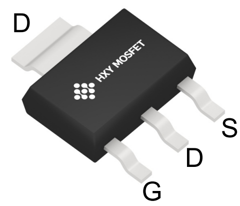
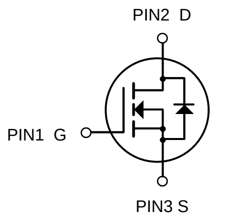
Description

The 1N60G uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.



SOT-223



N-Channel MOSFET

General Features

V_{DS} = 600V I_D =1A

$R_{DS(ON)}$ < 12Ω @ V_{GS}=10V

Application

Battery protection

Load switch

Uninterruptible power supply

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
1N60G	SOT-223	1N60 XXXX	2500

Absolute Maximum Ratings (T_C=25°C unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	600	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_A=25˚C	Continuous Drain Current, V_{GS} @ 10V[1]	1	A
I_{DM}	Pulsed Drain Current[2]	4.8	A
P_D@T_A=25˚C	Total Power Dissipation[4]	1	W
T_{STG}	Storage Temperature Range	-55 to 150	˚C
T_J	Operating Junction Temperature Range	-55 to 150	˚C
$R_{θJA}$	Thermal Resistance Junction-ambient (Steady State)[1]	62.5	˚C/W

Electerical Characteristics (T_J=25°C unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	600	---	---	V
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25°C , I_D=1mA	---	0.057	---	V/°C
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V , I_D=0.6A	---	9.5	12	Ω
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, I_D =250uA	2	---	4	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	-5.68	---	mV/°C
I_{DSS}	Drain-Source Leakage Current	V_{DS}=650V , V_{GS}=0V , T_J=25°C	---	---	1	uA
		V_{DS}=650V , V_{GS}=0V , T_J=55°C	---	---	5	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±30V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=5V , I_D=0.5A	---	35	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.7	---	Ω
Q_g	Total Gate Charge (4.5V)	V_{DS}=520V , V_{GS}=10V , I_D=1A	---	4	---	nC
Q_{gs}	Gate-Source Charge		---	0.9	---	
Q_{gd}	Gate-Drain Charge		---	2.5	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=325V , V_{GS}=10V , R_G=50Ω , I_D=1A	---	4	---	ns
T_r	Rise Time		---	24	---	
$T_{d(off)}$	Turn-Off Delay Time		---	6	---	
T_f	Fall Time		---	24	---	
C_{iss}	Input Capacitance	V_{DS}=15V , V_{GS}=0V , f=1MHz	---	119	---	pF
C_{oss}	Output Capacitance		---	19	---	
C_{rss}	Reverse Transfer Capacitance		---	2	---	
I_S	Continuous Source Current[1,5]	$V_G=V_D$=0V , Force Current	---	---	1	A
I_{SM}	Pulsed Source Current[2,5]		---	---	4.8	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=1A , T_J=25°C	---	---	1.4	V
t_{rr}	Reverse Recovery Time	I_F=15A , dI/dt=100A/µs , T_J=25°C	---	160	---	nS
Q_{rr}	Reverse Recovery Charge		---	0.3	---	nC

Note :

1.The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.

2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%

3.The EAS data shows Max. rating . The test condition is VDD=25V,VGS=10V,L=0.1mH,IAS=28A

4.The power dissipation is limited by 150℃ junction temperature 5.The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation

Typical Characteristics

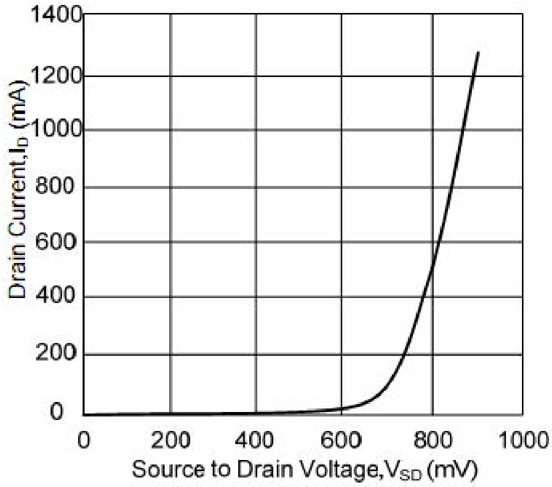
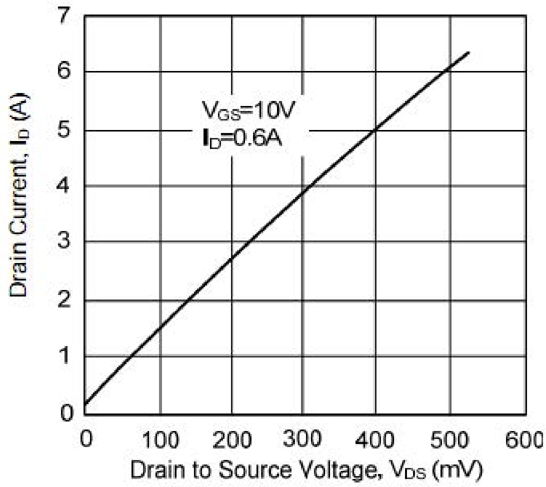
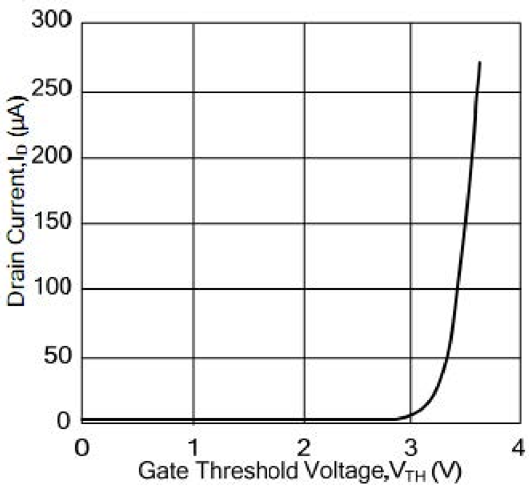


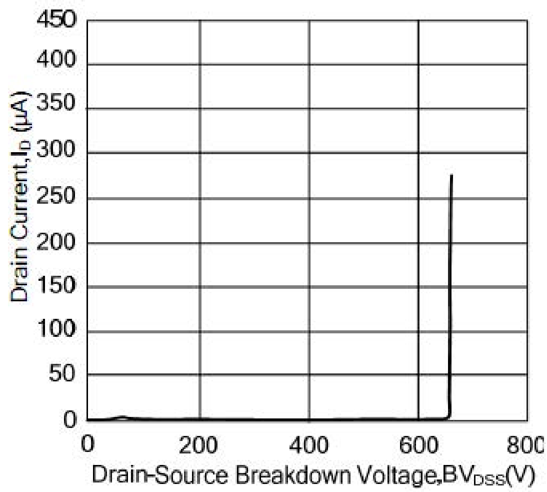
Fig1.Drain Current vs. Source to Drain Voltage



Drain-Source On-State
Fig2. Resistance Characteristics

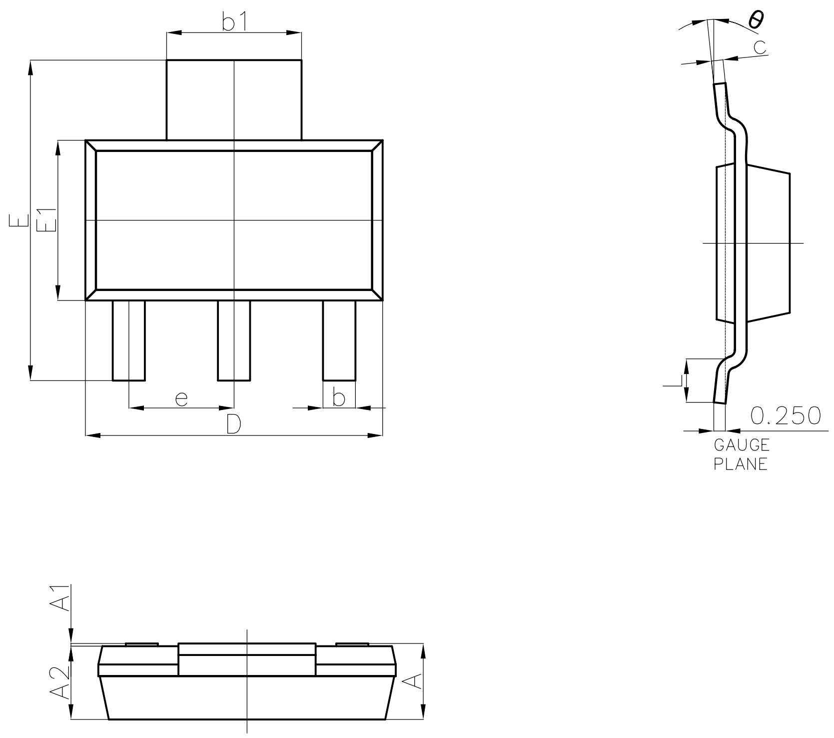


Drain Current vs.
Fig3.Gate Threshold Voltage



Drain Current vs.
Fig4.Drain-Source Breakdown Voltage

SOT-223 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	——	1.800	——	0.071
A1	0.020	0.100	0.001	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.840	0.026	0.033
b1	2.900	3.100	0.114	0.122
c	0.230	0.350	0.009	0.014
D	6.300	6.700	0.248	0.264
E	6.700	7.300	0.264	0.287
E1	3.300	3.700	0.130	0.146
e	2.300(BSC)		0.091(BSC)	
L	0.750	——	0.030	——
θ	0°	10°	0°	10°

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