

PRIMARY CHARACTERISTICS

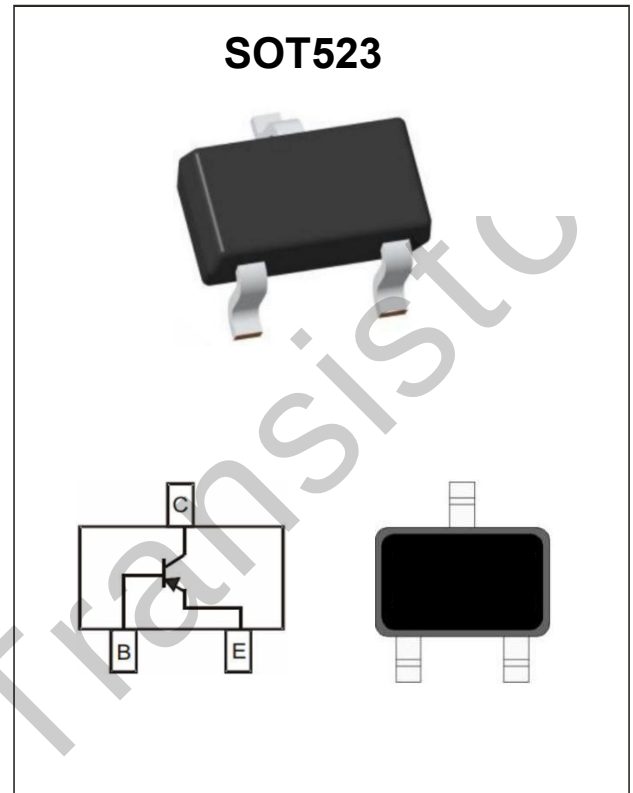
VCEO	IC	VCE(sat)	fT	Tjmax
40V	200mA	0.30V	300MHz	150°C

Features

- Complementary to MMBT3906T
- Small Package SOT-523
- RoHS Compliant and Halogen Free
- NPN Transistor
- Marking: 1N

Mechanical Data

- Package: SOT-523
- Mounting Style: Surface Mount
- Terminals: 3, Gull Wing


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

Parameters	Symbols	Limits	Units
Collector-Base Voltage	VCBO	60	V
Collector-Emitter Voltage	VCEO	40	V
Emitter -Base Voltage	VEBO	6	V
Collector Current-Continuous	IC	200	mA
Collector Power Dissipation	PC	150	mW
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	-55~+150	°C
Thermal resistance From junction to ambient	RθJA	833	°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=10μA, IE=0	60	-	-	V
Collector-emitter breakdown voltage	V(BR)CEO	IC=1mA, IB=0	40	-	-	V
Emitter-base breakdown voltage	V(BR)EBO	IE=10μA, IC=0	6	-	-	V
Emitter cut-off current	IEBO	VEB=5V, IC=0	-	-	100	nA
DC current gain	hFE(1)	VCE=1V, IC=1mA	70	-	-	
	hFE(2)	VCE=1V, IC=10mA	100	-	300	
	hFE(3)	VCE=1V, IC=50mA	60	-	-	
Collector-emitter saturation voltage	VCE(sat)	IC=10mA, IB=1mA	-	-	0.2	V
		IC=50mA, IB=5mA	-	-	0.3	V
		-	-	-	-	V
Base -emitter saturation voltage	VBE(sat)	IC=10mA, IB=1mA	0.65	-	0.85	V
		IC=50mA, IB=5mA	-	-	0.95	V
Transition frequency	fT	VCE=20V, IC=10mA, f=100MHz	-	300	-	MHz
Collector output capacitance	Cob	VCB=5V, IE=0, f=1MHz	-	4	-	pF

Typical Characteristics

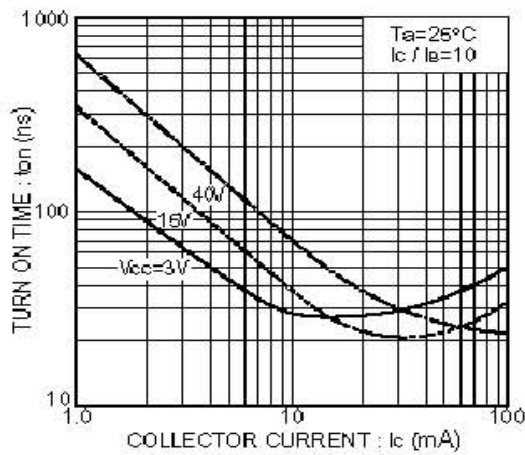


Fig.5 Turn-on time vs. collector current

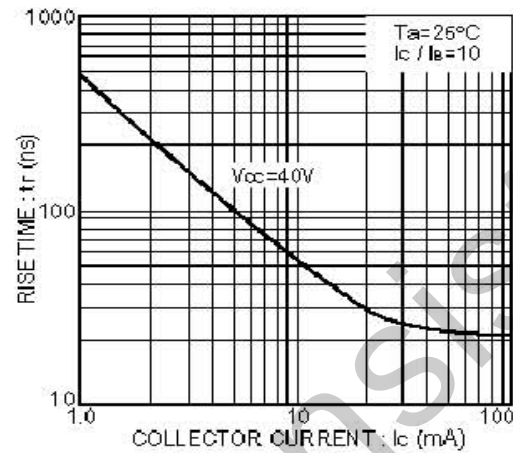


Fig.6 Rise time vs. collector current

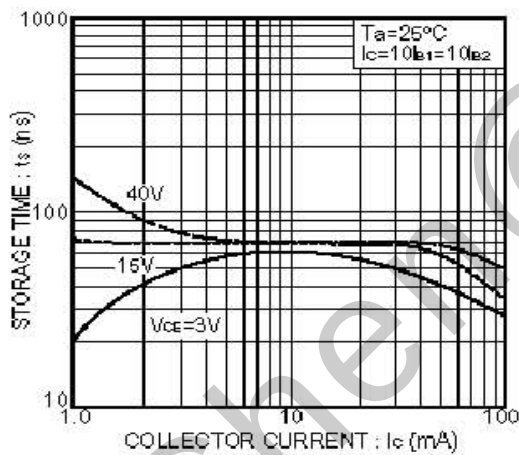


Fig.7 Storage time vs. collector current

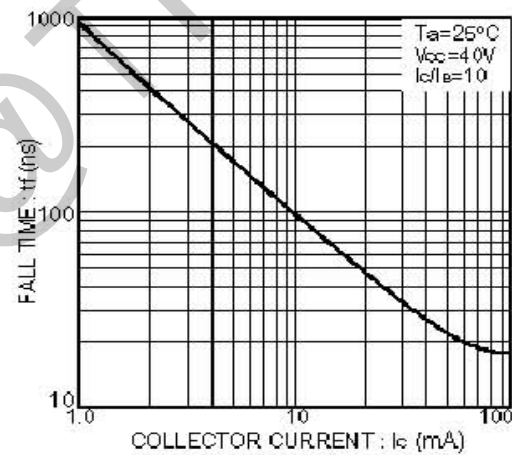


Fig.8 Fall time vs. collector current

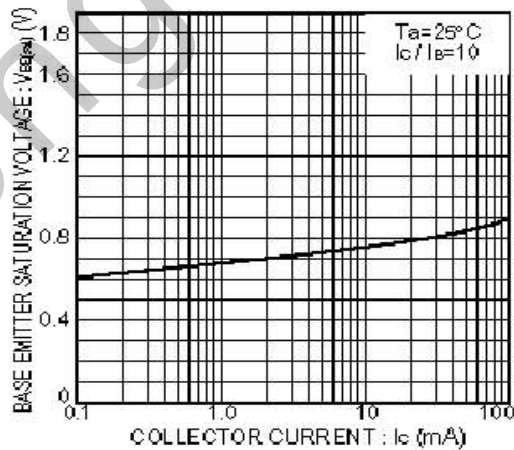


Fig.9 Base-emitter saturation voltage vs. collector current

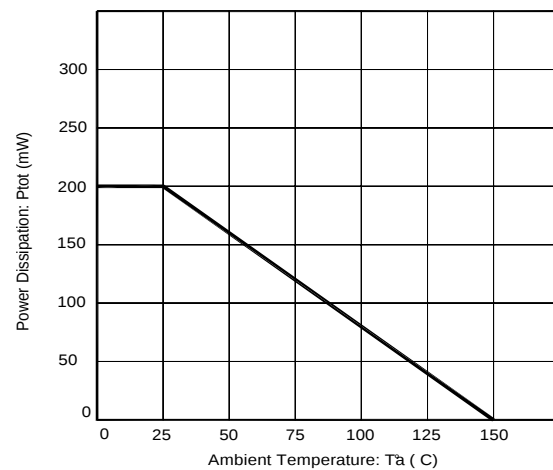
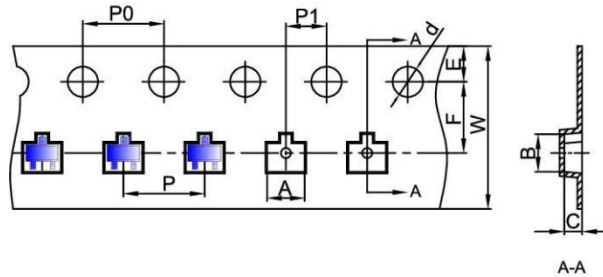


Fig.10 Power Dissipation vs Ambient Temperature

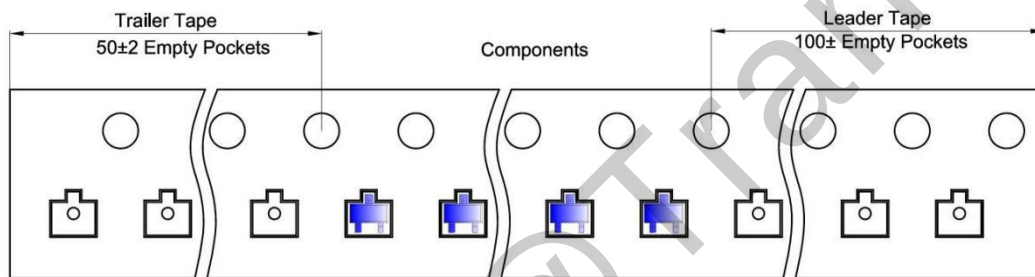
Package Information

Carrier Dimension(mm)

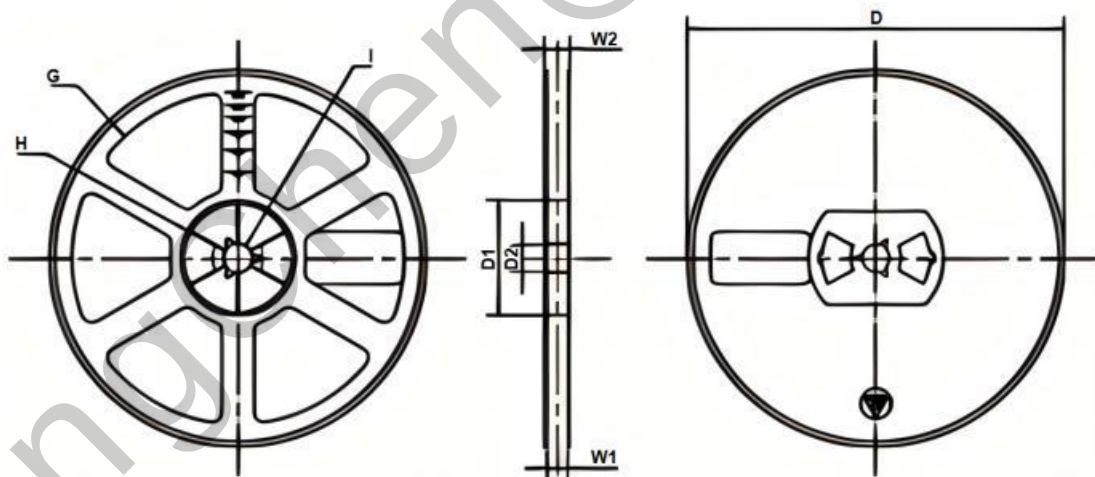


Dimensions are in millimeter

Pkg Type	A	B	C	d	E	F	P0	P	P1	W
SOT-523	1.85	1.85	0.875	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00



Reel Dimension(mm)



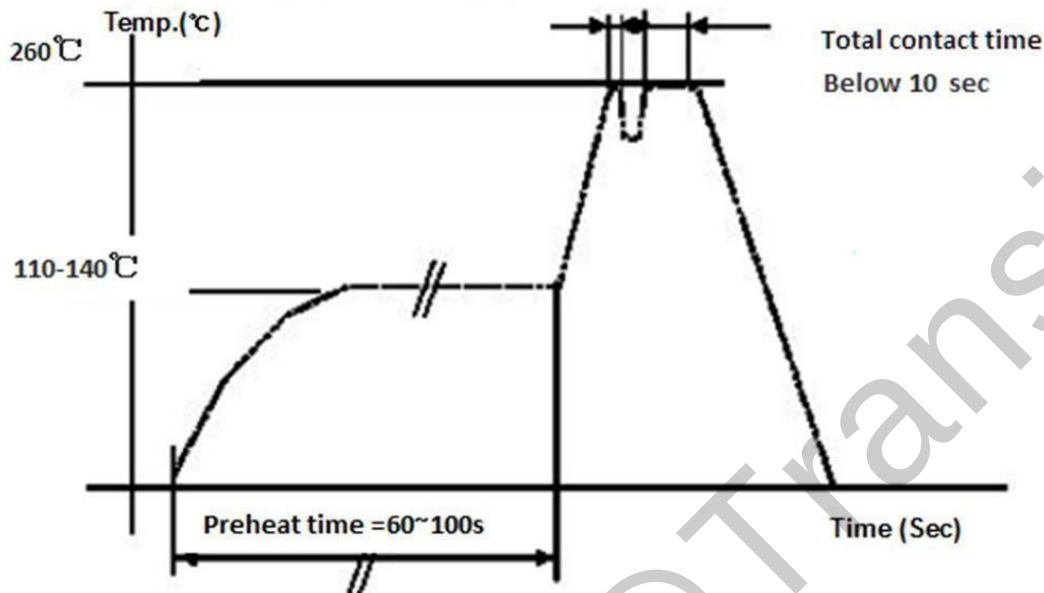
Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Φ178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30
Tolerance	±2	±1	±1	±1	±1	±1	±1	±1

Package Specifications

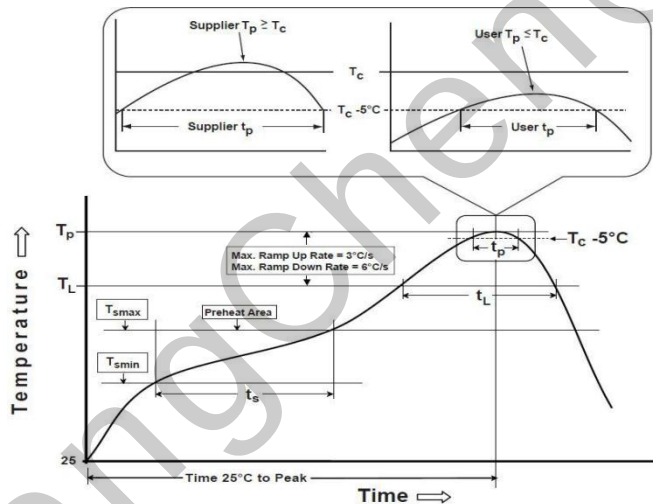
Package	Reel Size	Reel DIA. (mm)	Q'TY/Reel (Kpcs)	Box Size (mm)	QTY/Box (Kpcs)	Carton Size (mm)	Q'TY/Carton (Kpcs)
SOT523	7'	178	3	210*208*203	45	440*400*230	180

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



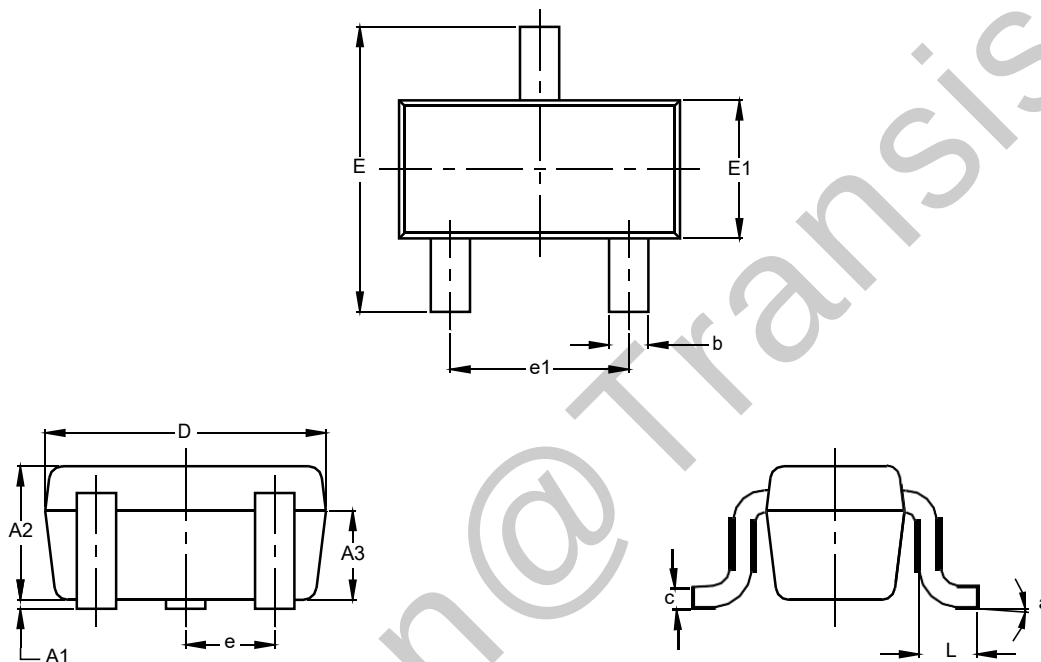
Preheat/Soak Temperature Min (T _{smin}) Temperature Max (T _{smax}) Time (ts) from (T _{smin} to T _{smax})	50 °C 200 °C 60-120 seconds
Melting Point of Solder (Sn Ag Cu)	217°C
Ramp-up Rate to 217°C(Melting Point of Solder)	3°C/sec
Time at Temp.>217°C (Melting Point of Solder)	60~150 Sec
Peak Temperature	255±5°C
Time within 5°Cbelow 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

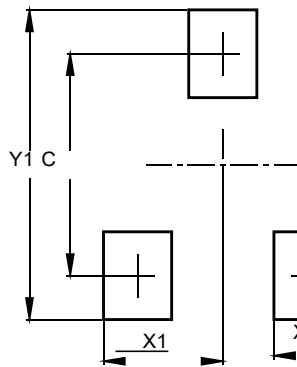
SOT-523



SOT523			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.60	0.80	0.75
A3	0.45	0.65	0.50
b	0.15	0.30	0.22
c	0.10	0.20	0.12
D	1.50	1.70	1.60
E	1.45	1.75	1.60
E1	0.75	0.85	0.80
e	0.50 BSC		
e1	0.90	1.10	1.00
L	0.20	0.40	0.33
a	0°	--	8°
All Dimensions in mm			

Suggested Soldering Pad Layout

SOT-523



Dimensions	Value (in mm)
C	1.29
X	0.40
X1	0.70
Y	0.51
Y1	1.80

Dimensions in inches and (millimeters)

Important Notice

DongChen Electronics reserves the right to make changes without further notice to any products herein.

DongChen Electronics makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does DongChen Electronics assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages.

“Typical” parameters which may be provided in DongChen Electronics data sheets and/or specifications can and do vary in different applications and actual performance may vary over time.

All operating parameters, including “Typicals,” must be validated for each customer application by the customer’s technical experts.

DongChen Electronics does not convey any license under its patent rights nor the rights of others.

The products listed in this document are designed to be used with ordinary electronic equipment or devices.

Should you intend to use these products with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, aerospace machinery, nuclear-reactor controllers, fuel controllers, and other safety devices), please be sure to consult with our sales representative in advance.

Head Office

Contact Information:

DongChen Electronics Co.,Ltd.

Address: 2F., No.407, Sec. 2, Longgang Rd.,Zhongli Dist.,
Taoyuan City 32097, Taiwan (R.O.C.)

Tel: 03-284-1808

Fax: 03-284-1404

Mail:dc@dongchen.com.tw

Web:www.dongchen.com.tw