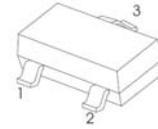




FEATURES

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

SOT-23



- 1.BASE
- 2.EMITTER
- 3.COLLECTOR

Marking

Marking	491
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MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

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

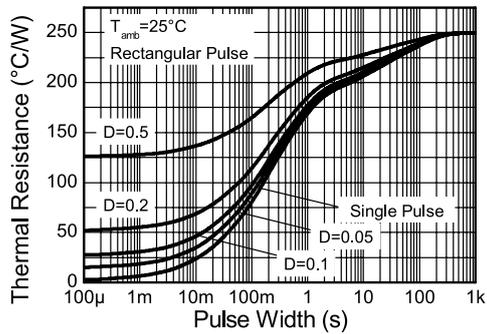
Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CBO}	80	V
Collector - Emitter Voltage	V_{CEO}	60	
Emitter - Base Voltage	V_{EBO}	7	
Collector Current - Continuous	I_C	1	A
Collector Current - Pulse	I_{CP}	2	
Power Dissipation	P_D	500	mW
Linear derating factor		4	mW/°C
Junction to ambient	$R_{\theta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

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

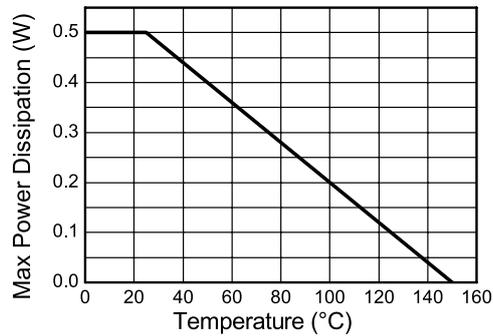
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	V_{CBO}	$I_C = 100 \mu\text{A}, I_E = 0$	80			V
Collector- emitter breakdown voltage	V_{CEO}	$I_C = 10 \text{mA}, I_B = 0$	60			
Emitter - base breakdown voltage	V_{EBO}	$I_E = 100 \mu\text{A}, I_C = 0$	7			
Collector-base 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 $\leq 2\%$.

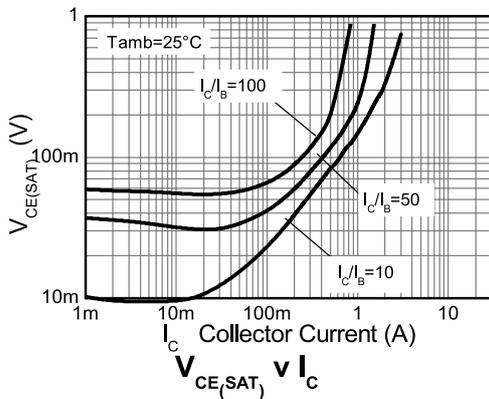
RATING AND CHARACTERISTIC CURVES



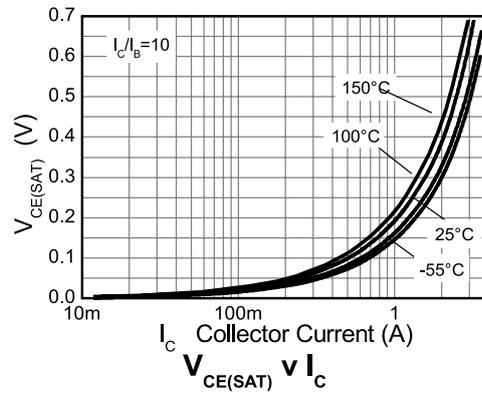
Transient Thermal Impedance



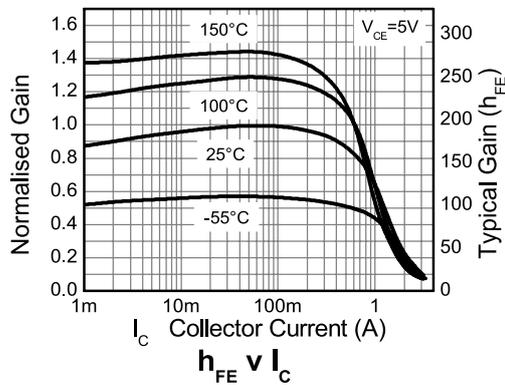
Derating Curve



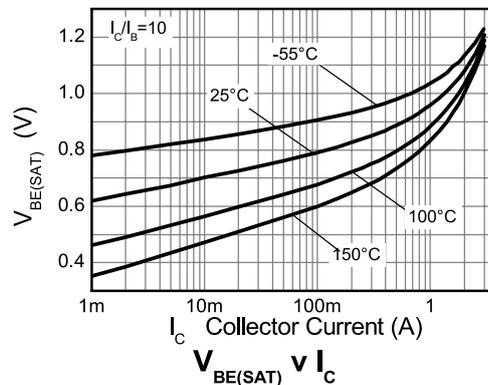
$V_{CE(SAT)} \propto I_C$



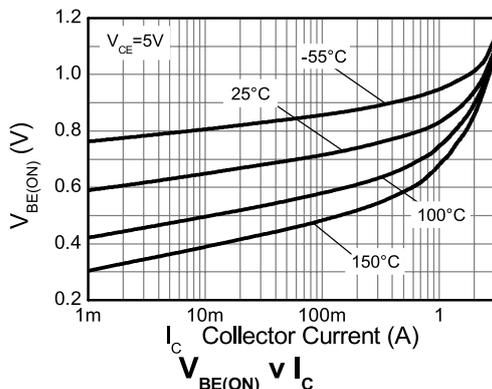
$V_{CE(SAT)} \propto I_C$



$h_{FE} \propto I_C$



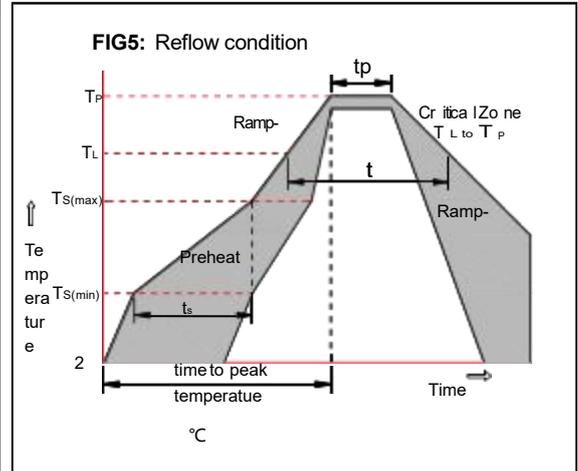
$V_{BE(SAT)} \propto I_C$



$V_{BE(ON)} \propto I_C$

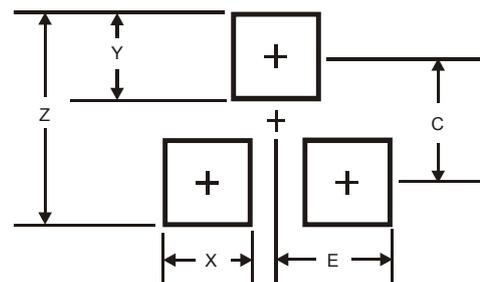
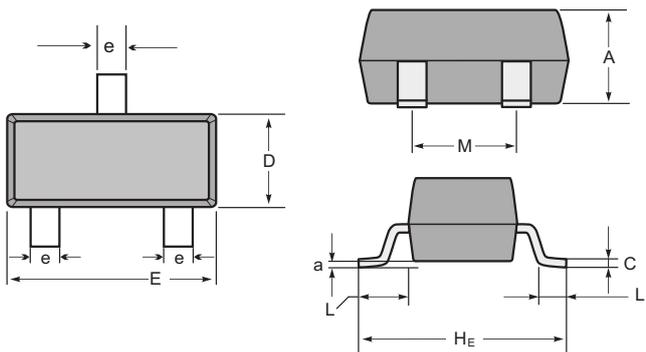
Soldering parameters

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



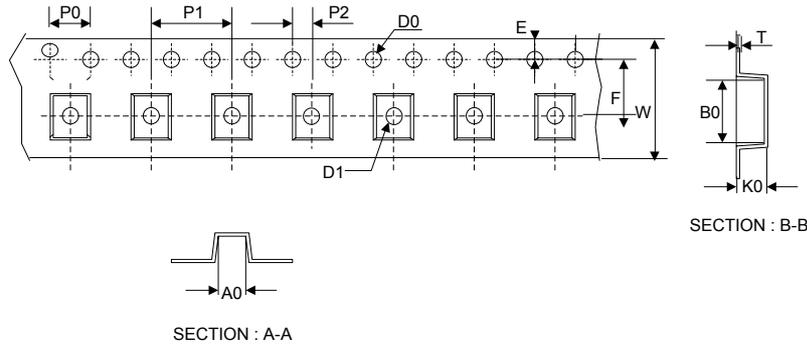
SOT-23 mechanical data

UNIT	A	C	D	E	H _e	e	M	L	L ₁	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

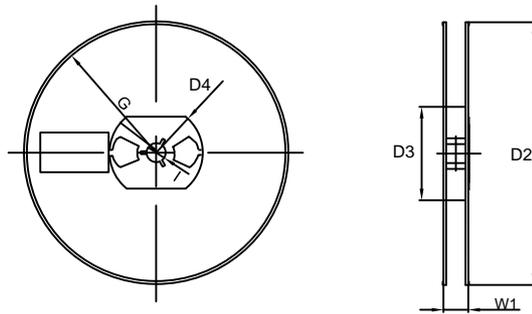
Tape & reel specification

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
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

7" Reel



Quantity: 3000PCS