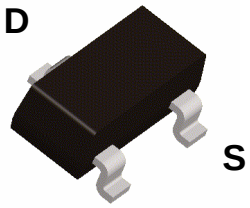
FDN327N

Applications

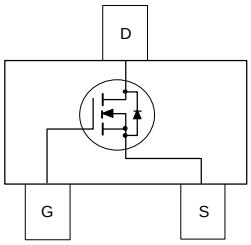
- Load switch
- Battery protection
- Power management

Features

- 2 A, 20 V. $R_{DS(ON)}$ = 70 mΩ @ V_{GS} = 4.5 V
  $R_{DS(ON)}$ = 80 mΩ @ V_{GS} = 2.5 V
  $R_{DS(ON)}$ = 120 mΩ @ V_{GS} = 1.8 V
- Low gate charge (4.5 nC typical)
- Fast switching speed
- High performance trench technology for extremely low $R_{DS(ON)}$



SuperSOT™-3



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		± 8	V
I_D	Drain Current – Continuous	(Note 1a)	2	A
	– Pulsed		8	
P_D	Power Dissipation for Single Operation	(Note 1a)	0.5	W
		(Note 1b)	0.46	
T_J, T_{STG}	Operating and Storage Junction Temperature Range		–55 to +150	°C

Thermal Characteristics

$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	(Note 1a)	250	°C/W
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	(Note 1)	75	°C/W

Package Marking and Ordering Information

Device Marking	Device	Reel Size	Tape width	Quantity
327	FDN327N	7''	8mm	3000 units

Electrical Characteristics

T_A = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain–Source Breakdown Voltage	V_{GS} = 0 V, I_D = 250 µA	20			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Breakdown Voltage Temperature Coefficient	I_D = 250 µA,Referenced to 25°C		12		mV/°C
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} = 8 V, V_{DS} = 0 V			100	nA
I_{GSSR}	Gate–Body Leakage, Reverse	V_{GS} = –8 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	0.4	0.7	1.5	V
$\frac{\Delta V_{GS(th)}}{\Delta T_J}$	Gate Threshold Voltage Temperature Coefficient	I_D = 250 µA,Referenced to 25°C		–3		mV/°C
$R_{DS(on)}$	Static Drain–Source On–Resistance	V_{GS} = 4.5 V, I_D = 2.0 A V_{GS} = 2.5 V, I_D = 1.9 A V_{GS} = 1.8 V, I_D = 1.6 A V_{GS} = 4.5V, I_D = 2 A, T_J = 125°C		40 49 65 55	70 80 120 103	mΩ
$I_{D(on)}$	On–State Drain Current	V_{GS} = 4.5V, V_{DS} = 5 V	8			A
g_{FS}	Forward Transconductance	V_{DS} = 5V, I_D = 2 A		11		S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = 10 V, V_{GS} = 0 V f = 1.0 MHz		423		pF
C_{oss}	Output Capacitance			87		pF
C_{rss}	Reverse Transfer Capacitance			48		pF
Switching Characteristics (Note 2)						
$t_{d(on)}$	Turn–On Delay Time	V_{DD} = 10 V, I_D = 1 A, V_{GS} = 4.5 V, R_{GEN} = 6 Ω		6	12	ns
t_r	Turn–On Rise Time			6.5	13	ns
$t_{d(off)}$	Turn–Off Delay Time			14	29	ns
t_f	Turn–Off Fall Time			2	4	ns
Q_g	Total Gate Charge	V_{DS} = 10 V, I_D = 2 A, V_{GS} = 4.5 V		4.5	6.3	nC
Q_{gs}	Gate–Source Charge			0.89		nC
Q_{gd}	Gate–Drain Charge			0.95		nC
Drain–Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain–Source Diode Forward Current				0.42	A
V_{SD}	Drain–Source Diode Forward Voltage	V_{GS} = 0 V, I_S = 0.42 A (Note 2)		0.6	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.

a) 250°C/W when mounted on a 0.02 in² pad of 2 oz. copper.

b) 270°C/W when mounted on a minimum pad.

Scale 1 : 1 on letter size paper

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