

ZXTN25020DFL

20V, SOT23, NPN low power transistor

Summary

$BV_{CEX} > 100V$

$BV_{CEO} > 20V$

$BV_{ECO} > 5V$

$I_{C(cont)} = 2A$

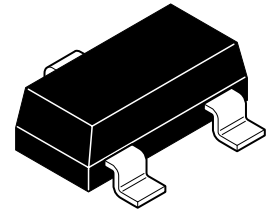
$I_{CM} = 8A$

$V_{CE(sat)} < 70mV @ 1A$

$R_{CE(sat)} = 55m\Omega$

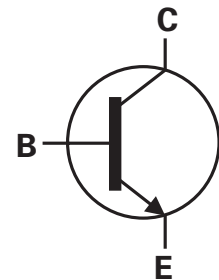
$P_D = 350mW$

Complementary part number ZXTP25020DFL



Description

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

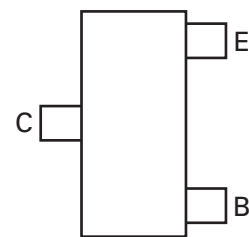


Features

- High peak current
- Low saturation voltage
- 100V forward blocking voltage

Applications

- MOSFET and IGBT gate driving
- DC-DC conversion
- LED driving
- Interface between low voltage IC's and loads



Pinout - top view

Ordering information

Device	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTN25020DFLTA	7	8	3,000

Device marking

1A1

ZXTN25020DFL

Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Collector-base voltage	V_{CBO}	100	V
Collector-emitter voltage (forward blocking)	V_{CEX}	100	V
Collector-emitter voltage	V_{CEO}	20	V
Emitter-collector voltage (reverse blocking)	V_{ECO}	5	V
Emitter-base voltage	V_{EBO}	7	V
Continuous collector current ^(a)	I_C	2	A
Base current	I_B	500	mA
Peak pulse current	I_{CM}	8	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

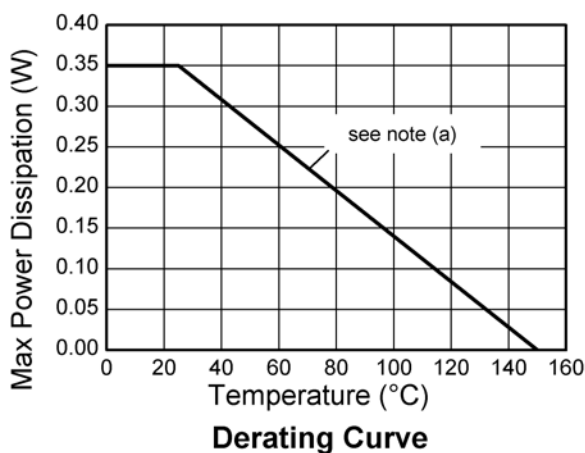
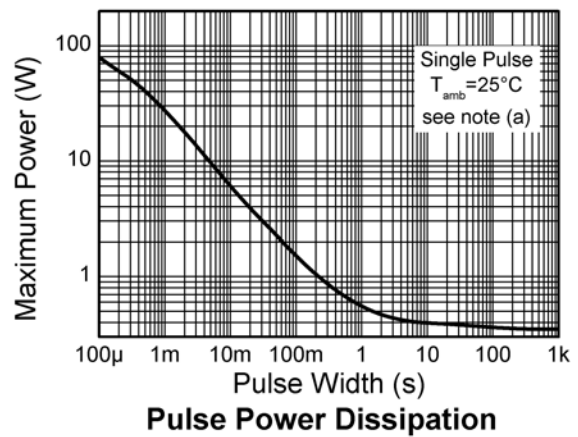
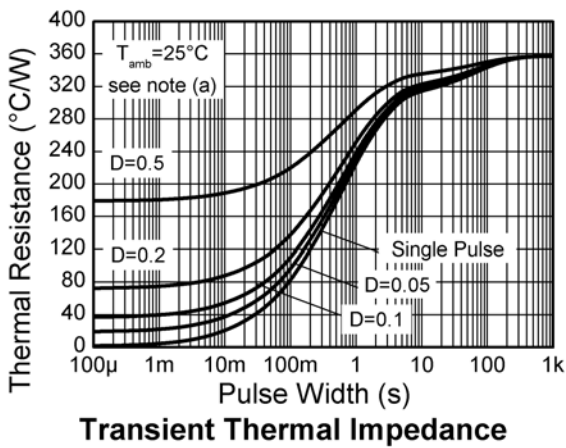
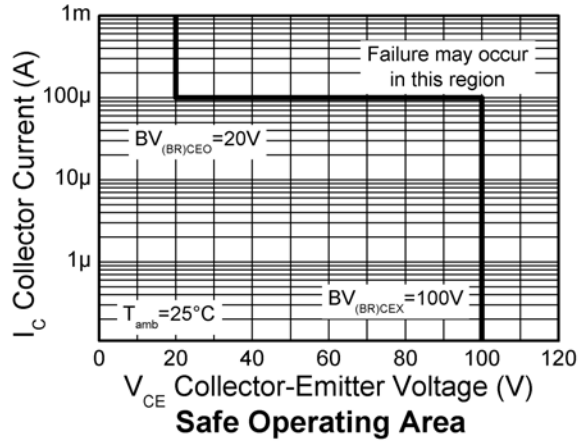
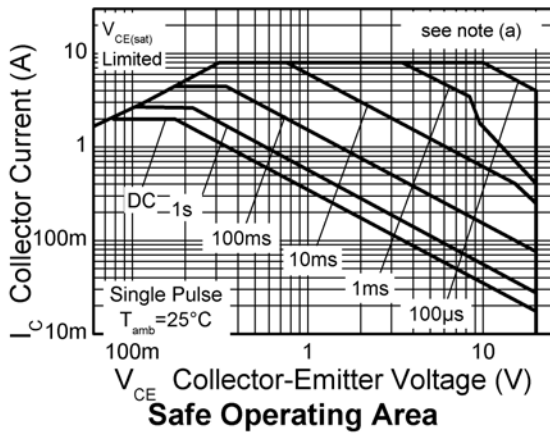
Thermal resistance

Parameter	Symbol	Limit	Unit
Junction to ambient ^(a)	$R_{\theta JA}$	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



ZXTN25020DFL

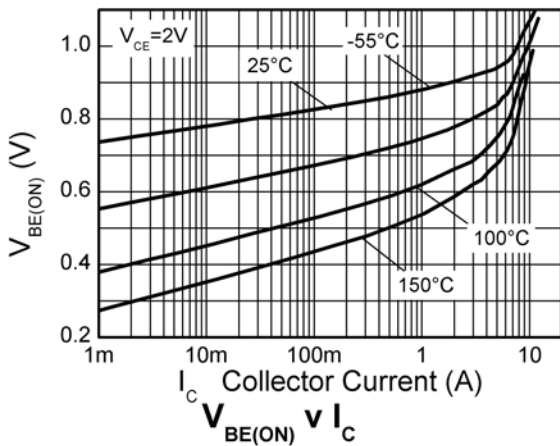
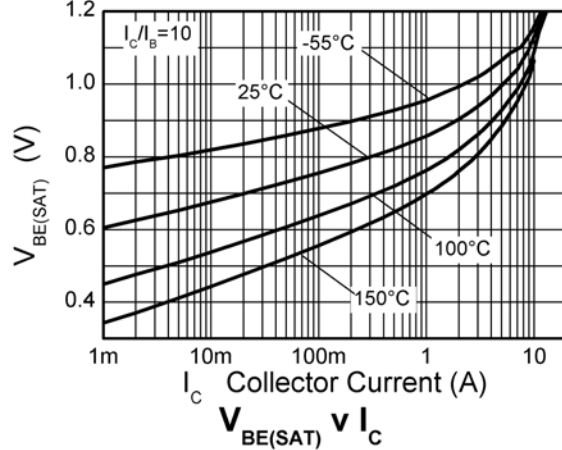
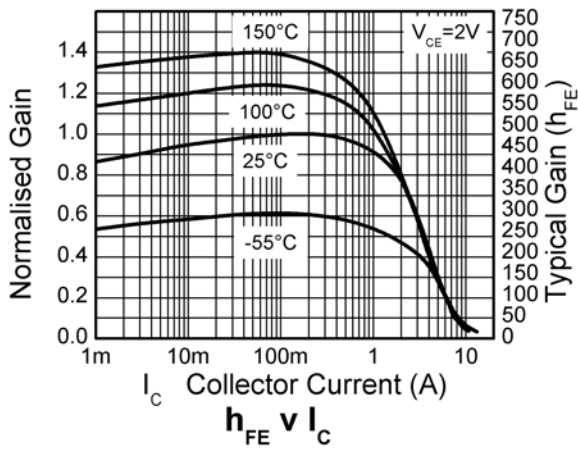
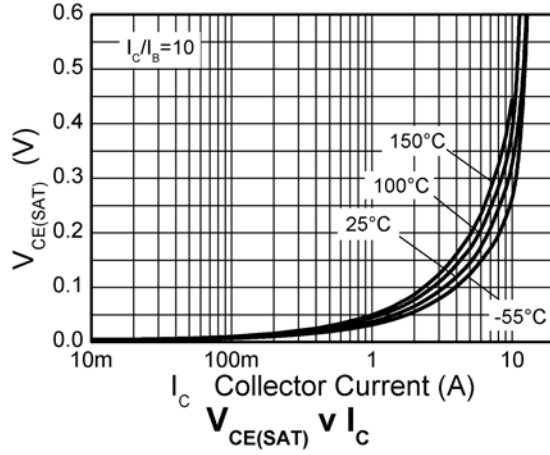
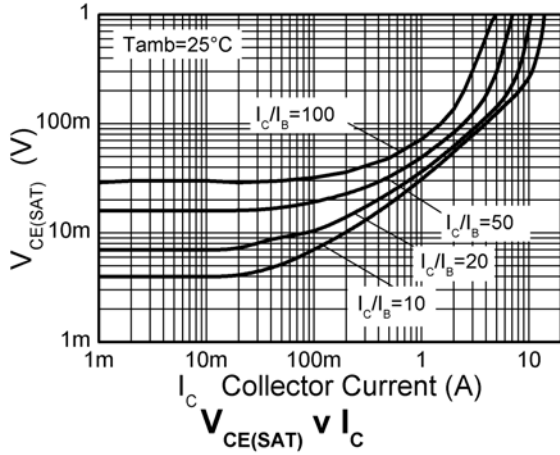
Electrical characteristics (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	100	125		V	$I_C = 100\mu\text{A}$
Collector-emitter breakdown voltage (forward blocking)	BV_{CEX}	100	120		V	$I_C = 100\text{A}$; $R_{BE} < 1\text{k}\Omega$ or $-1\text{V} < V_{BE} < 0.25\text{V}$
Collector-emitter breakdown voltage (base open)	BV_{CEO}	20	35		V	$I_C = 10\text{mA}^{(*)}$
Emitter-collector breakdown voltage (reverse blocking)	BV_{ECX}	6	8		V	$I_E = 100\mu\text{A}$, $R_{BC} < 1\text{k}\Omega$ or $0.25\text{V} > V_{BC} > -0.25\text{V}$
Emitter-collector breakdown voltage (base open)	BV_{ECO}	5	6		V	$I_E = 100\mu\text{A}$,
Emitter-base breakdown voltage	BV_{EBO}	7	8.3		V	$I_E = 100\mu\text{A}$
Collector cut-off current	I_{CBO}		<1	50 20	nA μA	$V_{CB} = 80\text{V}$ $V_{CB} = 80\text{V}$, $T_{amb} = 100^{\circ}\text{C}$
Collector-emitter cut-off current	I_{CEX}		-	100	nA	$V_{CE} = 80\text{V}$; $R_{BE} < 1\text{k}\Omega$ or $-1\text{V} < V_{BE} < 0.25\text{V}$
Emitter cut-off current	I_{EBO}		<1	50	nA	$V_{EB} = 5.6\text{V}$
Collector-emitter saturation voltage	$V_{CE(SAT)}$		60	70	mV	$I_C = 1\text{A}$, $I_B = 100\text{mA}^{(*)}$
			85	100	mV	$I_C = 1\text{A}$, $I_B = 20\text{mA}^{(*)}$
			140	160	mV	$I_C = 2\text{A}$, $I_B = 40\text{mA}^{(*)}$
			180	225	mV	$I_C = 2\text{A}$, $I_B = 20\text{mA}^{(*)}$
			245	270	mV	$I_C = 4.5\text{A}$, $I_B = 450\text{mA}^{(*)}$
Base-emitter saturation voltage	$V_{BE(SAT)}$		895	1000	mV	$I_C = 2\text{A}$, $I_B = 40\text{mA}^{(*)}$
Base-emitter turn-on voltage	$V_{BE(ON)}$		825	900	mV	$I_C = 2\text{A}$, $V_{CE} = 2\text{V}^{(*)}$
Static forward current transfer ratio	h_{FE}	300	450	900		$I_C = 10\text{mA}$, $V_{CE} = 2\text{V}^{(*)}$
		220	350			$I_C = 2\text{A}$, $V_{CE} = 2\text{V}^{(*)}$
		80	120			$I_C = 4.5\text{A}$, $V_{CE} = 2\text{V}^{(*)}$
Transition frequency	f_T		215		MHz	$I_C = 50\text{mA}$, $V_{CE} = 10\text{V}$ $f = 100\text{MHz}$
Output capacitance	C_{OBO}		16.5	25	pF	$V_{CB} = 10\text{V}$, $f = 1\text{MHz}^{(*)}$
Delay time	$t_{(d)}$		67.7		ns	$V_{CC} = 10\text{V}$. $I_C = 1\text{A}$, $I_{B1} = I_{B2} = 10\text{mA}$.
Rise time	$t_{(r)}$		72.2		ns	
Storage time	$t_{(s)}$		361		ns	
Fall time	$t_{(f)}$		63.9		ns	

NOTES:

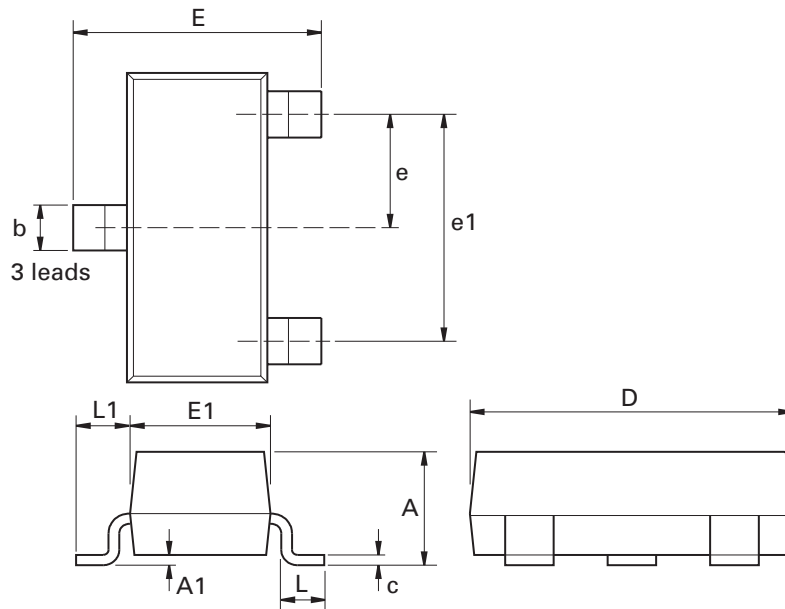
(*) Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$; duty cycle $\leq 2\%$.

Typical characteristics



ZXTN25020DFL

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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ESD (Electrostatic discharge)

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"Obsolete"	Production has been discontinued

Datasheet status key:

"Draft version"	This term denotes a very early datasheet version and contains highly provisional information, which may change in any manner without notice.
"Provisional version"	This term denotes a pre-release datasheet. It provides a clear indication of anticipated performance. However, changes to the test conditions and specifications may occur, at any time and without notice.
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- Техническая поддержка проекта;
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