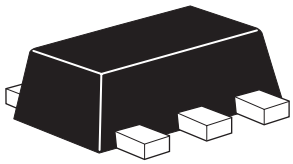
ZXTN19055DZ
55V, SOT89, NPN medium power transistor

Summary



BV_{CEX} > 150V

BV_{CEO} > 55V

$I_{C(cont)}$ = 6A

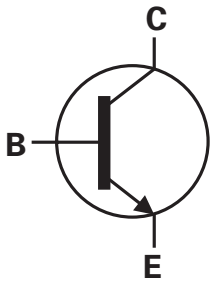
$V_{CE(sat)}$ < 60mV @ 1A

$R_{CE(sat)}$ = 28mΩ

P_D = 2.1W

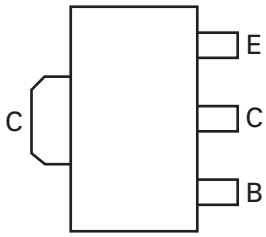
Description

Packaged in the SOT89 outline this low saturation 55V NPN transistor offers extremely low on state losses making it ideal for use in DC-DC circuits and various driving and power management functions.



Feature

- Extremely low equivalent on-resistance of 28mΩ
- 6 Amps continuous current
- Up to 10 amps peak current
- Very low saturation voltages
- Excellent h_{FE} characteristics up to 10 amps
- 150V Forward blocking voltage



Pinout - top view

Applications

- Emergency lighting circuits
- Motor driving (including DC fans)
- Solenoid, relay and actuator drivers
- DC modules
- Backlight inverters

Ordering information

Device	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTN19055DZTA	7	12	1000

Device marking

S75

Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Collector-base voltage	V_{CBO}	150	V
Collector-emitter voltage (forward blocking voltage)	V_{CEX}	150	V
Collector-emitter voltage (base open)	V_{CEO}	55	V
Emitter-base voltage	V_{EBO}	7	V
Continuous collector current[b]	I_C	6	A
Peak pulse current	I_{CM}	10	A
Power dissipation at T_{amb} =25°C[a]	P_D	1.5	W
Linear derating factor		12	mW/°C
Power dissipation at T_{amb} =25°C[b]	P_D	2.1	W
Linear derating factor		16.8	mW/°C
Operating and storage temperature range	T_j, T_{stg}	-55 to +150	°C

Thermal resistance

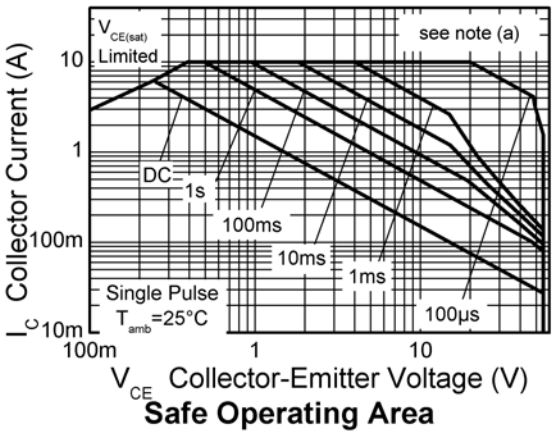
Parameter	Symbol	Limit	Unit
Junction to ambient[a]	$R_{\Theta JA}$	83	°C/W
Junction to ambient[b]	$R_{\Theta JA}$	59	°C/W

NOTES:

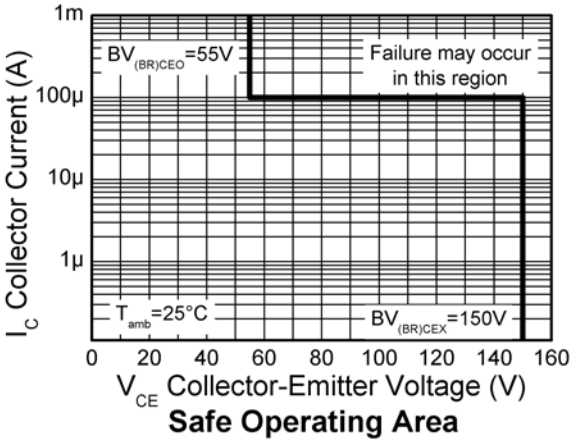
(a) For a device surface mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

(b) For a device surface mounted on 50mm x 50mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

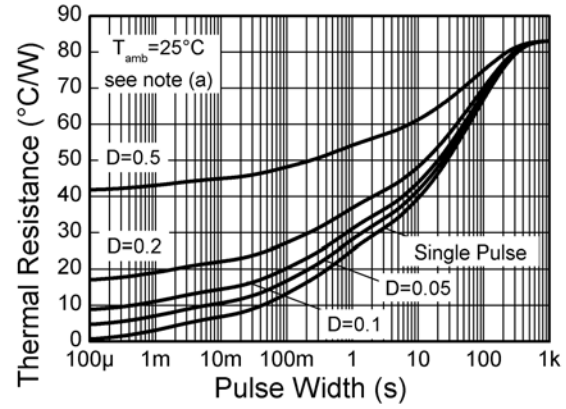
Characteristics



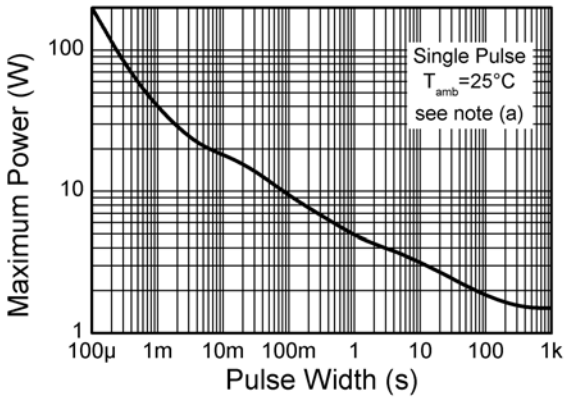
Safe Operating Area



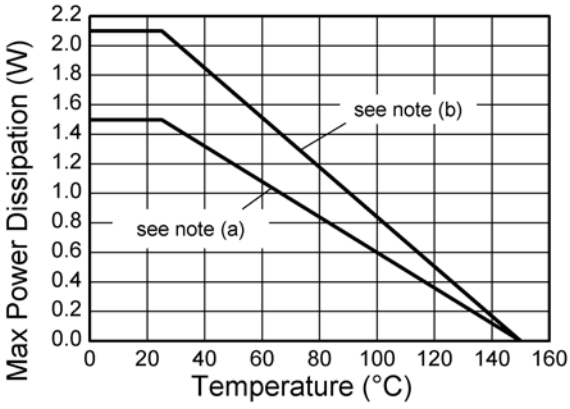
Safe Operating Area



Transient Thermal Impedance



Pulse Power Dissipation



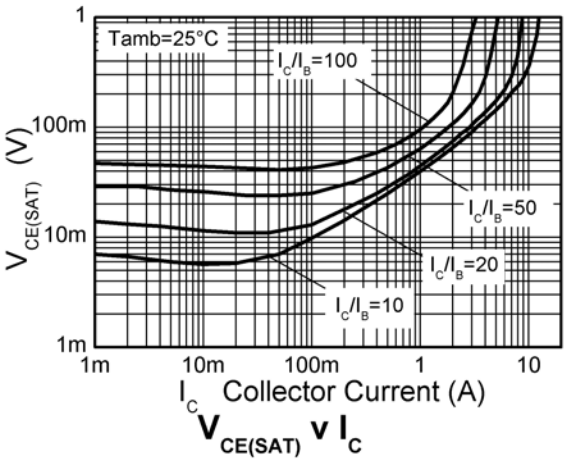
Derating Curve

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

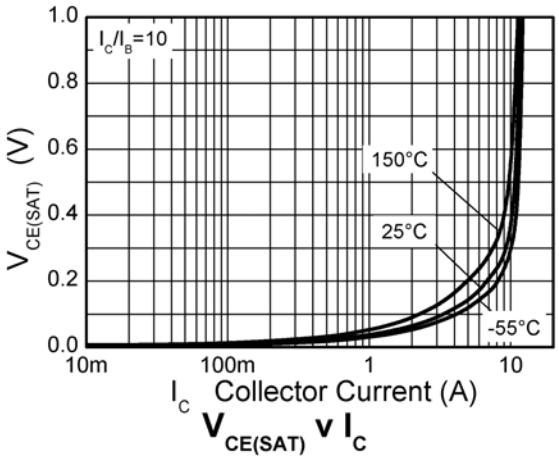
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	150	200		V	I_C = 100mA
Collector-emitter breakdown voltage (forward blocking)	BV_{CEX}	150	200		V	I_C = 100mA, R_{BE} < 1kΩ or -1V < V_{BE} < +0.25V
Collector-emitter breakdown voltage (base open)	BV_{CEO}	55	75		V	I_C = 10mA (*)
Emitter-base breakdown voltage	BV_{EBO}	7	8.1		V	IE = 100mA
Collector-base cut-off current	I_{CBO}		<1	50	nA	V_{CB} = 120V
				20	μA	V_{CB} = 120V, T_{amb}= 100°C
Collector-emitter cut-off current	I_{CEX}		<1	100	nA	V_{CE} = 120V; R_{BE} < 1kΩ or -1V < V_{BE} < 0.25V
Emitter cut-off current	I_{EBO}		<1	50	nA	V_{EB} = 5.6V
Collector-emitter saturation voltage	$V_{CE(sat)}$		25	40	mV	I_C = 0.5A, I_B = 50mA(*)
			45	70	mV	I_C = 1A, I_B = 50mA(*)
			40	60	mV	I_C = 1A, I_B = 100mA(*)
			200	350	mV	I_C = 2A, I_B = 20mA(*)
			110	140	mV	I_C = 2A, I_B = 40mA(*)
			140	200	mV	I_C = 4A, I_B = 200mA(*)
			170	250	mV	I_C = 6A, I_B = 600mA(*)
Base-emitter saturation voltage	$V_{BE(sat)}$		800	900	mV	I_C = 2A, I_B = 20mA(*)
			1000	1150	mV	I_C = 6A, I_B = 600mA(*)
Base-emitter turn-on voltage	$V_{BE(on)}$		760	900	mV	I_C = 2A, V_{CE} = 2V(*)
			900	1050	mV	I_C = 6A, V_{CE} = 2V(*)
Static forward current transfer ratio	h_{FE}	250	400	700		I_C = 10mA, V_{CE} = 2V(*)
		250	400			I_C = 1A, V_{CE} = 2V(*)
		180	300			I_C = 2A, V_{CE} = 2V(*)
		30	50			I_C = 6A, V_{CE} = 2V(*)
			20			I_C = 10A, V_{CE} = 2V(*)
Transition frequency	f_T	140	200		MHz	I_C = 100mA, V_{CE} =10 V f = 50MHz
Output capacitance	C_{OBO}		21.2	30	pF	V_{CB} = 10V, f = 1MHz
Delay time	t_d		13.8			V_{CC} = 10V, I_C = 1A, I_{B1} = I_{B2} = 100mA
Rise time	t_r		21.9			
Storage time	t_s		546			
Fall time	t_f		106			

NOTES:
(*) Measured under pulsed conditions. Pulse width ≤300μs; duty cycle ≤2%.

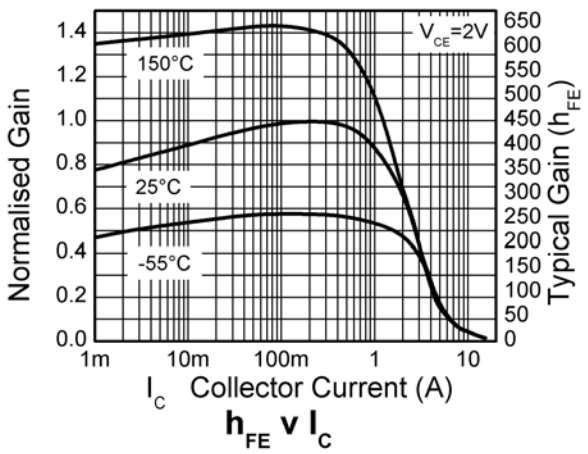
Typical characteristics



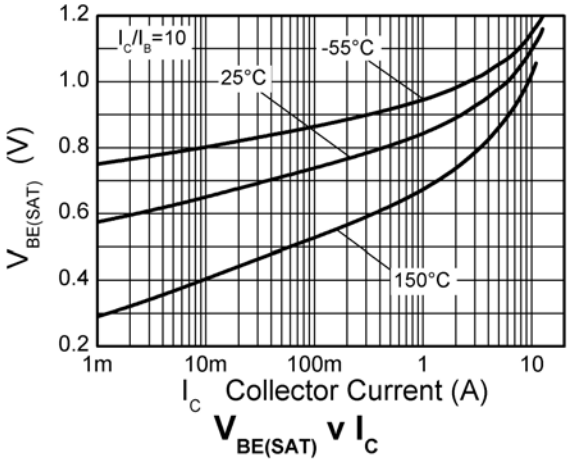
$V_{CE(SAT)}$ v I_C



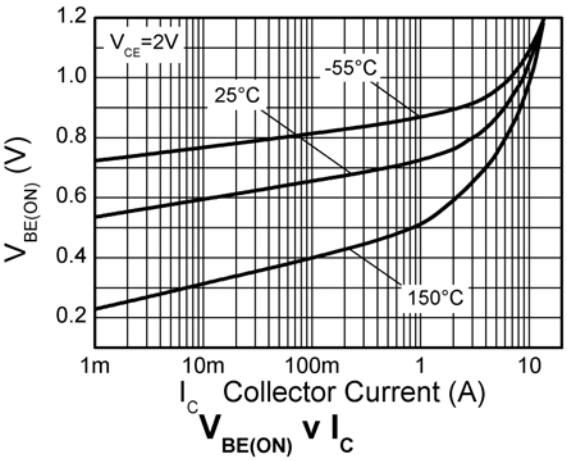
$V_{CE(SAT)}$ v I_C



h_{FE} v I_C

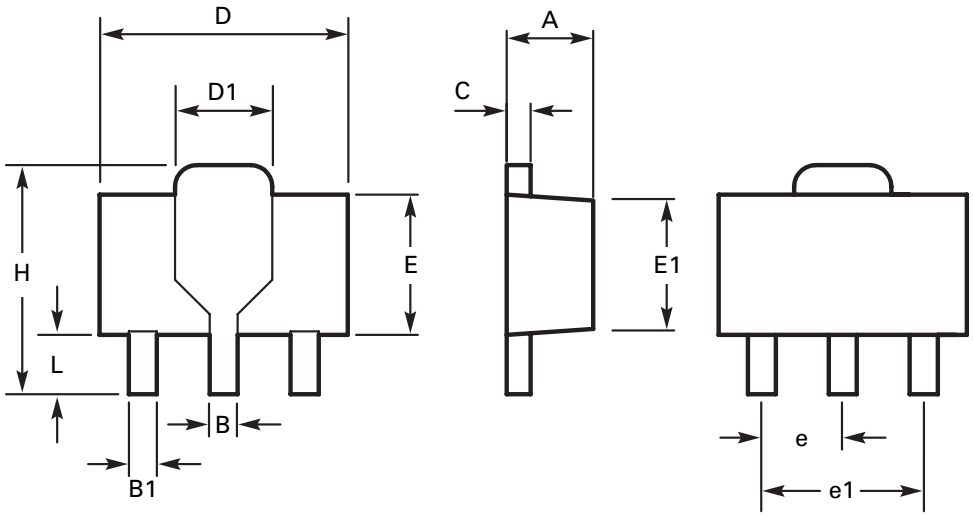


$V_{BE(SAT)}$ v I_C



$V_{BE(ON)}$ v I_C

Package outline - SOT89



DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
A	1.40	1.60	0.550	0.630	E1	2.13	2.29	0.084	0.090
B	0.44	0.56	0.017	0.022	e	1.50 BSC		0.059 BSC	
B1	0.36	0.48	0.014	0.019	e1	3.00 BSC		0.118 BSC	
C	0.35	0.44	0.014	0.019	H	3.94	4.25	0.155	0.167
D	4.40	4.60	0.173	0.181	L	0.89	1.20	0.155	0.167
E	2.29	2.60	0.090	0.102		-	-	-	-

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

Europe
Zetex GmbH
Streitfeldstraße 19
D-81673 München
Germany

Telefon: (49) 89 45 49 49 0
Fax: (49) 89 45 49 49 49
europe.sales@zetex.com

Americas
Zetex Inc
700 Veterans Memorial Highway
Hauppauge, NY 11788
USA

Telephone: (1) 631 360 2222
Fax: (1) 631 360 8222
usa.sales@zetex.com

Asia Pacific
Zetex (Asia Ltd)
3701-04 Metroplaza Tower 1
Hing Fong Road, Kwai Fong
Hong Kong

Telephone: (852) 26100 611
Fax: (852) 24250 494
asia.sales@zetex.com

Corporate Headquarters
Zetex Semiconductors plc
Zetex Technology Park, Chadderton
Oldham, OL9 9LL
United Kingdom

Telephone: (44) 161 622 4444
Fax: (44) 161 622 4446
hq@zetex.com