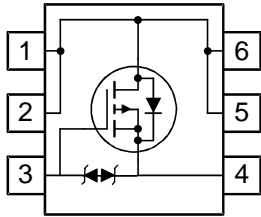
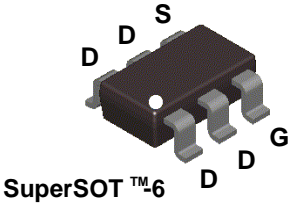


FDC608PZ

Features

- -5.8 A, -20 V. $R_{DS(ON)} = 30\text{ m}\Omega @ V_{GS} = -4.5\text{ V}$
 $R_{DS(ON)} = 43\text{ m}\Omega @ V_{GS} = -2.5\text{ V}$
- Low Gate Charge
- 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	±12	V
I _D	Drain Current – Continuous (Note 1a)	-5.8	A
	– Pulsed	-20	
P _D	Maximum Power Dissipation (Note 1a) (Note 1b)	1.6	W
		0.8	
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)	78	°C/W
R _{θJC}	Thermal Resistance, Junction-to-Case (Note 1)	30	°C/W

Package Marking and Ordering Information

Device Marking	Device	Reel Size	Tape width	Quantity
.608Z	FDC608PZ	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	$V_{GS} = 0\text{ V}, I_D = -250\ \mu\text{A}$	-20			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Breakdown Voltage Temperature Coefficient	$I_D = -250\ \mu\text{A}$, Referenced to 25°C		-10		mV/ $^\circ\text{C}$
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = -16\text{ V}, V_{GS} = 0\text{ V}$			-1	μA
I_{GSS}	Gate–Body Leakage	$V_{GS} = \pm 12\text{ V}, V_{DS} = 0\text{ V}$			± 10	μA

On Characteristics (Note 2)

$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\ \mu\text{A}$	-0.4	-1.0	-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		3		mV/ $^\circ\text{C}$
$R_{DS(on)}$	Static Drain–Source On–Resistance	$V_{GS} = -4.5\text{ V}, I_D = -5.8\text{ A}$ $V_{GS} = -2.5\text{ V}, I_D = -5.0\text{ A}$ $V_{GS} = -4.5\text{ V}, I_D = -5.8\text{ A}, T_J = 125^\circ\text{C}$		26 38 35	30 43	m Ω
$I_{D(on)}$	On–State Drain Current	$V_{GS} = -4.5\text{ V}, V_{DS} = -5\text{ V}$	-20			A
g_{FS}	Forward Transconductance	$V_{DS} = -10\text{ V}, I_D = -5.8\text{ A}$		22		S

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{DS} = -10\text{ V}, V_{GS} = 0\text{ V}$		1330		pF
C_{oss}	Output Capacitance	$f = 1.0\text{ MHz}$		270		pF
C_{riss}	Reverse Transfer Capacitance			230		pF
R_G	Gate Resistance	$V_{GS} = 15\text{ mV}, f = 1.0\text{ MHz}$		12		Ω

Switching Characteristics (Note 2)

$t_{d(on)}$	Turn–On Delay Time	$V_{DD} = -10\text{ V}, I_D = -1\text{ A}$		13	24	ns
t_r	Turn–On Rise Time	$V_{GS} = -4.5\text{ V}, R_{GEN} = 6\ \Omega$		8	16	ns
$t_{d(off)}$	Turn–Off Delay Time			91	145	ns
t_f	Turn–Off Fall Time			60	96	ns
Q_g	Total Gate Charge	$V_{DS} = -10\text{ V}, I_D = -5.8\text{ A}$		17	23	nC
Q_{gs}	Gate–Source Charge	$V_{GS} = -4.5\text{ V}$		3		nC
Q_{gd}	Gate–Drain Charge			6		nC

Drain–Source Diode Characteristics and Maximum Ratings

I_S	Maximum Continuous Drain–Source Diode Forward Current				-1.3	A
V_{SD}	Drain–Source Diode Forward Voltage	$V_{GS} = 0\text{ V}, I_S = -1.3\text{ A}$ (Note 2)		-0.7	-1.2	V
t_{rr}	Diode Reverse Recovery Time	$I_F = -5.8\text{ A}, d_I/d_t = 100\text{ A}/\mu\text{s}$		40	60	ns
Q_{rr}	Diode Reverse Recovery Charge	$I_F = -5.8\text{ A}, d_I/d_t = 100\text{ A}/\mu\text{s}$		15	23	nC

Notes:

1. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient 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.

- $78^\circ\text{C}/\text{W}$ when mounted on a 1 in^2 pad of 2oz copper on FR-4 board.
- $156^\circ\text{C}/\text{W}$ when mounted on a minimum pad.

2. Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2.0\%$