

Dual N-Channel, 12V, 15A, DFN2x3-6L, Power MOSFET

MOSFET Product Summary

V_{DS}	$R_{DS(ON)}$ (Typ.)	I_D
12V	4.9m Ω @ $V_{GS}=4.5V$	15A
	5.1m Ω @ $V_{GS}=4.0V$	
	5.2m Ω @ $V_{GS}=3.8V$	
	5.7m Ω @ $V_{GS}=3.1V$	
	6.7m Ω @ $V_{GS}=2.5V$	

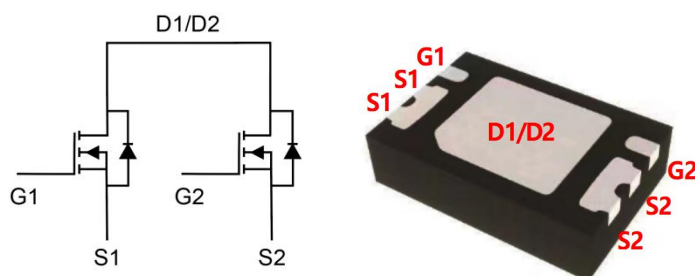
Description

The PM2003B is dual N-Channel enhancement MOSFET, which uses advanced trench technology and designs to provide excellent $R_{DS(ON)}$ with low gate charge. This device is suitable for use in general purpose applications.

Features

- Low Gate Charge and $R_{DS(ON)}$
- RoHS Product
- High Density Cell Design for Ultra Low $R_{DS(ON)}$

Dimensions and Pin Configuration



Circuit diagram

Bottom View

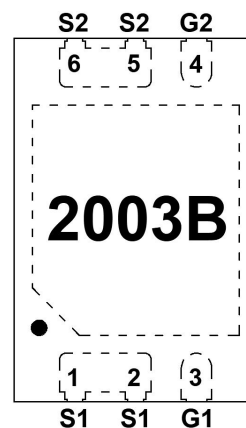
Mechanical Characteristics

- Package: DFN2*3-6L
- Case Material: "Green" Molding Compound
- Marking Information: See Below

Applications

- Load Switching
- PWM
- DC-DC converter
- High Frequency Switching

Marking Information



2003B = Device Marking Code

Ordering Information

Part Number	Shipping	Reel Size
PM2003B	3000/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}	12	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	15	A
Pulsed Drain Current ^(Note1)	I_{DM}	95	A
Power Dissipation ^(Note2)	P_D	1.52	W
Thermal Resistance from Junction to Ambient ^(Note3)	$R_{\theta JA}$	82	$^{\circ}\text{C/W}$
Junction Temperature	T_J	$-55 \sim +150$	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

Notes:

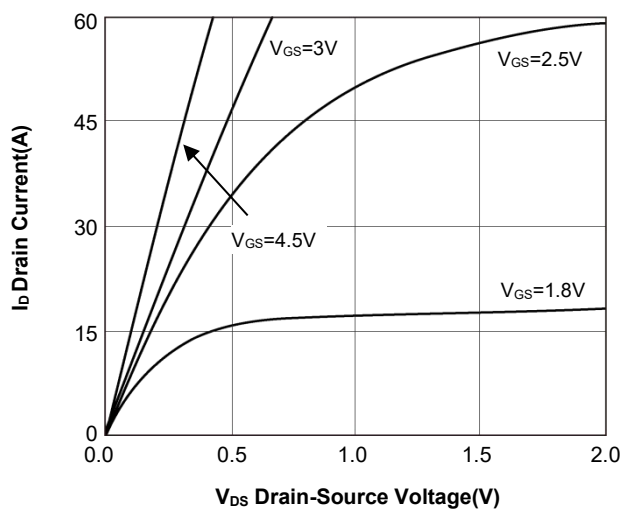
1. $P_W \leq 10\mu\text{s}$, Duty Cycle $\leq 1\%$. Pulse width limited by maximum junction temperature.
2. Pulse Width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$
3. The value of $R_{\theta JA}$, which is steady state, is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, with $T_A = 25^{\circ}\text{C}$.

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

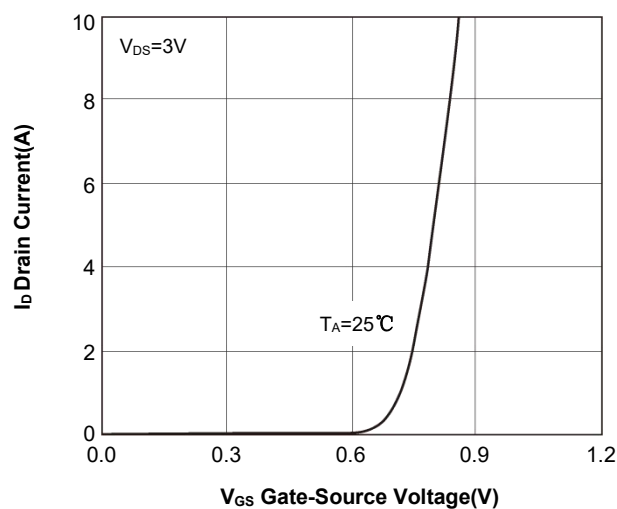
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-to-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0\text{V}$, $I_D=250\mu\text{A}$	12	-	-	V
Zero Gate voltage Drain Current	I_{DSS}	$V_{DS}=12\text{V}$, $V_{GS}=0\text{V}$	-	-	1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 12\text{V}$, $V_{DS}=0\text{V}$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	0.5	0.6	1.0	V

Drain-to-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=3A$	-	4.9	7.0	mΩ
		$V_{GS}=4.0V, I_D=3A$	-	5.1	7.3	
		$V_{GS}=3.8V, I_D=3A$	-	5.2	7.8	
		$V_{GS}=3.1V, I_D=3A$	-	5.7	8.5	
		$V_{GS}=2.5V, I_D=3A$	-	6.7	9.5	
Diode Forward Voltage	V_{SD}	$I_S=10A, V_{GS}=0V$	-	0.85	1.25	V
Dynamic Characteristics						
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=6V,$ $f=1MHz$	-	1326	-	pF
Output Capacitance	C_{oss}		-	315	-	
Reverse Transfer Capacitance	C_{rss}		-	290	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=5V, V_{DS}=6V,$ $R_L=1.35\Omega, R_G=3\Omega$	-	3.3	-	ns
Turn-On Rise Time	t_r		-	13.8	-	
Turn-Off Delay Time	$t_{d(off)}$		-	15.2	-	
Turn-Off Fall Time	t_f		-	8.5	-	
Gate Total Charge	Q_g	$V_{GS}=4.5V, V_{DS}=6V,$ $I_{DS}=7A$	-	22	-	nC
Gate-Source Charge	Q_{gs}		-	3.4	-	
Gate-Drain Charge	Q_{gd}		-	4.1	-	

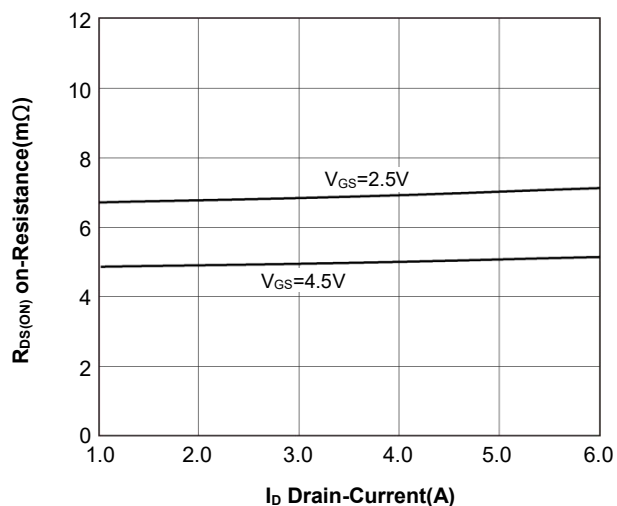
Typical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise specified)



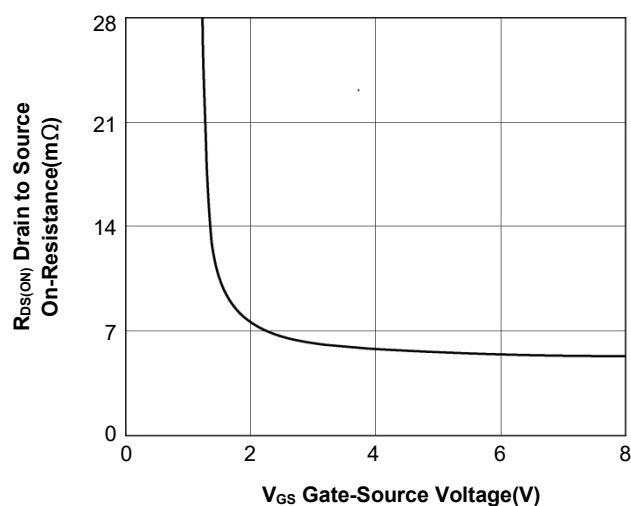
Drain Current vs. Drain-Source Voltage



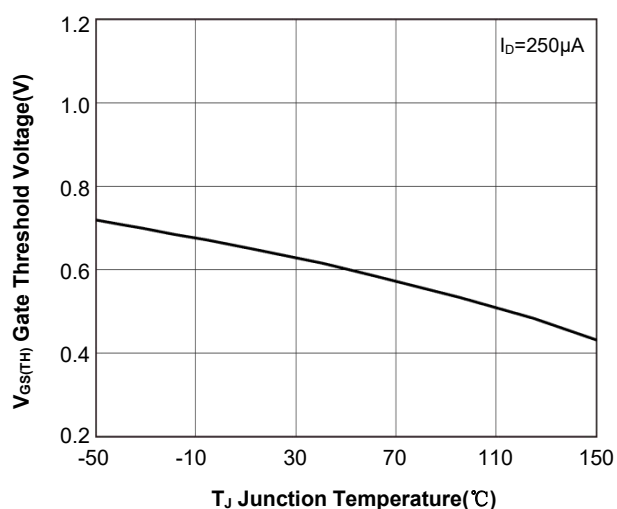
Drain Current vs. Gate-Source Voltage



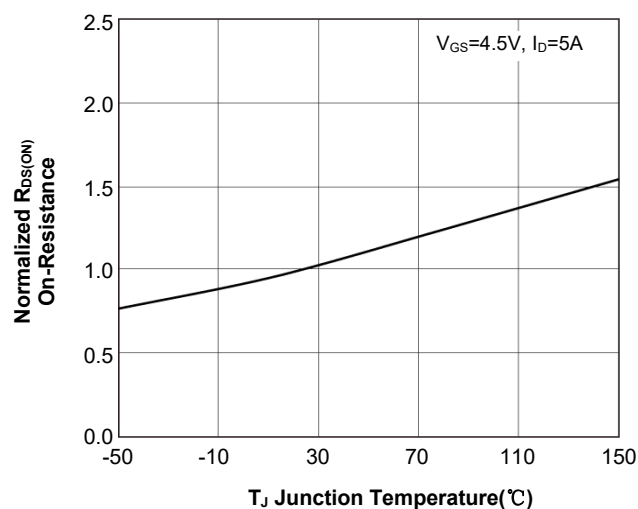
$R_{DS(on)}$ On-Resistance vs. Drain-Current



On-Resistance vs. Gate-Source Voltage

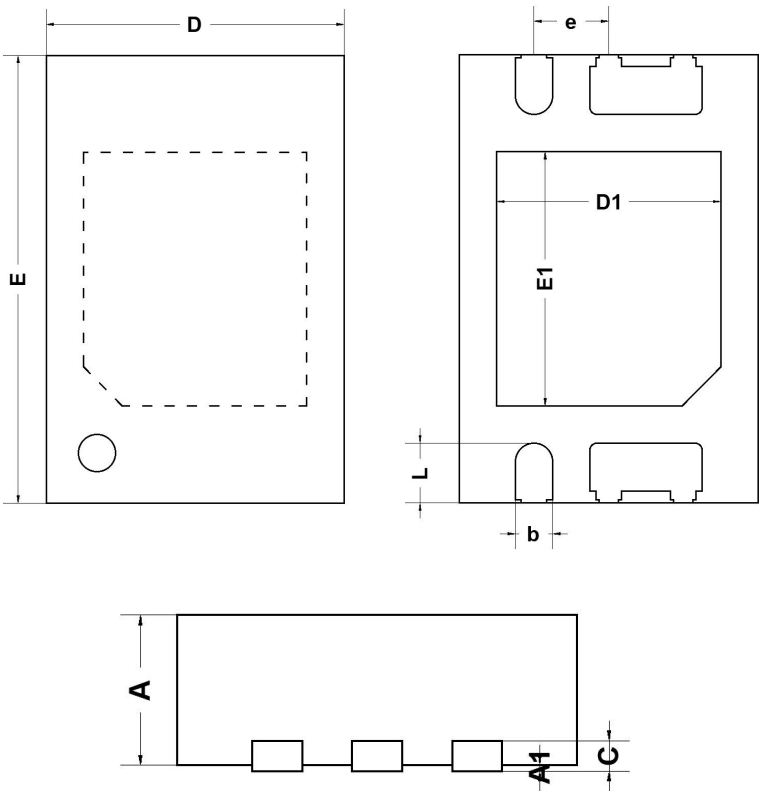


Gate Threshold Voltage vs. Temperature



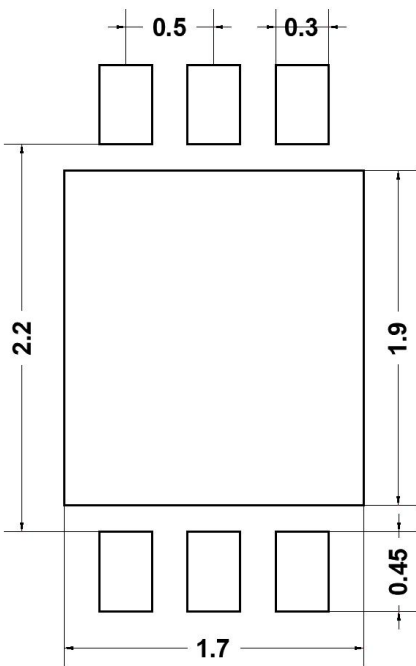
On-Resistance vs. Temperature

DFN2*3-6L Package Outline Drawing



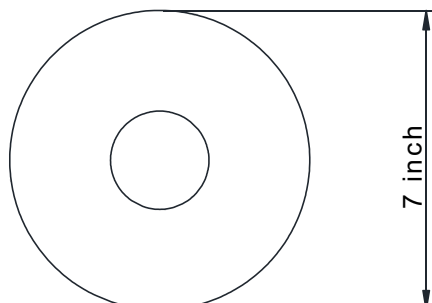
Symbol	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	0.70	0.75	0.80
A1	0.00	0.03	0.05
b	0.20	0.25	0.30
C	0.152 TYP		
D	1.95	2.00	2.05
e	0.50 BSC		
E	2.95	3.00	3.05
E1	1.60	1.70	1.80
D1	1.40	1.50	1.60
L	0.35	0.40	0.45

Suggested Land Pattern (Unit: mm)

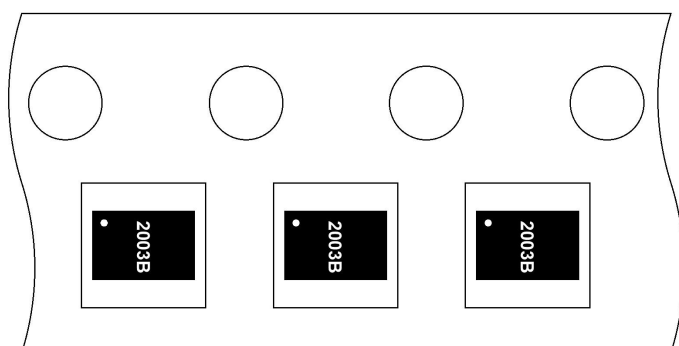
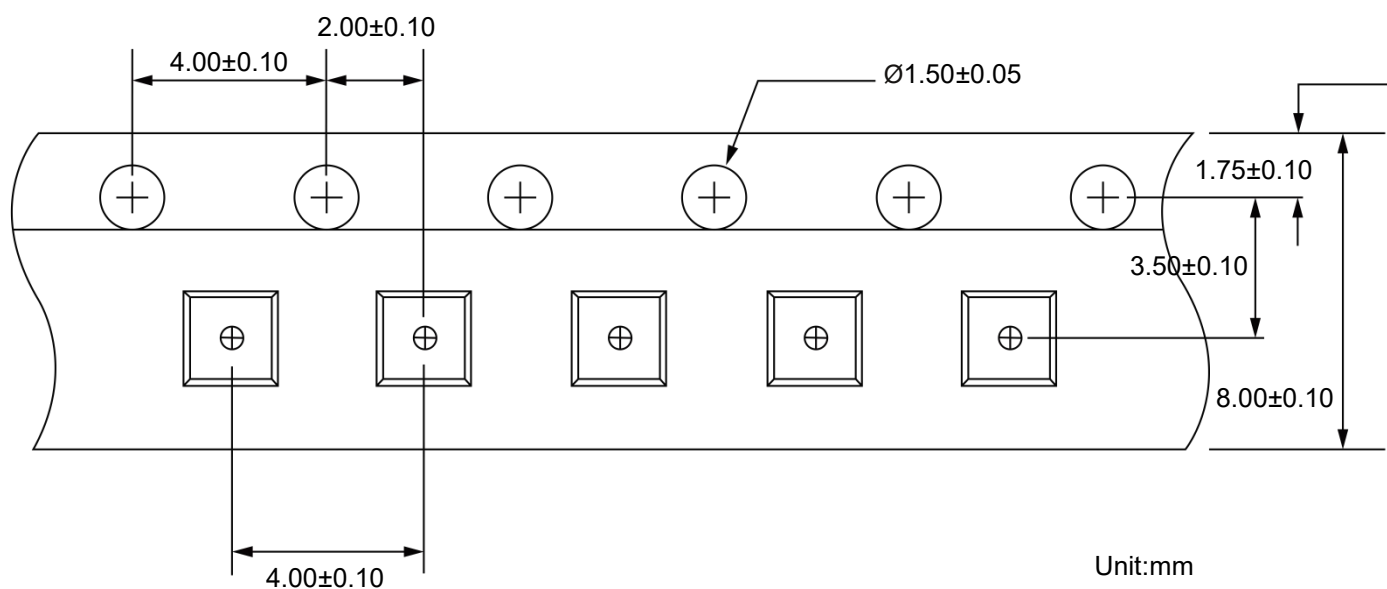


TAPE AND REEL INFORMATION

Reel Dimensions



Tape Dimensions



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User Direction of Feed

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