

FDS6814

Dual N-Channel 2.5V Specified PowerTrench™ MOSFET

General Description

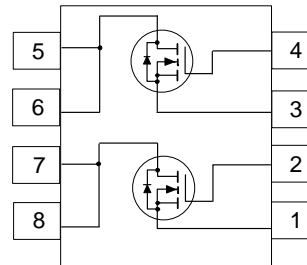
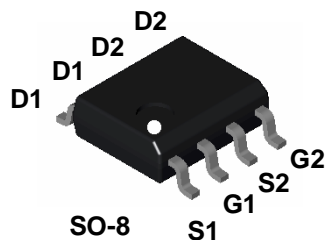
These N-Channel 2.5V specified MOSFETs are produced using a rugged gate version of Fairchild's advanced PowerTrench™ process. It has been optimized for power management applications which require a wide range of gate drive voltage.

Applications

- Low voltage DC/DC Converters
- Load switch
- Battery protection
- Power management

Features

- 8 A, 20 V. $R_{DS(ON)} = 0.020 \Omega @ V_{GS} = 4.5 V$
 $R_{DS(ON)} = 0.030 \Omega @ V_{GS} = 2.5 V$
- Rugged gate rating ($\pm 12V$).
- Low gate charge.
- Fast switching speed.
- High performance trench technology for extremely low $R_{DS(ON)}$.
- High power and current handling capability.



Absolute Maximum Ratings T_A=25°C unless otherwise noted

Symbol	Parameter	Ratings	Units
V _{DSS}	Drain-Source Voltage	20	V
V _{GSS}	Gate-Source Voltage	±12	V
I _D	Drain Current - Continuous (Note 1a)	8	A
	- Pulsed	50	
P _D	Power Dissipation for Dual Operation	2.0	W
	Power Dissipation for Single Operation (Note 1a)	1.6	
	(Note 1b)	1.0	
	(Note 1c)	0.9	
T _J , T _{stg}	Operating and Storage Junction Temperature Range	-55 to +150	°C

Thermal Characteristics

R _{θJA}	Thermal Resistance, Junction-to-Ambient (Note 1a)	78	°C/W
R _{θJC}	Thermal Resistance, Junction-to-Case (Note 1)	40	°C/W

Package Marking and Ordering Information

Device Marking	Device	Reel Size	Tape width	Quantity
FDS6814	FDS6814	13"	12mm	2500 units

Electrical Characteristics T_A=25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
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OFF CHARACTERISTICS

BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _D = 250 μA	20			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 16 V, V _{GS} = 0 V			1	μA
I _{GSSF}	Gate-Body Leakage, Forward	V _{GS} = 12 V, V _{DS} = 0 V			100	nA
I _{GSSR}	Gate-Body Leakage, Reverse	V _{GS} = -12 V, V _{DS} = 0 V			-100	nA

ON CHARACTERISTICS (Note 2)

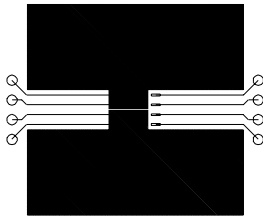
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250 μA	0.6		1.5	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} = 4.5 V, I _D = 8 A V _{GS} = 2.5 V, I _D = 6.5 A			0.02 0.03	Ω
I _{D(ON)}	On-State Drain Current	V _{GS} = 4.5 V, V _{DS} = 5.0 V	25			A

DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS

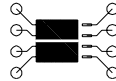
I _S	Maximum Continuous Drain-Source Diode Forward Current				1.3	A
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} = 0 V, I _S = 1.3 A <small>(Note 2)</small>			1.2	V

Notes:

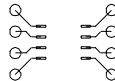
- R_{θJA} is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. R_{θJC} is guaranteed by design while R_{θCA} is determined by the user's board design. Thermal rating based on independent single device operation.



a) 78° C/W when mounted on a 0.5 in² pad of 2 oz. copper.



b) 125° C/W when mounted on a 0.02 in² pad of 2 oz. copper.



c) 135° C/W when mounted on a minimum pad.

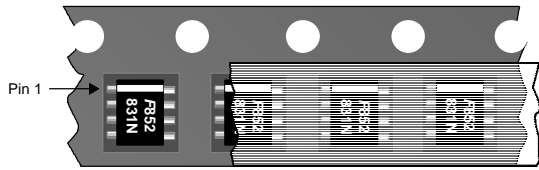
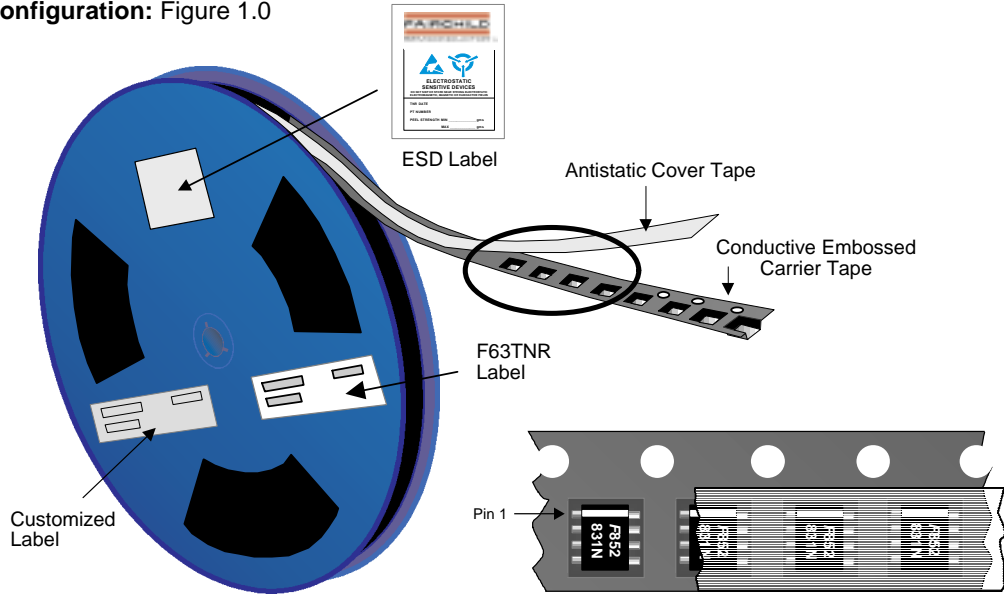
Scale 1 : 1 on letter size paper

- Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%

SO-8 Tape and Reel Data and Package Dimensions



SOIC(8lds) Packaging Configuration: Figure 1.0

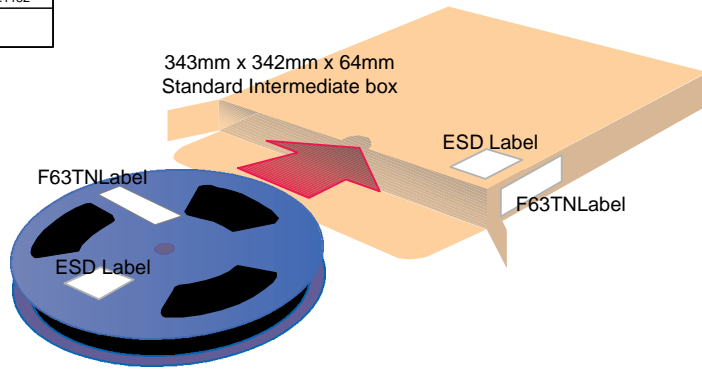


SOIC-8 Unit Orientation

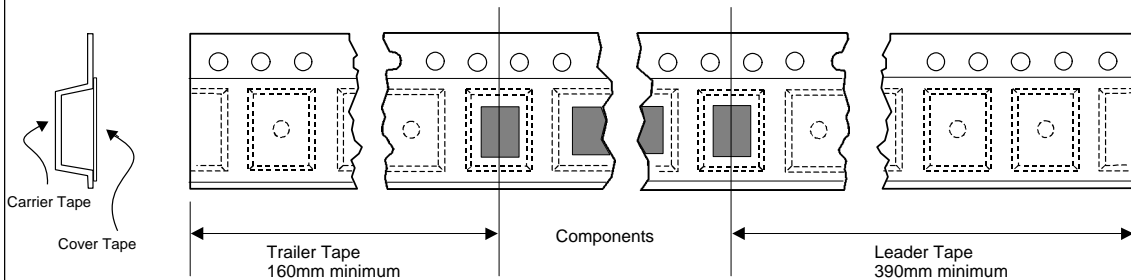
SOIC (8lds) Packaging Information				
Packaging Option	Standard (no flow code)	L86Z	S62Z	D84Z
Packaging type	TNR	Rail/Tube	Bag	TNR
Qty per Reel/Tube/Bag	2,500	95	200	500
Reel Size	13" Dia	-	-	7" Dia
Box Dimension (mm)	343x64x343	530x130x83	76x102x127	184x187x47
Max qty per Box	5,000	30,000	1,000	2,500
Weight per unit (gm)	0.0774	0.0774	0.0774	0.0774
Weight per Reel (kg)	0.6060	-	-	0.1182
Note/Comments			Bulk	

F63TNR Label sample

LOT: CBVK741B019	QTY: 2500
FSID: FDS9953A	SPEC:
DIC1: D9842	QTY1:
DIC2:	QTY2:
SPEC REV: CPN:	QARV:
	(F63TNR)2

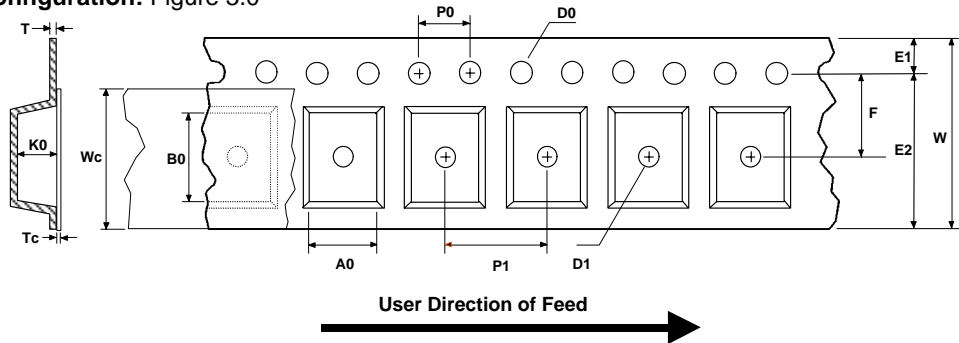


SOIC(8lds) Tape Leader and Trailer Configuration: Figure 2.0



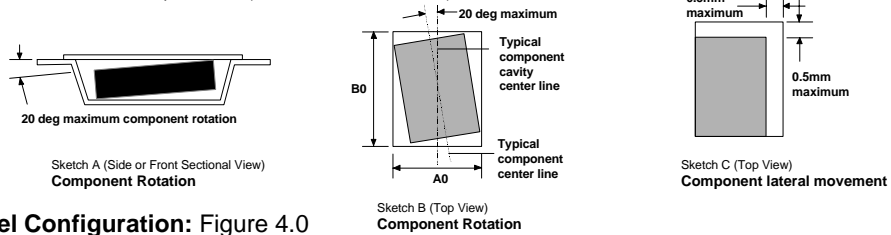
SO-8 Tape and Reel Data and Package Dimensions, continued

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

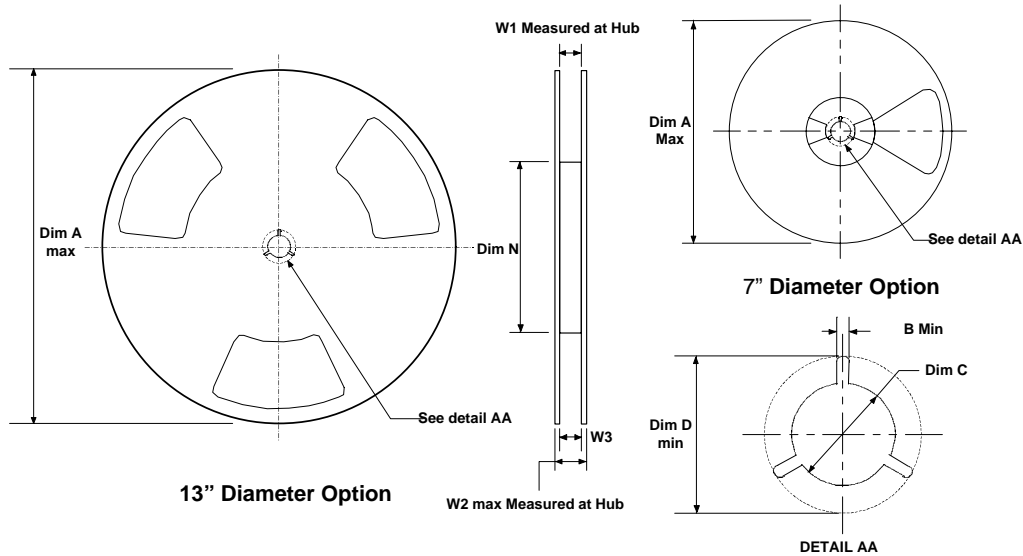


Dimensions are in millimeter														
Pkg type	A0	B0	W	D0	D1	E1	E2	F	P1	P0	K0	T	Wc	Tc
SOIC(8lds) (12mm)	6.50 +/-0.10	5.30 +/-0.10	12.0 +/-0.3	1.55 +/-0.05	1.60 +/-0.10	1.75 +/-0.10	10.25 min	5.50 +/-0.05	8.0 +/-0.1	4.0 +/-0.1	2.1 +/-0.10	0.450 +/- 0.150	9.2 +/-0.3	0.06 +/-0.02

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).



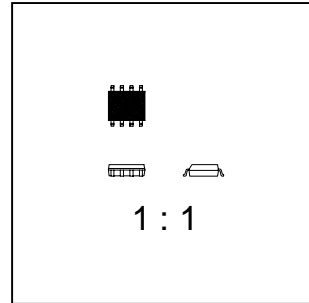
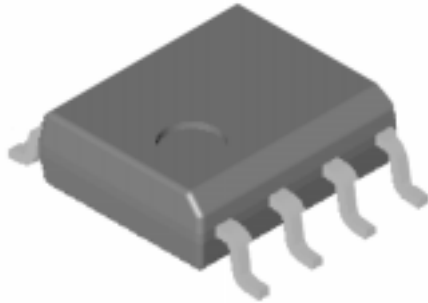
SOIC(8lds) Reel Configuration: Figure 4.0



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	5.906 150	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

SO-8 Tape and Reel Data and Package Dimensions, continued

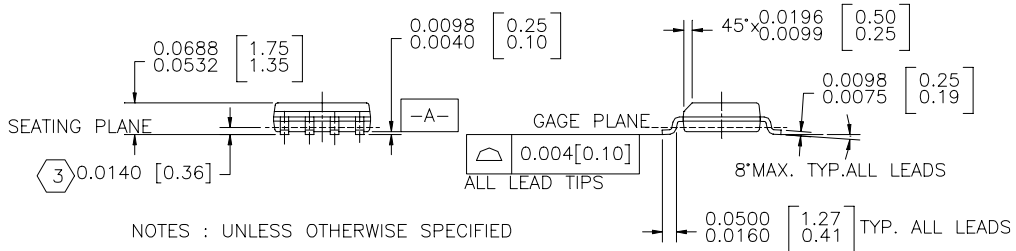
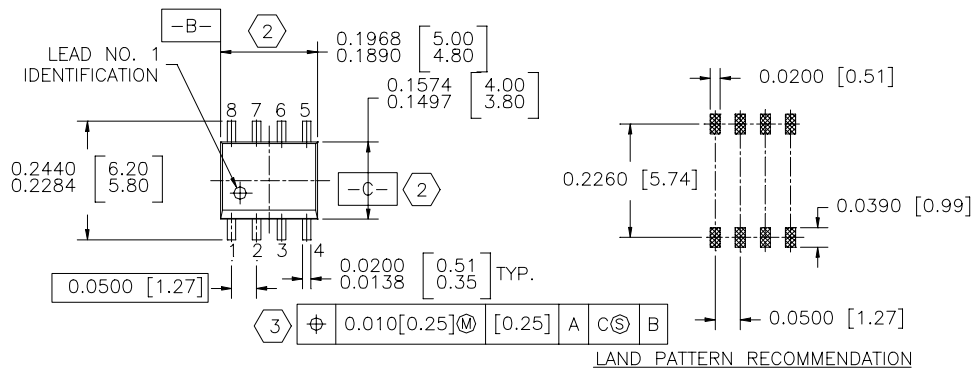
SOIC-8 (FS PKG Code S1)



Scale 1:1 on letter size paper

Dimensions shown below are in:
inches [millimeters]

Part Weight per unit (gram): 0.0774



NOTES : UNLESS OTHERWISE SPECIFIED

- STANDARD LEAD FINISH:
200 MICROINCHES / 5.08 MICRONS MINIMUM
LEAD / TIN (SOLDER) ON COPPER.

SO 0.150 WIDE 8 LEADS

- THESE DIMENSIONS DO NOT INCLUDE MOLD FLASH
- MAXIMUM LEAD 0.024 [0.609]

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FACT Quiet Series™	QS™	
FAST®	Quiet Series™	
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GTO™	SuperSOT™-6	
HiSeC™	SuperSOT™-8	

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