$I_{CBO}$		$(-) < 1^{(*)}$	$(-)20^{(*)}$	nA	$V_{CB} = (-)32\text{V}$
Collector cut-off current	$I_{CES/R}$		$(-) < 1^{(*)}$	$(-)20^{(*)}$	nA	$V_{CE} = (-)16\text{V}$ , $R \leq 1\text{k}\Omega$
Emitter cut-off current	$I_{EBO}$		$(-) < 1^{(*)}$	$(-)20^{(*)}$	nA	$V_{EB} = (-)6\text{V}$
Collector-emitter saturation voltage	$V_{CE(SAT)}$			$(-)375^{(*)}$	mV	$I_C = (-)0.75\text{A}$ , $I_B = (-)15\text{mA}^{(†)}$
Base-emitter saturation voltage	$V_{BE(SAT)}$			$(-)1.2^{(*)}$	V	$I_C = (-)0.75\text{A}$ , $I_B = (-)15\text{mA}^{(†)}$
Static forward current transfer ratio	$h_{FE}$	180	300	500		$I_C = (-)100\text{mA}$ , $V_{CE} = (-)2\text{V}^{(†)}$

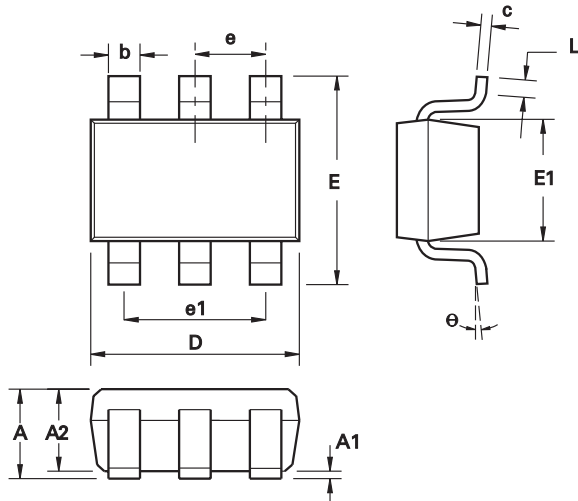
### NOTES:

(\*) ( ) applies to PNP

(†) Measured under pulsed conditions. Pulse width  $\leq 300$  s; duty cycle  $\leq 2\%$ .

# ZXTC2045E6

## Package details - SOT23-6



DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.45	0.354	0.0570
A1	0.00	0.15	0.00	0.0059
A2	0.90	1.30	0.0354	0.0511
b	0.35	0.50	0.0078	0.0196
C	0.09	0.26	0.0035	0.0102
D	2.70	3.10	0.1062	0.1220
E	2.20	3.20	0.0866	0.1181
E1	1.30	1.80	0.0511	0.0708
L	0.10	0.60	0.0039	0.0236
e	0.95 REF		0.0374 REF	
e1	1.90 REF		0.0748 REF	
L	0°	30°	0°	30°

**Note:** Controlling dimensions are in millimeters. Approximate dimensions are provided in inches

Europe	Americas	Asia Pacific	Corporate Headquarters
Zetex GmbH Streitfeldstraße 19 D-81673 München Germany	Zetex Inc 700 Veterans Memorial Highway Hauppauge, NY 11788 USA	Zetex (Asia Ltd) 3701-04 Metroplaza Tower 1 Hing Fong Road, Kwai Fong Hong Kong	Zetex Semiconductors plc Zetex Technology Park, Chadderton Oldham, OL9 9LL United Kingdom
Telefon: (49) 89 45 49 49 0 Fax: (49) 89 45 49 49 49 europe.sales@zetex.com	Telephone: (1) 631 360 2222 Fax: (1) 631 360 8222 usa.sales@zetex.com	Telephone: (852) 26100 611 Fax: (852) 24250 494 asia.sales@zetex.com	Telephone: (44) 161 622 4444 Fax: (44) 161 622 4446 hq@zetex.com

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