

# ZXTP25040DFL

## 40V, SOT23, PNP low power transistor

### Summary

$BV_{CEO} > -40V$

$BV_{ECO} > -3V$

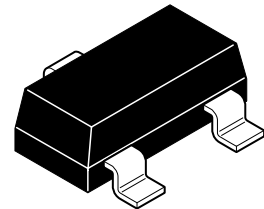
$I_{C(cont)} = -1.5A$

$V_{CE(sat)} < -115mV @ 1A$

$R_{CE(sat)} = 82m\Omega$

$P_D = 350mW$

Complementary part number ZXTN25040DFL



### Description

Advanced process capability has been used to achieve high current gain hold up making this device ideal for applications requiring high pulse currents.

### Features

- High peak current
- Low saturation voltage
- 40V forward blocking voltage

### Applications

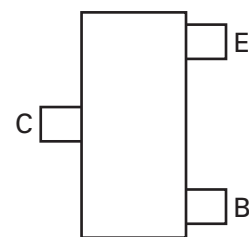
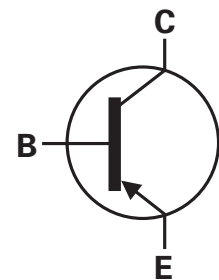
- MOSFET and IGBT gate driving
- Low power DC-DC conversion

### Ordering information

Device	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTP25040DFLTA	7	8	3,000

### Device marking

1A2



Pinout - top view

# ZXTP25040DFL

## Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Collector-base voltage	$V_{CBO}$	-45	V
Collector-emitter voltage (forward blocking)	$V_{CEO}$	-40	V
Emitter-collector voltage (reverse blocking)	$V_{ECO}$	-3	V
Emitter-base voltage	$V_{EBO}$	-7	V
Continuous collector current <sup>(a)</sup>	$I_C$	-1.5	A
Base current	$I_B$	-0.5	A
Peak pulse current	$I_{CM}$	-5	A
Power dissipation at $T_{amb} = 25^\circ\text{C}^{(a)}$	$P_D$	350	mW
Linear derating factor		2.8	mW/°C
Operating and storage temperature range	$T_j, T_{stg}$	-55 to 150	°C

## Thermal resistance

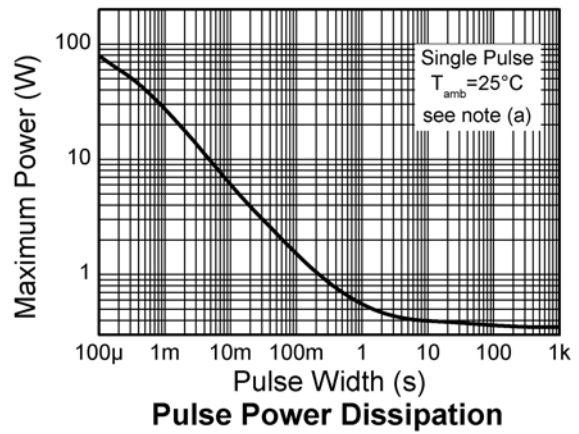
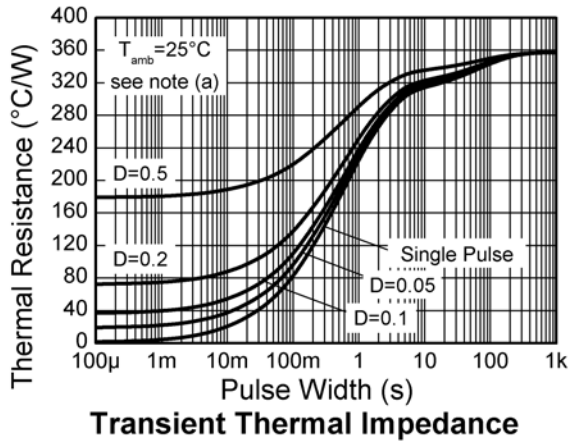
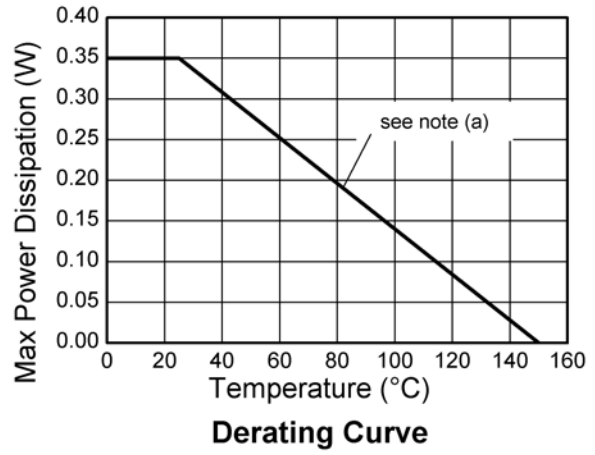
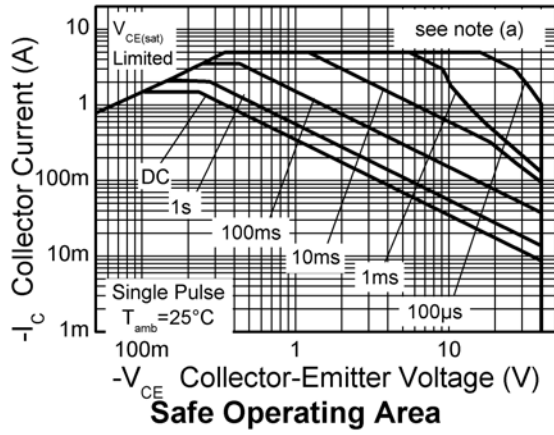
Parameter	Symbol	Limit	Unit
Junction to ambient <sup>(a)</sup>	$R_{\theta JA}$	357	°C/W

### NOTES:

(a) For a device surface mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

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## Characteristics



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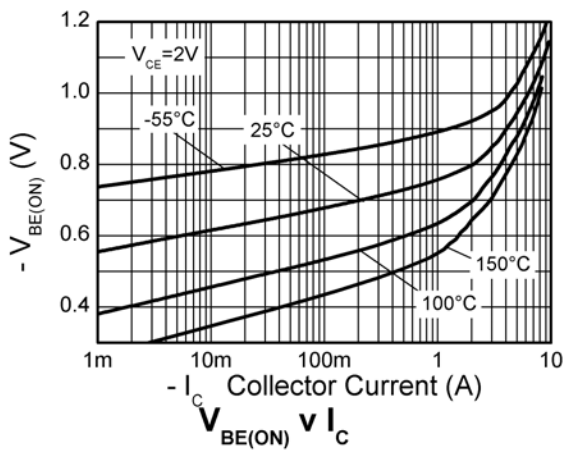
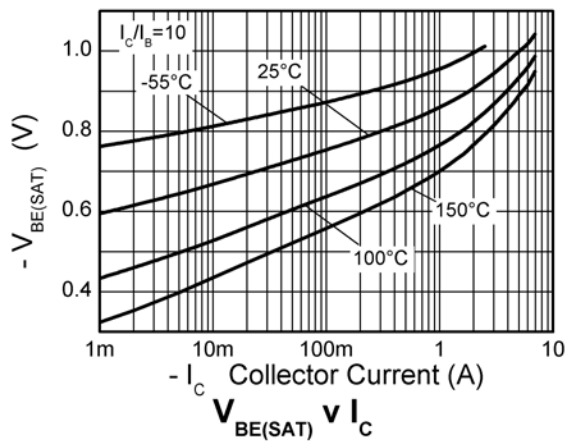
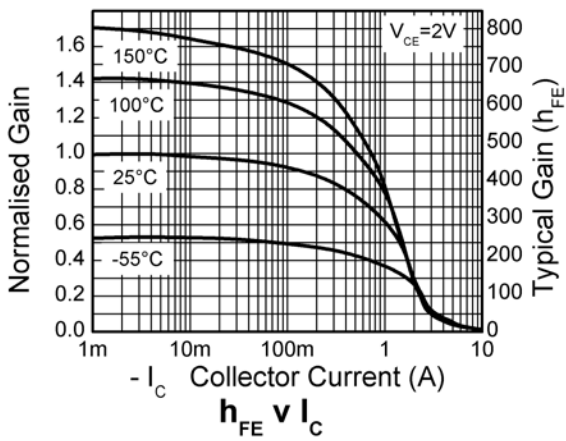
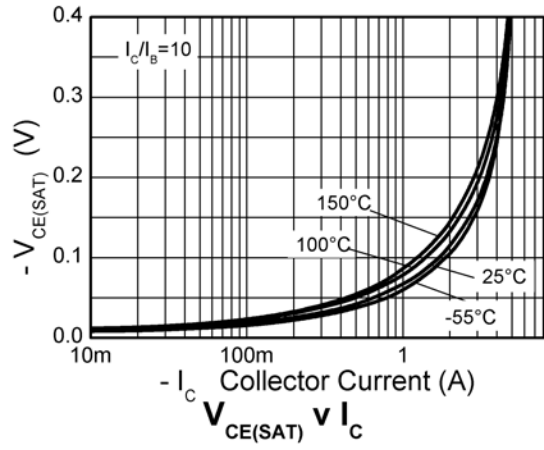
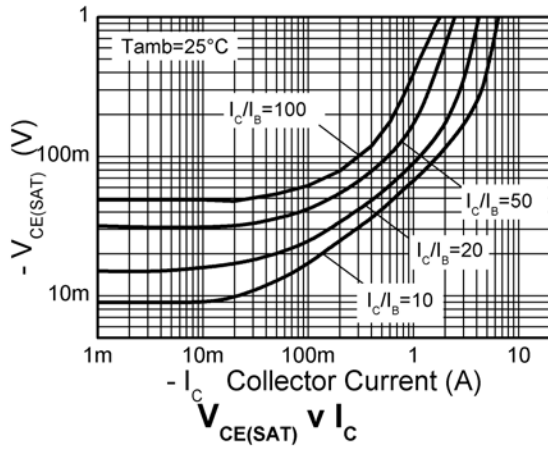
## Electrical characteristics (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	$BV_{CBO}$	-45	-75		V	$I_C = -100\mu\text{A}$
Collector-emitter breakdown voltage (base open)	$BV_{CEO}$	-40	-65		V	$I_C = -10\text{mA}^{(*)}$
Emitter-collector breakdown voltage (reverse blocking)	$BV_{ECO}$	-3	-8.7		V	$I_E = -100\mu\text{A}^{(*)}$
Emitter-base breakdown voltage	$BV_{EBO}$	-7	-8.2		V	$I_E = -100\mu\text{A}$
Collector cut-off current	$I_{CBO}$		<-1	-50 -20	nA $\mu\text{A}$	$V_{CB} = -36\text{V}$ $V_{CB} = -36\text{V}, T_{amb} = 100^{\circ}\text{C}$
Emitter cut-off current	$I_{EBO}$		<-1	-50	nA	$V_{EB} = -5.6\text{V}$
Collector-emitter saturation voltage	$V_{CE(sat)}$		-75 -200 -95 -160 -245	-95 -290 -115 -190 -300	mV mV mV mV mV	$I_C = -0.5\text{A}, I_B = -20\text{mA}^{(*)}$ $I_C = -1\text{A}, I_B = -20\text{mA}^{(*)}$ $I_C = -1\text{A}, I_B = -100\text{mA}^{(*)}$ $I_C = -1.5\text{A}, I_B = -75\text{mA}^{(*)}$ $I_C = -3\text{A}, I_B = -300\text{mA}^{(*)}$
Base-emitter saturation voltage	$V_{BE(sat)}$		-915	-1000	mV	$I_C = -1.5\text{A}, I_B = -75\text{mA}^{(*)}$
Base-emitter turn-on voltage	$V_{BE(on)}$		-825	-900	mV	$I_C = -1.5\text{A}, V_{CE} = -2\text{V}^{(*)}$
Static forward current transfer ratio	$h_{FE}$	300 120 15	450 200 40	900		$I_C = -10\text{mA}, V_{CE} = -2\text{V}^{(*)}$ $I_C = -1.5\text{A}, V_{CE} = -2\text{V}^{(*)}$ $I_C = -3\text{A}, V_{CE} = -2\text{V}^{(*)}$
Transition frequency	$f_T$		270		MHz	$I_C = -50\text{mA}, V_{CE} = -10\text{V}$ $f = 50\text{MHz}$
Output capacitance	$C_{obo}$		17.4	25	pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}^{(*)}$
Delay time	$t_{(d)}$		34		ns	$V_{CC} = -15\text{V}, I_C = -750\text{mA},$ $I_{B1} = I_{B2} = -15\text{mA}.$
Rise time	$t_{(r)}$		41		ns	
Storage time	$t_{(s)}$		266		ns	
Fall time	$t_{(f)}$		53		ns	

### NOTES:

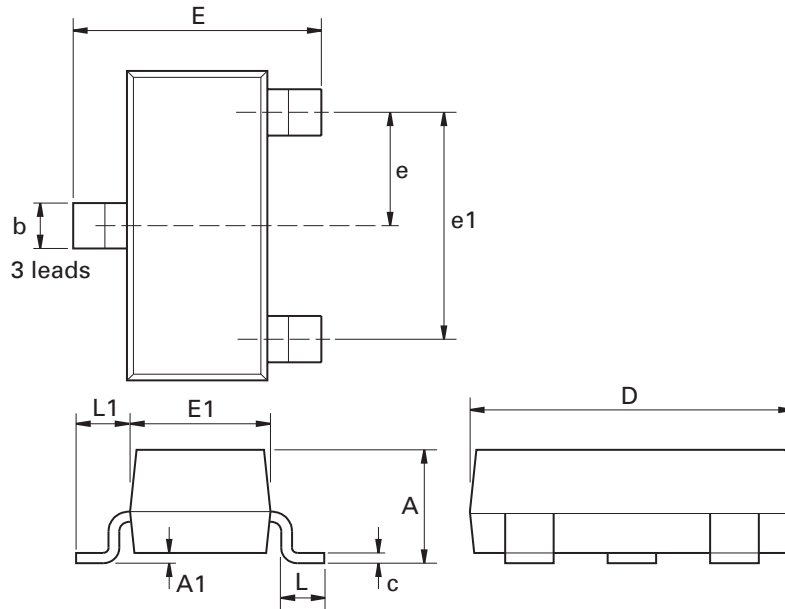
(\*) Measured under pulsed conditions. Pulse width  $\leq 300\mu\text{s}$ ; duty cycle  $\leq 2\%$ .

## Typical characteristics



# ZXTP25040DFL

## Package outline - SOT23



Dim.	Millimeters		Inches		Dim.	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Max.	Max.
A	2.67	3.05	0.105	0.120	H	0.33	0.51	0.013	0.020
B	1.20	1.40	0.047	0.055	K	0.01	0.10	0.0004	0.004
C	-	1.10	-	0.043	L	2.10	2.50	0.083	0.0985
D	0.37	0.53	0.015	0.021	M	0.45	0.64	0.018	0.025
F	0.085	0.15	0.0034	0.0059	N	0.95 NOM		0.0375 NOM	
G	1.90 NOM		0.075 NOM		-	-	-	-	-

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

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