Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Collector-base voltage	V_{CBO}	-12	V
Collector-emitter voltage	V_{CEO}	-12	V
Emitter-base voltage	V_{EBO}	-7	V
Continuous collector current[b]	I_C	-4	A
Base current	I_B	-1	A
Peak pulse current	I_{CM}	-10	A
Power dissipation at T_{amb} =25°C[a]	P_D	0.73	W
Linear derating factor		5.84	mW/°C
Power dissipation at T_{amb} =25°C[b]	P_D	1.05	W
Linear derating factor		8.4	mW/°C
Power dissipation at T_{amb} =25°C[c]	P_D	1.25	W
Linear derating factor		9.6	mW/°C
Power dissipation at T_{amb} =25°C[d]	P_D	1.81	W
Linear derating factor		14.5	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]	$R_{\Theta JA}$	171	°C/W
Junction to ambient[b]	$R_{\Theta JA}$	119	°C/W
Junction to ambient[c]	$R_{\Theta JA}$	100	°C/W
Junction to ambient[d]	$R_{\Theta JA}$	69	°C/W

NOTES:

(a) For a device surface mounted on 15mm x 15mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

(b) Mounted on 25mm x 25mm x 1.6mm FR4 PCB with a high coverage of single sided 2 oz copper in still air conditions.

(c) Mounted on 50mm x 50mm x 1.6mm FR4 PCB with a high coverage of single sided 2 oz copper in still air conditions.

(d) As (c) above measured at t<5secs

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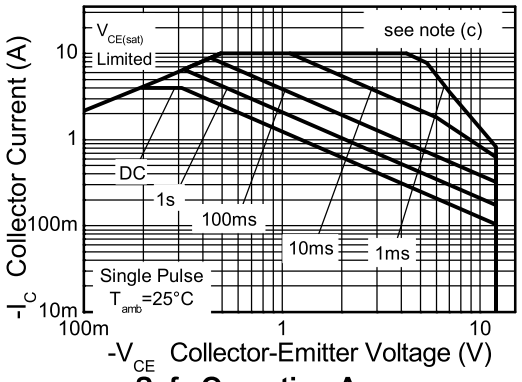
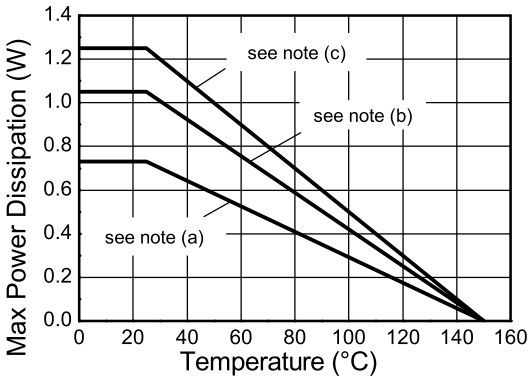
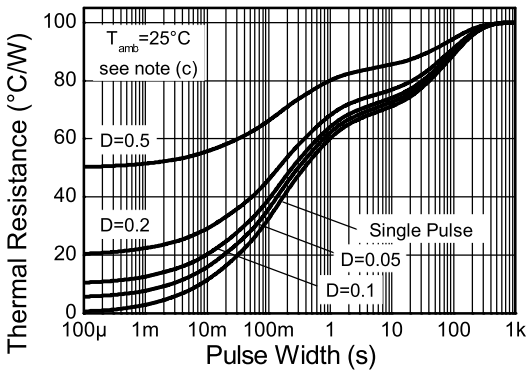
Characteristics



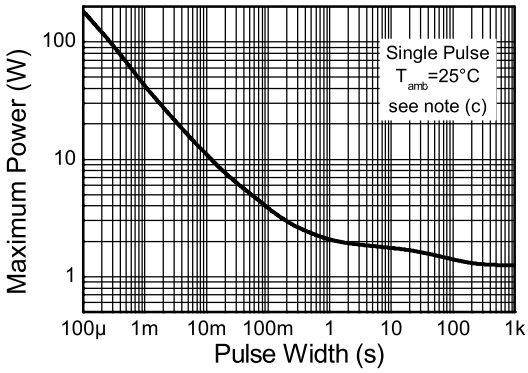
Safe Operating Area



Derating Curve



Transient Thermal Impedance



Pulse Power Dissipation

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV_{CBO}	-12	-35		V	I_C = -100μA
Collector-emitter breakdown voltage (base open)	BV_{CEO}	-12	-25		V	I_C = -10mA (*)
Emitter-base breakdown voltage	BV_{EBO}	-7	-8.5		V	I_E = -100μA
Collector-base cut-off current	I_{CBO}		<-1	-50	nA	V_{CB} = -12V
				-0.5	μA	V_{CB} = -12V, T_{amb}= 100°C
Emitter-base cut-off current	I_{EBO}		<-1	-50	nA	V_{EB} = -5.6V
Collector-emitter saturation voltage	$V_{CE(sat)}$		-50	-65	mV	I_C = -1A, I_B = -100mA(*)
			-150	-260	mV	I_C = -1A, I_B = -10mA(*)
			-175	-350	mV	I_C = -2A, I_B = -40mA(*)
			-160	-210	mV	I_C = -4A, I_B = -400mA(*)
Base-emitter saturation voltage	$V_{BE(sat)}$		-970	-1050	mV	I_C = -4A, I_B = -400mA(*)
Base-emitter turn-on voltage	$V_{BE(on)}$		-825	-950	mV	I_C = -4A, V_{CE} = -2V(*)
Static forward current transfer ratio	h_{FE}	500	800	1500		I_C = -10mA, V_{CE} = -2V(*)
		300	450			I_C = -1A, V_{CE} = -2V(*)
		50	100			I_C = -4A, V_{CE} = -2V(*)
Transition frequency	f_T		310		MHz	I_C = -50mA, V_{CE} = -10V f = 100MHz
Output capacitance	C_{obo}		16.9		pF	V_{CB} = -10V, f = 1MHz(*)
Delay time	t_d		41		ns	V_{CC} = -10V I_C = -1A, I_{B1} = I_{B2}= -10mA
Rise time	t_r		62		ns	
Storage time	t_s		179		ns	
Fall time	t_f		65		ns	

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

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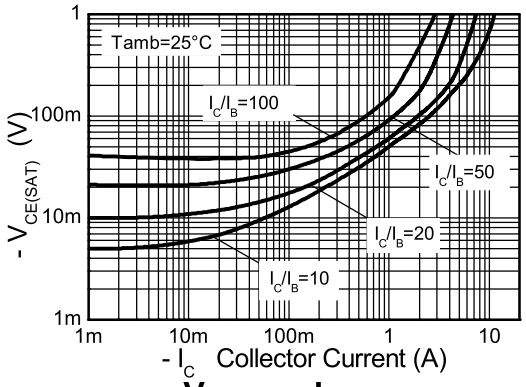
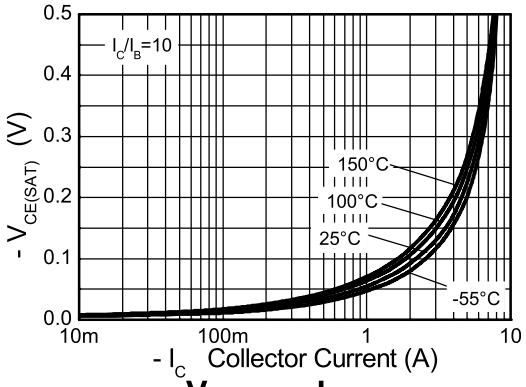
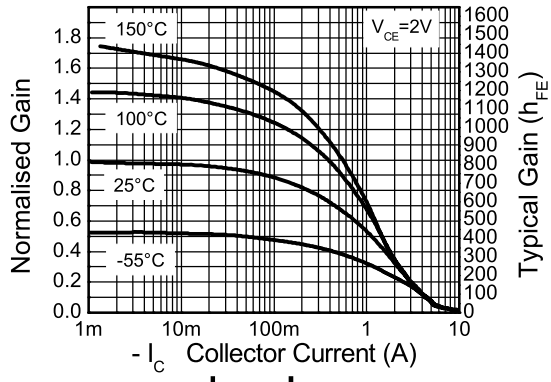
Typical characteristics



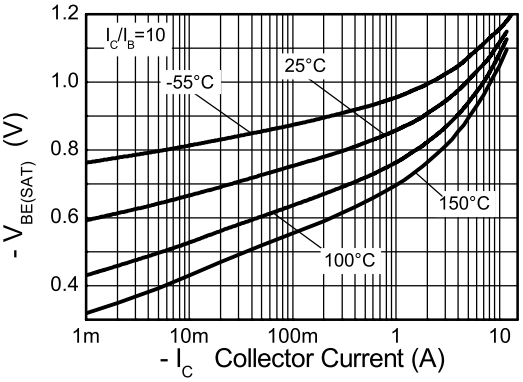
$V_{CE(SAT)}$ v I_C



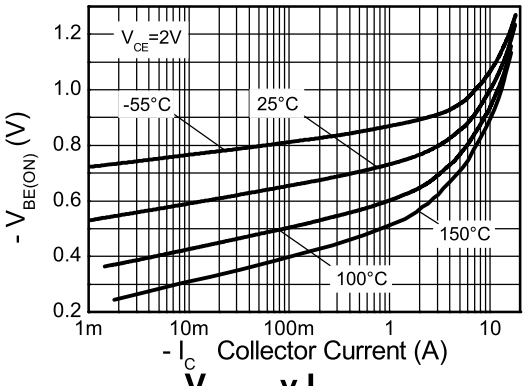
$V_{CE(SAT)}$ v I_C



h_{FE} v I_C



$V_{BE(SAT)}$ v I_C



$V_{BE(ON)}$ v I_C

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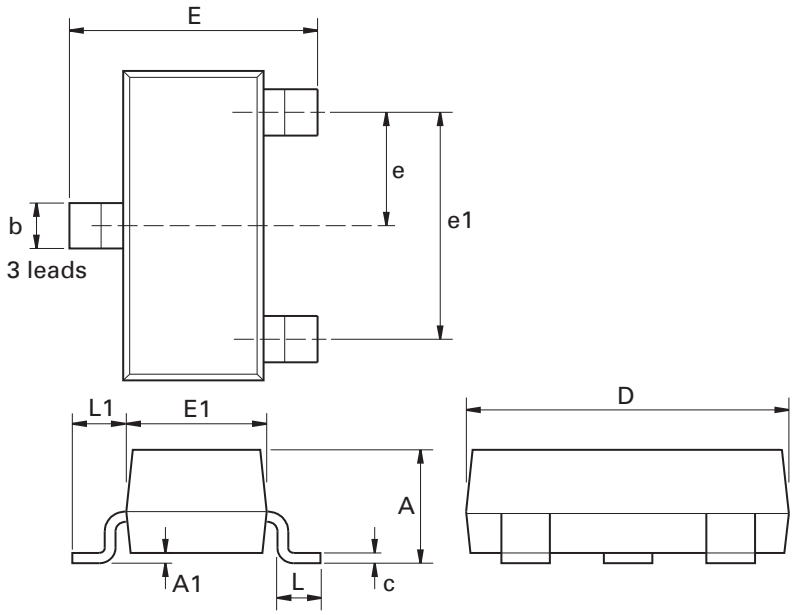
Package outline - SOT23



Dim.	Millimeters		Inches		Dim.	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Max.	Max.
A	-	1.12	-	0.044	e1	1.90 NOM		0.075 NOM	
A1	0.01	0.10	0.0004	0.004	E	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
C	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
e	0.95 NOM		0.0375 NOM		-	-	-	-	-

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

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Zetex sales offices

Europe	Americas	Asia Pacific	Corporate Headquarters
Zetex GmbH Kustermann-park Balanstraße 59 D-81541 München Germany	Zetex Inc 700 Veterans Memorial Highway Hauppauge, NY 11788 USA	Zetex (Asia Ltd) 3701-04 Metroplaza Tower 1 Hing Fong Road, Kwai Fong Hong Kong	Zetex Semiconductors plc Zetex Technology Park, Chadderton Oldham, OL9 9LL United Kingdom
Telefon: (49) 89 45 49 49 0 Fax: (49) 89 45 49 49 49 europe.sales@zetex.com	Telephone: (1) 631 360 2222 Fax: (1) 631 360 8222 usa.sales@zetex.com	Telephone: (852) 26100 611 Fax: (852) 24250 494 asia.sales@zetex.com	Telephone: (44) 161 622 4444 Fax: (44) 161 622 4446 hq@zetex.com

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