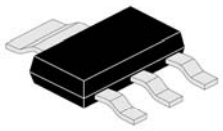
PNP Silicon Planar Medium Power Transistor

CZT753



SOT-223

SOT-223
Surface Mount
Plastic Package
RoHS compliant

Marking : CZT753

FEATURES:

1. Low saturation voltage
2. Excellent hFE specified up to 2A

APPLICATION: High Voltage switching applications.

ABSOLUTE MAXIMUM RATINGS (Ta = 25 ℃ Unless otherwise specified)

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	-120	V
Collector-Emitter Voltage	V_{CEO}	-100	V
Emitter-Base Voltage	V_{EBO}	-5	V
Peak Pulse Current	I_{CM}	-6	A
Continuous Collector Current	I_C	-2	A
Power Dissipation at Tamb=25°C	P_{tot}	2	W
Operating and Storage Temperature Range	T_j, T_{stg}	-55 to +150	°C

ELECTRICAL CHARACTERISTICS at (Ta = 25 ℃ Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=-100μA	-120	--	--	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=-10mA [1]	-100	--	--	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=-100μA	-5	--	--	V
Collector Cut-Off Current	I_{CBO}	V_{CB}=-100V	--	--	-0.1	μA
		V_{CB}=-100V,T_{amb}=100°C	--	--	-10	μA
Emitter Cut-Off Current	I_{EBO}	V_{EB}=-4V	--	--	-0.1	μA
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=-1A, I_B=-100mA [1]	--	-0.17	-0.3	V
		I_C=-2A, I_B=-200mA [1]	--	-0.30	-0.5	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=-1A, I_B=-100mA [1]	--	-0.9	-1.25	V
Base-Emitter Turn-On Voltage	$V_{BE(on)}$	I_C=-1A, V_{CE}=-2V [1]	--	-0.8	-1.0	V
Static Forward Current Transfer Ratio	h_{FE}	I_C=-50mA, V_{CE} =-2V [1]	70	200	--	--
		I_C=-500mA, V_{CE} =-2V [1]	100	200	300	
		I_C=-1A, V_{CE} =-2V [1]	55	170	--	
		I_C=-2A, V_{CE} =-2V [1]	25	55	--	
Transition Frequency	f_T	I_C=-100mA, V_{CE}=-5V, f=100MHz	100	140	--	MHz
Output Capacitance	C_{obo}	V_{CB} =-10V f=1MHz	--	--	30	pF
Switching Times	t_{on}	I_C=-500mA, V_{CC} = -10V,I_{B1}=I_{B2}=-50mA	--	40	--	ns
	t_{off}		--	600	--	ns

Note:

1. Measured under pulsed conditions. Pulse Width=300μs. Duty cycle ≤2%

TYPICAL CHARACTERISTICS CURVES

Fig 1: Collector Current vs Collector-emitter Saturation voltage

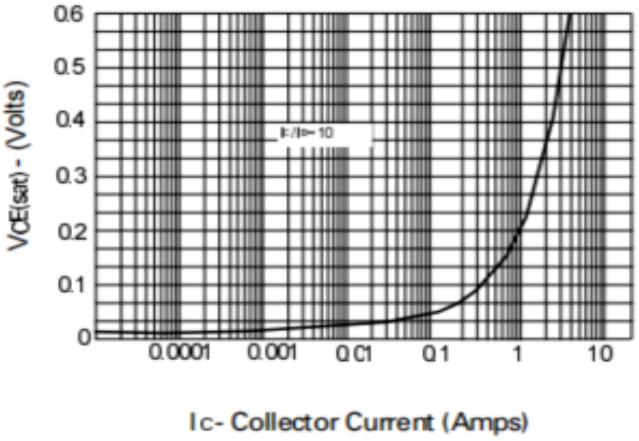


Fig 2: Collector Current vs Switching Time

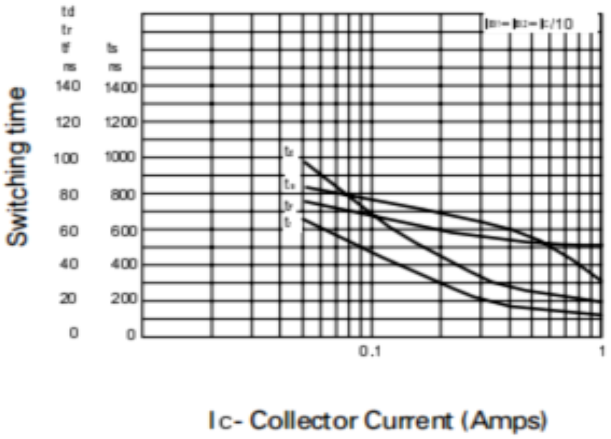


Fig 3: Collector Current vs DC Gain

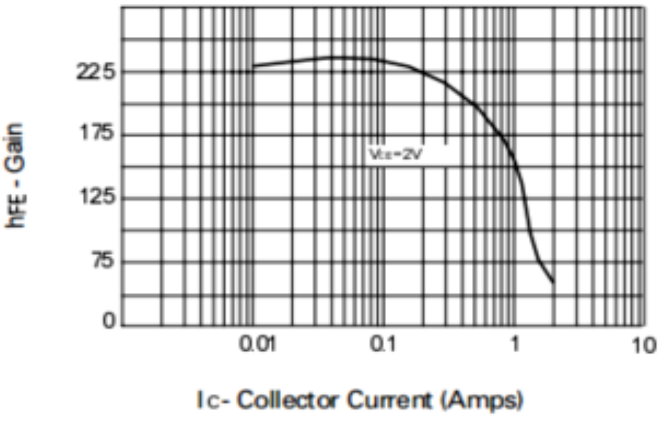


Fig 4: Collector Current vs Base-Emitter Saturation voltage

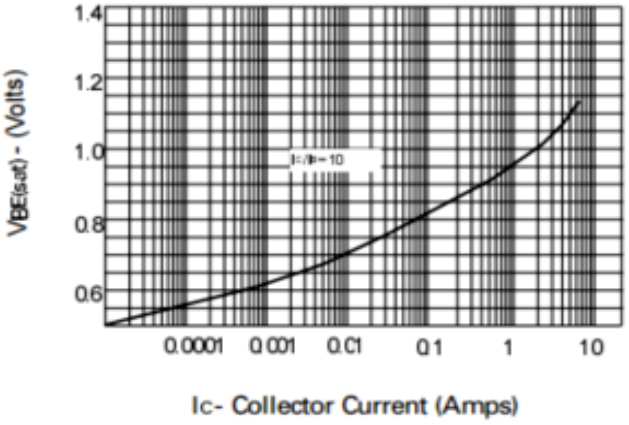


Fig 5: Collector Current vs Base-Emitter Voltage

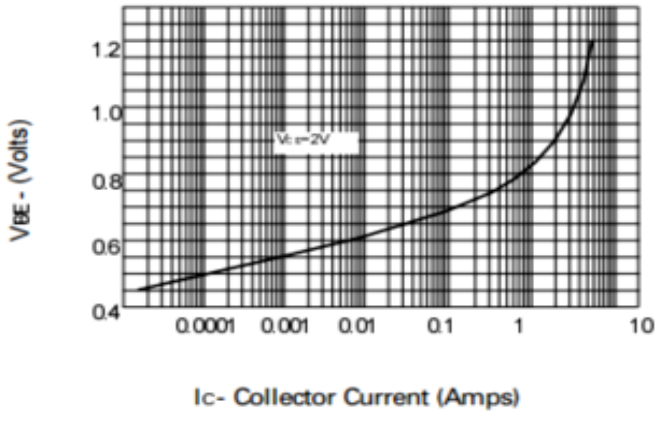
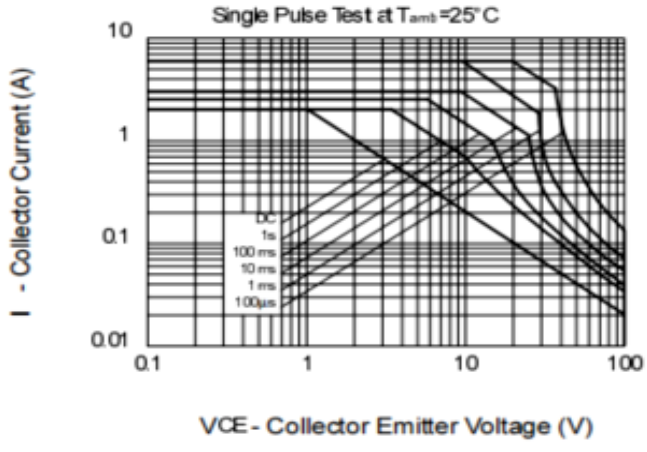
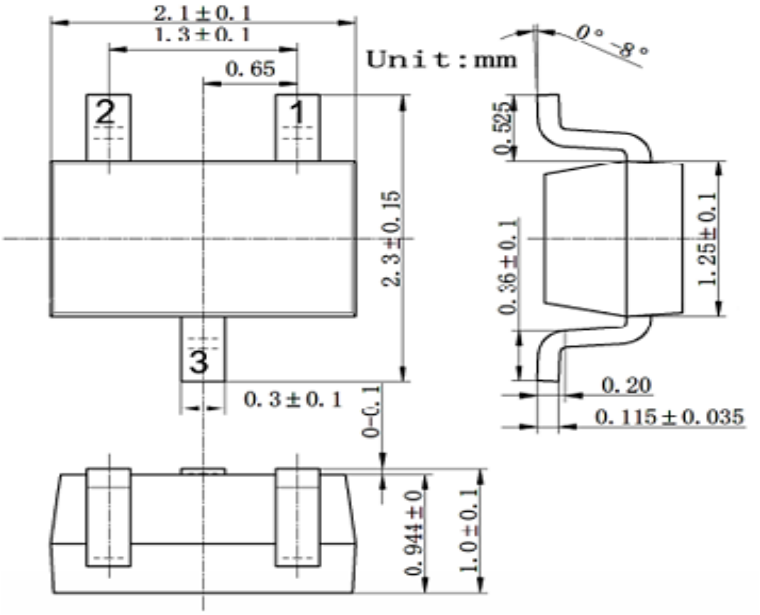


Fig 6: Collector Emitter Voltage vs Collector Current



PACKAGE DETAIL

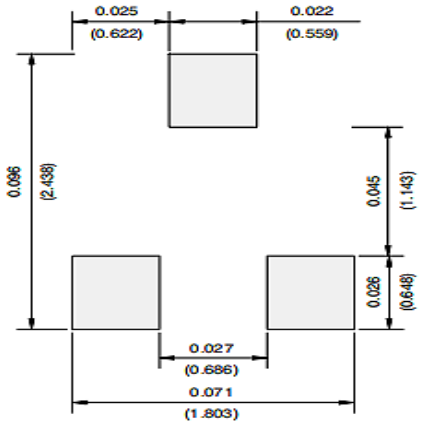
SOT-323 Package Outline Dimensions



Pin Configuration

1. Gate
2. Source
3. Drain

SOT-323 Suggested Pad Layout

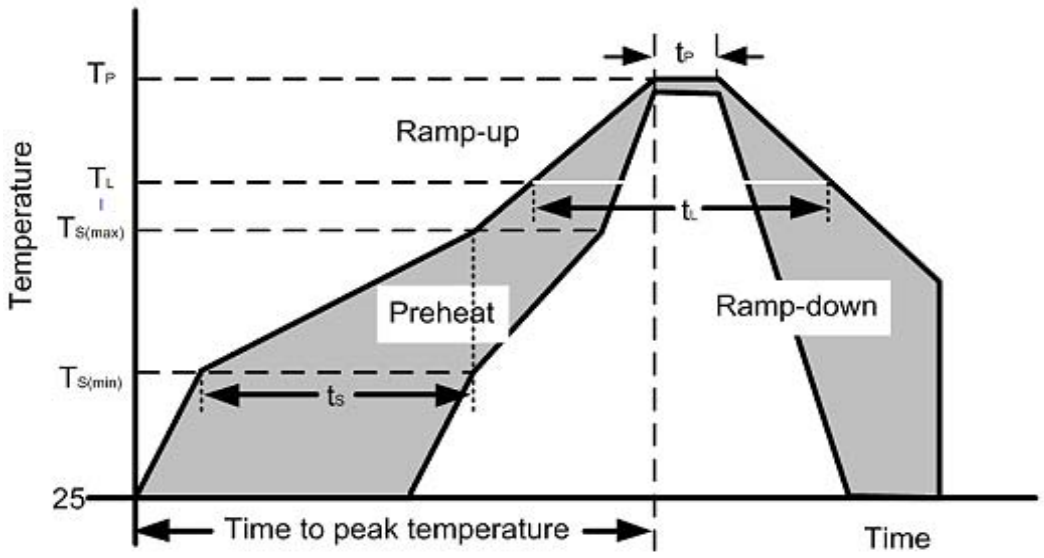


Note:

1. Controlling Dimension: in millimeters.
2. General tolerance:±0.050mm.
3. The pad layout is for reference purpose only

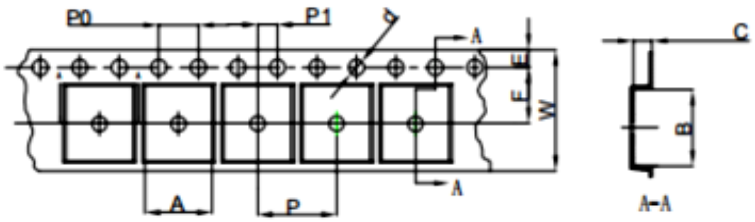
Soldering Parameters

Reflow Condition		Pb--Free assembly
Pre Heat	Temperature Min ($T_{s(min)}$)	150°C
	Temperature Max ($T_{s(max)}$)	200°C
	Time (min to max) (ts)	60 – 190 secs
Average ramp up rate (Liquidus Temp) (T_L) to peak		5°C/second max
$T_{S(max)}$ to T_L——Ramp-up Rate		5°C/second max
Reflow	Temperature (TL) (Liquidus)	217°C
	Temperature (t_L)	60 – 150 seconds
Peak Temperature (T_P)		260+0/-5 °C
Time within actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		5°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes Max.
Do not exceed		280°C



SOT-323 Tape and Reel

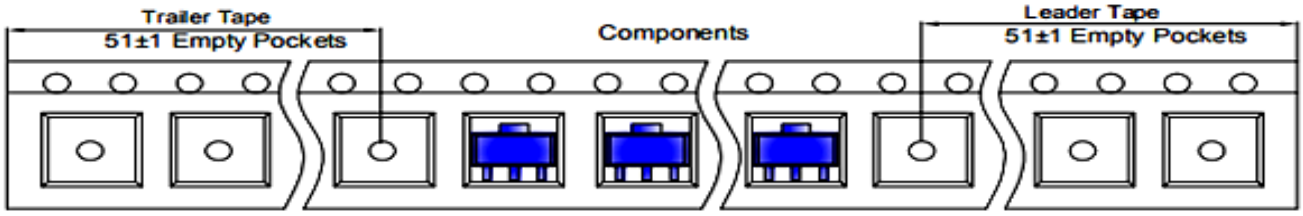
SOT-223 Embossed Carrier Tape



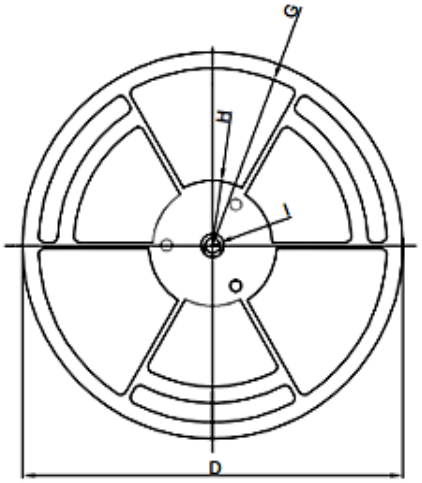
Packaging Description:
SOT-223 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 2,500 units per 13" or 33.0cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

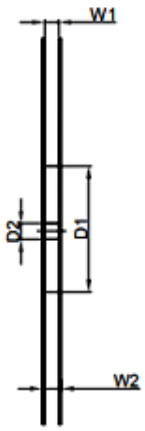
Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-223	6.765	7.335	1.88	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00

SOT-223 Tape Leader and Trailer



SOT-223 Reel





Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
13"Dia	Ø330.00	100.00	13.00	R151.00	R56.00	R6.50	12.40	17.60

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
2,500 pcs	13 inch	2,500 pcs	336×336×48	20,000 pcs	445×355×365	

CZT753 Rev0 08072020EJS

Recommended Product Storage Environment for Discrete Semiconductor Devices

This storage environment assumes that the Diodes and transistors are packed properly inside the original packing supplied by CDIL.

- Temperature 5 °C to 30 °C
- Humidity between 40 to 70 %RH
- Air should be clean.
- Avoid harmful gas or dust.
- Avoid outdoor exposure or storage in areas subject to rain or water spraying .
- Avoid storage in areas subject to corrosive gas or dust. Product shall not be stored in areas exposed to direct sunlight.
- Avoid rapid change of temperature.
- Avoid condensation.
- Mechanical stress such as vibration and impact shall be avoided.
- The product shall not be placed directly on the floor.
- The product shall be stored on a plane area. They should not be turned upside down. They should not be placed against the wall.

Shelf Life of CDIL Products

The shelf life of products is the period from product manufacture to shipment to customers. The product can be unconditionally shipped within this period. The period is defined as 2 years.

If products are stored longer than the shelf life of 2 years the products shall be subjected to quality check as per CDIL quality procedure.

The products are further warranted for another one year after the date of shipment subject to the above conditions in CDIL original packing.

Floor Life of CDIL Products and MSL Level

When the products are opened from the original packing, the floor life will start.
For this, the following JEDEC table may be referred:

JEDEC MSL Level		
Level	**Time**	**Condition**
1	Unlimited	≤30 °C / 85% RH
2	1 Year	≤30 °C / 60% RH
2a	4 Weeks	≤30 °C / 60% RH
3	168 Hours	≤30 °C / 60% RH
4	72 Hours	≤30 °C / 60% RH
5	48 Hours	≤30 °C / 60% RH
5a	24 Hours	≤30 °C / 60% RH
6	Time on Label(TOL)	≤30 °C / 60% RH

Customer Notes

Component Disposal Instructions

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

Disclaimer

The product information and the selection guides facilitate selection of the CDIL's Semiconductor Device(s) best suited for application in your product(s) as per your requirement. It is recommended that you completely review our Data Sheet(s) so as to confirm that the Device(s) meet functionality parameters for your application. The information furnished in the Data Sheet and on the CDIL Web Site/CD are believed to be accurate and reliable. CDIL however, does not assume responsibility for inaccuracies or incomplete information. Furthermore, CDIL does not assume liability whatsoever, arising out of the application or use of any CDIL product; neither does it convey any license under its patent rights nor rights of others. These products are not designed for use in life saving/support appliances or systems. CDIL customers selling these products (either as individual Semiconductor Devices or incorporated in their end products), in any life saving/support appliances or systems or applications do so at their own risk and CDIL will not be responsible for any damages resulting from such sale(s).

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