

SOT-523 20V 210mΩ N-Channel MOSFET

MOSFET Product Summary

V_{DS}	$R_{DS(ON)}(Typ.)$	I_D
20V	210mΩ @ $V_{GS}=4.5V$	1A
	290mΩ @ $V_{GS}=2.5V$	

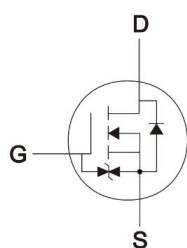
Description

The PM02N01N 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.

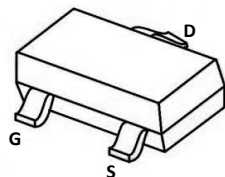
Features

- Surface Mount Package
- N-Channel Switch with Low $R_{DS(ON)}$
- Operated at Low Logic Level Gate Drive
- ESD Protected

Dimensions and Pin Configuration



Circuit Diagram



SOT-523

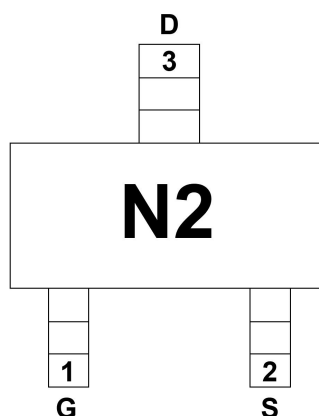
Mechanical Characteristics

- Package: SOT-523
- Case Material: “Green” Molding Compound
- Marking Information: See Below

Applications

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

Marking Information



N2 = Device Marking Code

Ordering Information

Part Number	Shipping	Reel Size
PM02N01N	3000/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}	± 10	V

Continuous Drain Current ^(Note1)	I_D	1	A
Pulsed Drain Current ^(Note2)	I_{DM}	1.8	A
Power Dissipation	P_D	0.21	W
Thermal Resistance from Junction to Ambient ^(Note3)	$R_{\theta JA}$	580	°C/W
Junction Temperature	T_J	-55~ +150	°C
Storage Temperature	T_{STG}	-55~ +150	°C

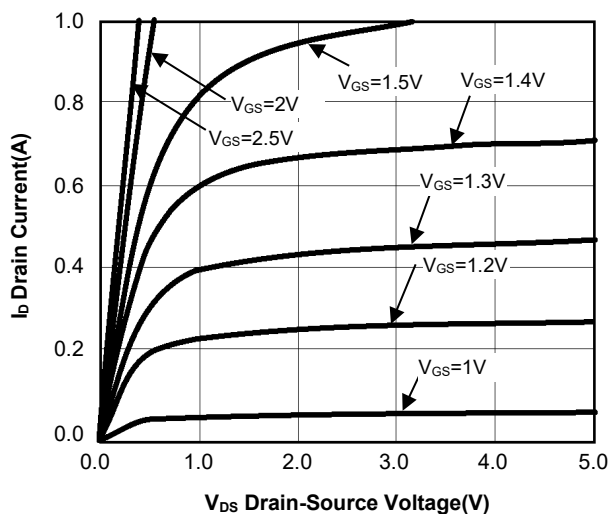
Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise specified)

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} =±10V, V _{DS} =0V	-	-	±10	μA
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	0.4	0.7	1.0	V
Drain-to-Source On-Resistance	R _{DS(ON)}	V _{GS} =4.5V, I _D =0.5A	-	210	320	mΩ
		V _{GS} =2.5V, I _D =0.5A	-	290	350	
Diode Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V	-	-	1.2	V
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f=1MHz	-	48	-	pF
Output Capacitance	C _{oss}		-	6.9	-	
Reverse Transfer Capacitance	C _{rss}		-	4.8	-	
Switching Characteristics						
Gate Total Charge	Q _g	V _{GS} =4.5V, V _{DS} =10V, I _D =0.15A	-	1.34	-	nC
Gate-to-Source Charge	Q _{gs}		-	0.2	-	
Gate-to-Drain Charge	Q _{gd}		-	0.32	-	
Turn-On Delay Time	t _{d(on)}	V _{GS} =4.5V, V _{DS} =10V, I _D =0.5A, R _G =10Ω	-	5.2	-	ns
Turn-On Rise Time	t _r		-	4.3	-	
Turn-Off Delay Time	t _{d(off)}		-	18	-	
Turn-Off Fall Time	t _f		-	8.6	-	

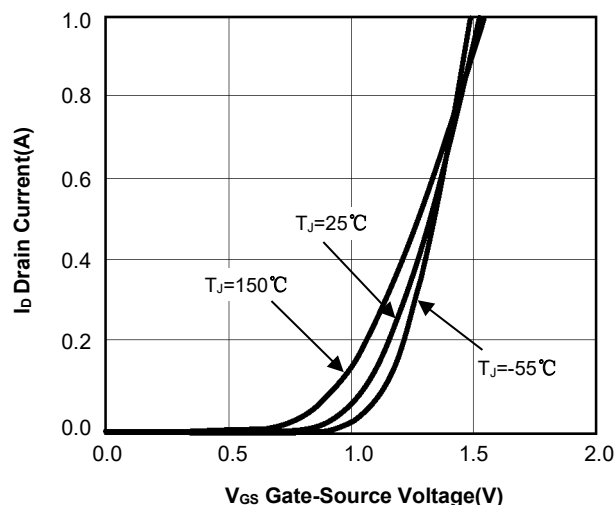
Notes:

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 $T_A=25^\circ\text{C}$.

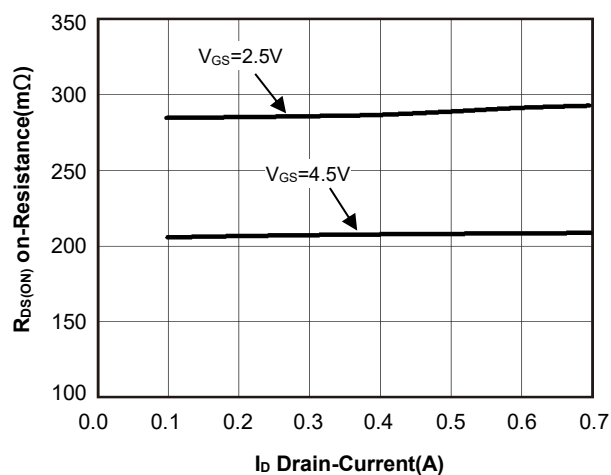
Typical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise specified)



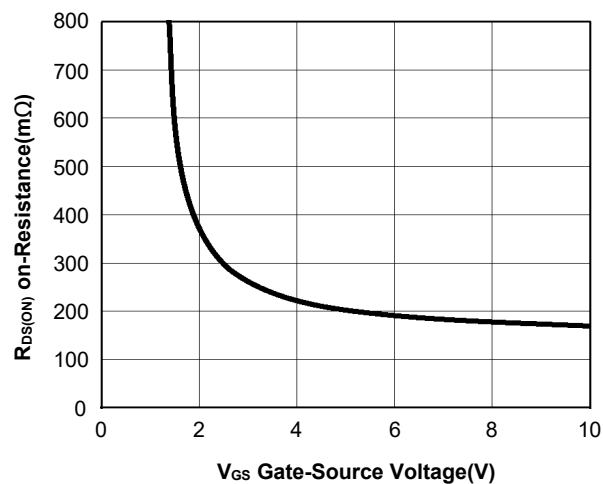
Drain Current vs. Drain-Source Voltage



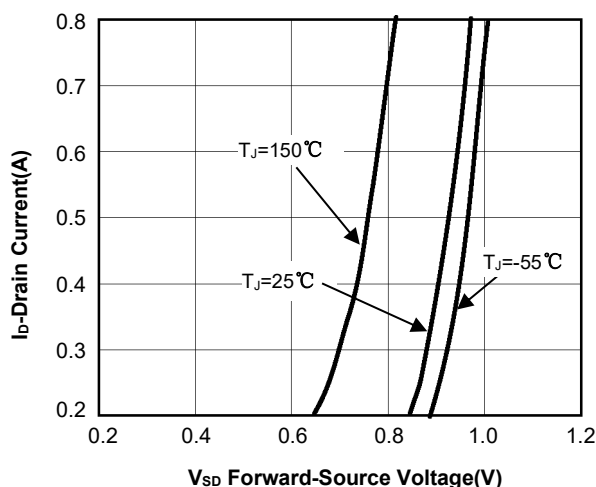
Drain Current vs. Gate-Source Voltage



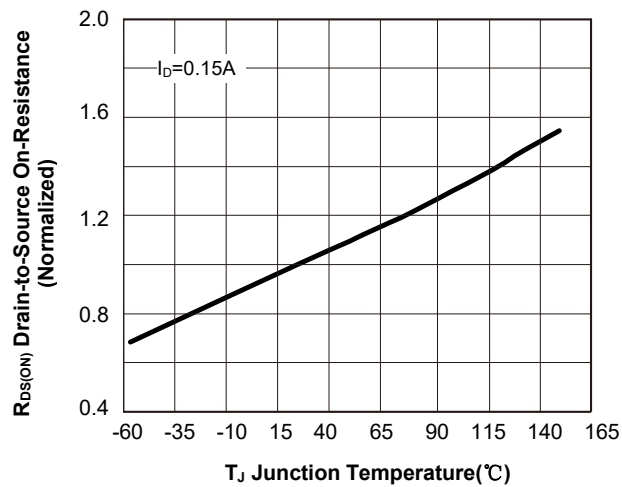
$R_{DS(on)}$ On-Resistance vs. Drain-Current



$R_{DS(on)}$ On-Resistance vs. Gate-Source Voltage

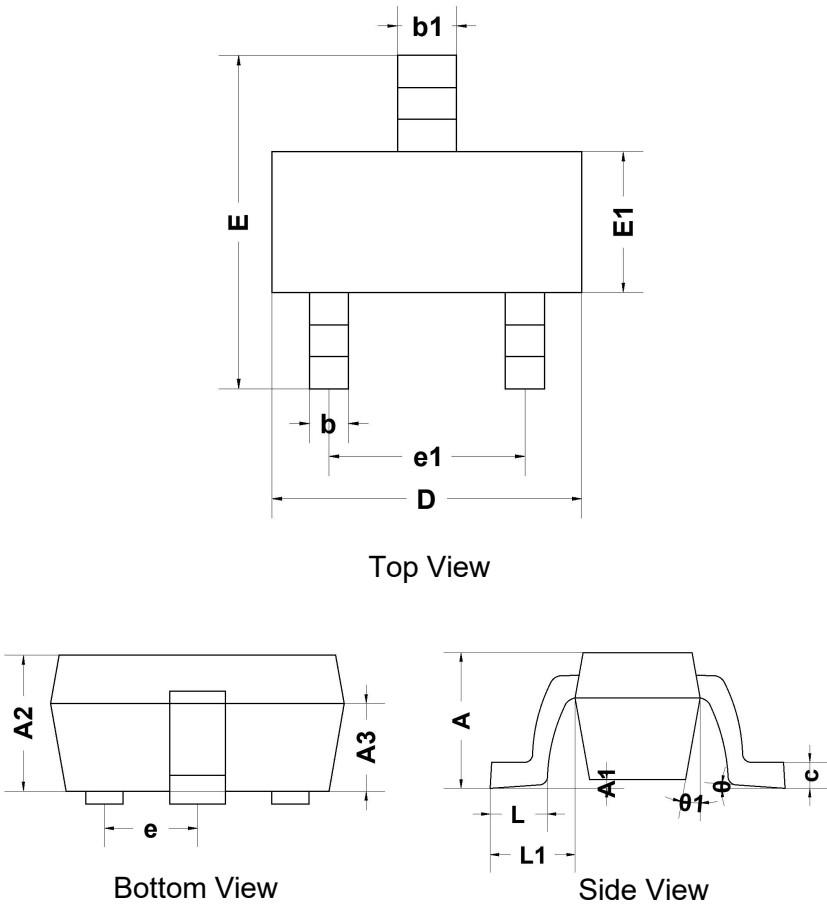


Drain Current vs. Forward-Source Voltage



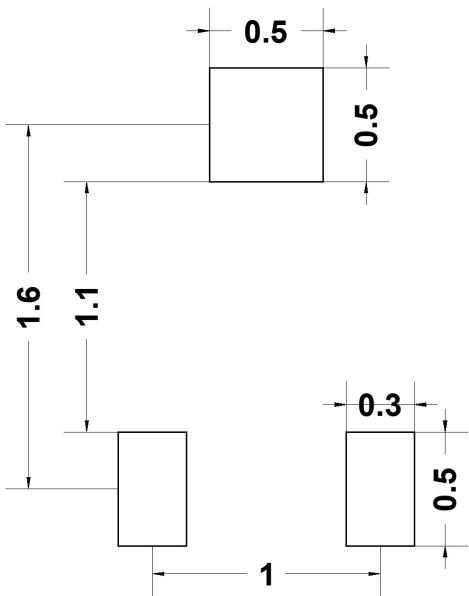
Normalized On-Resistance vs. Temperature

SOT-523 Package Outline Drawing



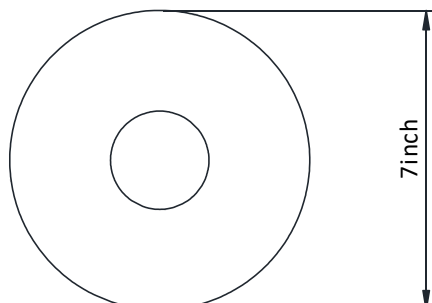
Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.68	0.78	0.88
A1	0.01	0.05	0.10
A2	0.63	0.73	0.83
A3	0.42	0.47	0.52
b	0.15	0.20	0.25
b1	0.25	0.30	0.35
c	0.10	0.15	0.20
D	1.48	1.58	1.68
E1	0.62	0.72	0.82
E	1.55	1.70	1.85
e	0.50 BSC.		
e1	0.95	1.00	1.05
L1	0.49 REF.		
L	0.21	0.33	0.45
θ	0°	4°	8°
θ 1	10°		

Recommended PCB Layout (Unit: mm)

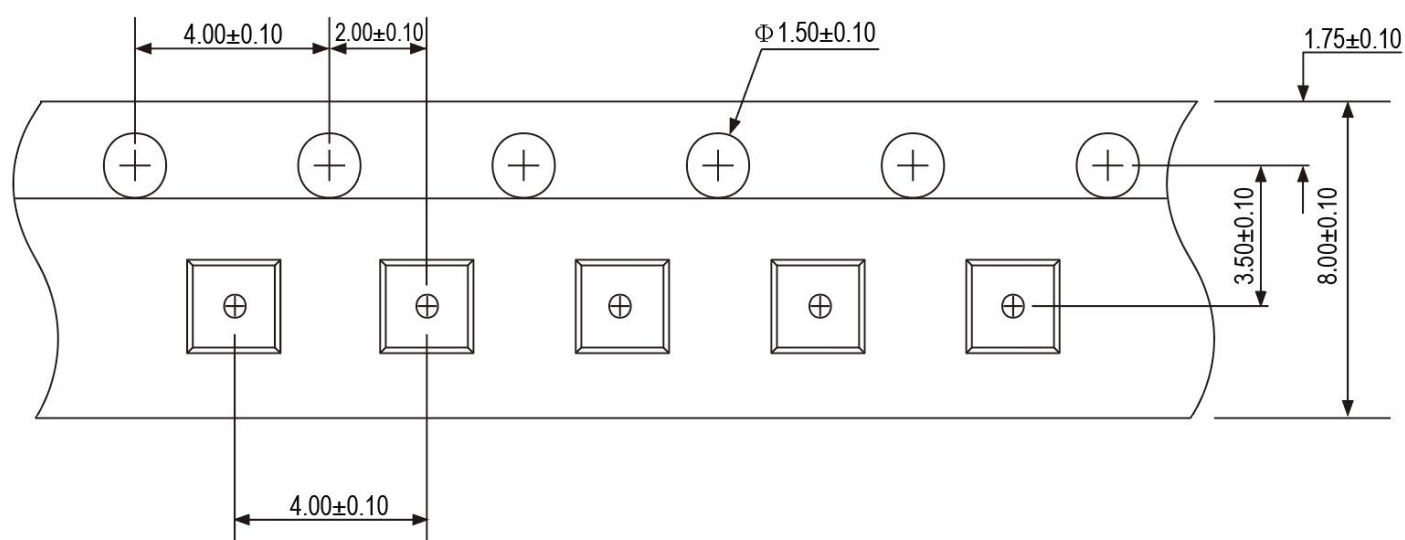


TAPE AND REEL INFORMATION

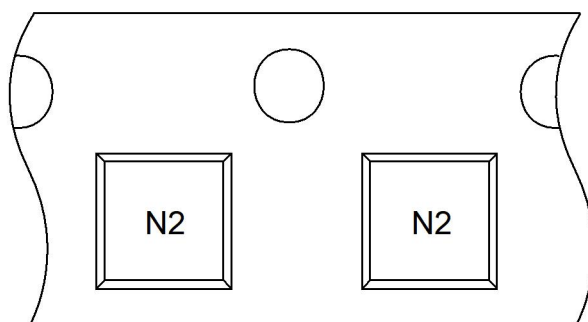
Reel Dimensions



Tape Dimensions



Unit:mm



User Direction of Feed

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