

Product Summary

BV _{DSS}	R _{DS(ON)} max	I _D max T _A = +25°C
20V	9mΩ @ V _{GS} = 4.5V	15.2A
	15mΩ @ V _{GS} = 2.5V	13.8A

Application

- General Purpose Interfacing Switch
- Power Management Functions

Ordering Information

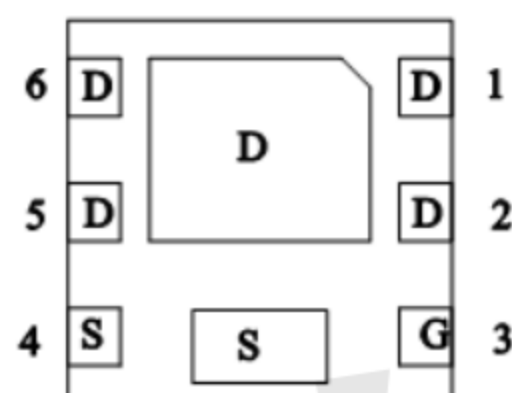
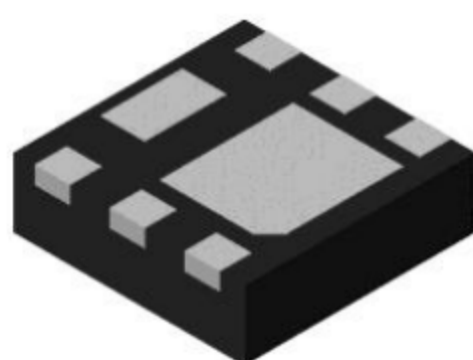
- Shipping Qty:3000 /7inch Tape& Reel

Features

- 0.6mm Profile – Ideal for Low Profile Applications
- PCB Footprint of 4mm²
- Low Gate Threshold Voltage
- Low On-Resistance

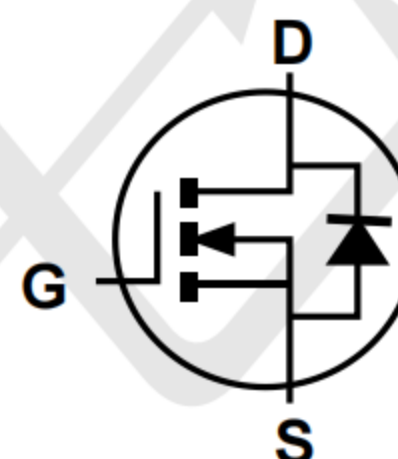
Package and Pin Configuration

DFN2X2



Pin Out
Bottom View

Circuit diagram



Marking:1019D

Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V _{DSS}	20	V
Gate-Source Voltage			V _{GSS}	±8	V
Continuous Drain Current (Note 6) V _{GS} = 4.5V	Steady State	T _A = +25°C T _A = +70°C	I _D	11.6 9.3	A
	t<10s	T _A = +25°C T _A = +70°C	I _D	15.2 12.2	A
Pulsed Drain Current (380μs Pulse, Duty Cycle = 1%)			I _{DM}	70	A
Maximum Body Diode Continuous Current (Note 6)			I _S	2.1	A
Avalanche Current (Note 7) L = 0.1mH			I _{AS}	23	A
Avalanche Energy (Note 7) L = 0.1mH			E _{AS}	28	mJ

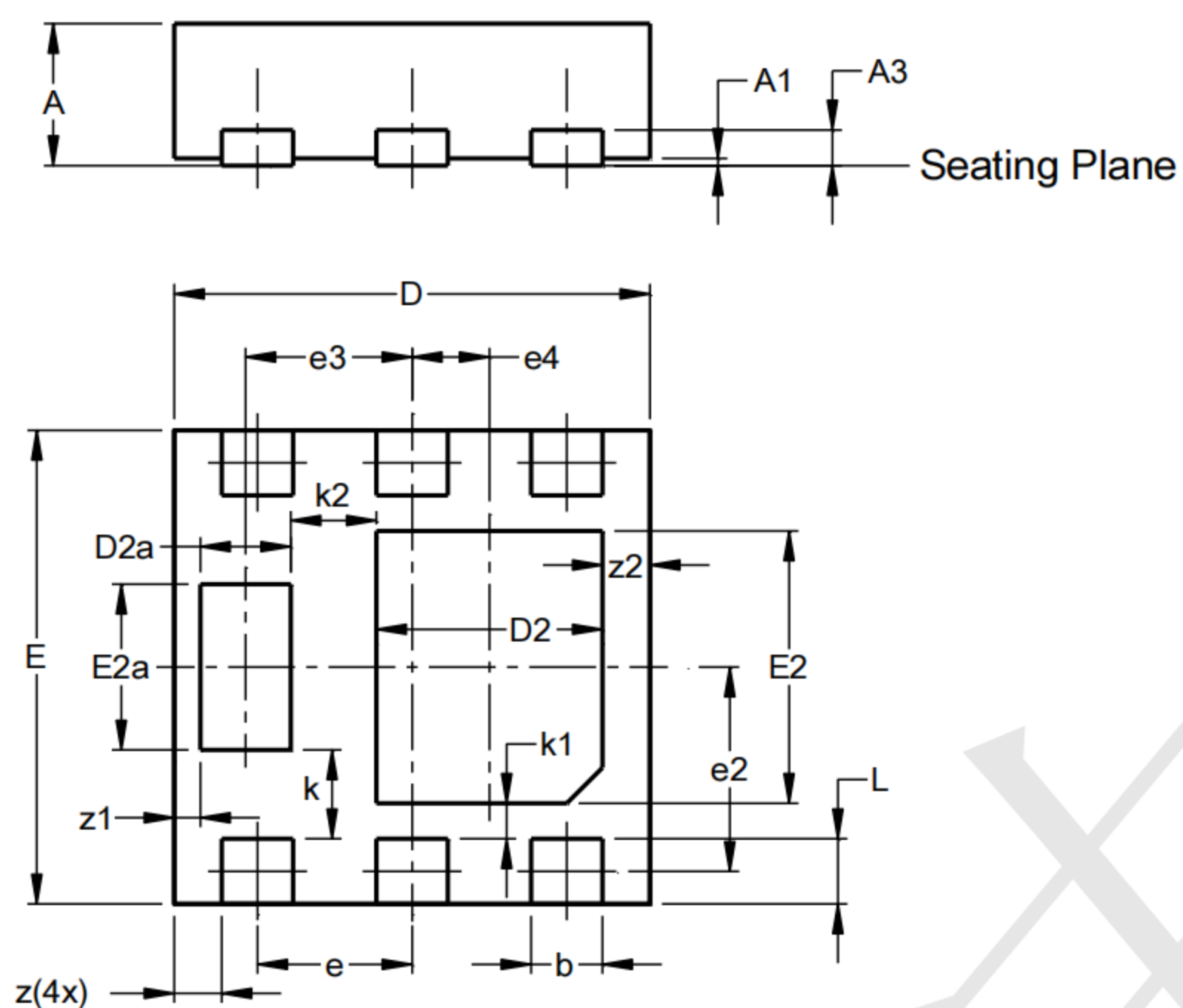
Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P_D	$T_A = +25^\circ\text{C}$ 0.8	W
		$T_A = +70^\circ\text{C}$ 0.5	
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	Steady state 159	$^\circ\text{C/W}$
		$t < 10\text{s}$ 110	
Total Power Dissipation (Note 6)	P_D	$T_A = +25^\circ\text{C}$ 1.8	W
		$T_A = +70^\circ\text{C}$ 1.2	
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	Steady state 70	$^\circ\text{C/W}$
		$t < 10\text{s}$ 40	
Thermal Resistance, Junction to Case (Note 6)	$R_{\theta JC}$	14	
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

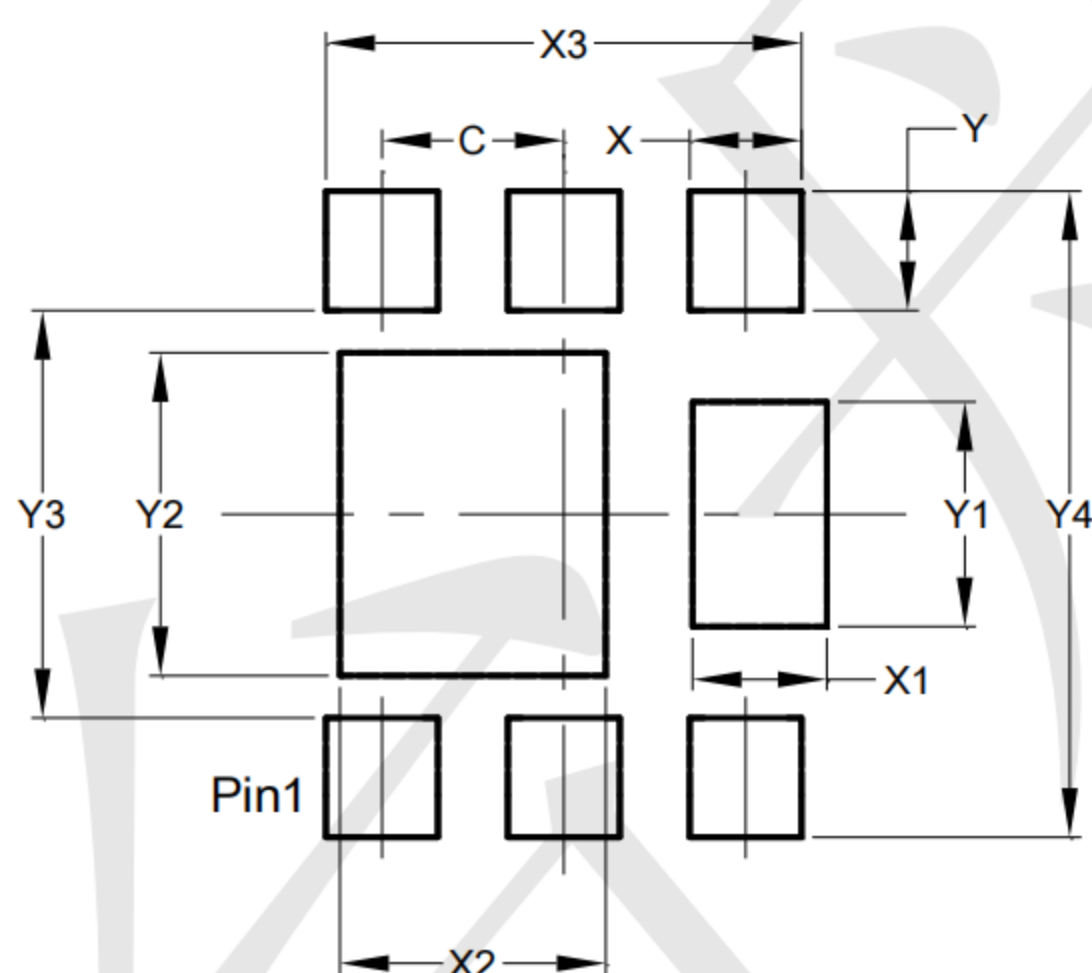
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 8)						
Drain-Source Breakdown Voltage	BV_{DSS}	20	—	—	V	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$
Zero Gate Voltage Drain Current $T_J = +25^\circ\text{C}$	I_{DSS}	—	—	1	μA	$V_{DS} = 16\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	—	—	± 100	nA	$V_{GS} = \pm 8\text{V}, V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	$V_{GS(TH)}$	0.4	—	1.2	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	6.8	9	m Ω	$V_{GS} = 4.5\text{V}, I_D = 8.5\text{A}$
			7.6	15		$V_{GS} = 2.5\text{V}, I_D = 8.5\text{A}$
			11	30		$V_{GS} = 1.8\text{V}, I_D = 5\text{A}$
			18	50		$V_{GS} = 1.5\text{V}, I_D = 3\text{A}$
Diode Forward Voltage	V_{SD}	—	0.75	1.2	V	$V_{GS} = 0\text{V}, I_S = 8.5\text{A}$
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C_{iss}	—	1439	—	pF	$V_{DS} = 10\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	—	224	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	202	—	pF	
Gate Resistance	R_g	—	1.3	—	Ω	$V_{DS} = 0\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$
Total Gate Charge ($V_{GS} = 4.5\text{V}$)	Q_g	—	19.3	—	nC	$V_{DS} = 10\text{V}, I_D = 8.5\text{A}$
Total Gate Charge ($V_{GS} = 10\text{V}$)	Q_g	—	42.3	—	nC	
Gate-Source Charge	Q_{gs}	—	2.5	—	nC	
Gate-Drain Charge	Q_{gd}	—	4.5	—	nC	
Turn-On Delay Time	$t_{D(ON)}$	—	4.7	—	ns	$V_{DS} = 10\text{V}, I_D = 8.5\text{A}$ $V_{GS} = 4.5\text{V}, R_G = 1.8\Omega$
Turn-On Rise Time	t_r	—	6.9	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	23	—	ns	
Turn-Off Fall Time	t_f	—	7.4	—	ns	$I_F = 8.5\text{A}, di/dt = 210\text{A}/\mu\text{s}$
Reverse Recovery Time	t_{RR}	—	11.6	—	ns	
Reverse Recovery Charge	Q_{RR}	—	4.6	—	nC	

DFN2X2 Package Outline Dimensions



(Type F)			
Dim	Min	Max	Typ
A	0.57	0.63	0.60
A1	0.00	0.05	0.03
A3	-	-	0.15
b	0.25	0.35	0.30
D	1.95	2.05	2.00
D2	0.85	1.05	0.95
D2a	0.33	0.43	0.38
E	1.95	2.05	2.00
E2	1.05	1.25	1.15
E2a	0.65	0.75	0.70
e	0.65 BSC		
e2	0.863 BSC		
e3	0.70 BSC		
e4	0.325 BSC		
k	0.37 BSC		
k1	0.15 BSC		
k2	0.36 BSC		
L	0.225	0.325	0.275
z	0.20 BSC		
z1	0.110 BSC		
z2	0.20 BSC		
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
C	0.650
X	0.400
X1	0.480
X2	0.950
X3	1.700
Y	0.425
Y1	0.800
Y2	1.150
Y3	1.450
Y4	2.300