

ZXTP25040DZ

40V PNP medium power transistor in SOT89

Summary

 $BV_{CEO} > -40V$

 $BV_{ECO} > -3V$

 $I_{C(cont)} = -3.5A$

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

V_{CE(sat)} < -90mV @ 1A

 $P_D = 2.4W$

Complementary part number ZXTN25040DZ



Advanced process capability and package design have been used to maximize the power handling and performance of this small outline transistor. The compact size and ratings of this device make it ideally suited to applications where space is at a premium.

B C

Features

- · High power dissipation SOT89 package
- · High peak current
- · Low saturation voltage
- · 3V reverse blocking voltage

Applications

- · MOSFET and IGBT gate driving
- · DC DC converters
- Motor drive
- · High side driver

Pinout - top view

Ordering information

Device	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTP25040DZTA	7	12	1000

Device marking

• 1L6

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 ^(c)	I _C	-3	Α
Base current	I _B	-1	Α
Peak pulse current	I _{CM}	-9	Α
Power dissipation at T _A =25°C ^(a)	P _D	1.1	W
Linear derating factor		8.8	mW/°C
Power dissipation at T _A =25°C ^(b)	P_{D}	1.8	W
Linear derating factor		14.4	mW/°C
Power dissipation at T _A =25°C ^(c)	P_{D}	2.4	W
Linear derating factor		19.2	mW/°C
Power dissipation at T _A =25°C ^(d)	P_{D}	4.46	W
Linear derating factor		35.7	mW/°C
Power dissipation at T _C =25°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)	$R_{\Theta JA}$	117	°C/W	
Junction to ambient ^(b)	$R_{\Theta JA}$	68	°C/W	
Junction to ambient ^(c)	$R_{\Theta JA}$	51	°C/W	
Junction to ambient ^(d)	$R_{\Theta JA}$	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.

 $[\]textbf{(b)}\,Mounted\,\,on\,\,25mm\,\,x\,\,25mm\,\,x\,\,0.6mm\,\,FR4\,\,PCB\,\,with\,\,high\,\,coverage\,\,of\,\,single\,\,sided\,\,1oz\,\,copper,\,\,in\,\,still\,\,air\,\,conditions.$

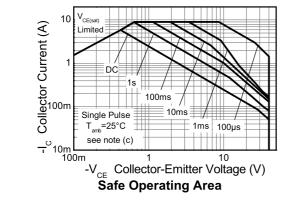
⁽c) Mounted on $50 \text{mm} \times 50 \text{mm} \times 0.6 \text{mm}$ FR4 PCB with high coverage of single sided 2 oz copper, in still air conditions.

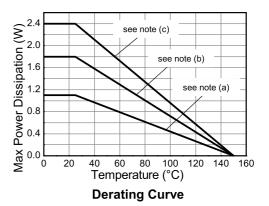
⁽d) As (c) above measured at t<5 seconds.

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

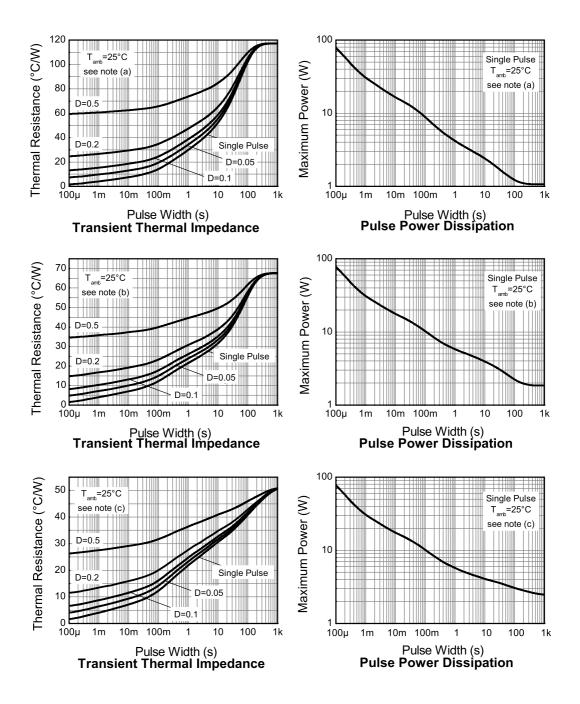
ZXTP25040DZ

Thermal characteristics





Thermal characteristics



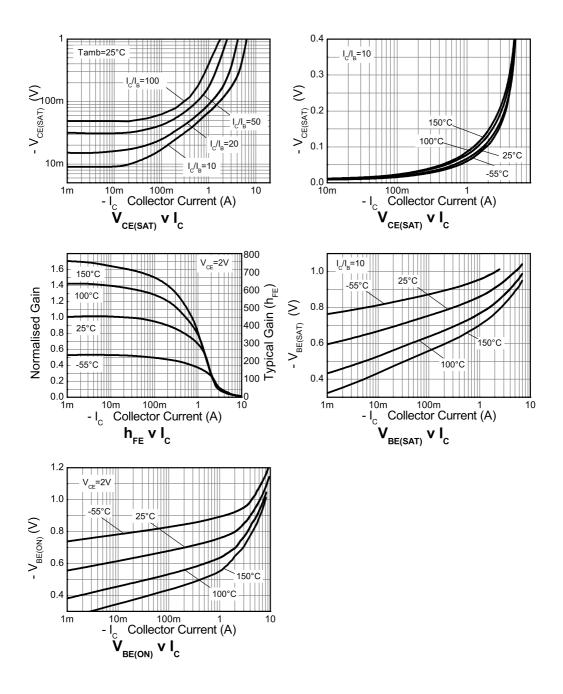
Electrical characteristics (at $T_{amb} = 25$ °C unless otherwise stated)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Collector-Base breakdown voltage	BV _{CBO}	-45	-75		V	I _C = -100μA
Collector-Emitter breakdown voltage (base open)	BV _{CEO}	-40	-65		V	I _C = -10mA ^(*)
Emitter-Collector breakdown voltage (reverse blocking)	BV _{ECO}	-3	-8.7		V	I _E = -100μA
Emitter-Base breakdown voltage	BV _{EBO}	-7	-8.2		V	I _E = -100μA
Collector cut-off current	I _{CBO}		<-1	-50	nA	V _{CB} = -45V
				-0.5	μΑ	$V_{CB} = -45V, T_{amb} = 100^{\circ}C$
Emitter cut-off current	I _{EBO}		<-1	-50	nA	V _{EB} = -5.6V
Collector-Emitter	V _{CE(sat)}		-170	-265	mV	$I_C = -1A$, $I_B = -20 \text{mA}^{(*)}$
saturation voltage			-70	-90	mV	$I_C = -1A$, $I_B = -100 \text{mA}^{(*)}$
			-215	-350	mV	$I_C = -3.5A$, $I_B = -350 \text{mA}^{(*)}$
Base-Emitter saturation voltage	V _{BE(sat)}		-970	-1050	mV	$I_C = -3.5A$, $I_B = -350 \text{mA}^{(*)}$
Base-emitter turn-on voltage	V _{BE(on)}		-870	-950	mV	$I_C = -3.5A$, $V_{CE} = -2V^{(*)}$
Static forward current	h _{FE}	300	450	900		$I_C = -10 \text{mA}, V_{CE} = -2V^{(*)}$
transfer ratio		200	300			$I_C = -1A$, $V_{CE} = -2V^{(*)}$
		20	50			$I_C = -3.5A$, $V_{CE} = -2V^{(*)}$
Transition frequency	f _T		270		MHz	I _C = -50mA, V _{CE} = -10V f = 100MHz
Input capacitance	C _{ibo}		142		рF	V _{EB} = -0.5V, f = 1MHz ^(*)
Output capacitance	C _{obo}		17.4		рF	$V_{CB} = -10V, f = 1MHz^{(*)}$
Turn-on time	t _(on)		75.5		ns	$V_{CC} = -15V$, $I_{C} = -750$ mA,
Turn-off time	t _(off)		320		ns	$I_{B1} = -I_{B2} = -15$ mA,

NOTES:

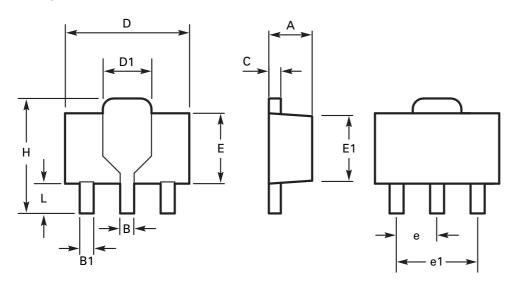
^(*) Measured under pulsed conditions. Pulse width $\leq 300 \mu s;$ duty cycle $\leq 2\%.$

Typical characteristics



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Package outline - SOT89



DIM	Millin	neters	Inc	hes	DIM	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
Α	1.40	1.60	0.550	0.630	Е	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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