

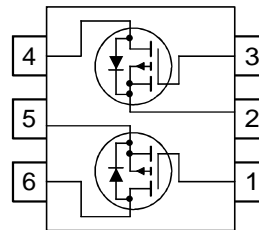
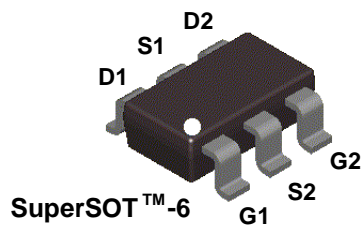
FDC6312P

Applications

- Power management
- Load switch

Features

- -2.3 A, -20 V. $R_{DS(ON)} = 115\text{ m}\Omega$ @ $V_{GS} = -4.5\text{ V}$
 $R_{DS(ON)} = 155\text{ m}\Omega$ @ $V_{GS} = -2.5\text{ V}$
 $R_{DS(ON)} = 225\text{ m}\Omega$ @ $V_{GS} = -1.8\text{ V}$
- High performance trench technology for extremely low $R_{DS(ON)}$
- SuperSOT™-6 package: small footprint (72% smaller than standard SO-8); low profile (1mm thick)



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)	-2.3	A
	– Pulsed	-7	
P _D	Power Dissipation for Single Operation (Note 1a)	0.96	W
	(Note 1b)	0.9	
	(Note 1c)	0.7	
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)	130	°C/W
R _{θJC}	Thermal Resistance, Junction-to-Case (Note 1)	60	°C/W

Package Marking and Ordering Information

Device Marking	Device	Reel Size	Tape width	Quantity
.312	FDC6312P	13"	12mm	3000 units

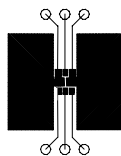
Electrical Characteristics

T_A = 25°C unless otherwise noted

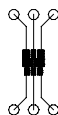
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _D = -250 μA	-20			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Breakdown Voltage Temperature Coefficient	I _D = -250 μA, Referenced to 25°C		-11		mV/°C
I _{DSS}	Zero Gate 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	-0.9	-1.5	V
$\frac{\Delta V_{GS(th)}}{\Delta T_J}$	Gate Threshold Voltage Temperature Coefficient	I _D = -250 μA, Referenced to 25°C		2		mV/°C
R _{DS(on)}	Static Drain-Source On-Resistance	V _{GS} = -4.5 V, I _D = -2.3 A V _{GS} = -2.5 V, I _D = -1.9 A V _{GS} = -1.8 V, I _D = -1.6 A V _{GS} = -4.5 V, I _D = -2.3 A, T _J = 125°C		92 116 166 112	115 155 225 150	mΩ
I _{D(on)}	On-State Drain Current	V _{GS} = -4.5 V, V _{DS} = -5 V	-7			A
g _{FS}	Forward Transconductance	V _{DS} = -5 V, I _D = -3.5 A		5.3		S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} = -10 V, V _{GS} = 0 V, f = 1.0 MHz		467		pF
C _{oss}	Output Capacitance			85		pF
C _{rss}	Reverse Transfer Capacitance			38		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		8	16	ns
t _r	Turn-On Rise Time			13	23	ns
t _{d(off)}	Turn-Off Delay Time			18	32	ns
t _f	Turn-Off Fall Time			8	16	ns
Q _g	Total Gate Charge	V _{DS} = -10 V, I _D = -2.3 A, V _{GS} = -4.5 V		4.4	7	nC
Q _{gs}	Gate-Source Charge			1.0		nC
Q _{gd}	Gate-Drain Charge			0.8		nC
Drain-Source Diode Characteristics and Maximum Ratings						
I _S	Maximum Continuous Drain-Source Diode Forward Current				-0.8	A
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} = 0 V, I _S = -0.8 A (Note 2)		-0.7	-1.2	V

Notes:

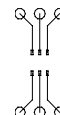
1. R_{θJA} is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. R_{θJC} is guaranteed by design while R_{θCA} is determined by the user's board design.



a) 130 °C/W when mounted on a 0.125 in² pad of 2 oz. copper.



b) 140°/W when mounted on a .004 in² pad of 2 oz copper



c) 180°/W when mounted on a minimum pad.

Scale 1 : 1 on letter size paper

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