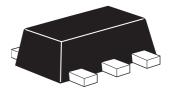


ZXTP25020DZ 20V PNP high gain transistor in SOT89

Summary

$$\begin{split} &\mathsf{BV}_{\mathsf{CEO}} > -20\mathsf{V} \\ &\mathsf{BV}_{\mathsf{ECO}} > -4\mathsf{V} \\ &\mathsf{I}_{\mathsf{C}(\mathsf{cont})} = 5\mathsf{A} \\ &\mathsf{V}_{\mathsf{CE}(\mathsf{sat})} < -65\mathsf{mV} @ -1\mathsf{A} \\ &\mathsf{R}_{\mathsf{CE}(\mathsf{sat})} = 39\mathsf{m}\Omega \\ &\mathsf{P}_{\mathsf{D}} = 2.4\mathsf{W} \\ &\mathsf{Complementary part number ZXTN25020\mathsf{DZ}} \end{split}$$



Description

Packaged in the SOT89 outline this new low saturation 20V PNP transistor offers extremely low on state losses making it ideal for use in DC-DC circuits and various driving and power management functions

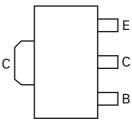
Features

- High peak current
- Low saturation voltage
- High gain
- SOT89 package

Applications

- DC-DC converters
- Load switch
- Motor drive
- · Disconnect switch
- MOSFET and IGBT gate drive

B



Pinout - top view

Ordering information

Device	Reel size	Tape width	Quantity
	(inches)	(mm)	per reel
ZXTP25020DZTA	7	12	1000

Device marking

• 1L5

Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Collector-Base voltage	V _{CBO}	-25	V
Collector-Emitter voltage	V _{CEO}	-20	V
Emitter-Base voltage (reverse blocking)	V _{ECO}	-4	V
Emitter-Base voltage	V _{EBO}	-7	V
Continuous Collector current ^(c)	۱ _C	-5	А
Base current	ا _B	-1	А
Peak pulse current	I _{CM}	-10	А
Power dissipation at $T_A = 25^{\circ}C^{(a)}$	PD	1.1	W
Linear derating factor		8.8	mW/°C
Power dissipation at $T_A = 25^{\circ}C^{(b)}$	PD	1.8	W
Linear derating factor		14.4	mW/°C
Power dissipation at $T_A = 25^{\circ}C^{(c)}$	PD	2.4	W
Linear derating factor		19.2	mW/°C
Power dissipation at $T_A = 25^{\circ}C^{(d)}$	PD	4.46	W
Linear derating factor		35.7	mW/°C
Power dissipation at $T_{C} = 25^{\circ}C^{(e)}$	P _D	15.7	W
Linear derating factor		126	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 _{OJA}	117	°C/W
Junction to ambient ^(b)	R _{OJA}	68	°C/W
Junction to ambient ^(c)	R _{OJA}	51	°C/W
Junction to ambient ^(d)	R _{OJA}	28	°C/W
Junction to case ^(e)	$R_{\Theta JC}$	7.95	°C/W

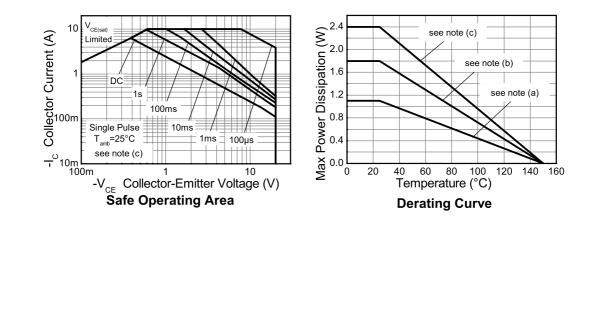
NOTES:

(a) For a device surface mounted on 15mm x 15mm x 0.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

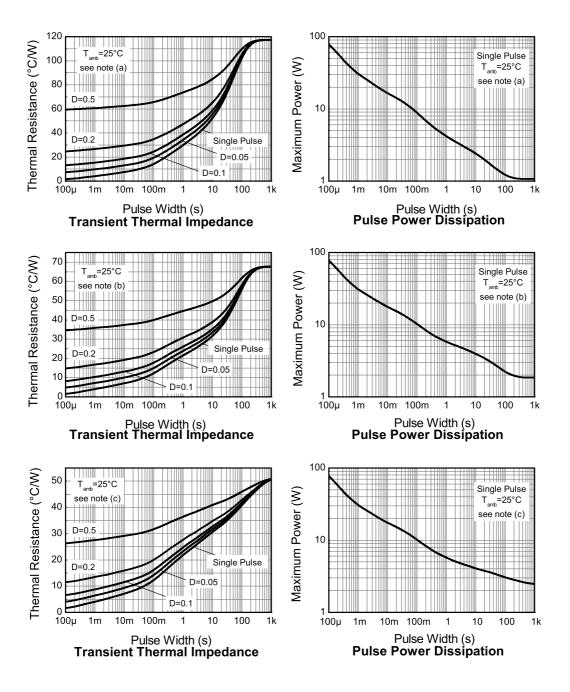
(b) Mounted on 25mm x 25mm x 0.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions. (c) Mounted on 50mm x 50mm x 0.6mm FR4 PCB with high coverage of single sided 2oz copper, in still air conditions. (d) As (c) above measured at t<5 seconds.

(e) Junction to case (collector tab). Typical.

Thermal characteristics



Thermal characteristics



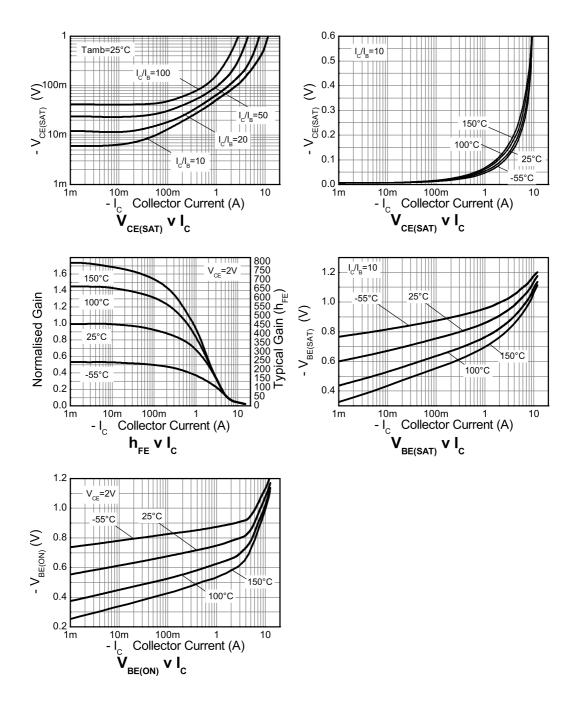
Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Collector-Base breakdown voltage	BV _{CBO}	-25	-55		V	I _C = -100μA
Collector-Emitter breakdown voltage	BV _{CEO}	-20	-45		V	I _C = -10mA ^(*)
Emitter-Collector breakdown voltage (reverse blocking)	BV _{ECX}	-4	-8.5		V	$I_E = -100\mu$ A, $R_{BC} < 1k\Omega$ or 0.25V > V _{BC} > -0.25V
Emitter-Collector breakdown voltage (reverse blocking)	BV _{ECO}	-4	-8.5		V	I _E = -100μΑ
Emitter-Base breakdown voltage	BV _{EBO}	-7	-8.3		V	I _E = -5.6V
Collector-Base cut-off	I _{CBO}		<1	-50	nA	V _{CB} = -25V
current				-0.5	μA	$V_{CB} = -25V$, $T_{amb} = 100^{\circ}C$
Emitter cut-off current	I _{EBO}		<1	-50	nA	V _{EB} = -5.6V
Collector-Emitter	V _{CE(sat)}		-50	-65	mV	$I_{C} = -1A$, $I_{B} = -100 \text{mA}^{(*)}$
saturation voltage			-150	-215	mV	$I_{C} = -1A$, $I_{B} = -10mA^{(*)}$
			-185	-245	mV	$I_{C} = -2A$, $I_{B} = -40mA^{(*)}$
			-195	-265	mV	I _C = -5A, I _B = -500mA ^(*)
Base-Emitter saturation voltage	V _{BE(sat)}		-1010	-1100	mV	$I_{C} = -5A, I_{B} = -500 \text{mA}^{(*)}$
Base-Emitter turn-on voltage	V _{BE(on)}		-870	-1000	mV	$I_{C} = -5A, V_{CE} = -2V^{(*)}$
Static forward current	h _{FE}	300	450	900		$I_{C} = -10 \text{mA}, V_{CE} = -2V^{(*)}$
transfer ratio		200	310			$I_{C} = -1A, V_{CE} = -2V^{(*)}$
		45	85			$I_{C} = -5A, V_{CE} = -2V^{(*)}$
			20			$I_{C} = -10A, V_{CE} = -2V^{(*)}$
Transition frequency	f _T		290		MHz	I _C = -50mA, V _{CE} = -10V f = 100MHz
Input capacitance	C _{ibo}		157	400	pF	V _{EB} = -0.5V, f = 1MHz ^(*)
Output capacitance	C _{obo}		21	30	pF	V _{CB} = -10V, f = 1MHz ^(*)
Delay time	t _d		14.2		ns	
Rise time	t _r		16.3		ns	$V_{CC} = -10V, I_{C} = -1A,$
Storage time	t _s		186		ns	I _{B1} = -I _{B2} = -50mA
Fall time	t _f		32.7		ns	

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

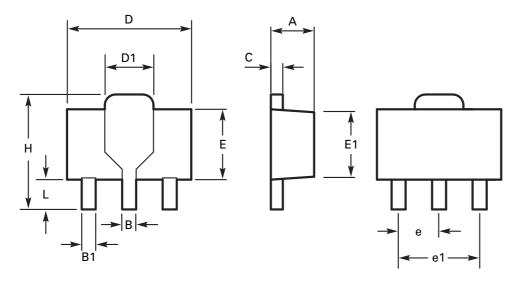
NOTES:

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

Typical characteristics



Package outline - SOT89



DIM	Millin	neters	Inc	hes	DIM	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
А	1.40	1.60	0.550	0.630	E	2.29	2.60	0.090	0.102
В	0.44	0.56	0.017	0.022	E1	2.13	2.29	0.084	0.090
B1	0.36	0.48	0.014	0.019	е	1.50 BSC		0.059 BSC	
С	0.35	0.44	0.014	0.017	e1	3.00 BSC		0.118 BSC	
D	4.40	4.60	0.173	0.181	Н	3.94	4.25	0.155	0.167
D1	1.52	1.83	0.064	0.072	L	0.89	1.20	0.035	0.047

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

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