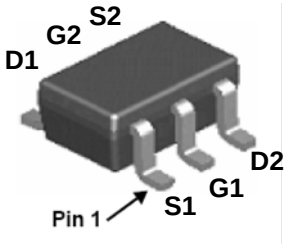
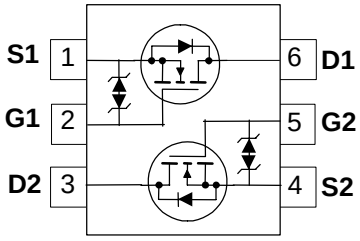
FDG1024NZ

Features

- Max $r_{DS(on)}$ = 175 mΩ at V_{GS} = 4.5 V, I_D = 1.2 A
- Max $r_{DS(on)}$ = 215 mΩ at V_{GS} = 2.5 V, I_D = 1.0 A
- Max $r_{DS(on)}$ = 270 mΩ at V_{GS} = 1.8 V, I_D = 0.9 A
- Max $r_{DS(on)}$ = 389 mΩ at V_{GS} = 1.5 V, I_D = 0.8 A
- HBM ESD protection level >2 kV (Note 3)
- Very low level gate drive requirements allowing operation in 3 V circuits ($V_{GS(th)}$ < 1.5 V)
- Very small package outline SC70-6
- RoHS Compliant



SC70-6



MOSFET Maximum Ratings T_A = 25 °C unless otherwise noted

Symbol	Parameter			Ratings	Units
V_{DS}	Drain to Source Voltage			20	V
V_{GS}	Gate to Source Voltage			±8	V
I_D	-Continuous	T_A = 25°C	(Note 1a)	1.2	A
	-Pulsed			6	
P_D	Power Dissipation	T_A = 25°C	(Note 1a)	0.36	W
	Power Dissipation	T_A = 25°C	(Note 1b)	0.30	
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)	350	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	(Note 1b)	415	

Package Marking and Ordering Information

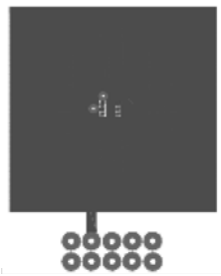
Device Marking	Device	Package	Reel Size	Tape Width	Quantity
.24	FDG1024NZ	SC70-6	7 ”	8 mm	3000 units

Electrical Characteristics T_J = 25 °C unless otherwise noted

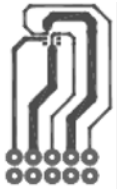
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain to Source Breakdown Voltage	I_D = 250 μA, V_{GS} = 0 V	20			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Breakdown Voltage Temperature Coefficient	I_D = 250 μA, referenced to 25 °C		14		mV/°C
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 16 V, V_{GS} = 0 V			1	μA
I_{GSS}	Gate to Source Leakage Current	V_{GS} = ±8 V, V_{DS} = 0 V			±10	μA
On Characteristics						
$V_{GS(th)}$	Gate to Source Threshold Voltage	V_{GS} = V_{DS}, I_D = 250 μA	0.4	0.8	1.0	V
$\frac{\Delta V_{GS(th)}}{\Delta T_J}$	Gate to Source Threshold Voltage Temperature Coefficient	I_D = 250 μA, referenced to 25 °C		-3		mV/°C
$r_{DS(on)}$	Static Drain to Source On Resistance	V_{GS} = 4.5 V, I_D = 1.2 A		160	175	mΩ
		V_{GS} = 2.5 V, I_D = 1.0 A		185	215	
		V_{GS} = 1.8 V, I_D = 0.9 A		232	270	
		V_{GS} = 1.5 V, I_D = 0.8 A		321	389	
		V_{GS} = 4.5 V, I_D = 1.2 A, T_J =125 °C		220	259	
g_{FS}	Forward Transconductance	V_{DD} = 5 V, I_D = 1.2 A		4		S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = 10 V, V_{GS} = 0 V, f = 1 MHz		115	150	pF
C_{oss}	Output Capacitance			25	35	pF
C_{rss}	Reverse Transfer Capacitance			20	25	pF
R_g	Gate Resistance			4.6		Ω
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = 10 V, I_D = 1.2 A, V_{GS} = 4.5 V, R_{GEN} = 6 Ω		3.7	10	ns
t_r	Rise Time			1.7	10	ns
$t_{d(off)}$	Turn-Off Delay Time			11	19	ns
t_f	Fall Time			1.5	10	ns
Q_g	Total Gate Charge	V_{GS} = 4.5 V, V_{DD} = 10 V, I_D = 1.2 A		1.8	2.6	nC
Q_{gs}	Gate to Source Charge			0.3		nC
Q_{gd}	Gate to Drain “Miller” Charge			0.4		nC
Drain-Source Diode Characteristics						
I_S	Maximum Continuous Drain-Source Diode Forward Current				0.3	A
V_{SD}	Source to Drain Diode Forward Voltage	V_{GS} = 0 V, I_S = 0.3 A (Note 2)		0.7	1.2	V
t_{rr}	Reverse Recovery Time	I_F = 1.2 A, di/dt = 100 A/μs		10	20	ns
Q_{rr}	Reverse Recovery Charge			1.9	10	nC

NOTES:

1. $R_{\theta JA}$ is determined with the device mounted on a 1 in^2 pad 2 oz copper pad on a 1.5 x 1.5 in. board of FR-4 material. $R_{\theta JC}$ is guaranteed by design while $R_{\theta JA}$ is determined by the user's board design.



a. 350 °C/W when mounted on a 1 in^2 pad of 2 oz copper.



b. 415 °C/W when mounted on a minimum pad of 2 oz copper.

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

3: The diode connected between the gate and source serves only as protection against ESD. No gate overvoltage rating is implied.