

MT9435A

P-Channel Enhancement Mode Field Effect Transistor

Product summary

PRODUCT SUMMARY		
V _{DSS}	I _D	R _{DS(ON)} (mΩ) Typ
-30V	-5.6A	45@ V _{GS} =-10V
		75 @ V _{GS} =-4.5V

Features

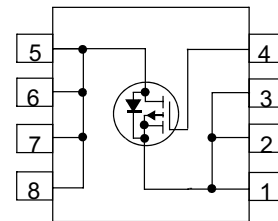
- Supper high dense cell design for low R_{DS(ON)}
- Rugged and reliable
- Sample drive requirement
- SOP-8 package



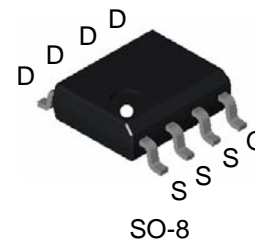
MT Semiconductor®

<http://www.mtsemi.com>

Simplified Schematic



MARKING DIAGRAM & PIN ASSIGNMENT



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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	-30	V
Gate-Source Voltage	V _{GS}	±20	V
Drain Current-Continuous ^a @T _j =125°C	I _D	-5.6	A
	- Pulse <i>d</i> ^b	I _{DM}	-24
Drain-source Diode Forward Current ^a	I _S	-1.7	A
Maximum Power Dissipation ^a	P _D	2.5	W
Operating Junction and Storage Temperature Range	T _J ,T _{STG}	-55 to 150	°C

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to Ambient ^a	R _{th JA}	50	°C/W
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ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

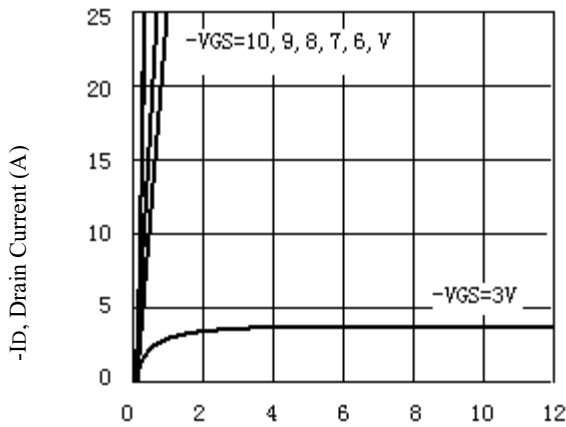
Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250μA	-30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-24V, V _{GS} =0V			-1	μA
Gate-Body Leakage	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1	-1.5	-2.5	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-5.6A		45	55	mΩ
		V _{GS} =-4.5V, I _D =-4.2A		75	85	
Forward Transconductance	g _{FS}	V _{GS} =-5V, I _D =-5.6A		5		S
DAYNAMIC CHARACTERISTICS						
Input Capacitance	C _{ISS}	V _{DS} =-15V, V _{GS} =0V f=1.0MHz		582		pF
Output Capacitance	C _{OSS}			125		pF
Reverse Transfer Capacitance	C _{RSS}			86		pF
SWITCHING CHARACTERISISTICS						
Turn-On Delay Time	t _{D(ON)}	V _{DD} =-15V I _D =-5.6A, V _{GEN} =-4.5V R _L =10ohm R _{GEN} =10ohm		9		ns
Rise Time	t _r			10		ns
Turn-Off Delay Time	t _{D(OFF)}			38		ns
Fall Time	t _f			23		ns
Total Gate Charge	Q _g	V _{DS} =-15V, I _D =-1A V _{GS} =-10V		11.7		nC
Gate-Source Charge	Q _{gs}			2.1		nC
Gate-Drain Charge	Q _{gd}			2.9		nC

ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

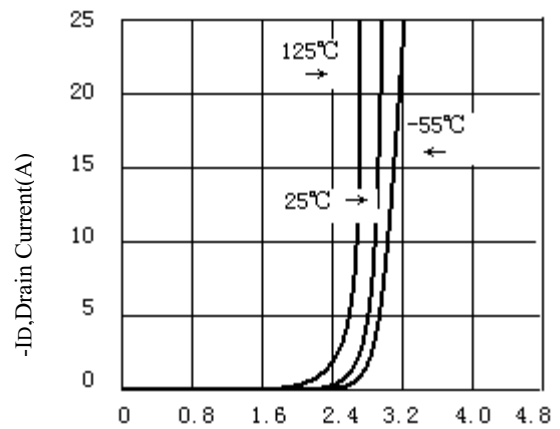
Parameter	Symbol	Condition	Min	Typ	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode Forward Voltage	VSD	VGS=0V, IS=-1.7A		-0.84	-1.2	V

Notes

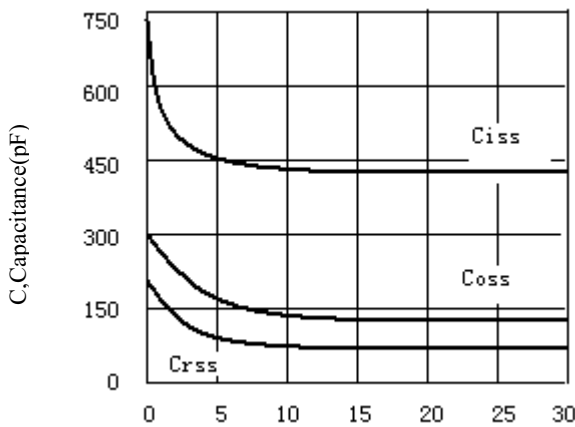
- a. Surface Mounted on FR4 Board, $t \leq 10\text{sec}$
- b. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$
- c. Guaranteed by design, not subject to production testing.



- Vds, Drain-to-Source Voltage (V)
Figure 1. Output Characteristics



-Vgs, Gate-to-source Voltage (V)
Figure 2. Transfer Characteristics



- VGS, Drain-to Source Voltage
Figure3. Capacitance

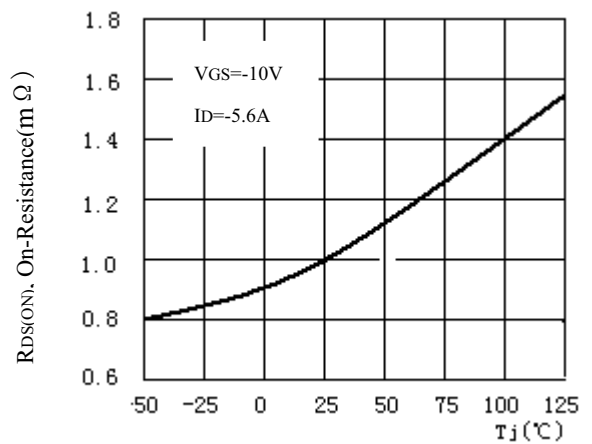
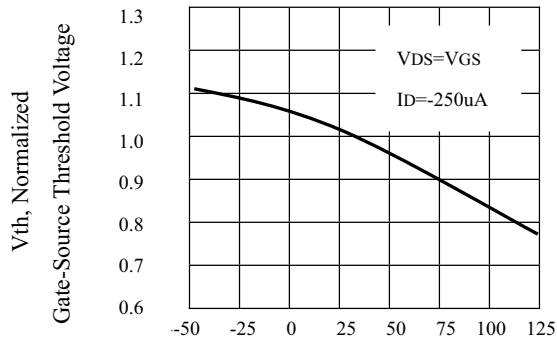
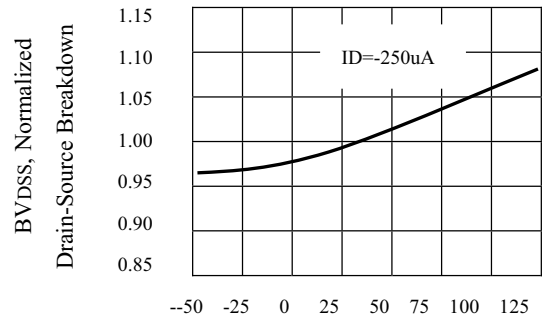


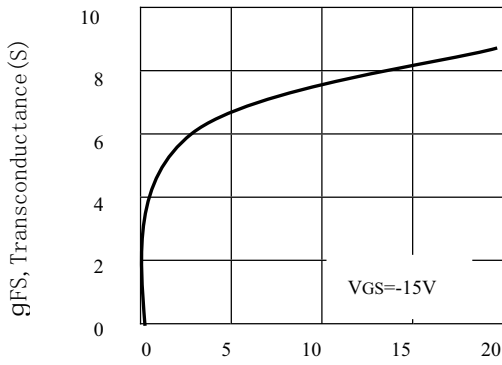
Figure4. On-Resistance Variation with Temperature



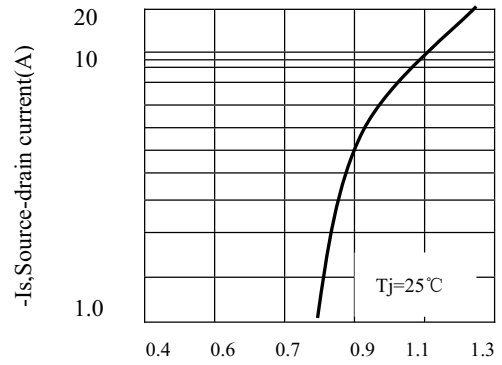
Tj, Junction Temperature(°C)
 Figure5.Gate Threshold Variation With Temperature



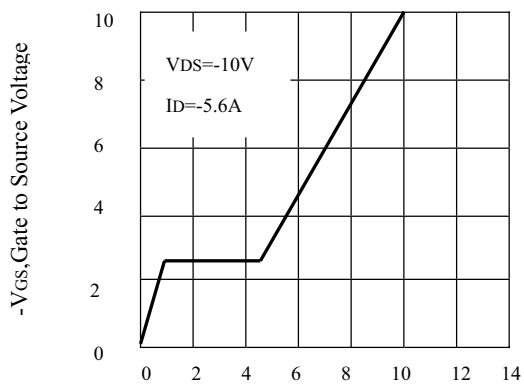
Tj, Junction Temperature (°C)
 Figure6.Breakdown Voltage Variation With Temperature



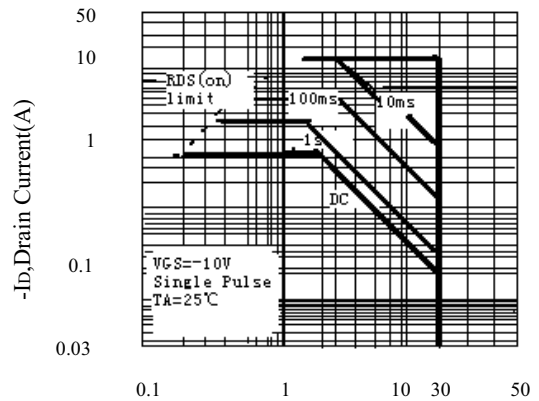
-IDS, Drain-Source Current (A)
 Figure7.Transconductance Variation With Drain Current



-VSD, Body Diode Forward Voltage
 Figure8.Body Diode Forward Voltage Variation with Source Current



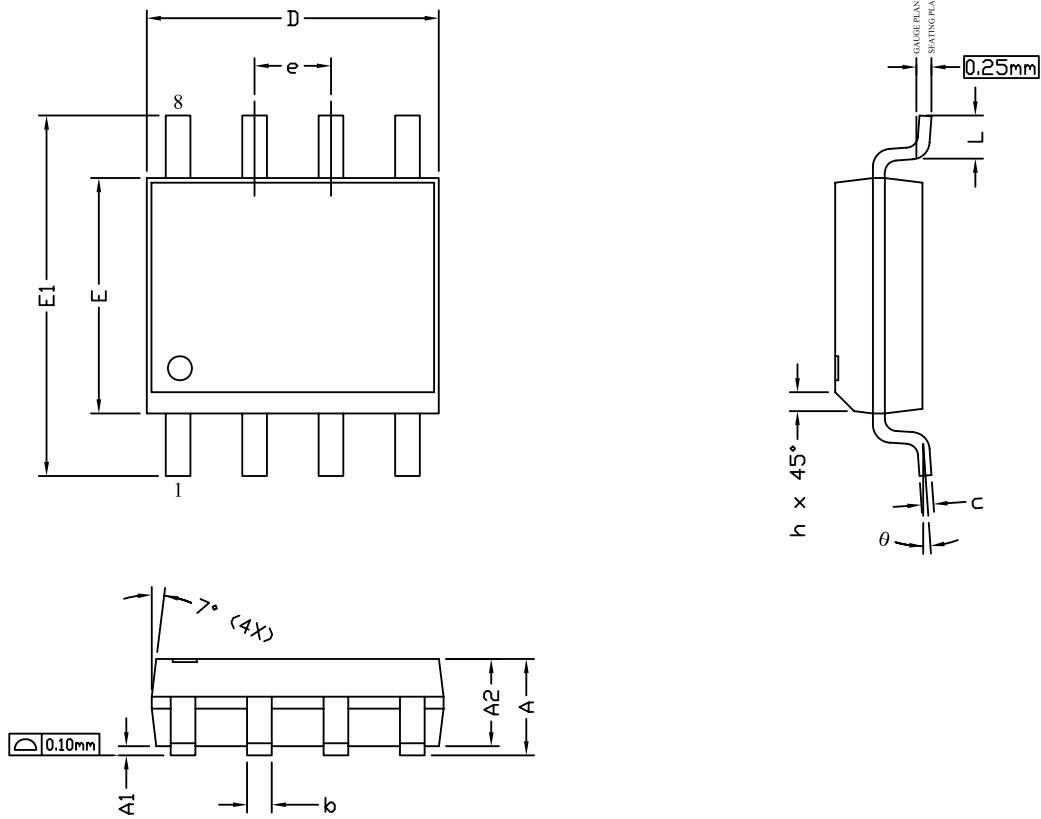
Qg, Total Gate Charge (nC)
 Figure9. Gate Charge



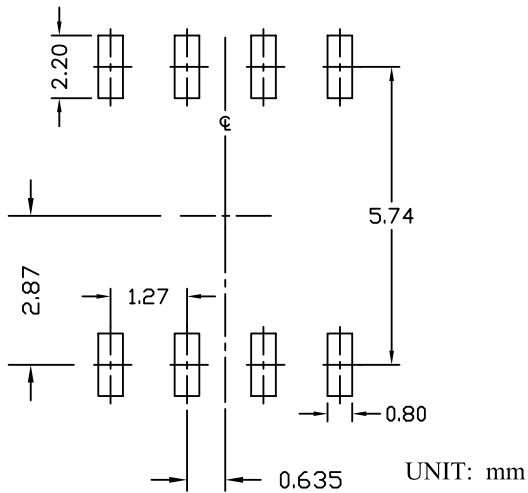
-VDS, Drain-Source Voltage(V)
 Figure10.Maximum Safe Operating Area

Document No.	PO-00004
Version	rev H

S08 PACKAGE OUTLINE



RECOMMENDED LAND PATTERN



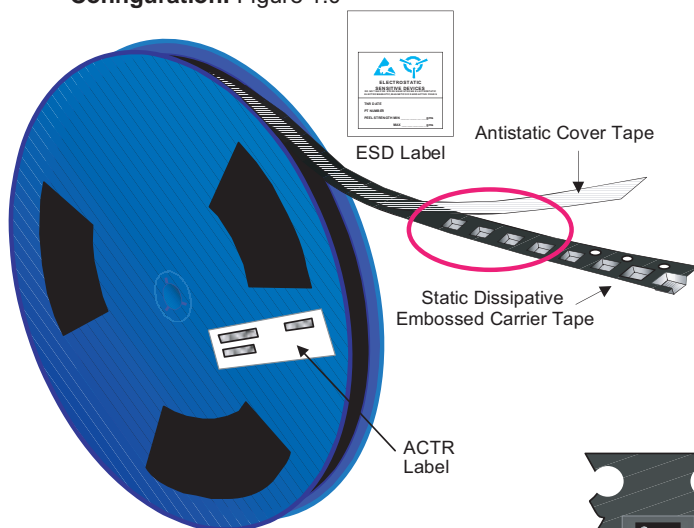
SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.35	1.65	1.75	0.053	0.065	0.069
A1	0.10	---	0.25	0.004	---	0.010
A2	1.25	1.50	1.65	0.049	0.059	0.065
b	0.31	---	0.51	0.012	---	0.020
c	0.17	---	0.25	0.007	---	0.010
D	4.80	4.90	5.00	0.189	0.193	0.197
E	3.80	3.90	4.00	0.150	0.154	0.157
e	1.27 BSC			0.050 BSC		
E1	5.80	6.00	6.20	0.228	0.236	0.244
h	0.25	---	0.50	0.010	---	0.020
L	0.40	---	1.27	0.016	---	0.050
θ	0°	---	8°	0°	---	8°

NOTE

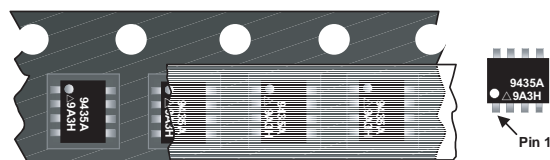
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DIMENSIONS ARE INCLUSIVE OF PLATING.
3. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
MOLD FLASH AT THE NON-LEAD SIDES SHOULD BE LESS THAN 6 MILS EACH.
4. DIMENSION L IS MEASURED IN GAUGE PLANE.
5. CONTROLLING DIMENSION IS MILLIMETER.
CONVERTED INCH DIMENSIONS ARE NOT NECESSARILY EXACT.

SOIC-8 Tape and Reel Data

SOIC(8lds) Packaging Configuration: Figure 1.0



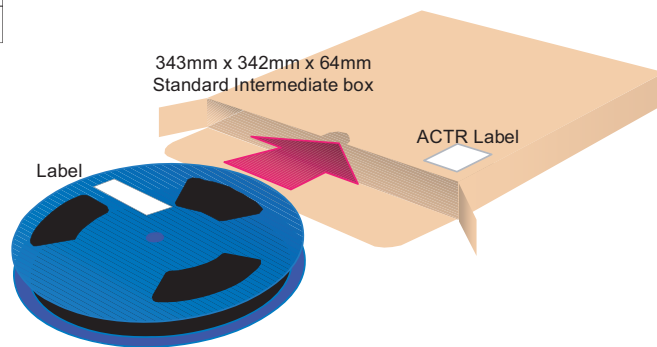
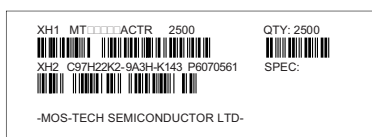
Packaging Description:
 SOIC-8 parts are shipped in a tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 2,500 units per 13" or 330cm diameter reel. The reels are dark blue in color and is made of polystyrene plastic (anti-static coated). Other option comes in 500 units per 7" or 177cm diameter reel. This and some other options are further described in the Packaging Information table.
 These full reels are individually bar code labeled and placed inside a standard intermediate box (illustrated in figure 1.0) made of recyclable corrugated brown paper. One box contains two reels maximum. And these boxes are placed inside a barcode labeled shipping box which comes in different sizes depending on the number of parts shipped.



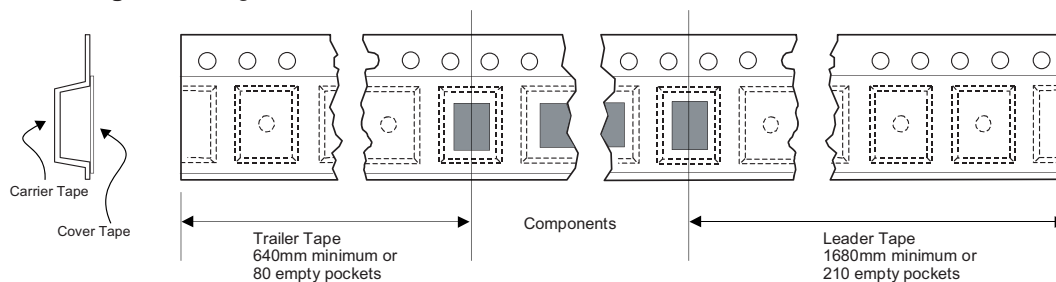
SOIC-8 Unit Orientation

SOIC (8lds) Packaging Information				
Packaging Option	Standard (no flow code)	L86Z	F011	D84Z
Packaging type	ACTR	Rail/Tube	TNR	TNR
Qty per Reel/Tube/Bag	2,500	95	4,000	500
Reel Size	13" Dia	-	13" Dia	7" Dia
Box Dimension (mm)	343x64x343	530x130x83	343x64x343	184x187x47
Max qty per Box	5,000	30,000	8,000	1,000
Weight per unit (gm)	0.0774	0.0774	0.0774	0.0774
Weight per Reel (kg)	0.6060	-	0.9696	0.1182
Note/Comments				

MT□□□□ACTR Label sample



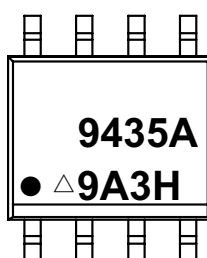
SOIC(8lds) Tape Leader and Trailer Configuration: Figure 2.0



Part Marking Information

SO-8 (PMG Code)

SO-8 Devices



9435A = Example Base Part Number

● = Pin 1 Indicator

△ = ESD Symbol (⚡)

9 = Year Code

A = Month Code

3 = Week Code

H = Assembly Factory Code

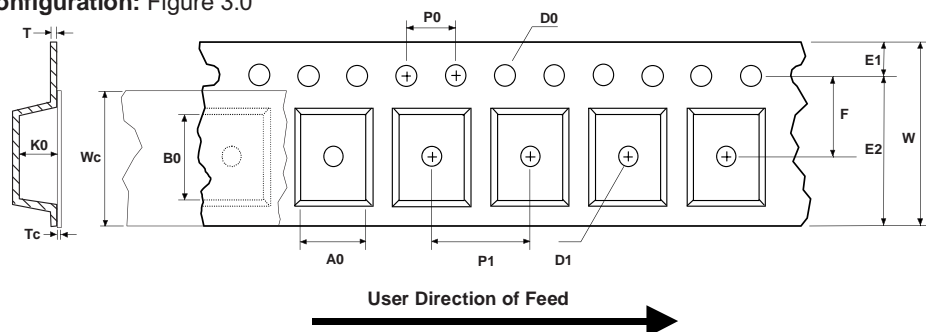
NOTE:

1. For analog switches base part includes DG prefix. Package suffix may or may not be present, depending on room available.

The current marking strategy is reflected. Contact your local sales representative for historical marking strategies for these packages.

SOIC-8 Tape and Reel Data, continued

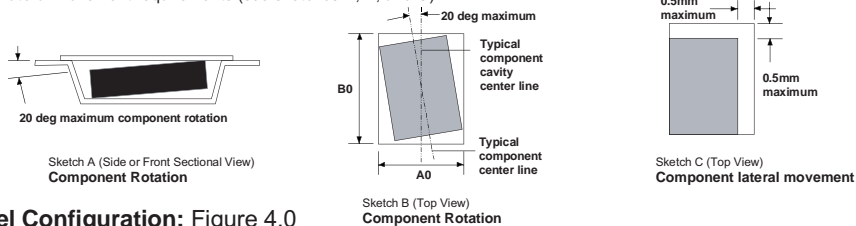
SOIC(8lds) Embossed Carrier Tape Configuration: Figure 3.0



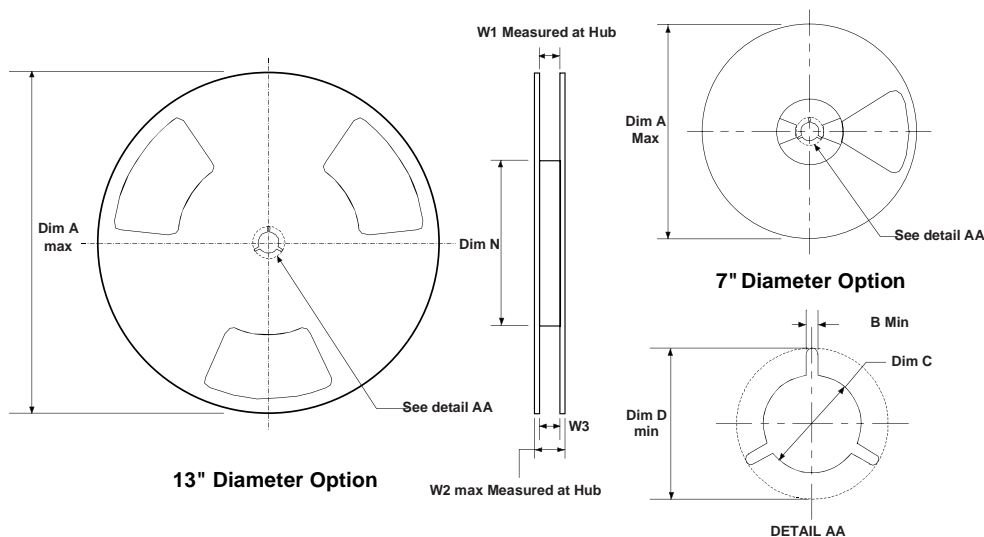
Dimensions are in millimeter

Pkg type	A0	B0	W	D0	D1	E1	E2	F	P1	P0	K0	T	Wc	Tc
SOIC(8lds) (12mm)	6.50 +/-0.10	5.30 +/-0.10	12.0 +/-0.3	1.55 +/-0.05	1.60 +/-0.10	1.75 +/-0.10	10.25 min	5.50 +/-0.05	8.0 +/-0.1	4.0 +/-0.1	2.1 +/-0.10	0.450 +/- 0.150	9.2 +/-0.3	0.06 +/-0.02

Notes: A0, B0, and K0 dimensions are determined with respect to the EIA/Jedec RS-481 rotational and lateral movement requirements (see sketches A, B, and C).



SOIC(8lds) Reel Configuration: Figure 4.0



Dimensions are in inches and millimeters

Tape Size	Reel Option	Dim A	Dim B	Dim C	Dim D	Dim N	Dim W1	Dim W2	Dim W3 (LSL-USL)
12mm	7" Dia	7.00 177.8	0.059 1.5	512+0.020/-0.008 13+0.5/-0.2	0.795 20.2	2.165 55	0.488+0.078/-0.000 12.4+2/0	0.724 18.4	0.469 - 0.606 11.9 - 15.4
12mm	13" Dia	13.00 330	0.059 1.5	512+0.020/-0.008 13+0.5/-0.2	0.795 20.2	7.00 178	0.488+0.078/-0.000 12.4+2/0	0.724 18.4	0.469 - 0.606 11.9 - 15.4

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Keep safety first in your circuit designs!

1. MOS-TECH Semiconductor Corp. puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage. Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of nonflammable material or (iii) prevention against any malfunction or mishap.