

-20V P-Channel MOSFET

MOSFET Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)}$ (Typ.)	I_D
-20V	100m Ω @ $V_{GS}=-4.5V$	-2A
	132m Ω @ $V_{GS}=-2.5V$	

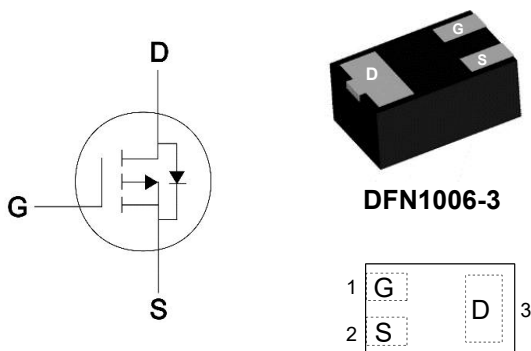
Description

The PM02P02P1 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
- P-Channel Switch with Low $R_{DS(ON)}$
- Operated at Low Logic Level Gate Drive
- Lead Free Product is Acquired

Dimensions and Pin Configuration



Circuit diagram Pin Configuration(Top View)

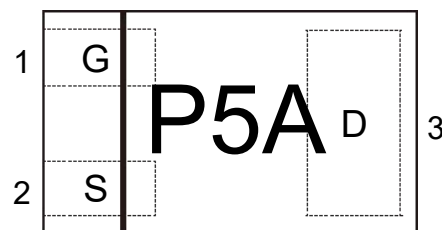
Mechanical Characteristics

- 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



P5A = Device Marking Code

Ordering Information

Part Number	Shipping	Reel Size
PM02P02P1	10000/Tape & Reel	7 inch

Absolute Maximum Ratings ($T_A=25^{\circ}C$ 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	A
Pulsed Drain Current ^(Note2)	I_{DM}	-6	A
Power Dissipation	P_D	0.2	W

Thermal Resistance from Junction to Ambient ^(Note3)	$R_{\theta JA}$	625	°C/W
Junction Temperature	T_J	-50~ +150	°C
Storage Temperature	T_{STG}	-50~ +150	°C

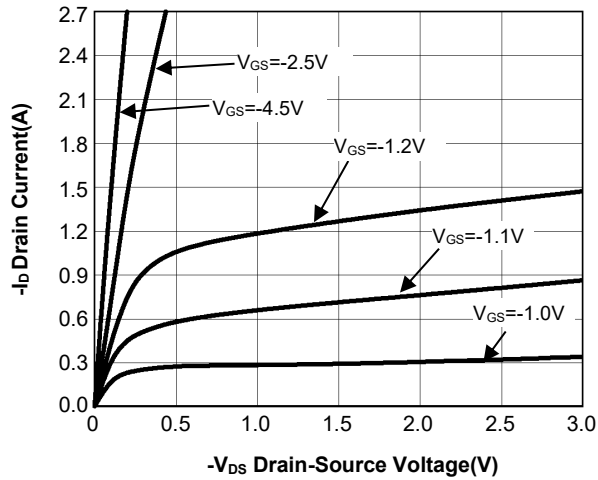
Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-to-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =-250μA	-20	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V	-	-	-1	μA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =-250μA	-0.4	-0.65	-1.0	V
Drain-to-Source On-Resistance	R _{DS(ON)}	V _{GS} =-4.5V, I _D =-1.5A	-	100	110	mΩ
		V _{GS} =-2.5V, I _D =-1A	-	132	155	
Diode Forward Voltage	V _{SD}	I _S =-2A, V _{GS} =0V	-	-0.85	-1.25	V
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V, f=1MHz	-	227	-	pF
Output Capacitance	C _{oss}		-	26	-	
Reverse Transfer Capacitance	C _{rss}		-	12	-	
Switching Characteristics						
Gate Total Charge	Q _g	V _{DS} =-10V, V _{GS} =-4.5V, R _{GEN} =6Ω, I _D =-0.45A	-	2.9	-	nC
Gate-to-Source Charge	Q _{gs}		-	0.2	-	
Gate-to-Drain Charge	Q _{gd}		-	0.7	-	
Turn-On Delay Time	t _{d(on)}	V _{DS} =-10V, V _{GS} =-4.5V, I _D =-0.45A	-	4.7	-	ns
Turn-On Rise Time	t _r		-	4.5	-	
Turn-Off Delay Time	t _{d(off)}		-	50.8	-	
Turn-Off Fall Time	t _f		-	31.2	-	

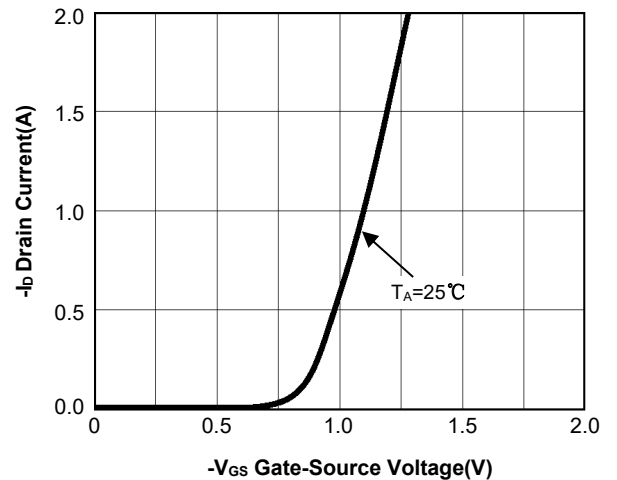
Notes:

1. This current is chip limited, which is calculated based on $R_{\theta JA}$.
2. This current is calculated on single pulse with 10 μs Pulse & Duty Cycle = 1%.
3. The value of $R_{\theta JA}$, which is steady state, is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, with $T_A=25^\circ\text{C}$.

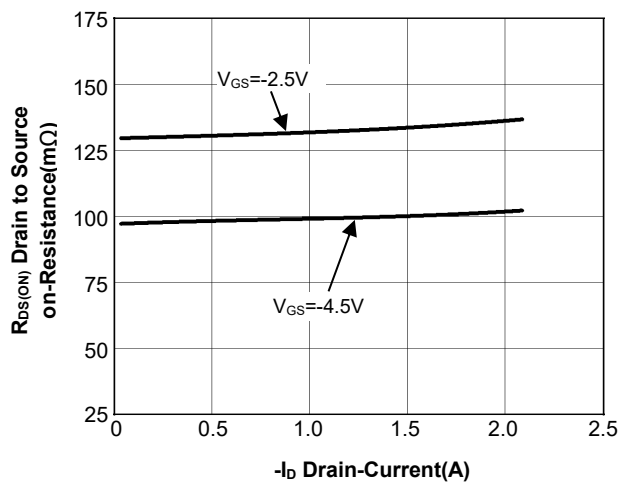
Typical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise specified)



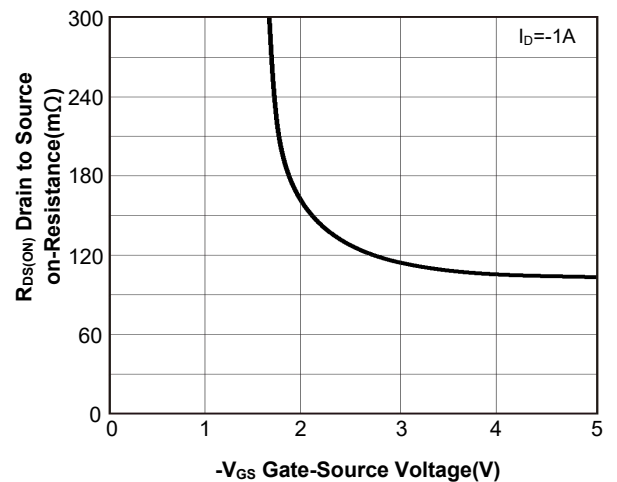
Drain Current vs. Drain-Source Voltage



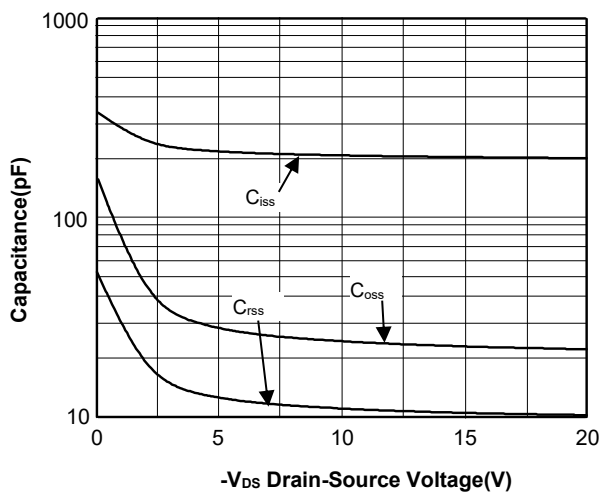
Drain Current vs. Gate-Source Voltage



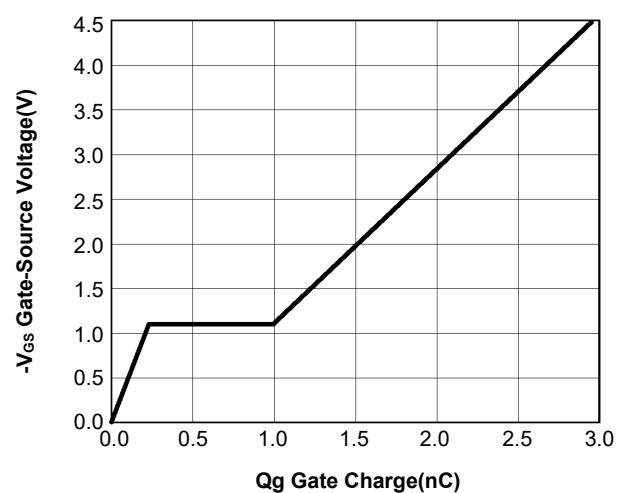
Rdson On-Resistance vs. Drain-Current



On-Resistance vs. Gate-Source Voltage

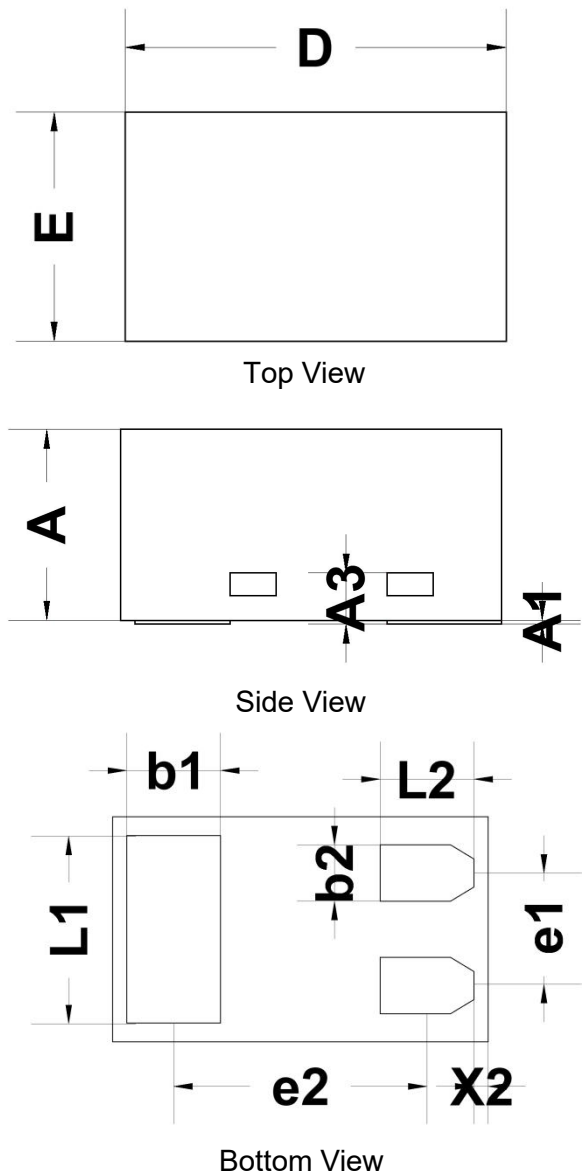


Capacitance vs. Drain-Source Voltage



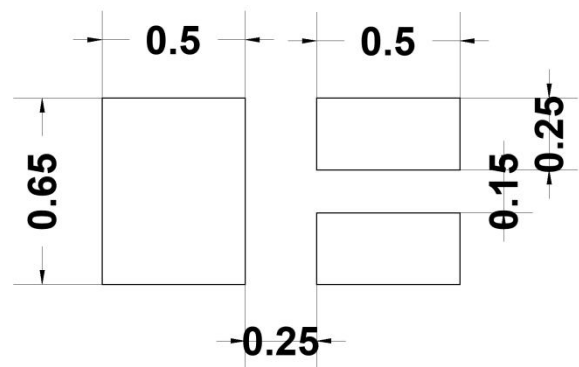
Drain Current vs. Drain-Source Voltage

DFN1006-3 Package Outline Drawing



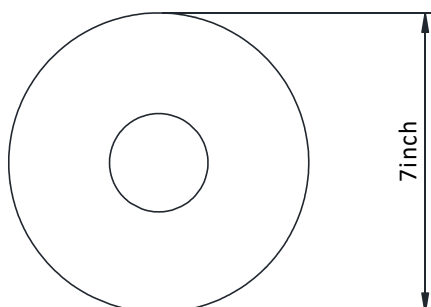
Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.43	0.50	0.55
D	0.95	1.00	1.05
E	0.55	0.60	0.65
b1	0.20	0.25	0.30
b2	0.10	0.15	0.20
L1	0.45	0.50	0.55
L2	0.25	0.30	0.35
e1	0.350 BSC		
e2	0.675 BSC		
A1	0.00	-	0.05
A3	0.11	-	0.15
X2	0.00	-	0.04

Recommended PCB Layout (Unit: mm)

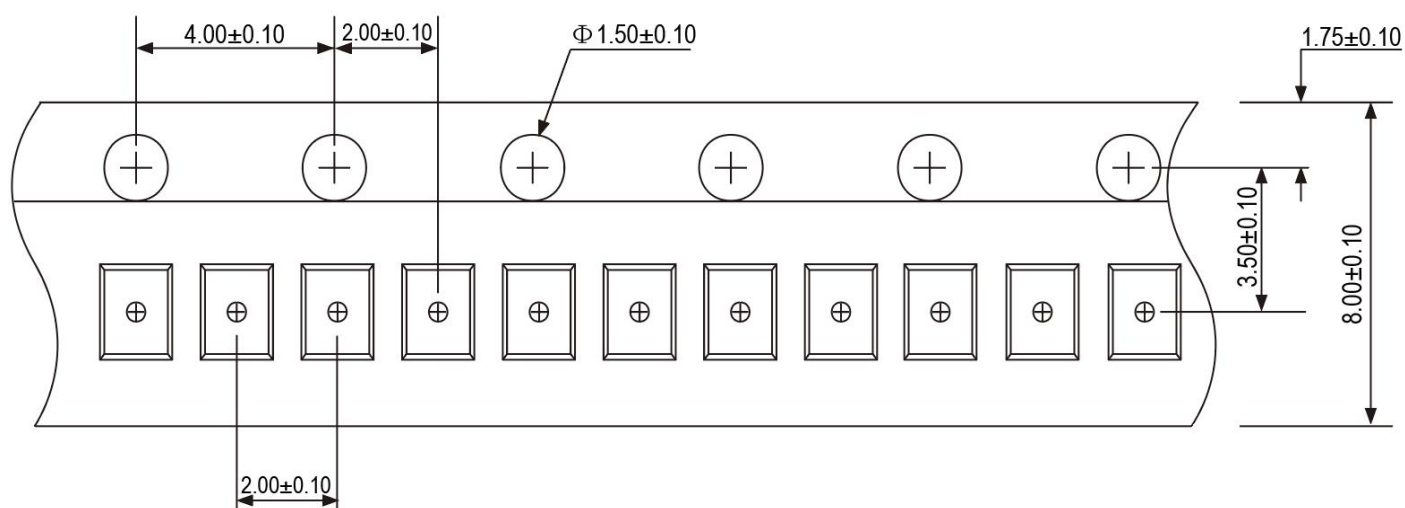


TAPE AND REEL INFORMATION

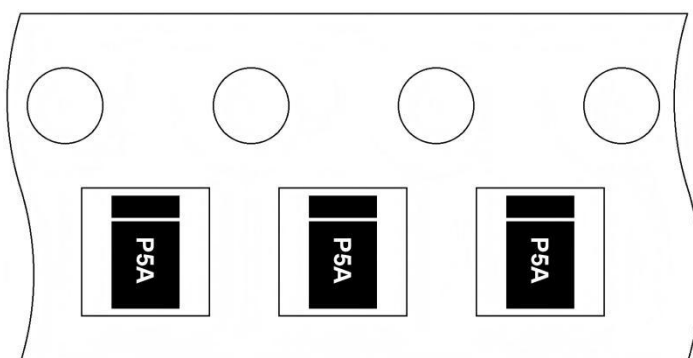
Reel Dimensions



Tape Dimensions



Unit:mm



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User Direction of Feed

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