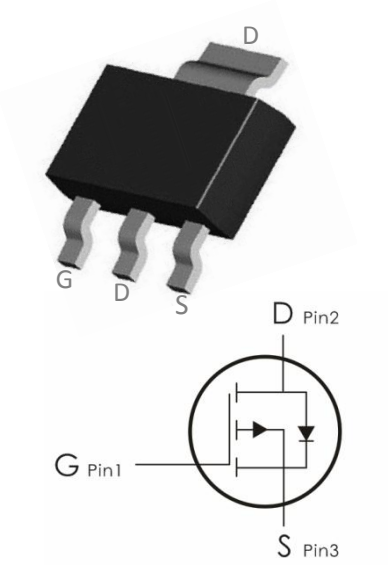
Description：

This N-Channel MOSFET uses advanced Planar technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.



Features：

1) V_{DS}=650V,I_D=1.2A,$R_{DS(ON)}$<12Ω @V_{GS}=10V （Typ：9.5Ω）
2) Low gate charge.
3) Green device available.
4) Advanced high cell denity trench technology for ultra low $R_{DS(ON)}$.
5) Excellent package for good heat dissipation.
6) MSL3

Package Marking and Ordering Information：

Part NO.	Marking	Package	Packing
TO01NG	O01N	SOT-223	4000 pcs/Reel

Absolute Maximum Ratings： (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	650	V
V_{GS}	Gate-Source Voltage	±30	V
I_D	Continuous Drain Curren [1]	1.2	A
I_{DM}	Pulsed Drain Current[2]	4.8	
P_D	Power Dissipation	1	W
E_{AS}	Single pulse avalanche energy[3]	50	mJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+150	℃

Thermal Characteristics：

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance,Junction to Case	14	℃/W
$R_{\theta JA}$	Thermal Resistance,Junction to Ambient	150	℃/W

Electrical Characteristics: (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	650	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=650V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±30V, V_{DS}=0A	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	2	---	4	V
$R_{DS(ON)}$	Drain-Source On Resistance [4]	V_{GS}=10V,I_D=0.6A	---	9.5	12	Ω
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1MHz	---	300	---	pF
C_{oss}	Output Capacitance		---	19	---	
C_{rss}	Reverse Transfer Capacitance		---	2	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=325V, I_D=1.2A, R_{ENG}=50Ω,V_{GS}=10V	---	4	---	ns
t_r	Rise Time		---	24	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	6	---	ns
t_f	Fall Time		---	24	---	ns
Q_g	Total Gate Charge	V_{GS}=10V, V_{DS}=520V, I_D=1.2A	---	8	---	nC
Q_{gs}	Gate-Source Charge		---	0.9	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	2.5	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_{SD}=1.2A	---	---	1.4	V
I_S	Continuous Drain Curren	VD=VG=0V	---	---	1.2	A
I_{SM}	Pulsed Drain Current		---	---	4.8	A
Trr	Reverse Recovery Time	I_F=1.2A,T_J=25℃ dI/dt=100A/us	---	160	---	ns
Qrr	Reverse Recovery Charge		---	0.3	---	nC

Notes:

1. Computed continuous current assumes the condition of $T_{j,Max}$ while the actual continuous current depends on the thermal & electro-mechanical application board design
2. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
3. EAS condition : TJ=25℃,VDD=325V,V_G=10V,L=0.5mH
4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Characteristics: (T_C=25℃ unless otherwise noted)

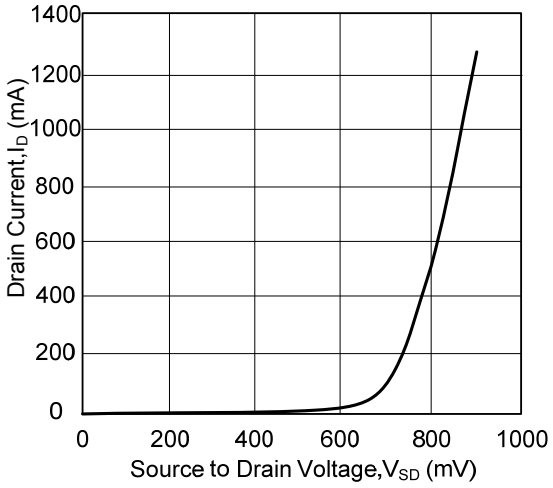
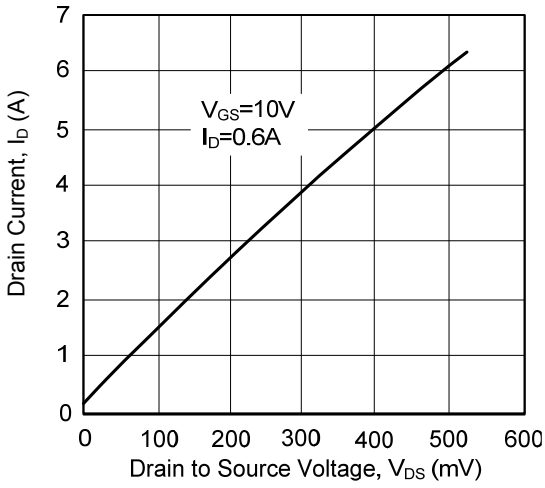
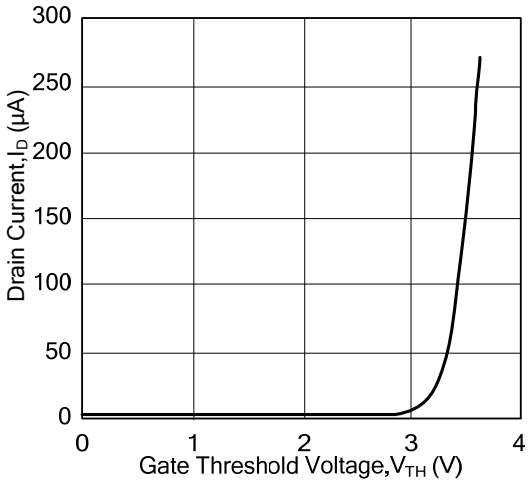


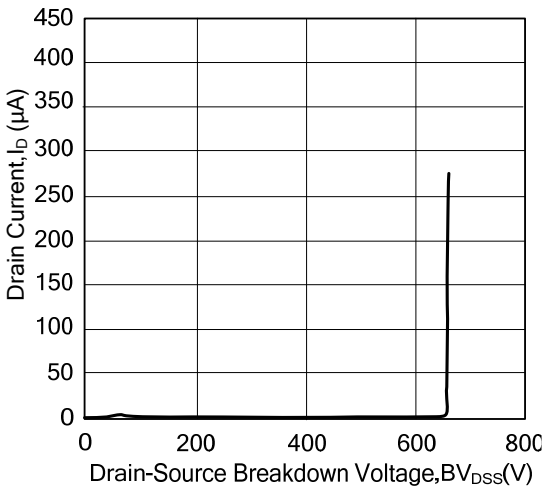
Fig1.Drain Current vs. Source to Drain Voltage



Drain-Source On-State
Fig2. Resistance Characteristics

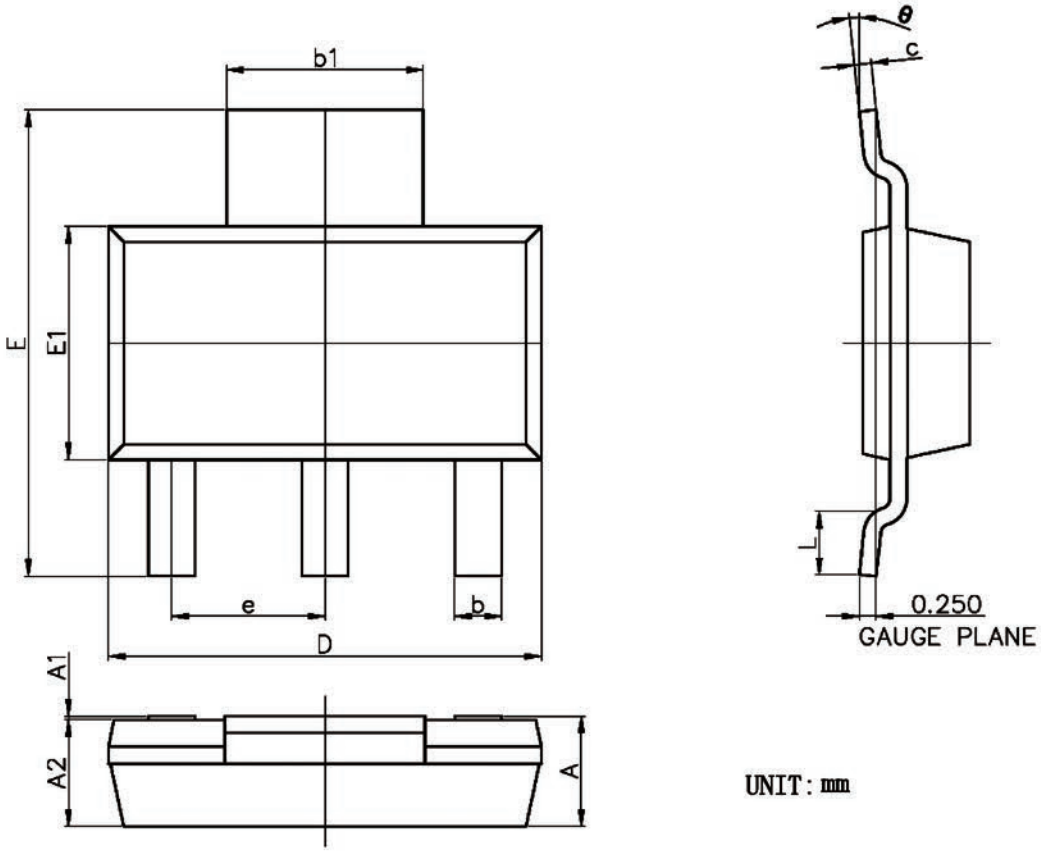


Drain Current vs.
Fig3.Gate Threshold Voltage



Drain Current vs.
Fig4.Drain-Source Breakdown Voltage

Sot-223Package Outline Data

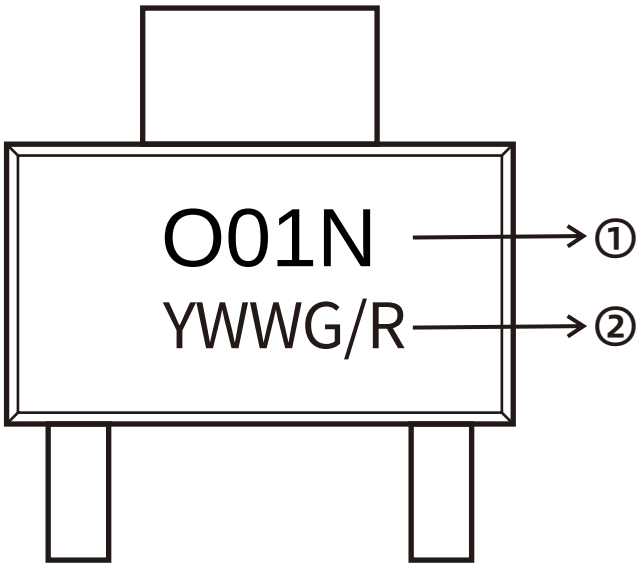


UNIT: mm

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°

Marking Information：

①: Part NO.
②: Date Code (YWWG / R)
Y: Year Code , last digit of the year
WW : Week Code (01-53)
G/R: G(Green) /R(Lead Free)



Previous Version

Version	Date	Subjects (major changes since last revision)
1.0	2023-05-18	Release of final version

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