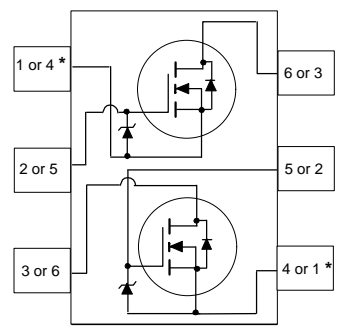
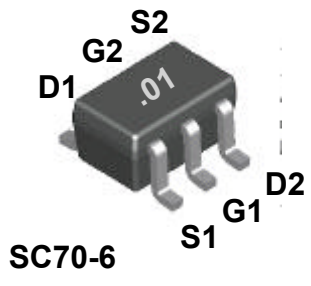
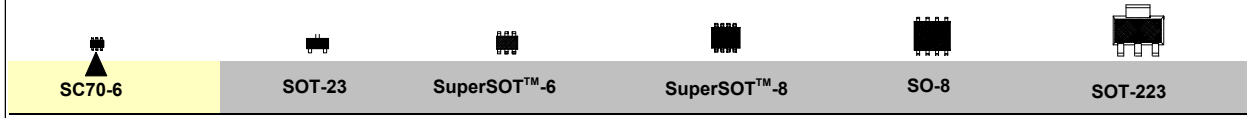


Features

- 25 V, 0.22 A continuous, 0.65 A peak.
 $R_{DS(ON)} = 4 \Omega @ V_{GS} = 4.5 V,$
 $R_{DS(ON)} = 5 \Omega @ V_{GS} = 2.7 V.$
- Very low level gate drive requirements allowing direct operation in 3 V circuits ($V_{GS(th)} < 1.5 V$).
- Gate-Source Zener for ESD ruggedness (>6kV Human Body Model).
- Compact industry standard SC70-6 surface mount package.



* The pinouts are symmetrical; pin 1 and 4 are interchangeable.
 Units inside the carrier can be of either orientation and will not affect the functionality of the device.

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

Symbol	Parameter	FDG6301N	Units
V_{DSS}	Drain-Source Voltage	25	V
V_{GSS}	Gate-Source Voltage	8	V
I_D	Drain/Output Current	- Continuous	0.22
		- Pulsed	0.65
P_D	Maximum Power Dissipation (Note 1)	0.3	W
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to 150	$^\circ C$
ESD	Electrostatic Discharge Rating MIL-STD-883D Human Body Model(100 pF / 1500 Ω)	6.0	kV

THERMAL CHARACTERISTICS

$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	415	$^\circ C/W$
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Electrical Characteristics ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	25			V
$\Delta BV_{DSS}/\Delta T_J$	Breakdown Voltage Temp. Coefficient	$I_D = 250\text{ }\mu\text{A}$, Referenced to $25\text{ }^\circ\text{C}$		25		mV / $^\circ\text{C}$
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 20\text{ V}, V_{GS} = 0\text{ V}$			1	μA
					10	μA
I_{GSS}	Gate - Body Leakage Current	$V_{GS} = 8\text{ V}, V_{DS} = 0\text{ V}$			100	nA
ON CHARACTERISTICS (Note 2)						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	0.65	0.85	1.5	V
$\Delta V_{GS(th)}/\Delta T_J$	Gate Threshold Voltage Temp. Coefficient	$I_D = 250\text{ }\mu\text{A}$, Referenced to $25\text{ }^\circ\text{C}$		-2.1		mV / $^\circ\text{C}$
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS} = 4.5\text{ V}, I_D = 0.22\text{ A}$		2.6	4	Ω
				5.3	7	
			$V_{GS} = 2.7\text{ V}, I_D = 0.19\text{ A}$	3.7	5	
$I_{D(on)}$	On-State Drain Current	$V_{GS} = 4.5\text{ V}, V_{DS} = 5\text{ V}$	0.22			A
g_{FS}	Forward Transconductance	$V_{DS} = 5\text{ V}, I_D = 0.22\text{ A}$		0.2		S
DYNAMIC CHARACTERISTICS						
C_{iss}	Input Capacitance	$V_{DS} = 10\text{ V}, V_{GS} = 0\text{ V},$ $f = 1.0\text{ MHz}$		9.5		pF
C_{oss}	Output Capacitance			6		pF
C_{rss}	Reverse Transfer Capacitance			1.3		pF
SWITCHING CHARACTERISTICS (Note 2)						
$t_{D(on)}$	Turn - On Delay Time	$V_{DD} = 5\text{ V}, I_D = 0.5\text{ A},$ $V_{GS} = 4.5\text{ V}, R_{GEN} = 50\text{ }\Omega$		5	10	ns
t_r	Turn - On Rise Time			4.5	10	ns
$t_{D(off)}$	Turn - Off Delay Time			4	8	ns
t_f	Turn - Off Fall Time			3.2	7	ns
Q_g	Total Gate Charge	$V_{DS} = 5\text{ V}, I_D = 0.22\text{ A},$ $V_{GS} = 4.5\text{ V}$		0.29	0.4	nC
Q_{gs}	Gate-Source Charge			0.12		nC
Q_{gd}	Gate-Drain Charge			0.03		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
I_S	Maximum Continuous Source Current				0.25	A
V_{SD}	Drain-Source Diode Forward Voltage	$V_{GS} = 0\text{ V}, I_S = 0.25\text{ A}$ (Note 2)		0.8	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. $R_{\theta JA} = 415\text{ }^\circ\text{C/W}$ on minimum pad mounting on FR-4 board in still air.
- Pulse Test: Pulse Width $\leq 300\text{ }\mu\text{s}$, Duty Cycle $\leq 2.0\%$.