

# SOT-23 Devices

Maximum die size 25 mil x 25 mil

## Bipolar Transistors General-Purpose Transistors

Pinout: 1-Base, 2-Emitter, 3-Collector

Devices are listed in order of descending breakdown voltage.

Device	Marking	V <sub>(BR)CEO</sub>	h <sub>FE</sub>			f <sub>T</sub>
			Min	Max	@ I <sub>C</sub> (mA)	Min (MHz)
<b>NPN</b>						
BC846AT	1A	65	110	220	2	100
BC846BT	1B	65	200	450	2	100
BC817-16L	6A	45	100	250	100	200
BC817-25L	6B	45	160	400	100	200
BC817-40L	6C	45	250	600	100	200
BC847AT	1E	45	110	220	2	100
BC847BT	1F	45	200	450	2	100
BC847CT	1G	45	420	800	2	100
BCX70KL	AK	45	100	—	50	125
BCW72L	K2	45	200	450	2	—
BCX70GL	AG	45	60	220	50	125
BCX19L	U1	45	40	—	500	200
MMBT2222AL	1P	40	40	—	500	200
MMBT3904T	1A	40	30	—	100	200
BSS79BL	CE	40	40	120	150	250
MMBTA20L	1C	40	40	400	5	125
MMBC1622D7L	D7	35	300	600	0.5	100
MMBC1622D6L	D6	35	200	400	0.5	100
BCW60DL	AD	32	100	—	50	125
BCW65CL	EC	32	100	—	500	100
BC848AT	1J	30	110	220	2	100
BC848BT	1K	30	200	450	2	100
BC848CT	1L	30	420	800	2	100

(continued)

**General-Purpose Transistors (continued)**

Device	Marking	V <sub>(BR)CEO</sub>	h <sub>FE</sub>			f <sub>T</sub>
			Min	Max	@ I <sub>C</sub> (mA)	Min (MHz)
<b>NPN — continued</b>						
MMBT2222L	1B	30	30	—	500	250
MMBC1009F1L	F1	25	30	60	0.5	150
MMBC1009F3L	F3	25	60	120	0.5	150
BCX20L	U2	25	100	600	100	—
BCW33L	D3	20	420	—	2	—
BCW31L	D1	20	110	220	2	—
<b>PNP</b>						
MMBT8599L	2W	80	75	—	100	150
BC856AT	3A	65	125	250	2	100
BC856BT	3B	65	220	475	2	100
BSS82CL	CM	60	100	300	150	100
MMBT2907AL	2F	60	50	—	500	200
MMBA811C8L	C8	45	450	900	5	50
BC807-16L	5A	45	100	250	100	200
BC807-25L	5B	45	160	400	100	200
BC807-40L	5C	45	250	600	100	200
BC857AT	3E	45	125	250	2	100
BC857BT	3F	45	220	475	2	100
BC857CT	3G	45	420	800	2	100
BCX71KL	BK	45	100	—	50	—
BCW70L	H2	45	215	500	2	—
BCW68GL	DG	45	60	—	500	100
BCX17L	T1	45	100	600	100	100
MMBA812M7L	M7	40	300	600	1	150
MMBA812M6L	M6	40	200	400	1	150
MMBT3906T	2A	40	100	300	10	250
MMBT4403L	2T	40	100	300	150	200
BSS80BL	CH	40	40	120	150	200
BCW61DL	BD	32	110	—	50	—
BCW67BL	DB	32	60	—	500	100
BC858AT	3J	30	125	250	2	100
BC858BT	3K	30	220	475	2	100
BC858CT	3L	30	420	800	2	100
BCX18L	T2	25	40	—	500	—
BCW30L	C2	20	215	500	2	—
BCW29L	C1	20	120	260	2	—

# Thyristors

## SILICON CONTROLLED RECTIFIERS

Device	Marking	I <sub>F</sub> (mA)	V <sub>FXM</sub> (mA)	I <sub>GT</sub> (μA)	V <sub>GT</sub> (V)	I <sub>H</sub> (mA)	Case Style
MMBS5062L	5T	500	100	200	0.8	5	14

## SILICON PROGRAMMABLE UNIUNCTION TRANSISTORS

Device	Marking	I <sub>p</sub>		I <sub>GAO</sub> @ 40 V nA Max	I <sub>v</sub>		Case Style
		R <sub>G</sub> = 10 kΩ μA Min	R <sub>G</sub> = 1 MΩ μA Max		R <sub>G</sub> = 10 kΩ μA Min	R <sub>G</sub> = 1 MΩ μA Max	
MMBP6028L	5V	1	0.15	10	70	25	20

With the advent of automated printed circuit board placement equipment, Motorola has offered the "Low Profile" package on SOT-23 packages.

This package is primarily for customers using both sides of the printed circuit board for parts placement.

All part numbers listed in the following tables are available in the low profile package.

# SOT-23 Package Dimensions

**SOT-23**

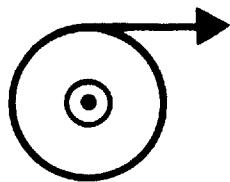
**NOTES**

- 1 DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982
- 2 CONTROLLING DIMENSION INCH
- 3 MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

**CASE 318-07**

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.80	3.04	0.1102	0.1197
B	1.20	1.40	0.0472	0.0551
C	0.89	1.11	0.0350	0.0440
D	0.37	0.50	0.0150	0.0200
G	1.78	2.04	0.0701	0.0807
H	0.013	0.100	0.0005	0.0040
J	0.085	0.177	0.0034	0.0070
K	0.45	0.60	0.0180	0.0236
L	0.89	1.02	0.0350	0.0401
S	2.10	2.50	0.0830	0.0984
V	0.45	0.60	0.0177	0.0236

<p><b>STYLE 6:</b> PIN 1. BASE 2. EMITTER 3. COLLECTOR</p> <p><b>STYLE 7:</b> PIN 1. EMITTER 2. BASE 3. COLLECTOR</p>	<p><b>STYLE 8:</b> PIN 1. ANODE 2. NO CONNECTION 3. CATHODE</p> <p><b>STYLE 9:</b> PIN 1. ANODE 2. ANODE 3. CATHODE</p> <p><b>STYLE 10:</b> PIN 1. DRAIN 2. SOURCE 3. GATE</p> <p><b>STYLE 11:</b> PIN 1. ANODE 2. CATHODE 3. CATHODE-ANODE</p>	<p><b>STYLE 12:</b> PIN 1. CATHODE 2. CATHODE 3. ANODE</p> <p><b>STYLE 13:</b> PIN 1. SOURCE 2. DRAIN 3. GATE</p> <p><b>STYLE 14:</b> PIN 1. CATHODE 2. GATE 3. ANODE</p> <p><b>STYLE 18:</b> PIN 1. NO CONNECTION 2. CATHODE 3. ANODE</p> <p><b>STYLE 19:</b> PIN 1. CATHODE 2. ANODE 3. CATHODE-ANODE</p>	<p><b>STYLE 15:</b> PIN 1. GATE 2. CATHODE 3. ANODE</p> <p><b>STYLE 16:</b> PIN 1. ANODE 2. CATHODE 3. CATHODE</p> <p><b>STYLE 17:</b> PIN 1. NO CONNECTION 2. ANODE 3. CATHODE</p> <p><b>STYLE 20:</b> PIN 1. CATHODE 2. ANODE 3. GATE</p> <p><b>STYLE 21:</b> PIN 1. GATE 2. SOURCE 3. DRAIN</p>
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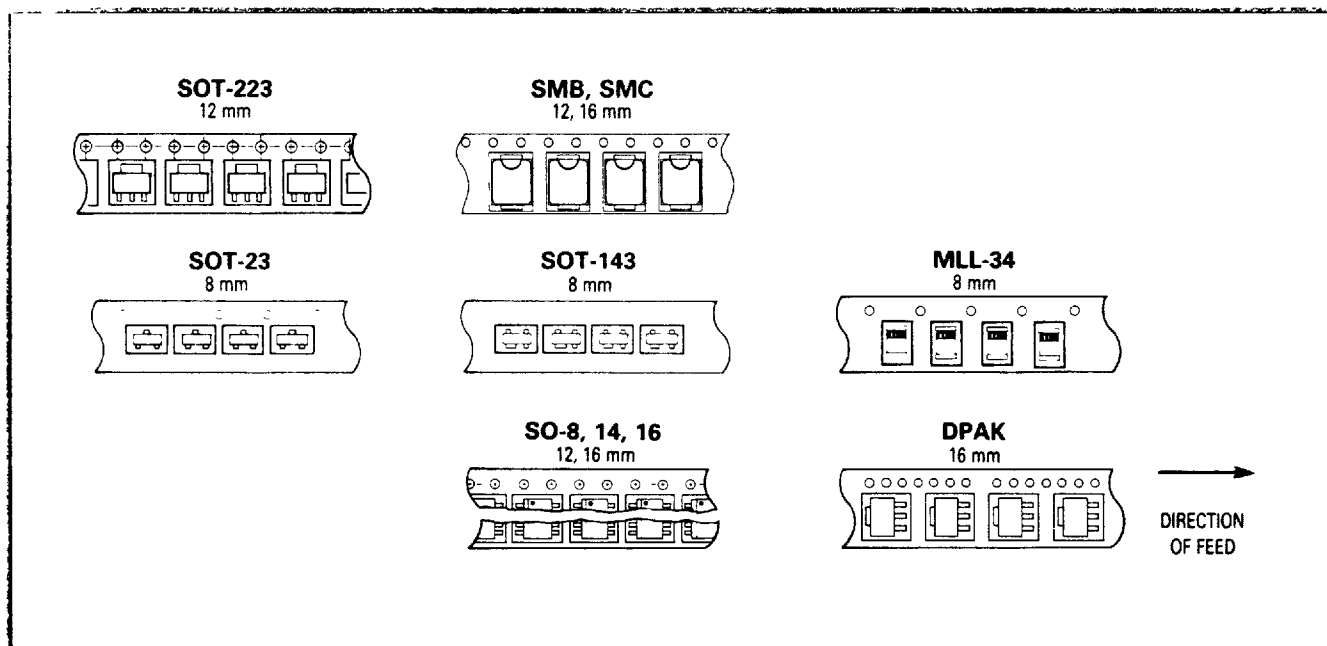
# Tape and Reel

## Discrete Products

Embossed Tape and Reel is used to facilitate automatic pick and place equipment feed requirements. The tape is used as the shipping container for various products and requires a minimum of handling. The antistatic/conductive tape provides a secure cavity for the product when sealed with the "peel-back" cover tape.

- Two Reel Sizes Available (7" and 13")
- Used For Automatic Pick and Place Feed Systems
- Minimizes Product Handling
- EIA 481A
- MLL-34, SOT-23, SOT-143 in 8 mm Tape
- SO-8, SOT-223, SMB in 12 mm Tape
- DPAK, SO-14, SO-16, SMC in 16 mm Tape

Use the standard device title and add the required suffix as listed in the option table below. Note that the individual reels have a finite number of devices depending on the type of product contained in the tape. Also note the minimum lot size is one full reel for each line item, and orders are required to be in increments of the single reel quantity. Minimum order \$200.00/line-line.



## TAPE AND REEL ORDERING INFORMATION

Package	Tape Width (mm)	Reel Size (inch)	Devices Per Reel and Minimum Order Quantity	Device Suffix
SOT-23	8	7	3,000	T1
	8	13	10,000	T3
SOT-143	8	7	3,000	T1
	8	13	10,000	T3
MLL-34	8	7	2,000	T1
	8	13	5,000	T3
SOT-223	12	7	1,000	T1
	12	13	4,000	T3
SMB	12	13	2,500	T3
SO-8	12	7	500	R1
	12	13	2,500	R2
SO-14	16	7	500	R1
	16	13	2,500	R2
SO-16	16	7	500	R1
	16	13	2,500	R2
DPAK	16	13	1,800	RL
SMC	16	13	2,500	T3