

General Purpose NPN Transistor

PRIMARY CHARACTERISTICS

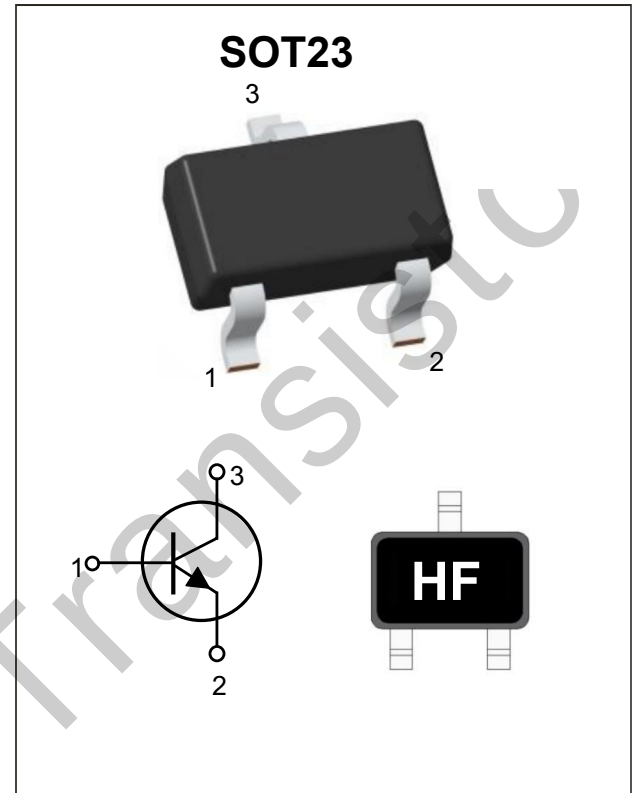
VCEO	IC	VCE(sat)	fT	Tjmax
50V	150mA	0.25V	80MHz	150°C

Features

- NPN General Purpose Transistor
- Complementary to A1015
- Power dissipation: 200mW
- High stability and reliability
- hFE range: 130-400
- RoHS compliant

Mechanical Data

- Package: SOT-23
- Pin: 1-Base, 2-Emitter, 3-Collector
- Marking: HF
- Surface mount package


Absolute Maximum Ratings (Ta=25°C unless otherwise noted)

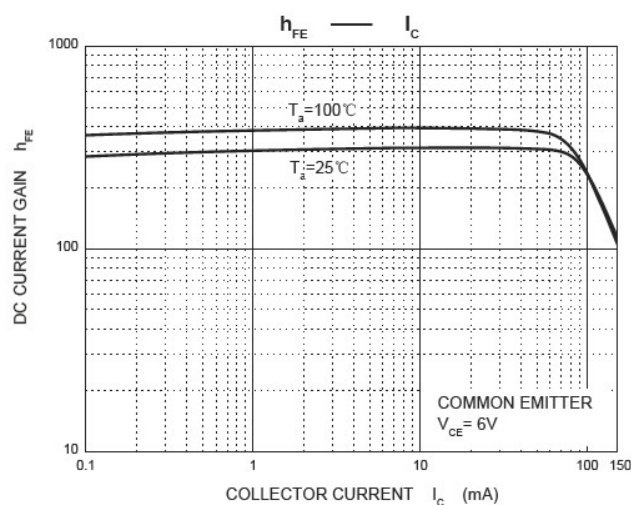
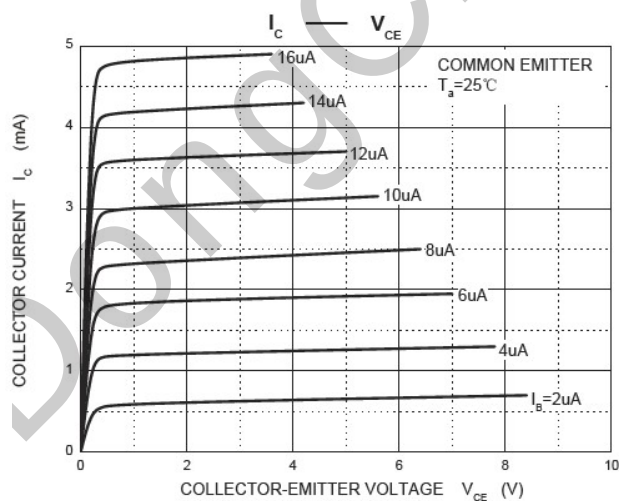
Parameters	Symbols	Limits	Units
Collector-Base Voltage	VCBO	60	V
Collector-Emitter Voltage	VCEO	50	V
Emitter -Base Voltage	VEBO	5	V
Collector Current-Continuous	IC	150	mA
Collector Power Dissipation	PC	200	mW
Junction Temperature	Tj	-55~+150	°C
Storage Temperature	Tstg	-55~+150	°C
Thermal resistance From junction to ambient	RθJA	625	°C/W

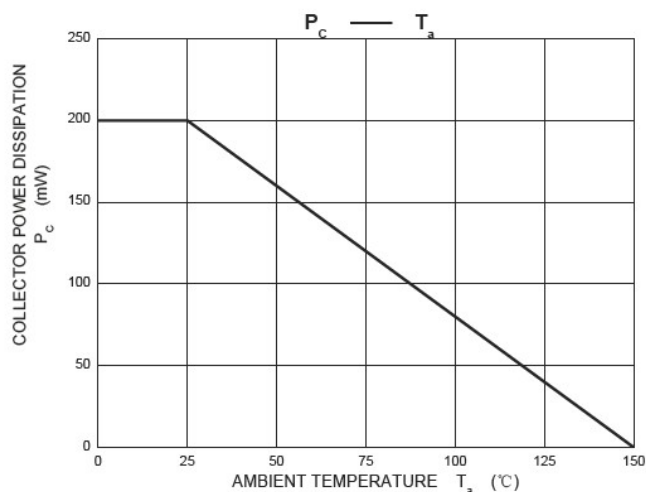
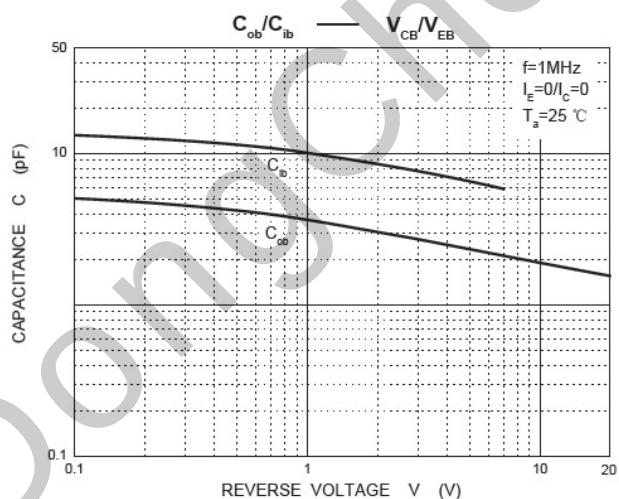
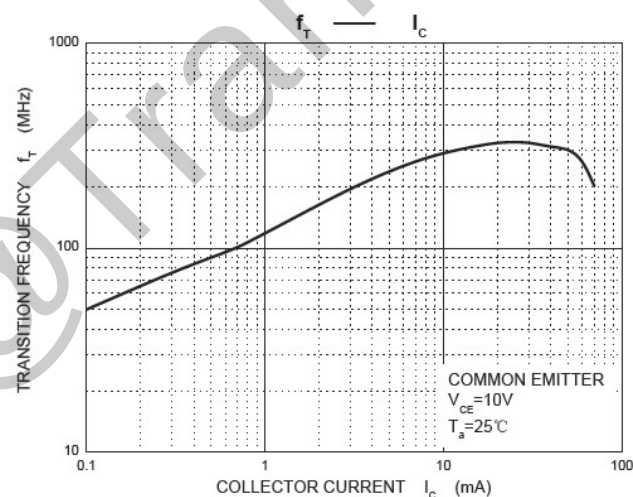
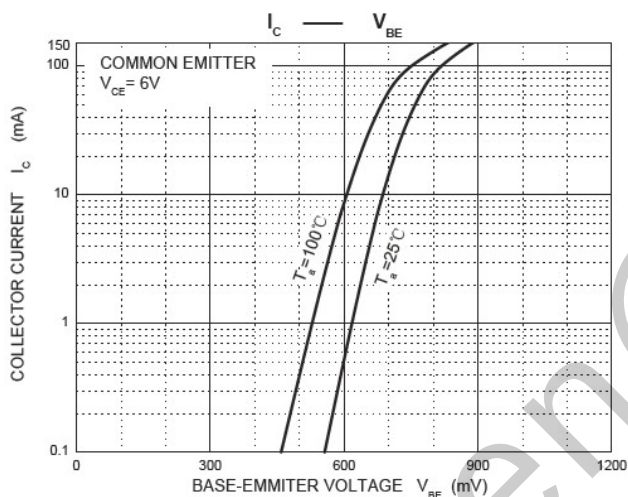
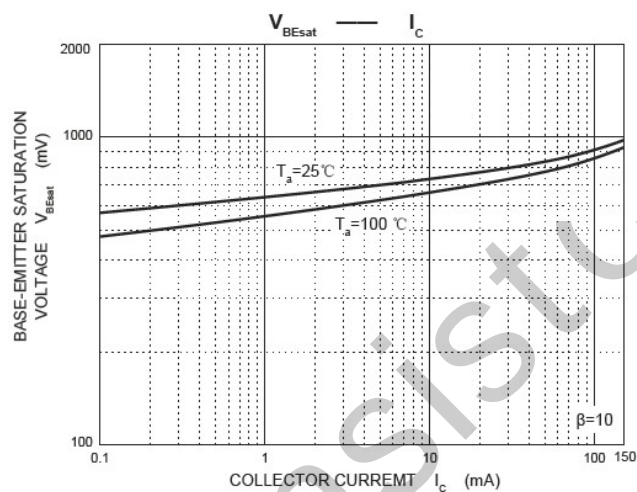
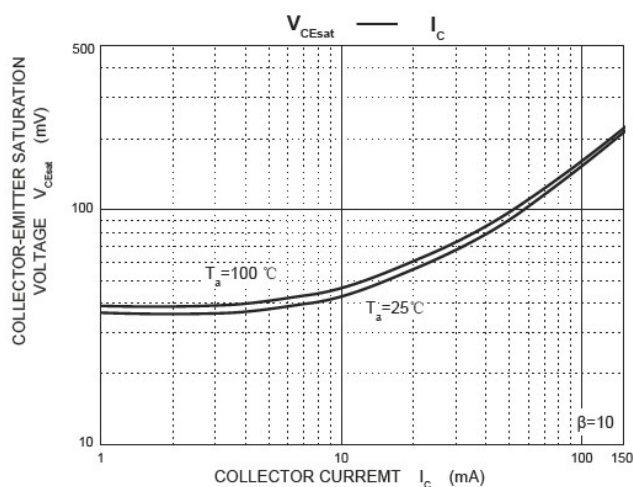
Electrical Characteristics(Ta=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	V(BR)CBO	IC=100μA, IE=0	60	-	-	V
Collector-emitter breakdown voltage	V(BR)CEO	IC=0.1mA, IB=0	50	-	-	V
Emitter-base breakdown voltage	V(BR)EBO	IE=100μA, IC=0	5	-	-	V
Collector cut-off current	ICBO	VCB=60V, IE=0	-	-	100	nA
Collector cut-off current	ICEO	VCE=50V, IB=0	-	-	100	nA
Emitter cut-off current	IEBO	VEB=5V, IC=0	-	-	100	nA
DC current gain	hFE(1)	VCE=6V, IC=2mA	130	-	400	
Collector-emitter saturation voltage	VCE(sat)	IC=100mA, IB=10mA	-	-	0.25	V
Base-emitter saturation voltage	VBE(sat)	IC=100mA, IB=10mA	-	-	1.00	V
Transition frequency	fT	VCE=10V, IC=1mA, f=30MHz	80	-	-	MHz

CLASSIFICATION OF hFE

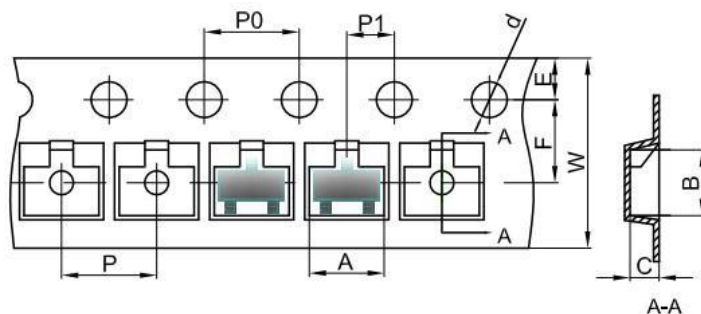
RANK	L	H
RANGE	130-200	200-400

Typical characteristics




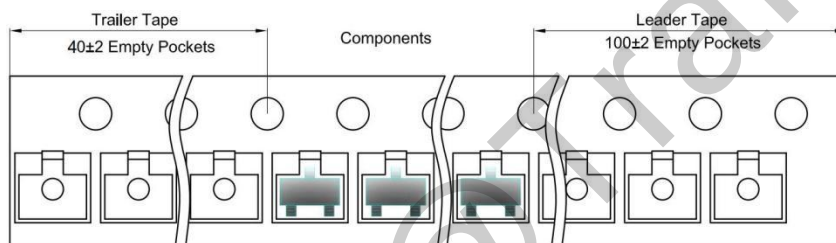
Package Information

Carrier Dimension(mm)

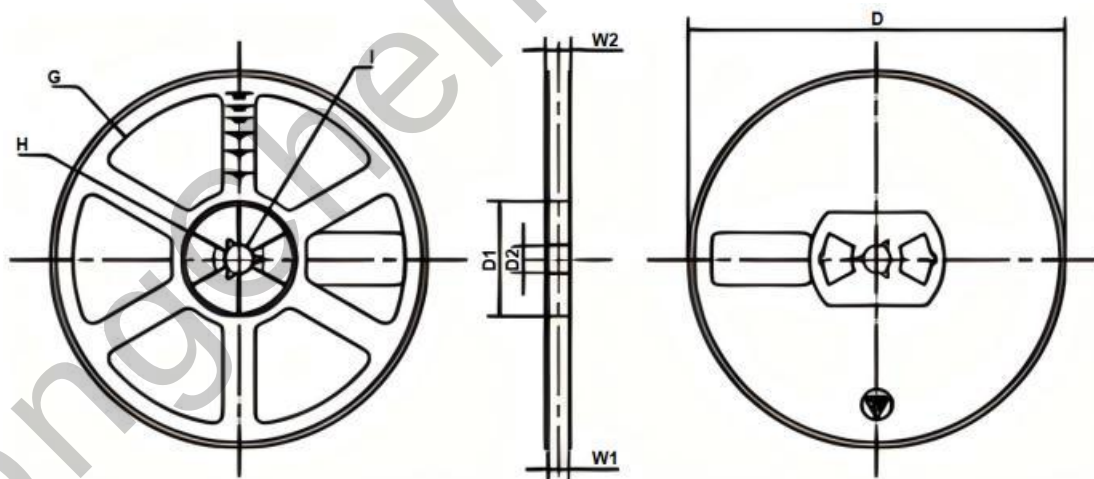


Dimensions are in millimeter

Pkg Type	A0	A1	B0	B1	K0	D0	D1	E	F	P0	P1	P2	10*P0	W	T
SOT-23	3.15	1.09	2.77	2.15	1.22	1.55	1.00	1.75	3.50	4.00	4.00	2.00	40.00	8.00	0.20
(Tolerance)	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.2	±0.1	±0.03



Reel Dimension(mm)



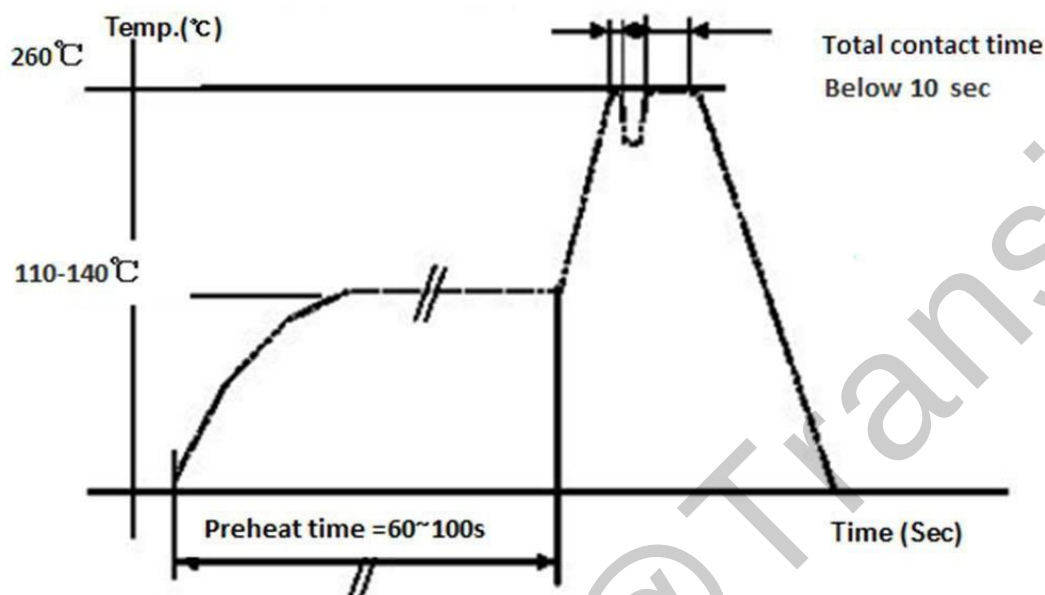
Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Φ178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30
Tolerance	±2	±1	±1	±1	±1	±1	±1	±1

Package Specifications

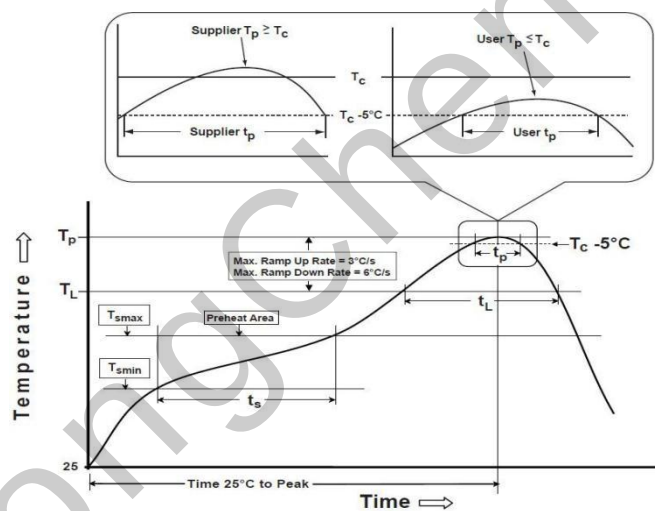
Package	Reel Size	Reel DIA. (mm)	Q'TY/Reel (Kpcs)	Box Size (mm)	QTY/Box (Kpcs)	Carton Size (mm)	Q'TY/Carton (Kpcs)
SOT23	7'	178	3	210*208*203	45	440*400*230	180

Recommended Soldering Profile for Rectifier Diodes (Pb Free)

a) Wave Soldering Profile



b) Reflow Soldering Profile (Pb Free Application), refer to IPC/JEDEC J-STD-020



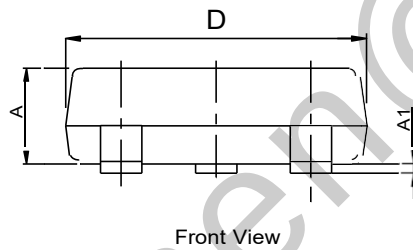
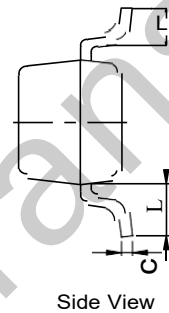
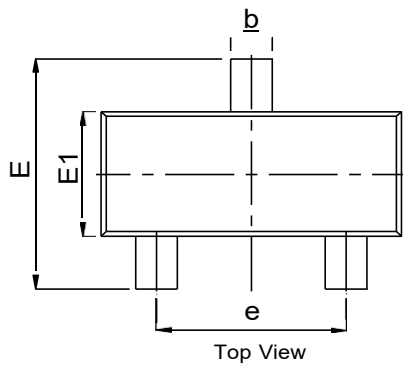
Preheat/Soak Temperature Min (T Amin) Temperature Max (T smax) Time (ts) from (T Amin to T smax)	50 °C 200 °C 60-120 seconds
Melting Point of Solder (Sn Ag Cu)	217°C
Ramp-up Rate to 217°C(Melting Point of Solder)	3°C/sec
Time at Temp. > 217°C (Melting Point of Solder)	60~150 Sec
Peak Temperature	255±5°C
Time within 5°C below Peak Temp.	20~40 Sec
Cooling Rate	6°C/sec (max)
Time from 25°C to Peak Temp.	8min (max)

c) Manual Soldering

When using an electric soldering iron for manual soldering, it is recommended that the temperature does not exceed 300°C and the soldering time is less than 10 seconds.

Outline Drawing

SOT-23

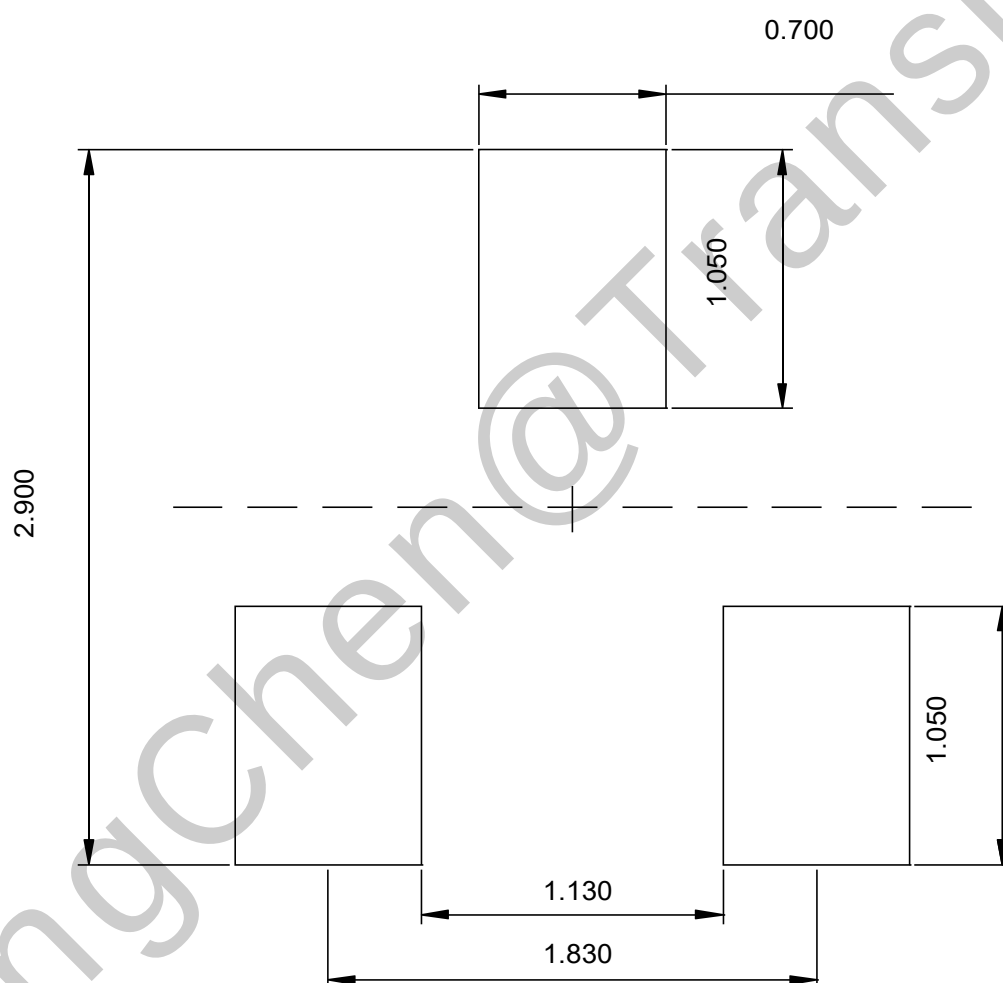


DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
A1	0.00	-	0.10
D	2.80	2.90	3.00
E	2.30	2.40	2.50
E1	1.20	1.30	1.40
L	0.45	0.55	0.65
L1	0.20	-	0.55
b	0.30	0.40	0.50
c	-	0.10	0.15
e	-	1.90	-

Dimensions in inches and (millimeters)

Suggested Soldering Pad Layout

SOT-23



Dimensions in inches and (millimeters)

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