60V N-Channel MOSFET

Description

The PM60N01 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.

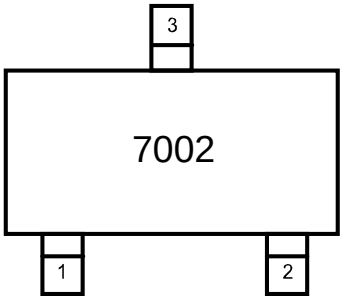
Applications

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

Features

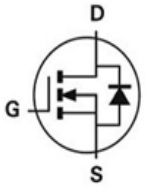
- High density cell design for Low $R_{DS(on)}$
- Voltage controlled small signal switch
- Rugged and reliable
- High saturation current capability
- ESD protected Gate HBM 1KV

Marking Information

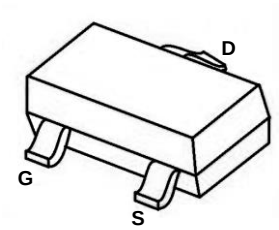


7002 = Device Marking Code

Dimensions and Pin Configuration



Circuit diagram



SOT-23

MOSFET Product Summary

V_{DSS}	$R_{DS(}$ON) @V_{GS}=10V	R_{DS}(ON) @V_{GS}=5V	I_D
60V	7.5Ω	7.5Ω	115mA

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	115	mA
Power Dissipation	P_D	0.225	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	417	℃/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	60			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =60V,V_{GS} = 0V			80	nA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±5	uA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1		2	V
On-state drain current	$I_{D(ON)}$	V_{GS}=10V, V_{DS}=7V	500			mA
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =500mA		1.4	7.5	Ω
		V_{GS} =5V, I_D =50mA		1.8	7.5	
On-state drain-source voltage	$V_{DS(on)}$	V_{GS}=10V, I_D=500mA			3.75	V
		V_{GS}=5V, I_D=50mA			0.375	
Dynamic characteristics						
Input Capacitance[1)]	C_{iss}	V_{DS}=25V,V_{GS}=0V,f=1MHz		17	50	pF
Output Capacitance[1)]	C_{oss}			10	25	
Reverse Transfer Capacitance[1)]	C_{rss}			0.5	5	
Switching Characteristics						
Turn-on delay time[1)]	$t_{d(on)}$	V_{DD}=25 V, R_L=50Ω I_D=500mA,V_{GEN}=10V, R_G=25Ω		7	20	ns
Turn-off delay time[1)]	$td_{(off)}$			11	40	
Source-Drain Diode characteristics						
Source-Drain Diode characteristics						
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S=115mA			1.5	V
Source Current Continuous	I_S				115	mA

Notes:

1) These parameters have no way to verify.

Typical Characteristics

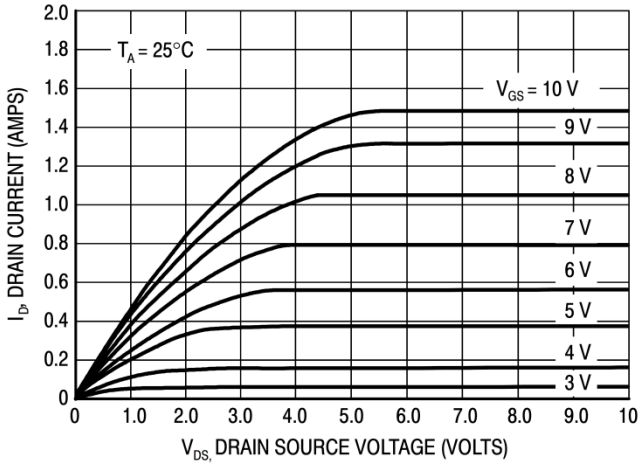


Figure 1. Ohmic Region

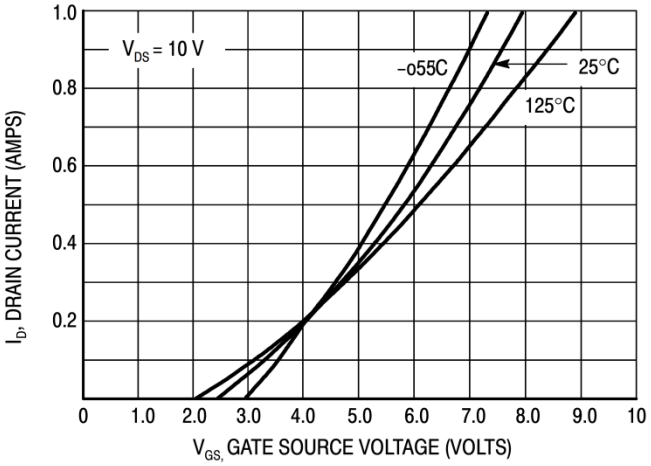


Figure 2. Transfer Characteristics

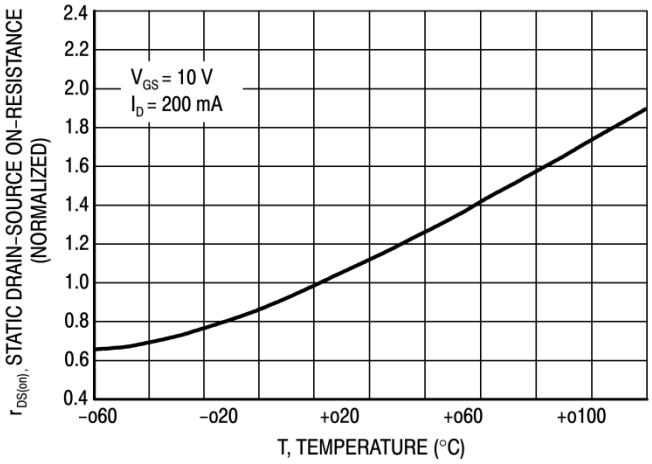


Figure 3. Temperature versus Static Drain–Source On–Resistance

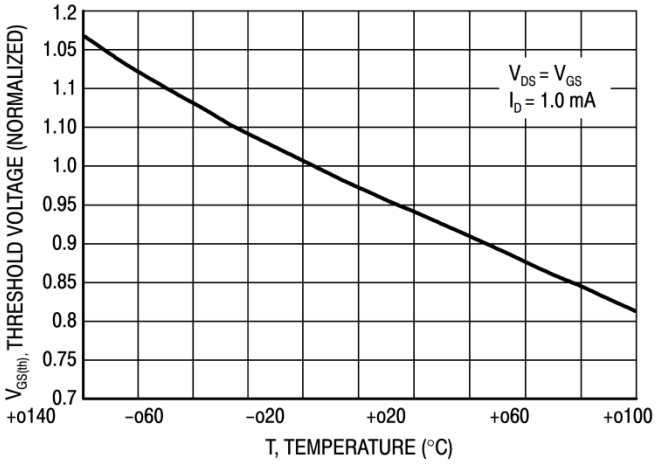
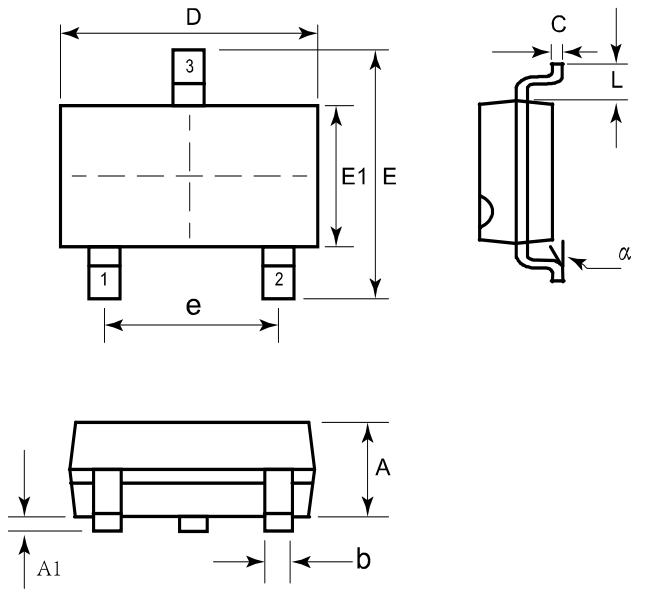


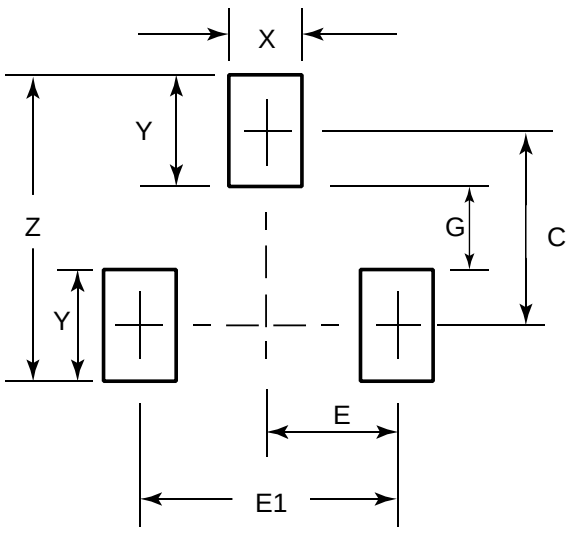
Figure 4. Temperature versus Gate Threshold Voltage

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