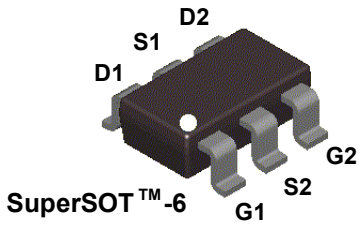
FDC6318P

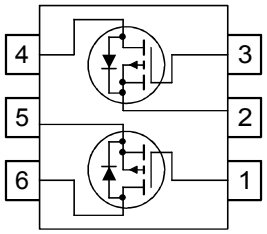
Features

- –2.5 A, –12 V. $R_{DS(ON)}$ = 90 mΩ @ V_{GS} = –4.5 V
  $R_{DS(ON)}$ = 125 mΩ @ V_{GS} = –2.5 V
  $R_{DS(ON)}$ = 200 mΩ @ V_{GS} = –1.8 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)

Applications

- Power management
- Load switch





Absolute Maximum Ratings

T_A=25°C unless otherwise noted

Symbol	Parameter		Ratings	Units
V_{DSS}	Drain-Source Voltage		–12	V
V_{GSS}	Gate-Source Voltage		±8	V
I_D	Drain Current – Continuous	(Note 1a)	–2.5	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

$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	(Note 1a)	130	°C/W
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	(Note 1)	60	°C/W

Package Marking and Ordering Information

Device Marking	Device	Reel Size	Tape width	Quantity
.318	FDC6318P	13''	12mm	3000 units

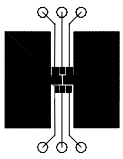
Electrical Characteristics

T_A = 25°C unless otherwise noted

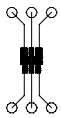
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain–Source Breakdown Voltage	V_{GS} = 0 V, I_D = –250 µA	–12			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Breakdown Voltage Temperature Coefficient	I_D = –250 µA, Referenced to 25°C		–2.9		mV/°C
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = –10 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		2.3		mV/°C
$R_{DS(on)}$	Static Drain–Source On–Resistance	V_{GS} = –4.5 V, I_D = –2.5 A V_{GS} = –2.5 V, I_D = –2 A V_{GS} = –1.8 V, I_D = –1.6 A V_{GS}= –4.5 V, I_D = –2.5A, T_J=125°C		69 93 135 85	90 125 200 120	mΩ
$I_{D(on)}$	On–State Drain Current	V_{GS} = –4.5 V, V_{DS} = –5 V	–6			A
g_{FS}	Forward Transconductance	V_{DS} = –5 V, I_D = –2.5 A		8		S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = –6 V, V_{GS} = 0 V, f = 1.0 MHz		455		pF
C_{oss}	Output Capacitance			194		pF
C_{rss}	Reverse Transfer Capacitance			134		pF
Switching Characteristics (Note 2)						
$t_{d(on)}$	Turn–On Delay Time	V_{DD} = –6 V, I_D = –1 A, V_{GS} = –4.5 V, R_{GEN} = 6 Ω		9	18	ns
t_r	Turn–On Rise Time			14	25	ns
$t_{d(off)}$	Turn–Off Delay Time			21	34	ns
t_f	Turn–Off Fall Time			17	31	ns
Q_g	Total Gate Charge	V_{DS} = –6 V, I_D = –2.5 A, V_{GS} = –4.5 V		5.4	8	nC
Q_{gs}	Gate–Source Charge			1.1		nC
Q_{gd}	Gate–Drain Charge			1.3		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:

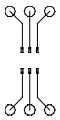
1. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is guaranteed by design while $R_{\theta CA}$ is determined by the user's board design.



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



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



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

Scale 1 : 1 on letter size paper

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