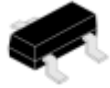
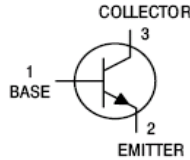


NPN Silicon Epitaxial Planar Transistor

CMMT458



SOT-23



SOT-23
SMD Package
RoHS compliant

FEATURES:

1. High voltage
2. 225mA High Continuous Collector Current

APPLICATION: High voltage switching

ABSOLUTE MAXIMUM RATING (Ta = 25 °C Unless otherwise specified)

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	400	V
Collector-Emitter Voltage	V_{CEO}	400	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current -Continuous	I_C	225	mA
Peak Pulse Current	I_{CM}	1	A
Base Current	I_B	200	mA
Power Dissipation	P_{tot}	500	mW
Junction and Storage Temperature	T_J, T_{stg}	-55 to +150	°C



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ELECTRICAL CHARACTERISTICS at (Ta = 25 °C Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=100\mu A, I_E=0$	400	--	--	V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=10mA, I_B=0$	400	--	--	V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=100\mu A, I_C=0$	5	--	--	V
Collector cut-off current	I_{CBO}	$V_{CB}=320V, I_E=0$	--	--	0.1	μA
Collector cut-off current	I_{CEO}	$V_{CE}=320V, I_B=0$	--	--	0.1	μA
Emitter cut-off current	I_{EBO}	$V_{EB}=4V, I_C=0$	--	--	0.1	μA
DC current gain	h_{FE}	$V_{CE}=10V, I_C=1mA$	100	--	--	
		$V_{CE}=10V, I_C=50mA$	100	--	300	
		$V_{CE}=10V, I_C=100mA$	15	--		
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=20mA, I_B=2mA$	--	--	0.2	V
		$I_C=50mA, I_B=6mA$	--	--	0.5	
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=50mA, I_B=5mA$	--	--	0.9	V
Base-emitter turn on voltage	$V_{BE(on)}$	$I_C=50mA, V_{CE}=10V$	--	--	0.9	V
Transition frequency	f_T	$V_{CE}=20V, I_C=10mA, f=20MHz$	50	--	--	MHz
Collector output capacitance	C_{ob}	$V_{CB}=20V, f=1MHz$	--	--	5	pF
Switching times	t_{on}	$I_C=50mA, V_{CC}=100V$	--	135	--	nS
	t_{off}	$I_{B1}=5mA, I_{B2}=10mA$	--	2260	--	

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TYPICAL CHARACTERISTICS CURVES

Fig 1: $V_{CE(sat)}$ vs. I_C

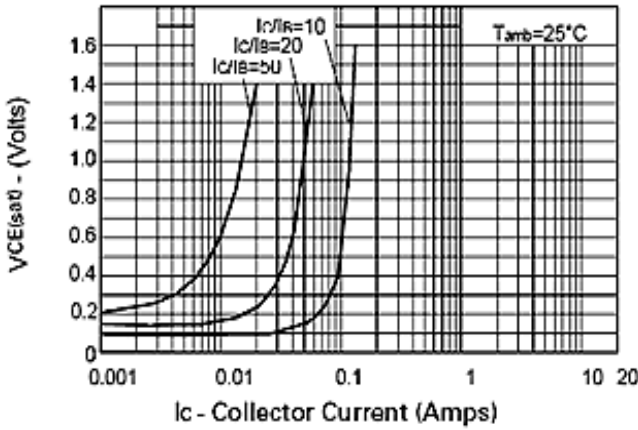


Fig 2: $V_{CE(sat)}$ vs. I_C

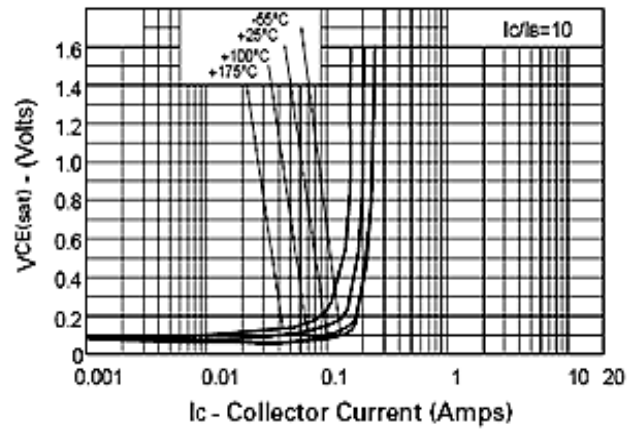


Fig 3: h_{FE} vs. I_C

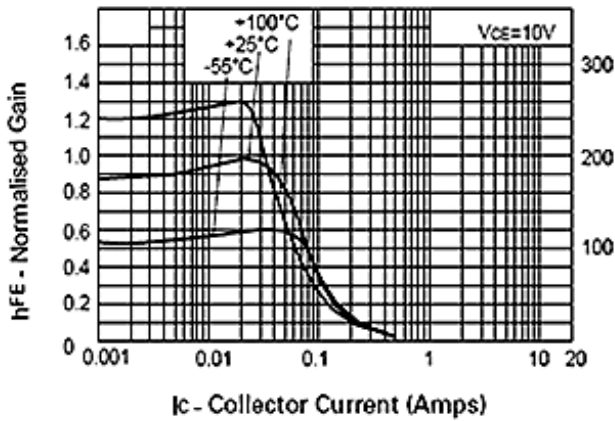


Fig 4: $V_{BE(sat)}$ vs. I_C

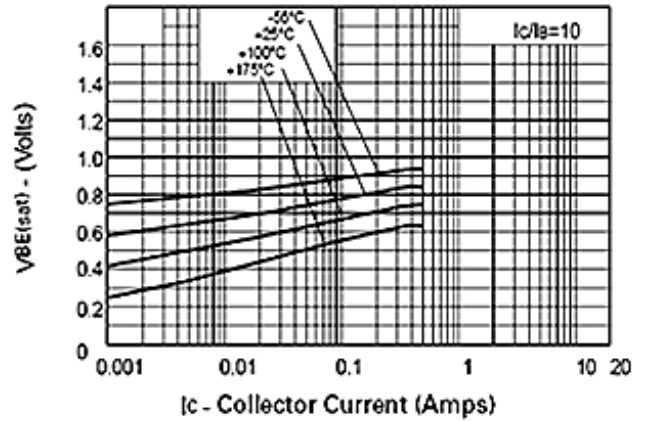


Fig 5: $V_{BE(on)}$ vs. I_C

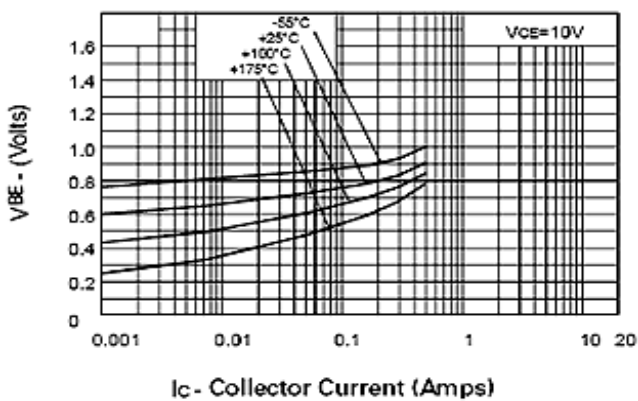
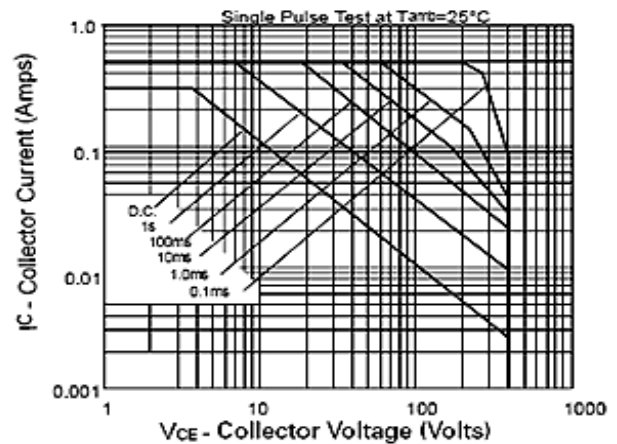
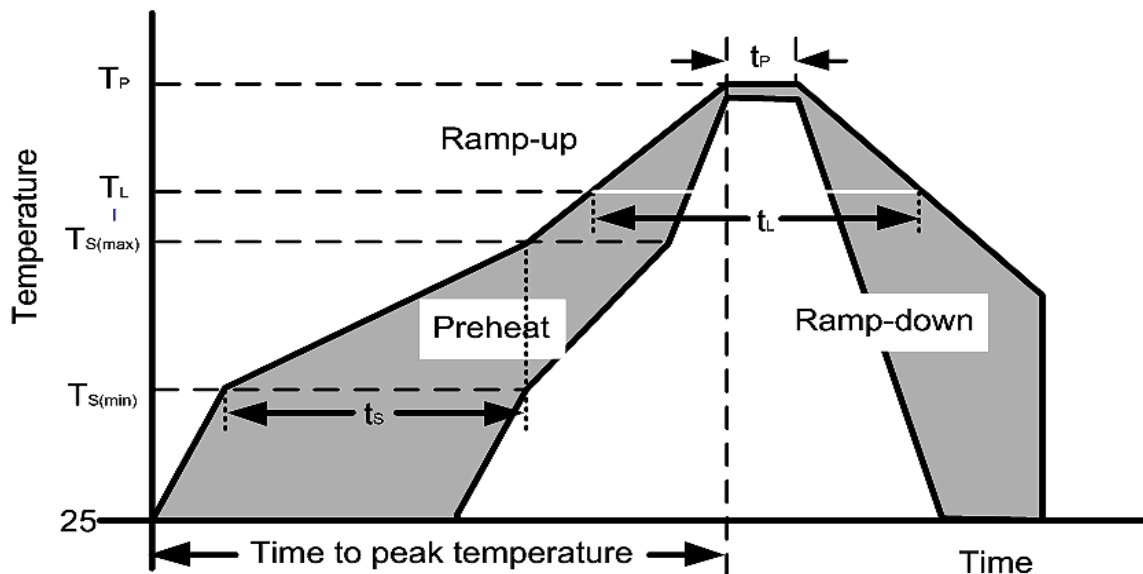


Fig 6: Safe Operating Area



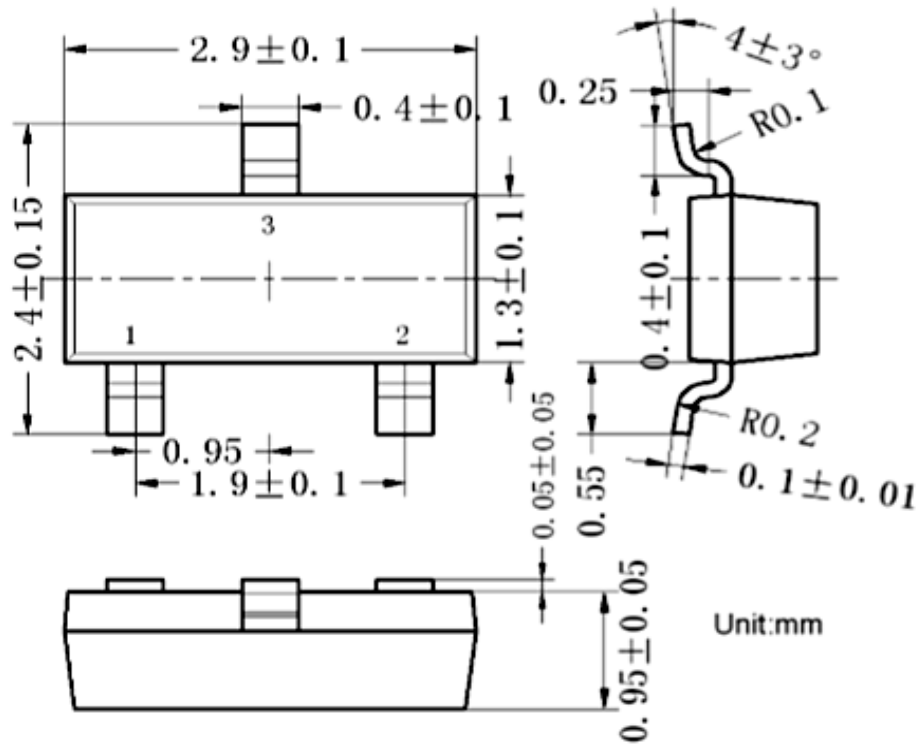
Soldering Parameters.

Reflow Condition		Pb – Free assembly
Pre Heat	Temperature Min ($T_{s(min)}$)	150°C
	Temperature Min ($T_{s(min)}$)	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 (T_L) (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

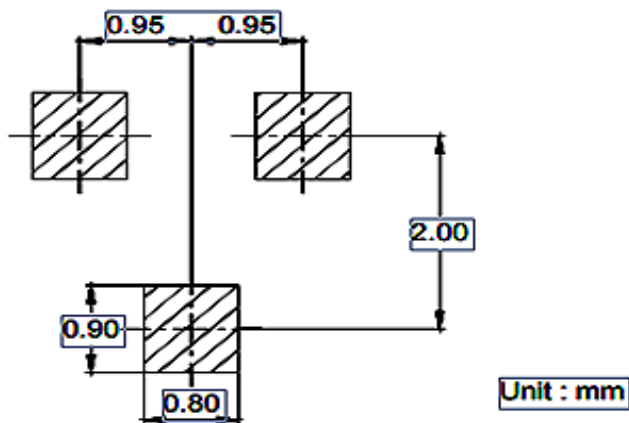


PACKAGE DETAILS

SOT-23 Surface Mount Plastic Package

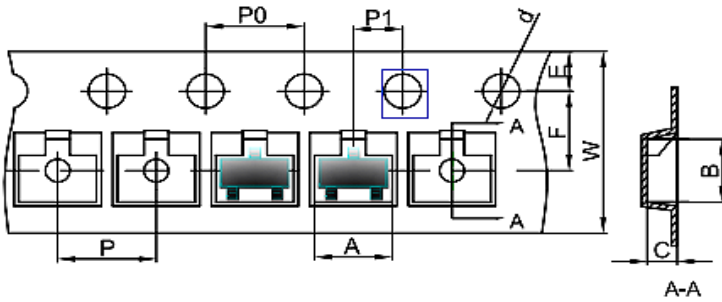


SOLDERING FOOTPRINT



Packing Details

SOT-23 Embossed Carrier Tape



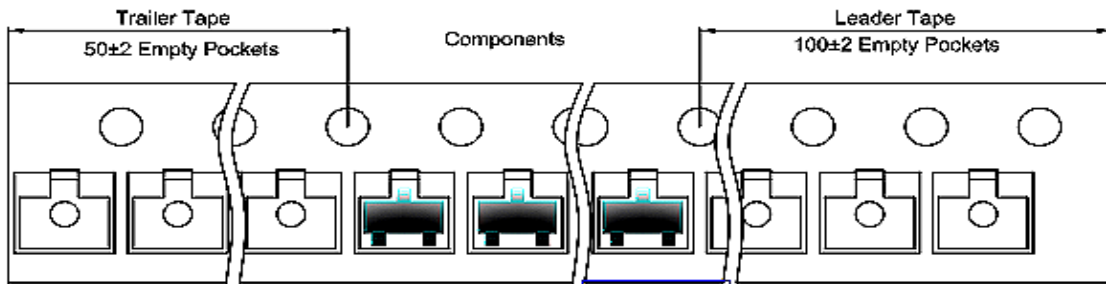
Packaging Description:

SOT-23 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 3000 units per 7" or 17.2cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

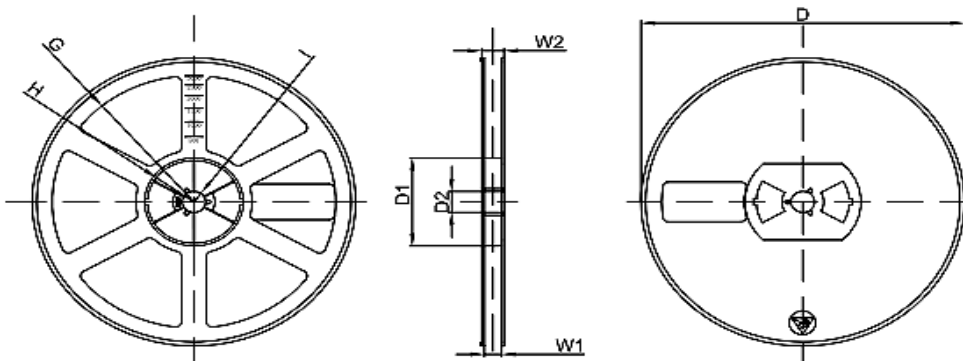
Dimensions are in millimeter

Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 Tape Leader and trailer



SOT-23 Reel



Dimensions are in millimeter

Reel Option	D	D1	D2	G	H	I	W1	W2
7" Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 Inch	45,000 pcs	203×203×195	180,000 pcs	438×438×220	

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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

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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).

CDIL strives for continuous improvement and reserves the right to change the specifications of its products without prior notice.



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