## 20V N-Channel MOSFET

Description

The PM2302 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

- Trench Power MOSFET
- Excellent $R_{DS(on)}$ and Low Gate Charge

### Dimensions and Pin Configuration
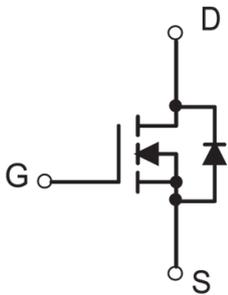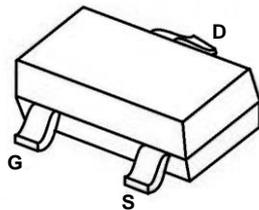
Circuit diagram   **SOT-23**

Applications

- DC/DC Converter
- Load Switch for Portable Devices
- Battery Switch

Outline Drawing
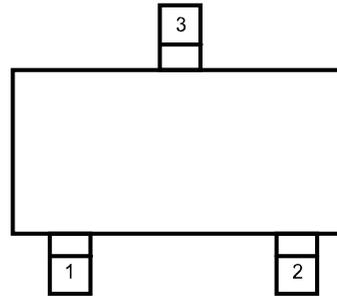
MOSFET Product Summary

V_{DSS}	$R_{DS(ON)}$ @V_{GS}= 4.5V	$R_{DS(ON)}$ @V_{GS}= 2.5V	I_D
20V	43mΩ	55mΩ	2.3A

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

| Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±10	V
Continuous Drain Current	I_D	2.3	A
Plused Drain Current	I_{DM}	10	A
Continuous Source-Drain Current(Diode Conduction)	I_S	0.6	A
Power Dissipation	P_D	0.35	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

Electrical Characteristics (T_A = 25°C unless otherwise noted)

| Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250µA	20	22		V
Zero gate voltage drain current	I_{DSS}	V_{DS} =20V, V_{GS} = 0V			1	µA
Gate-body leakage current	I_{GSS}	V_{GS} =±8V, V_{DS} = 0V			±0.1	µA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250µA	0.4	0.65	1.0	V
Drain-source on-resistance[1]	$R_{DS(on)}$	V_{GS} =4.5V, I_D =2A		43	56	mΩ
		V_{GS} =2.5V, I_D =1.5A		55	78	
Forward tranconductance[1]	g_{FS}	V_{DS} =5V, I_D =3.6A	8			S
Dynamic characteristics						
Input Capacitance[2]	C_{iss}	V_{DS} =10V, V_{GS} =0V, f=1MHz		260		pF
Output Capacitance[2]	C_{oss}			48		pF
Reverse Transfer Capacitance[2]	C_{rss}			27		pF
Total gate charge	Q_g	V_{DS} =10V, V_{GS} =4.5V, I_D =3.0A		2.9	5	nC
Gate-source charge	Q_{gs}			0.4		nC
Gate-drain charge	Q_{gd}			0.6		nC
Switching Characteristics[2]						
Turn-on delay time	$t_{d(on)}$	V_{DD}=10V, R_L=3.3Ω, V_{GEN}=4.5V, Rg=6Ω		2.5		ns
Turn-on rise time	t_r			3.2		ns
Turn-off delay time	$t_{d(off)}$			21		ns
Turn-off fall time	t_f			3		ns
Source-Drain Diode characteristics						
Diode Forward voltage	V_{DS}	V_{GS} =0V, I_S=0.94A		0.7	1.2	V

Notes:

1) Pulse Test: Pulse width≤300µs, duty cycle ≤2%.

2) These parameters have no way to verify.

Typical Characteristics

### $R_{DS(ON)} - I_D$

$R_{DS(ON)} - V_{GS}$

$I_S - V_{SD}$

Threshold Voltage

Output Characteristics

Transfer Characteristics
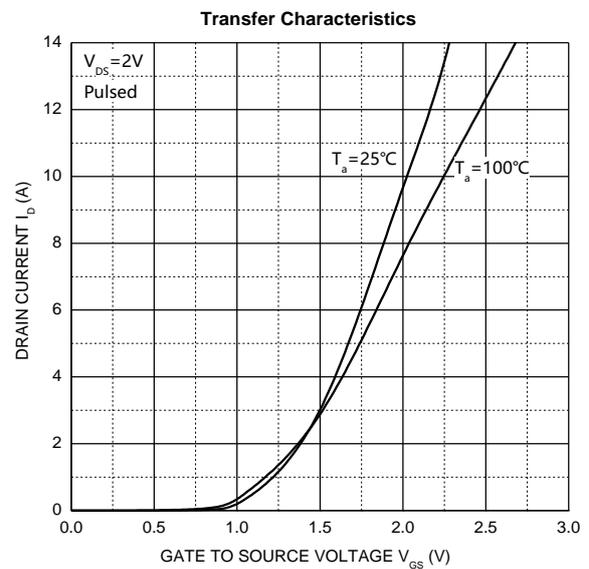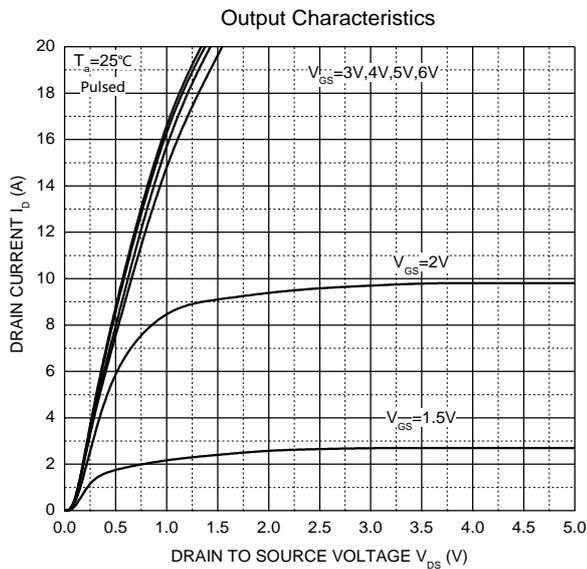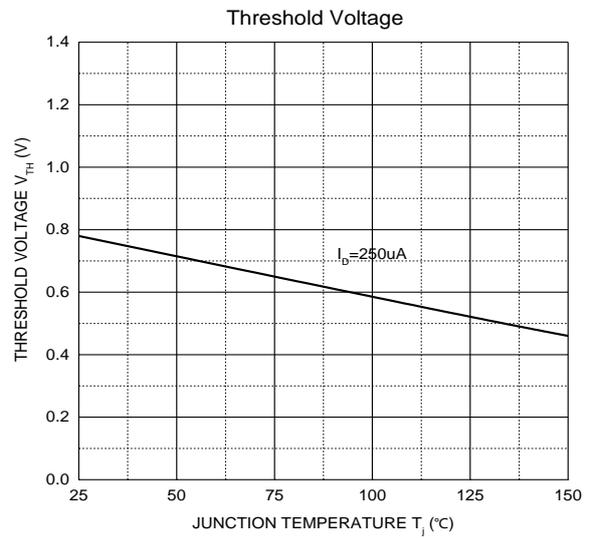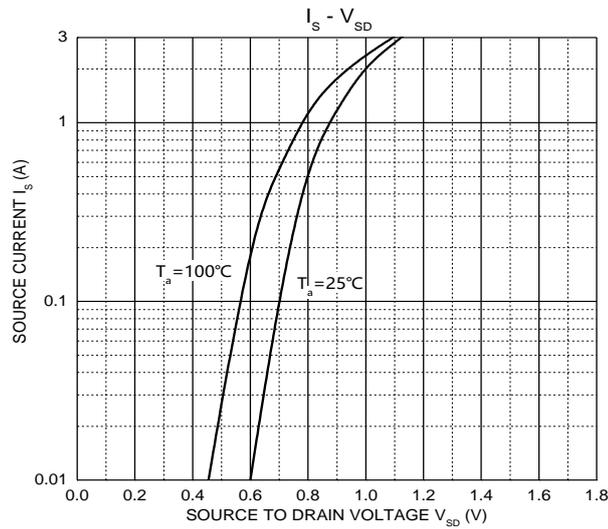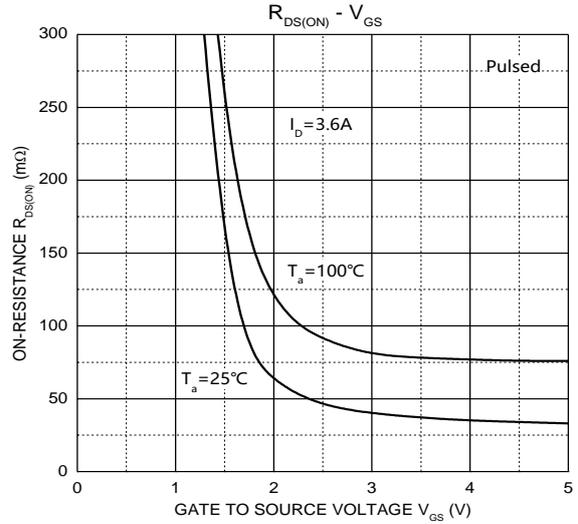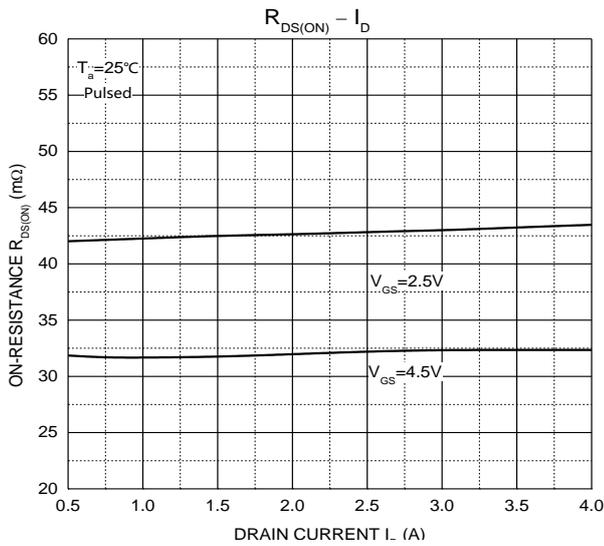
SOT-23 Package Outline Drawing
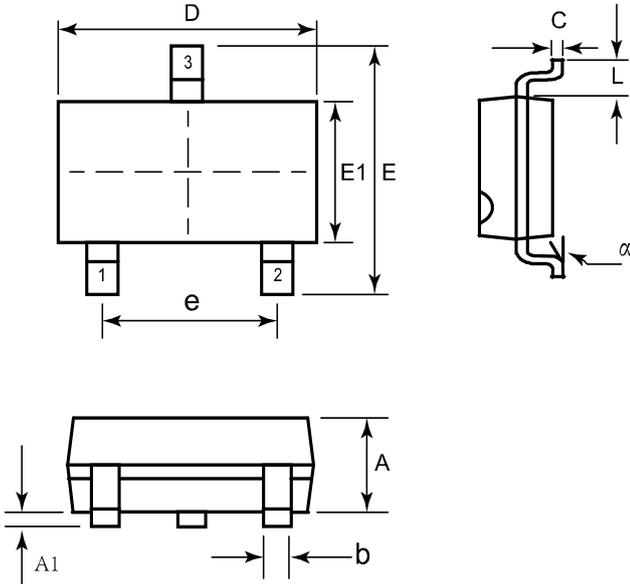
SYM	DIMENSIONS					
	INCHES			MILLIMETERS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.035	0.037	0.040	0.88	0.95	1.02
A1	0.000	-	0.004	0.01	-	0.10
b	0.012	-	0.020	0.30	-	0.51
C	0.003	-	0.007	0.08	-	0.18
D	0.110	0.114	0.120	2.80	2.90	3.04
E	0.082	0.093	0.104	2.10	2.37	2.64
E1	0.047	0.051	0.055	1.20	1.30	1.40
e	0.075 BSC			1.90 BSC		
L	0.022 BSC			0.55 BSC		
α	0°		8°	0°		8°

Suggested Land Pattern
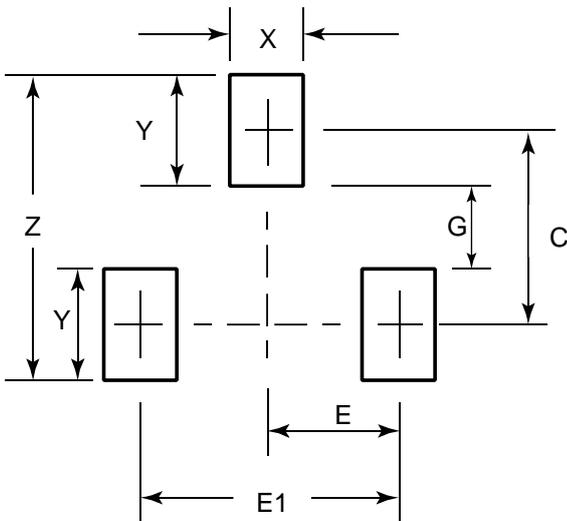
SYM	DIMENSIONS	
	MILLIMETERS	INCHES
C	2.20	0.087
E	0.95	0.037
E1	1.90	0.075
G	0.80	0.031
X	1.00	0.039
Y	1.40	0.055
Z	3.60	0.141

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