

FDN340P

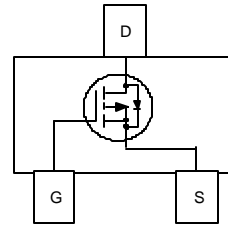
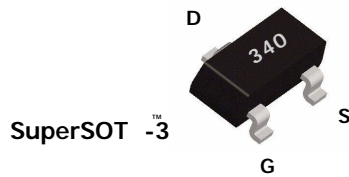
General Description

This P-Channel Logic Level MOSFET is produced using Fairchild Semiconductor advanced Power Trench process that has been especially tailored to minimize the on-state resistance and yet maintain low gate charge for superior switching performance.

These devices are well suited for portable electronics applications: Load switching and power management, battery charging circuits, and DC/DC conversion.

Features

- 2 A, 20 V. $R_{DS(ON)} = 0.07 \Omega @ V_{GS} = -4.5 V$
 $R_{DS(ON)} = 0.11 \Omega @ V_{GS} = -2.5 V$.
 $R_{DS(ON)} = 0.210 \Omega @ V_{GS} = -1.8 V$.
- Low gate charge (8nC typical).
- High performance trench technology for extremely low $R_{DS(ON)}$.
- High power version of industry Standard SOT-23 package. Identical pin-out to SOT-23 with 30% higher power 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	±8	V
I _b	Drain Current – Continuous (Note 1a)	-2	A
	– Pulsed	-10	
P _d	Power Dissipation for Single Operation (Note 1a) (Note 1b)	0.5	W
		0.46	
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)	250	°C/W
R _{θJC}	Thermal Resistance, Junction-to-Case (Note 1)	75	°C/W

Package Marking and Ordering Information

Device Marking	Device	Reel Size	Tape width	Quantity
340	FDN340P	7"	8mm	3000 units

FDN340P

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 _b = -250 μA	-20			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Breakdown Voltage Temperature Coefficient	I _b = -250 μA, Referenced to 25°C		-15		mV/°C
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -16 V, V _{GS} = 0 V T _J = 55°C			-1 -10	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 _b = -250 μA	-0.4	-0.9	-1.5	V
$\frac{\Delta V_{GS(th)}}{\Delta T_J}$	Gate Threshold Voltage Temperature Coefficient	I _b = -250 μA, Referenced to 25°C		2.7		mV/°C
R _{D(on)}	Static Drain-Source On-Resistance	V _{GS} = -4.5 V, I _b = -2 A T _J = 125°C		0.052 0.075	0.07 0.12	Ω
I _{b(on)}	On-State Drain Current	V _{GS} = -4.5 V, V _{DS} = -5 V	-5			A
g _{FS}	Forward Transconductance	V _{DS} = -4.5 V, I _b = -2 A		8		S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = -10 V, V _{GS} = 0 V, f = 1.0 MHz		600		pF
C _{oss}	Output Capacitance			175		pF
C _{rss}	Reverse Transfer Capacitance			80		pF
Switching Characteristics (Note 2)						
t _{d(on)}	Turn-On Delay Time	V _{DD} = -5 V, I _b = -0.5 A, V _{GS} = -4.5 V, R _{GEN} = 6 Ω		6	12	ns
t _r	Turn-On Rise Time			9	18	ns
t _{d(off)}	Turn-Off Delay Time			31	50	ns
t _f	Turn-Off Fall Time			26	42	ns
Q _g	Total Gate Charge	V _{DS} = -10V, I _b = -2 A, V _{GS} = -4.5 V		8	11	nC
Q _{gs}	Gate-Source Charge			1.3		nC
Q _{gd}	Gate-Drain Charge			2.2		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)		-0.7	-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.



a. 250°C/W when mounted on a 0.021in² pad of 2 oz copper



b. 270°C/W when mounted on a .001 in² pad of 2 oz copper

Scale 1 : 1 on letter size paper

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