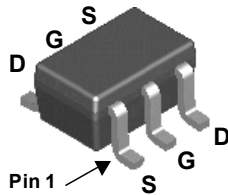


Applications

- Battery management
- Load switch

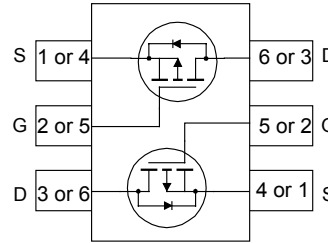
Features

- -0.7 A, -12 V. $R_{DS(ON)} = 270\text{ m}\Omega @ V_{GS} = -4.5\text{ V}$
 $R_{DS(ON)} = 360\text{ m}\Omega @ V_{GS} = -2.5\text{ V}$
 $R_{DS(ON)} = 650\text{ m}\Omega @ V_{GS} = -1.8\text{ V}$
- Low gate charge
- High performance trench technology for extremely low $R_{DS(ON)}$
- Compact industry standard SC70-6 surface mount package



SC70-6

The pinouts are symmetrical; pin 1 and pin 4 are interchangeable.



Absolute Maximum Ratings $T_A=25^\circ\text{C}$ 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 1)	-0.7	A
	– Pulsed	-1.8	
P_D	Power Dissipation for Single Operation (Note 1)	0.3	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

Thermal Characteristics

$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient (Note 1)	415	$^\circ\text{C/W}$
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Package Marking and Ordering Information

Device Marking	Device	Reel Size	Tape width	Quantity
.16	FDG6316P	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	$V_{GS} = 0\text{ V}, I_D = -250\ \mu\text{A}$	-12			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Breakdown Voltage Temperature Coefficient	$I_D = -250\ \mu\text{A}$, Referenced to 25°C		-3.7		mV/ $^\circ\text{C}$
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = -10\text{ V}, V_{GS} = 0\text{ V}$			-1	μA
I_{GSSF}	Gate-Body Leakage, Forward	$V_{GS} = -8\text{ V}, V_{DS} = 0\text{ V}$			-100	nA
I_{GSSR}	Gate-Body Leakage, Reverse	$V_{GS} = 8\text{ V}, V_{DS} = 0\text{ V}$			100	nA

On Characteristics (Note 2)

$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\ \mu\text{A}$	-0.4	-0.6	-1.5	V
$\frac{\Delta V_{GS(th)}}{\Delta T_J}$	Gate Threshold Voltage Temperature Coefficient	$I_D = -250\ \mu\text{A}$, Referenced to 25°C		2		mV/ $^\circ\text{C}$
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS} = -4.5\text{ V}, I_D = -0.7\text{ A}$ $V_{GS} = -2.5\text{ V}, I_D = -0.5\text{ A}$ $V_{GS} = -1.8\text{ V}, I_D = -0.4\text{ A}$ $V_{GS} = -4.5\text{ V}, I_D = -0.7\text{ A}, T_J = 125^\circ\text{C}$		221 297 427 250	270 360 650 348	m Ω
$I_{D(on)}$	On-State Drain Current	$V_{GS} = -4.5\text{ V}, V_{DS} = -5\text{ V}$	-1.8			A
g_{FS}	Forward Transconductance	$V_{DS} = -5\text{ V}, I_D = -0.7\text{ A}$		2.5		S

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{DS} = -6\text{ V}, V_{GS} = 0\text{ V}$		146		pF
C_{oss}	Output Capacitance	$f = 1.0\text{ MHz}$		60		pF
C_{rss}	Reverse Transfer Capacitance			48		pF

Switching Characteristics (Note 2)

$t_{d(on)}$	Turn-On Delay Time	$V_{DD} = -6\text{ V}, I_D = 1\text{ A}$ $V_{GS} = -4.5\text{ V}, R_{GEN} = 6\ \Omega$		5	10	ns
t_r	Turn-On Rise Time			13	23	ns
$t_{d(off)}$	Turn-Off Delay Time			8	16	ns
t_f	Turn-Off Fall Time			2	4	ns
Q_g	Total Gate Charge	$V_{DS} = -6\text{ V}, I_D = -0.7\text{ A}$ $V_{GS} = -4.5\text{ V}$		1.7	2.4	nC
Q_{gs}	Gate-Source Charge			0.3		nC
Q_{gd}	Gate-Drain Charge			0.4		nC

Drain-Source Diode Characteristics and Maximum Ratings

I_S	Maximum Continuous Drain-Source Diode Forward Current				-0.25	A
V_{SD}	Drain-Source Diode Forward Voltage	$V_{GS} = 0\text{ V}, I_S = -0.25\text{ A}$ (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 $R_{\theta JA}$ is determined by the user's board design. $R_{\theta JA} = 415^\circ\text{C/W}$ when mounted on a minimum pad of FR-4 PCB on still air environment

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