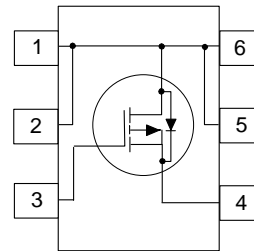
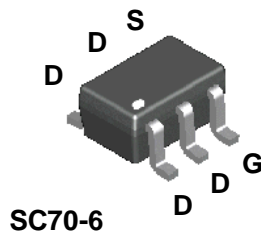


Applications

- DC/DC converter
- Load switch
- Power Management

Features

- -1.6 A, -30 V. $R_{DS(ON)} = 0.19 \Omega @ V_{GS} = -10 V$
 $R_{DS(ON)} = 0.30 \Omega @ V_{GS} = -4.5 V.$
- Low gate charge (3.5nC typical).
- High performance trench technology for extremely low $R_{DS(ON)}$.
- Compact industry standard SC70-6 surface mount package.



Absolute Maximum Ratings $T_A = 25^\circ C$ unless otherwise noted

Symbol	Parameter	Ratings	Units
V_{DSS}	Drain-Source Voltage	-30	V
V_{GSS}	Gate-Source Voltage	± 20	V
I_D	Drain Current - Continuous (Note 1a) - Pulsed	-1.6	A
		-6	
P_D	Power Dissipation for Single Operation (Note 1a) (Note 1b)	0.75	W
		0.48	
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 1b)	260	$^\circ C/W$
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Package Marking and Ordering Information

Device Marking	Device	Reel Size	Tape Width	Quantity
.36	FDG316P	7"	8mm	3000 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	$V_{GS} = 0\text{ V}, I_D = -250\ \mu\text{A}$	-30			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Breakdown Voltage Temperature Coefficient	$I_D = -250\ \mu\text{A}$, Referenced to 25°C		-34		mV/ $^\circ\text{C}$
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = -24\text{ V}, V_{GS} = 0\text{ V}$			-1	μA
I_{GSS}	Gate-Body Leakage Forward	$V_{GS} = 16\text{ V}, V_{DS} = 0\text{ V}$			100	nA
I_{GSS}	Gate-Body Leakage Reverse	$V_{GS} = -16\text{ V}, V_{DS} = 0\text{ V}$			-100	nA

On Characteristics (Note 2)

$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\ \mu\text{A}$	-1	-1.6	-3	V
$\frac{\Delta V_{GS(th)}}{\Delta T_J}$	Gate Threshold Voltage Temperature Coefficient	$I_D = -250\ \mu\text{A}$, Referenced to 25°C		3.5		mV/ $^\circ\text{C}$
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS} = -10\text{ V}, I_D = -1.6\text{ A}$ $V_{GS} = -10\text{ V}, I_D = -1.6\text{ A}, T_J = 125^\circ\text{C}$ $V_{GS} = -4.5\text{ V}, I_D = -1.3\text{ A}$		0.16 0.22 0.23	0.19 0.31 0.30	Ω
$I_{D(on)}$	On-State Drain Current	$V_{GS} = -4.5\text{ V}, V_{DS} = -5\text{ V}$	-3			A
g_{FS}	Forward Transconductance	$V_{DS} = -5\text{ V}, I_D = -0.5\text{ A}$		3		S

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{DS} = -15\text{ V}, V_{GS} = 0\text{ V},$ $f = 1.0\text{ MHz}$		165		pF
C_{oss}	Output Capacitance			60		pF
C_{rss}	Reverse Transfer Capacitance			25		pF

Switching Characteristics (Note 2)

$t_{d(on)}$	Turn-On Delay Time	$V_{DD} = -15\text{ V}, I_D = -1\text{ A},$ $V_{GS} = -10\text{ V}, R_{GEN} = 6\ \Omega$		8	20	ns
t_r	Turn-On Rise Time			9	20	ns
$t_{d(off)}$	Turn-Off Delay Time			14	30	ns
t_f	Turn-Off Fall Time			2	10	ns
Q_g	Total Gate Charge	$V_{DS} = -15\text{ V}, I_D = -1.6\text{ A},$ $V_{GS} = -10\text{ V}$		3.5	5	nC
Q_{gs}	Gate-Source Charge			0.6		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				-0.42	A
V_{SD}	Drain-Source Diode Forward Voltage	$V_{GS} = 0\text{ V}, I_S = -0.42\text{ A}$ (Note 2)		0.75	-1.2	V

Notes:

- $R_{\theta JA}$ 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.
 - 170°C/W when mounted on a 1 in² pad of 2oz copper.
 - 260°C/W when mounted on a minimum pad.
- Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2.0\%$