

20V N-Channel MOSFET

MOSFET Product Summar

V_{DS}	$R_{DS(ON)}$ (Typ.)	I_D
20V	55mΩ @ $V_{GS}=4.5V$	2.0A
	65mΩ @ $V_{GS}=2.5V$	

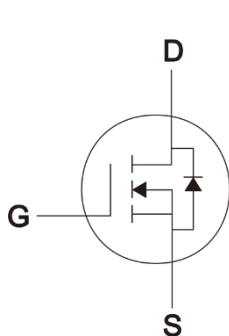
Description

The PM20N2P1 uses advanced Trench technology and designs to provide excellent $R_{DS(ON)}$ with low gate charge. This device is suitable for use in PWM, load switching and general purpose applications.

Features

- Surface Mount Package
- N-Channel Switch with Low $R_{DS(on)}$
- Operated at Low Logic Level Gate Drive
- Lead Free Product is Acquired

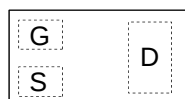
Dimensions and Pinonfiguration



Circuit diagram



DFN1006-3L



Pin configuration(Top view)

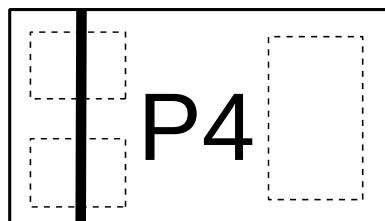
Mechanical Characteristics

- Package: DFN1006-3
- Case Material: "Green" Molding Compound
- Moisture Sensitivity: Level 1 per J-STD-020
- Marking Information: See Below

Applications

- Load/Power Switching
- Interfacing Switching
- Battery Management for Ultra Small Portable Electronics
- Logic Level Shift

Marking Information



P4 = Device Making Code

Ordering Information

Part Number	Shipping	Reel Size
PM20N2P1	10000/Tape & Reel	7 inch

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current (note1)	I_D	2.0	A
Power Dissipation(note1)	P_D	0.35	W
Thermal Resistance from Junction to Ambient(note1)	$R_{\theta JA}$	420	$^{\circ}\text{C/W}$
Lead Temperature for Soldering Purposes (1/8" from case for 10 s)	T_L	260	$^{\circ}\text{C}$
Junction Temperature	T_J	125	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-50~ +150	$^{\circ}\text{C}$

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

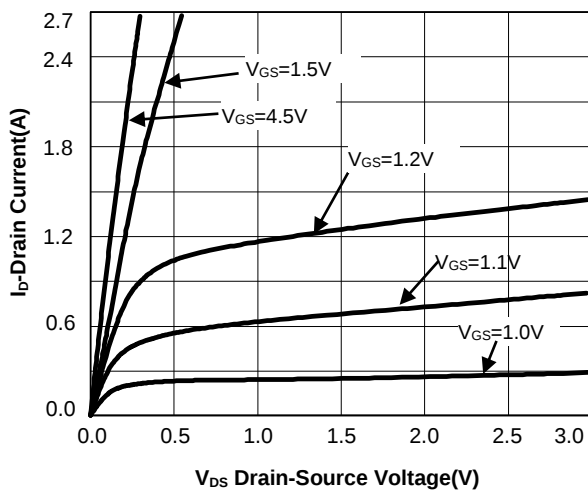
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20	-	-	V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 20V, V_{GS} = 0V$	-	-	1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 12V, V_{DS} = 0V$	-	-	± 100	nA
Gate threshold voltage(note2)	$V_{GS(TH)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	0.5	0.70	0.90	V
Drain-source on-resistance(note2)	$R_{DS(ON)}$	$V_{GS} = 4.5V, I_D = 1.0A$	-	55	60	m Ω
		$V_{GS} = 2.5V, I_D = 1.0A$	-	65	85	
Forward tranconductance(note2)	g_{fs}	$V_{DS} = 5.0V, I_D = 1.0A$	-	2.6	-	S
Drain-Source diode Characteristics and maximum ratings (note3)						
Diode forward voltage	V_{SD}	$I_S = 0.5A, V_{GS} = 0V$	-	0.67	0.90	V
Dynamic characteristics (note4)						
Input Capacitance	C_{iss}	$V_{DS} = 10V, V_{GS} = 0V, f = 1MHz$	-	220	-	pF
Output Capacitance	C_{oss}		-	27.8	-	
Reverse Transfer Capacitance	C_{rss}		-	23	-	
Gate resistance	R_g	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$		15		Ω
Total gate charge	Q_g	$V_{DS} = 10V, V_{GS} = 4.5V, I_D = 0.45A$	-	4.0	-	nC
Gate-source charge	Q_{gs}		-	0.3	-	

Gate-drain charge	Q_{gd}		-	0.5	-	
Switching Characteristics (note4)						
Turn-on delay time	$t_{d(on)}$	$V_{GS}=4.5V, V_{DS}=10V, R_L=6\Omega$	-	5.0	-	ns
Turn-on rise time	t_r		-	60	-	
Turn-off delay time	$t_{d(off)}$		-	15	-	
Turn-off fall time	t_f		-	34	-	

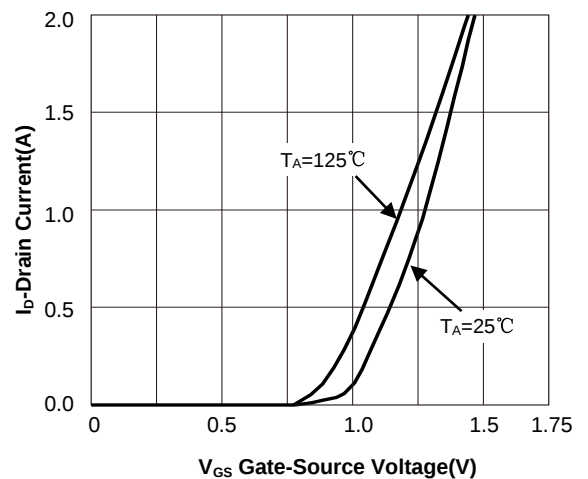
Notes:

1. Surface mounted on FR4 board using the minimum recommended pad size.
2. PulseTest : PulseWidth=300 μ s,Duty Cycle=2%
3. Switching characteristics are independent of operating junction temperatures.
4. Guaranteed by design, not subject to producting.

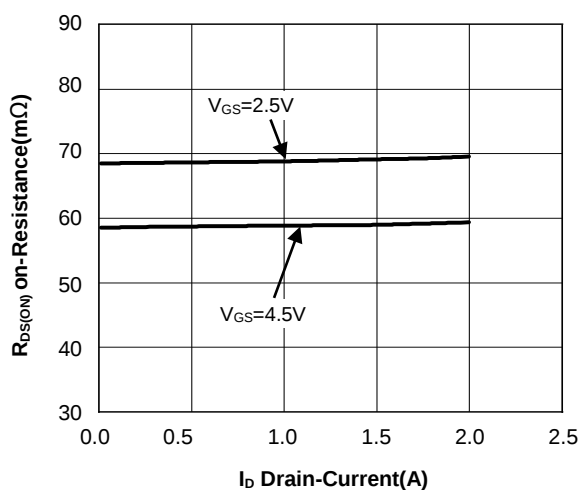
Typical Characteristics($T_A=25^\circ\text{C}$ unless otherwise specified)



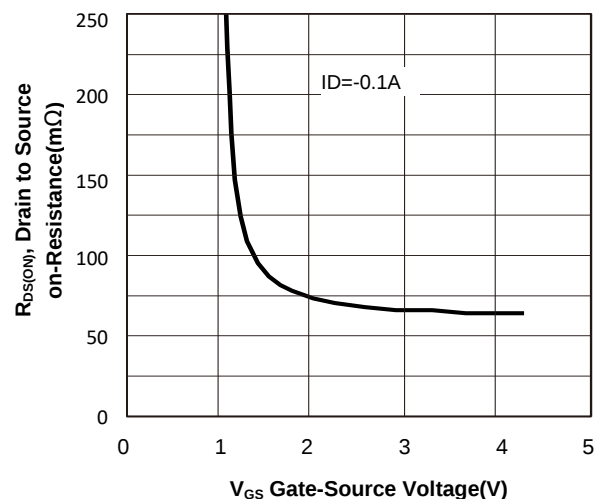
Drain Current vs. Drain-Source Voltage



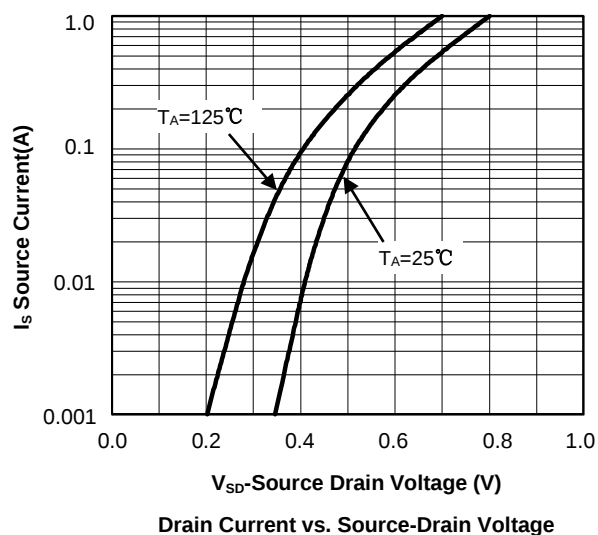
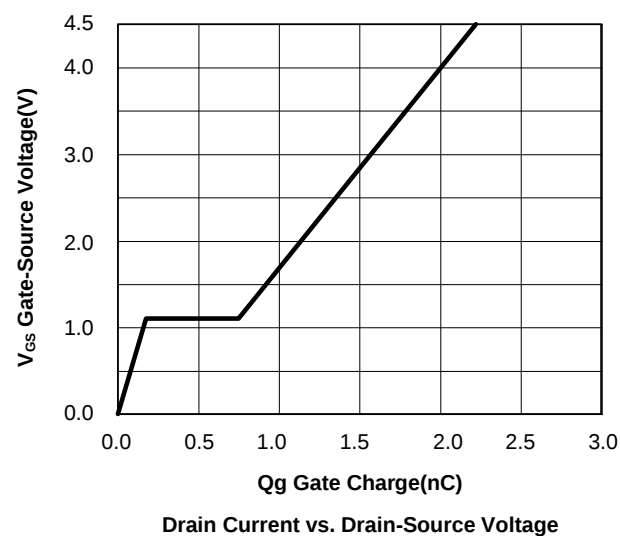
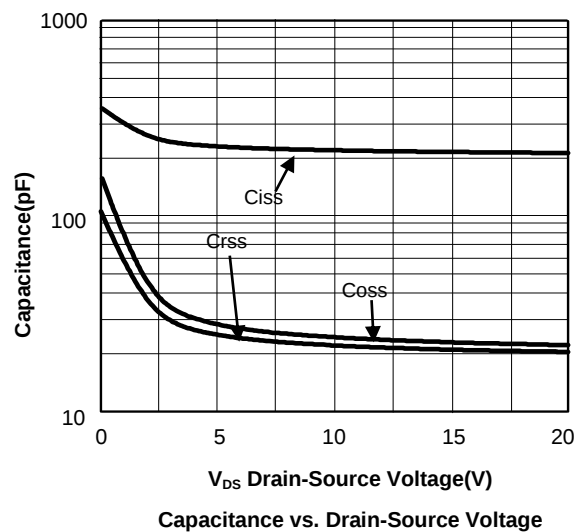
Drain Current vs. Gate-Source Voltage



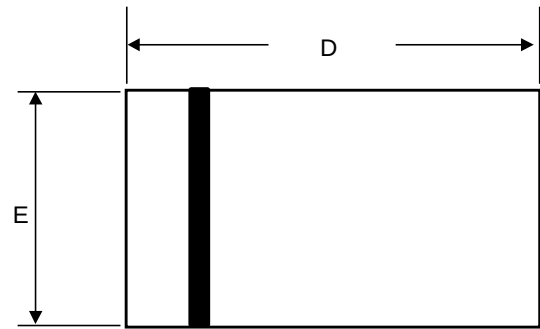
$R_{DS(on)}$ On-Resistance vs. Drain-Current



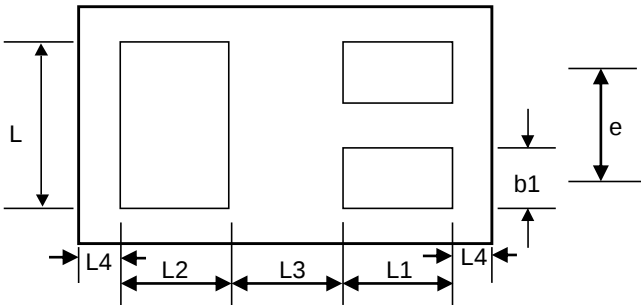
On-Resistance vs. Gate-Source Voltage



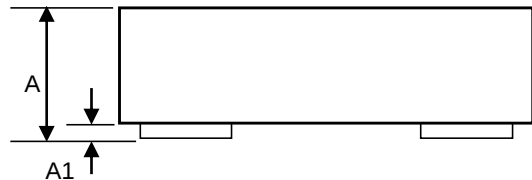
DFN1006-3 Package Outline Drawing



Top View



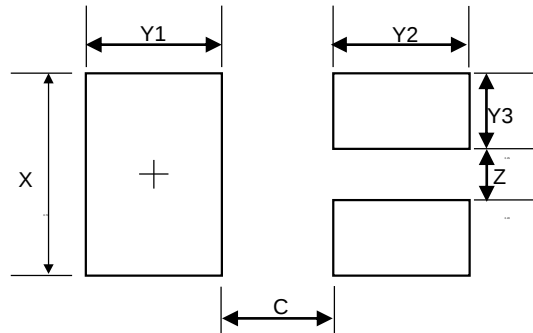
Bottom View



Side View

Symbol	Dimensions in Millimeters	
	Min.	Max.
A	0.33	0.50
A1	0.00	0.05
D	0.90	1.05
E	0.50	0.65
e	0.35	
b1	0.10	0.20
L	0.45	0.55
L1	0.20	0.30
L2	0.20	0.30
L3	0.39	
L4	0.05	

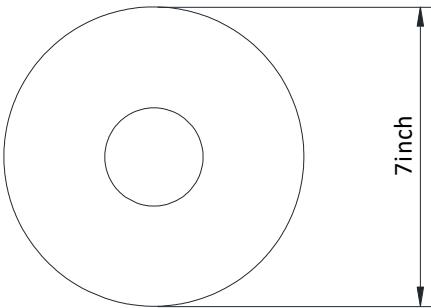
Recommended PCB Layout (Unit: mm)



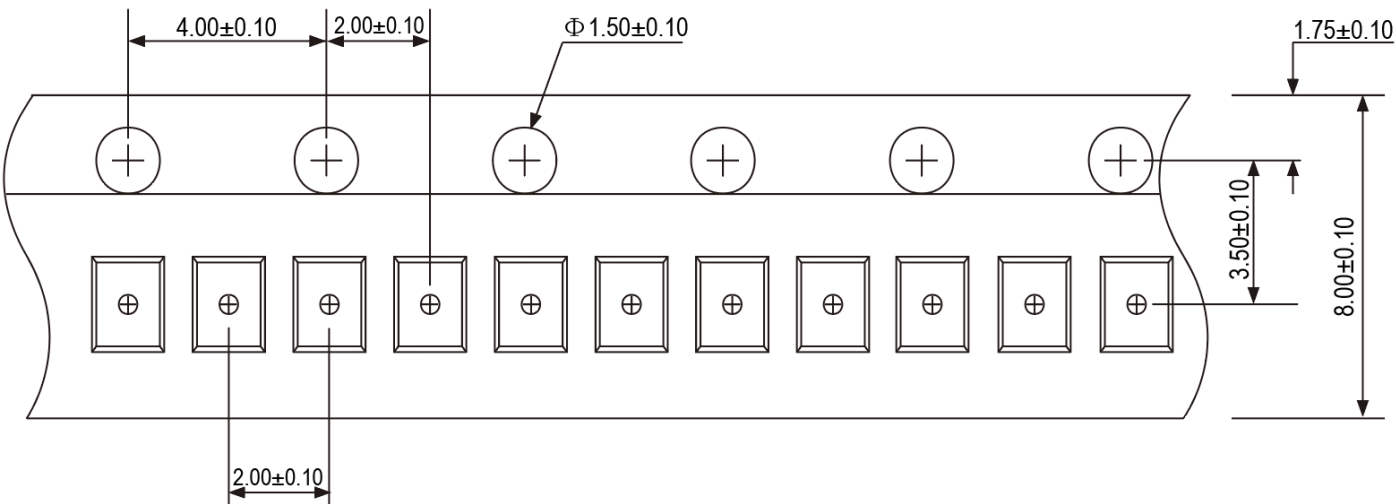
Symbol	Dimensions
C	0.25
X	0.65
Y1	0.50
Y2	0.50
Y3	0.25
Z	0.25

TAPE AND REEL INFORMATION

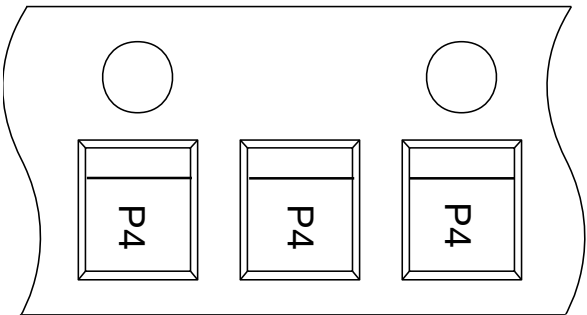
Reel Dimensions



Tape Dimensions



Unit:mm



 User Direction of Feed

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