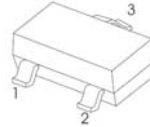




## FEATURES

- $V_{CE(sat)}$  maximum specification improvement
- Reverse blocking specification improvement

### SOT-23



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- 1.BASE  
2.EMITTER  
3.COLLECTOR

## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings  $T_a = 25^\circ\text{C}$

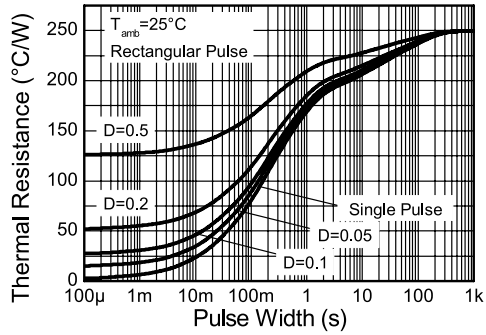
Parameter	Symbol	Rating	Unit
Collector - Base Voltage	$V_{CBO}$	80	V
Collector - Emitter Voltage	$V_{CEO}$	60	
Emitter - Base Voltage	$V_{EBO}$	7	
Collector Current - Continuous	$I_C$	1	A
Collector Current - Pulse	$I_{CP}$	2	
Power Dissipation	$P_D$	500	mW
Linear derating factor		4	mW/ $^\circ\text{C}$
Junction to ambient	$R_{\theta JA}$	250	$^\circ\text{C}/\text{W}$
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55 to 150	

Electrical Characteristics  $T_a = 25^\circ\text{C}$

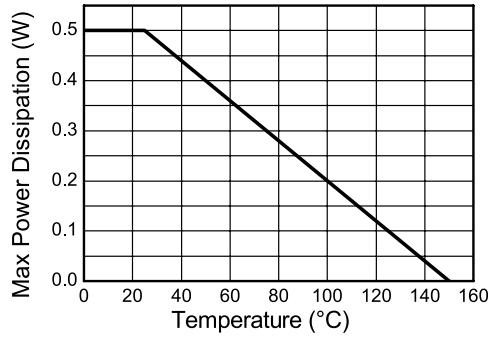
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	$V_{CBO}$	$I_C = 100 \mu\text{A}, I_E = 0$	80			V
Collector- emitter breakdown voltage	$V_{CEO}$	$I_C = 10 \text{mA}, I_B = 0$	60			
Emitter - base breakdown voltage	$V_{EBO}$	$I_E = 100 \mu\text{A}, I_C = 0$	7			
Collector-base cut-off current	$I_{CBO}$	$V_{CB} = 60 \text{V}, I_E = 0$			100	nA
Collector- emitter cut-off current	$I_{CES}$	$V_{CE} = 60 \text{V}, I_E = 0$			100	
Emitter cut-off current	$I_{EBO}$	$V_{EB} = 5.6 \text{V}, I_C = 0$			100	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 500 \text{mA}, I_B = 50 \text{mA}$ (Note.1)			150	mV
		$I_C = 1 \text{A}, I_B = 100 \text{mA}$ (Note.1)			250	
Base - emitter saturation voltage	$V_{BE(sat)}$	$I_C = 1 \text{A}, I_B = 100 \text{mA}$ (Note.1)			1.1	V
Base-emitter turn-on voltage	$V_{BE(on)}$	$V_{CE} = 5 \text{V}, I_C = 1 \text{A}$ (Note.1)			1	
DC current gain	$h_{FE(1)}$	$V_{CE} = 5 \text{V}, I_C = 1 \text{mA}$	100			
	$h_{FE(2)}$	$V_{CE} = 5 \text{V}, I_C = 500 \text{mA}$	100		300	
	$h_{FE(3)}$	$V_{CE} = 5 \text{V}, I_C = 1 \text{A}$	80			
	$h_{FE(4)}$	$V_{CE} = 5 \text{V}, I_C = 2 \text{A}$	30			
Collector output capacitance	$C_{ob}$	$V_{CB} = 10 \text{V}, f = 1 \text{MHz}$			10	pF
Transition frequency	$f_T$	$V_{CE} = 10 \text{V}, I_C = 50 \text{mA}, f = 100 \text{MHz}$	150			MHz

Note.1: Measured under pulsed conditions. Pulse width  $\leq 300 \mu\text{s}$ ; duty cycle  $\leq 2\%$ .

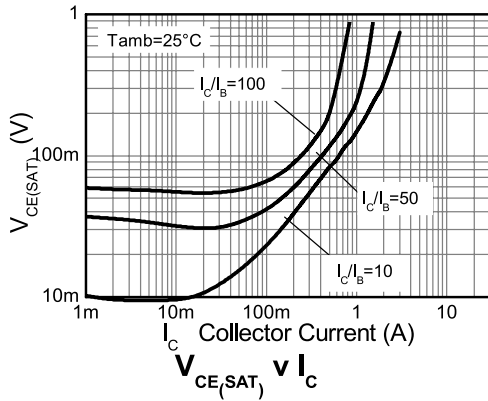
RATING AND CHARACTERISTIC CURVES



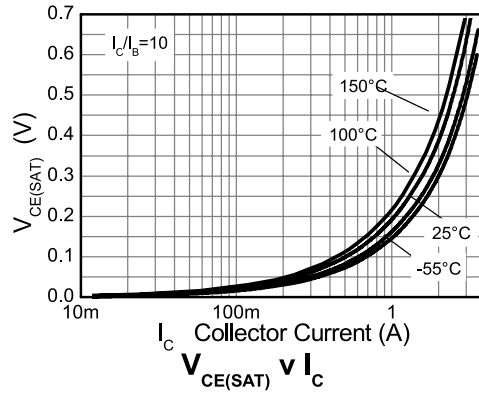
Transient Thermal Impedance



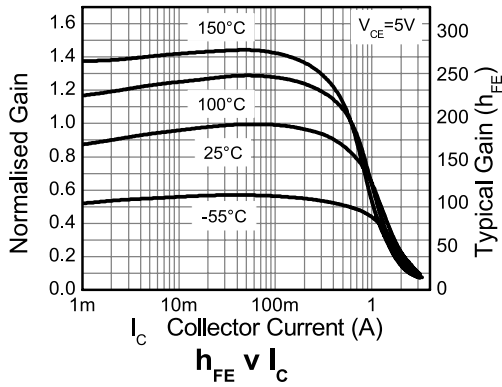
Derating Curve



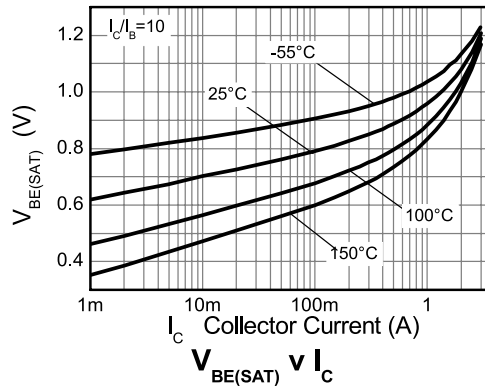
$V_{\text{CE(SAT)}} \propto I_{\text{C}}$



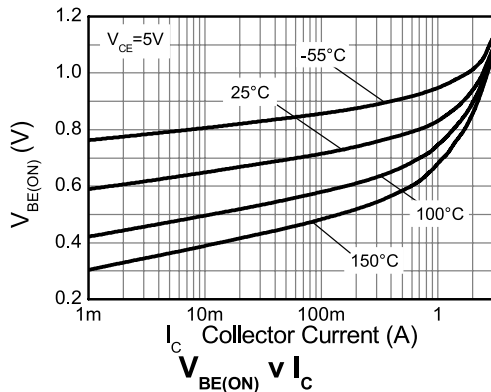
$V_{\text{CE(SAT)}} \propto I_{\text{C}}$



$h_{\text{FE}} \propto I_{\text{C}}$



$V_{\text{BE(SAT)}} \propto I_{\text{C}}$



$V_{\text{BE(ON)}} \propto I_{\text{C}}$

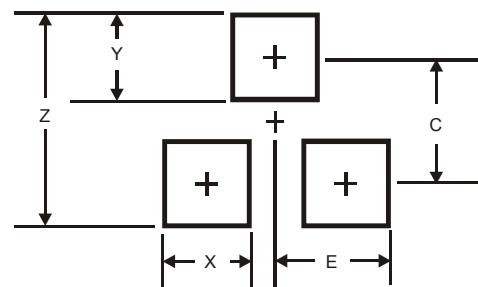
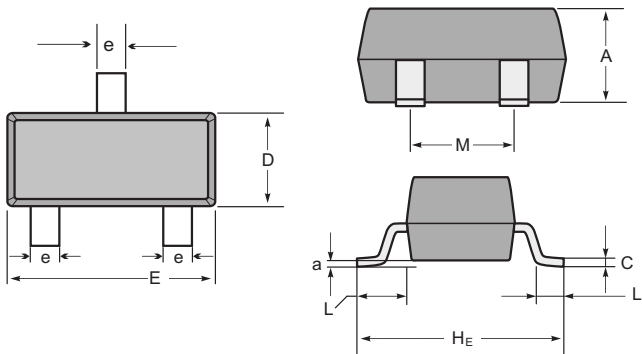
Soldering parameters

Reflow Condition		Pb-Free assembly (see as below)
Pre Heat	-Temperature Min ( $T_{s(min)}$ )	+150°C
	-Temperature Max( $T_{s(max)}$ )	+200°C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp ( $T_L$ ) to peak)		3°C/sec. Max
$T_{s(max)}$ to $T_L$ - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature( $T_L$ )(Liquid us)	+217°C
	-Temperature( $t_L$ )	60-150 secs.
Peak Temp ( $T_P$ )		+260(+0/-5)°C
Time within 5°C of actual Peak Temp ( $t_p$ )		30 secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp ( $T_P$ )		8 min. Max
Do not exceed		+260°C



Package Dimensions & Suggested Pad Layout

SOT23

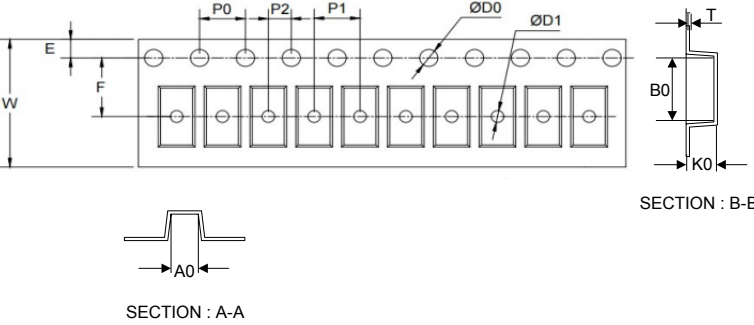
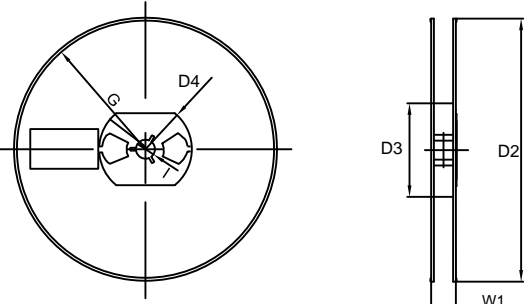


SOT-23 mechanical data

UNIT	A	C	D	E	H <sub>E</sub>	e	M	L	L <sub>1</sub>	a	
mm	max	1.1	0.15	1.4	3.0	2.6	0.5	1.95	0.55 (ref)	0.36 (ref)	0.0
	min	0.9	0.08	1.2	2.8	2.2	0.3	1.7			0.15
mil	max	43	6	55	118	102	20	77	22 (ref)	14 (ref)	0.0
	min	35	3	47	110	87	12	67			6

Dimensions	SOT23
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

Tape & reel specification

Tape	Symbol	Dimension (mm)	
	P0	4.00±0.10	
	P1	4.00±0.10	
	P2	2.00±0.10	
	D0	1.55±0.10	
	D1	1.05±0.10	
	E	1.55±0.10	
	F	3.60±0.10	
	W	8.00±0.10	
	A0	3.80±0.20	
	B0	3.25±0.20	
	K0	1.45±0.10	
	T	0.25±0.05	
	<p>7" Reel</p> 	D2	178.0±3.0
		D3	55Min.
D4		R24.0±3.0	
G		R82.0±3.0	
I		13.0±2.0	
W1		11.0±3.0	
Quantity: 3000PCS			