

# ZXTP25020DFL 20V, SOT23, PNP low power transistor

## **Summary**

 $BV_{CEO} > -20V$ 

 $BV_{ECO} > -4V$ 

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

V<sub>CE(sat)</sub> < 85 mV @ 1A

 $R_{CE(sat)} = 54m\Omega$ 

 $P_{D} = 350 \text{mW}$ 

Complementary part number ZXTN25020DFL

# **Description**

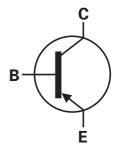
Advanced process capability has been used to achieve high current gain hold up making this device ideal for applications requiring high pulse currents.

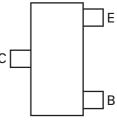
### **Features**

- · High peak current
- · Low saturation voltage

## **Applications**

- · DC-DC converters
- · MOSFET and IGBT gate driving





Pinout - top view

## **Ordering information**

Device	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTP25020DFLTA	7	8	3000

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## **Device marking**

1F2

# **Absolute maximum ratings**

Parameter	Symbol	Limit	Unit
Collector-base voltage	V <sub>CBO</sub>	-25	V
Collector-emitter voltage (forward blocking)	V <sub>CEO</sub>	-20	V
Emitter-collector voltage (reverse blocking)	V <sub>ECO</sub>	-4	V
Emitter-base voltage	V <sub>EBO</sub>	-7	V
Continuous collector current	Ic	-1.5	Α
Base current	I <sub>B</sub>	-500	mA
Peak pulse current	I <sub>CM</sub>	-6	Α
Power dissipation at T <sub>amb</sub> =25°C <sup>(a)</sup>	P <sub>D</sub>	350	mW
Linear derating factor		2.8	mW/°C
Operating and storage temperature range	T <sub>j</sub> , T <sub>stg</sub>	-55 to 150	°C

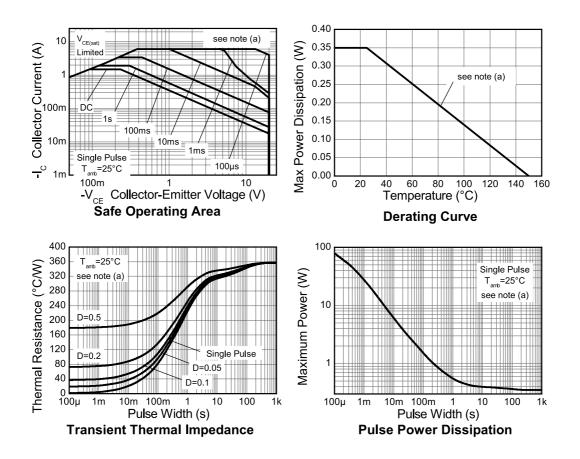
## Thermal resistance

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.

## **Characteristics**



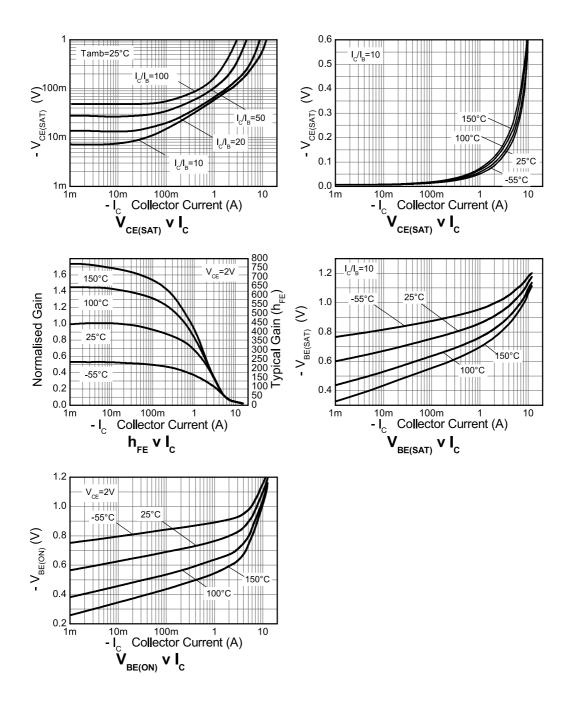
# Electrical characteristics (at T<sub>amb</sub> = 25°C unless otherwise stated)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV <sub>CBO</sub>	-25	-55		V	I <sub>C</sub> = -100μA
Collector-emitter breakdown voltage (base open)	BV <sub>CEO</sub>	-20	-45		V	I <sub>C</sub> = -10mA <sup>(*)</sup>
Emitter-base breakdown voltage	BV <sub>EBO</sub>	-7	-8.3		V	$I_E = -100 \mu A$
Emitter-collector breakdown voltage (reverse blocking)	BV <sub>ECO</sub>	-4	-8.5		V	I <sub>E</sub> = -100uA <sup>(*)</sup>
Collector cut-off current	I <sub>CBO</sub>		<-1	-50	nA	V <sub>CB</sub> = -20V
				-20	μΑ	$V_{CB} = -20V, T_{amb} = 100^{\circ}C$
Emitter cut-off current	I <sub>EBO</sub>		<-1	-50	nA	V <sub>EB</sub> = -5.6V
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>		-65	-85	mV	$I_C = -1A$ , $I_B = -100 \text{mA}^{(*)}$
Voitage			-160	-225	mV	$I_C = -1A$ , $I_B = -10mA^{(*)}$
			150	-195	mV	$I_C = -1.5A$ , $I_B = -30mA^{(*)}$
			-210	-275	mV	$I_C = -2A$ , $I_B = -40 \text{mA}^{(*)}$
			-215	260	mV	$I_C = -4A$ , $I_B = -400 \text{mA}^{(*)}$
Base-emitter saturation voltage	V <sub>BE(sat)</sub>		-845	-950	mV	$I_C = -1.5A$ , $I_B = -30mA^{(*)}$
Base-emitter turn-on voltage	V <sub>BE(on)</sub>		-785	-900	mV	I <sub>C</sub> = -1.5A, V <sub>CE</sub> = -2V <sup>(*)</sup>
Static forward current transfer	h <sub>FE</sub>	300	450	900		$I_C = -10 \text{mA}, V_{CE} = -2V^{(*)}$
ratio		160	250			$I_C = -1.5A$ , $V_{CE} = -2V^{(*)}$
		60	90			$I_C = -4A$ , $V_{CE} = -2V^{(*)}$
			15			$I_C = -10A$ , $V_{CE} = -2V^{(*)}$
Transition frequency	f <sub>T</sub>		290		MHz	I <sub>C</sub> = -50mA, V <sub>CE</sub> = -10V f = 50MHz
Output capacitance	C <sub>obo</sub>		21	30	pF	V <sub>CB</sub> = -10V, f = 1MHz <sup>(*)</sup>
Delay time	t <sub>(d)</sub>		14.2			$V_{CC} = -10V. I_C = -1A, I_{B1}$
Rise time	t <sub>(r)</sub>		16.3			= I <sub>B2</sub> = -50mA.
Storage time	t <sub>(s)</sub>		186			
Fall time	t <sub>(f)</sub>		32.7			

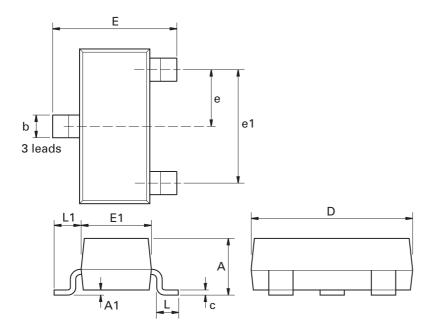
#### NOTES:

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

# **Typical characteristics**



# Package outline - SOT23



Dim.	Millin	neters	Inc	hes	Dim.	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Max.	Max.
Α	-	1.12	-	0.044	e1	1.90	NOM	0.075	NOM
A1	0.01	0.10	0.0004	0.004	Е	2.10	2.64	0.083	0.104
b	0.30	0.50	0.012	0.020	E1	1.20	1.40	0.047	0.055
С	0.085	0.120	0.003	0.008	L	0.25	0.62	0.018	0.024
D	2.80	3.04	0.110	0.120	L1	0.45	0.62	0.018	0.024
е	0.95	NOM	0.0375	NOM	-	-	-	-	-

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

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