

FDS6814

Dual N-Channel 2.5V Specified PowerTrench™ MOSFET

General Description

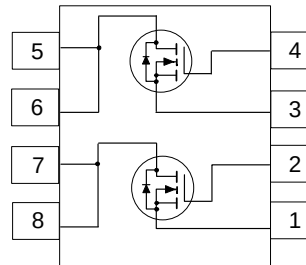
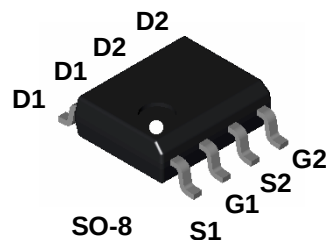
These N-Channel 2.5V specified MOSFETs are produced using a rugged gate version of Fairchild's advanced PowerTrench™ process. It has been optimized for power management applications which require a wide range of gate drive voltage.

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

$T_A = 25^\circ C$ 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	$^\circ C$

Thermal Characteristics

$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient (Note 1a)	78	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case (Note 1)	40	$^\circ C/W$

Package Marking and Ordering Information

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

Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
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OFF CHARACTERISTICS

BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	20			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 16\text{ V}, V_{GS} = 0\text{ V}$			1	μA
I_{GSSF}	Gate-Body Leakage, Forward	$V_{GS} = 12\text{ V}, V_{DS} = 0\text{ V}$			100	nA
I_{GSSR}	Gate-Body Leakage, Reverse	$V_{GS} = -12\text{ V}, V_{DS} = 0\text{ V}$			-100	nA

ON CHARACTERISTICS (Note 2)

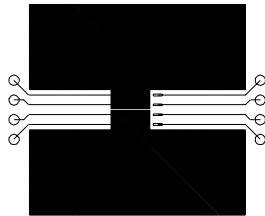
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	0.6		1.5	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS} = 4.5\text{ V}, I_D = 8\text{ A}$ $V_{GS} = 2.5\text{ V}, I_D = 6.5\text{ A}$			0.02 0.03	Ω
$I_{D(ON)}$	On-State Drain Current	$V_{GS} = 4.5\text{ V}, V_{DS} = 5.0\text{ V}$	25			A

DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS

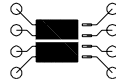
I_S	Maximum Continuous Drain-Source Diode Forward Current				1.3	A
V_{SD}	Drain-Source Diode Forward Voltage	$V_{GS} = 0\text{ V}, I_S = 1.3\text{ A}$ (Note 2)			1.2	V

Notes:

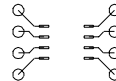
1. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is guaranteed by design while $R_{\theta CA}$ is determined by the user's board design. Thermal rating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



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



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



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

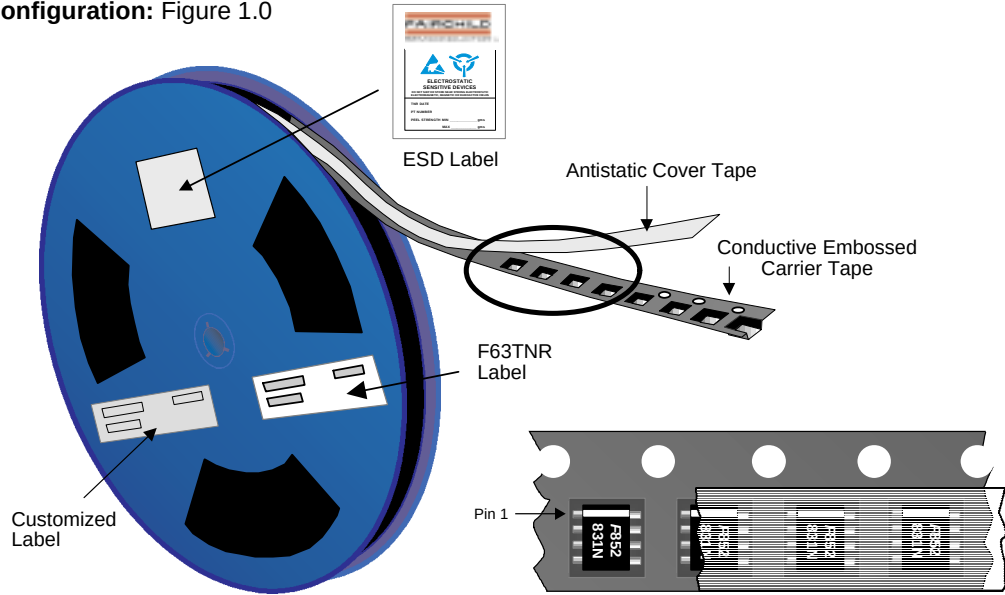
Scale 1 : 1 on letter size paper

2. Pulse Test: Pulse Width $\leq 300\text{ }\mu\text{s}$, Duty Cycle $\leq 2.0\%$

SO-8 Tape and Reel Data and Package Dimensions



SOIC(8lds) Packaging Configuration: Figure 1.0

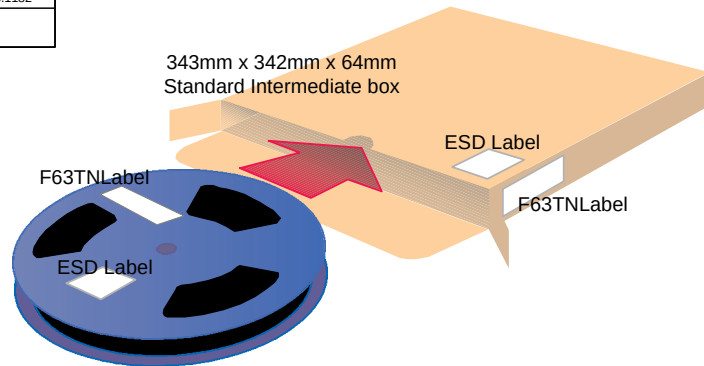


SOIC-8 Unit Orientation

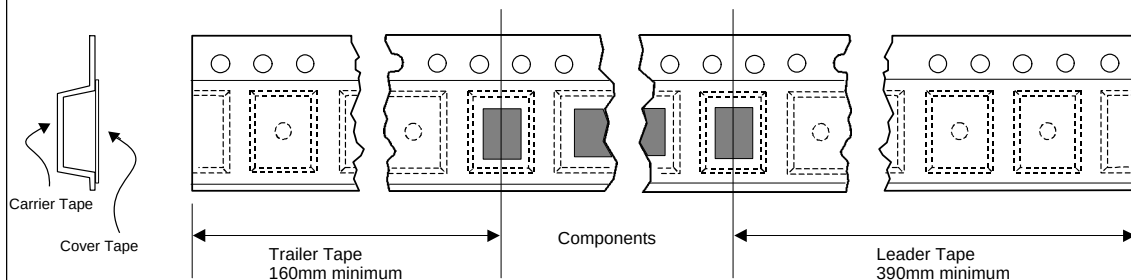
SOIC (8lds) Packaging Information				
Packaging Option	Standard (no flow code)	L86Z	S62Z	D84Z
Packaging type	TNR	Rail/Tube	Bag	TNR
Qty per Reel/Tube/Bag	2,500	95	200	500
Reel Size	13" Dia	-	-	7" Dia
Box Dimension (mm)	343x64x343	530x130x83	76x102x127	184x187x47
Max qty per Box	5,000	30,000	1,000	2,500
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:	QARV:
CPN:	(F63TNR)2

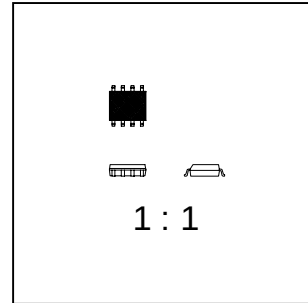
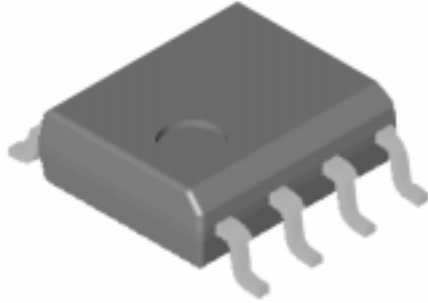


SOIC(8lds) Tape Leader and Trailer Configuration: Figure 2.0



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

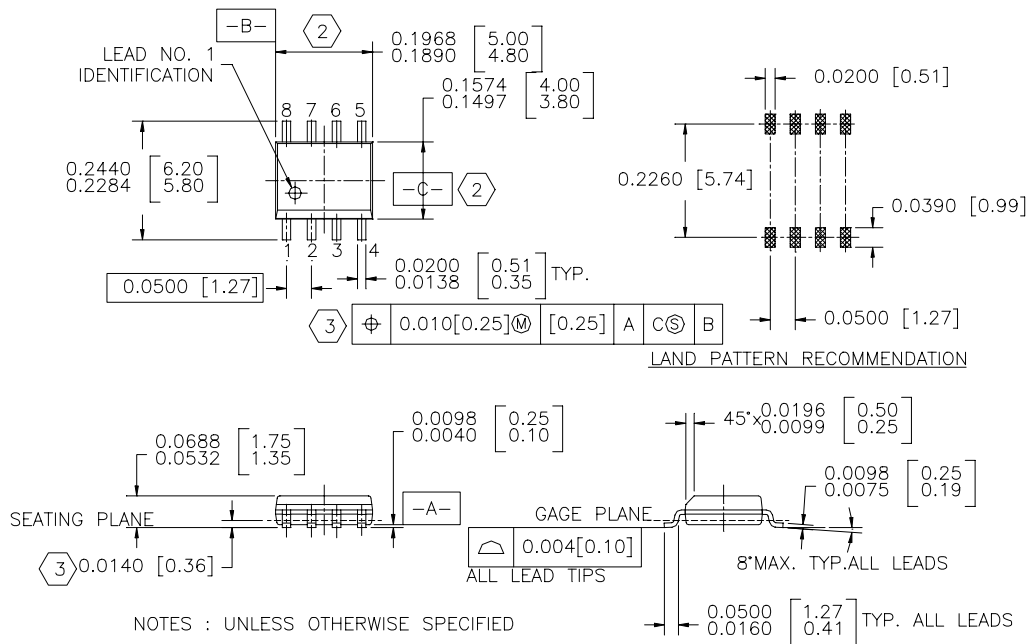
SOIC-8 (FS PKG Code S1)



Scale 1:1 on letter size paper

Dimensions shown below are in:
inches [millimeters]

Part Weight per unit (gram): 0.0774



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POP™
PowerTrench®
QFET™
QS™
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