



SOT-23 Plastic-Encapsulate MOSFETS

2N7002

N-Channel Enhancement Mode Field Effect Transist

V(BR)DSS	RDS(on)MAX	ID
60 V	5Ω@ 10V	115mA
	7Ω@4.5V	

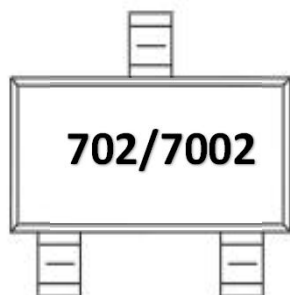
FEATURE:

- ※ High density cell design for low RDS(ON)
- ※ Voltage controlled small signal switch
- ※ Rugged and reliable
- ※ High saturation current capability
- ※ ESD Protected

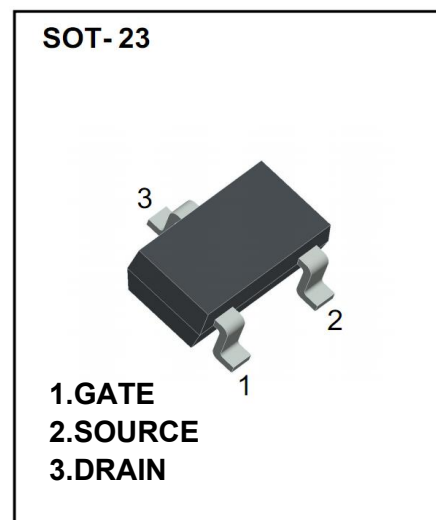
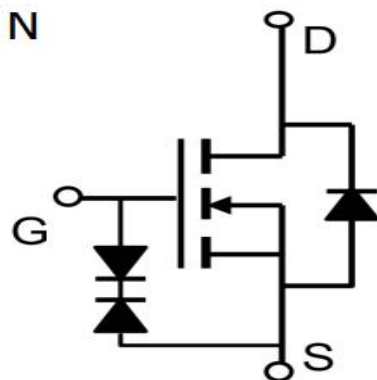
APPLICATION

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

MARKING:



Equivalent Circuit:



Maximum ratings (Ta=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	VDS	60	V
Gate-Source Voltage	VGS	±20	V
Continuous Drain Current	ID	0.115	A
Power Dissipation	PD	0.225	W
Thermal Resistance from Junction to Ambient	RθJA	556	°C/W
Junction Temperature	TJ	150	°C
Storage Temperature	TSTG	-55~+150	°C



MOSFET ELECTRICAL CHARACTERISTICS

Electrical Characteristics (Ta=25 °C unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Drain-source breakdown voltage	V(BR) DSS	VGS = 0V, ID =250μA	60			V
Gate threshold voltage	VGS(th)	VDS =VGS, ID =250μA	1	1.4	3	V
Gate-source leakage current	IGSS	VDS =0V, VGS =±20 V			±10	μA
Zero gate voltage drain current	IDSS	VDS =60V, VGS = 0V			1	μA
On-state Drain Current	ID(ON)	VGS =10V, VDS =7V	500			mA
Drain-source on-resistance	RDS(on)	VGS =10V, ID =500mA		2	5	Ω
		VGS =4.5V, ID =50mA		2.3	7	Ω
Forward tranconductance	gFS	VDS =10V, ID =200mA	80			mS
Drain-source on-Voitage	VGS(on)	VGS =10V, ID =500mA			3.75	V
		VGS =4.5V, ID =50mA			0.375	V
Dioge forward voitage	VSD	Is=115mA, VGS=0V	0.55		1.5	V
Input capacitance	Ciss	VDS =25V, VGS =0V, f =1MHz			50	pF
Output capacitance	Coss				25	pF
Reverse transfer capacitance	Crss				5	pF
Turn-on time	td(on)	VDD=25V,RL=50Ω ,ID=500mA VGEN=10V, RG=2.7Ω			20	ns
Turn-off time	td(off)				40	ns

Note :

1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t < 5 sec.
3. Pulse Test : Pulse Width≤300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.



TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

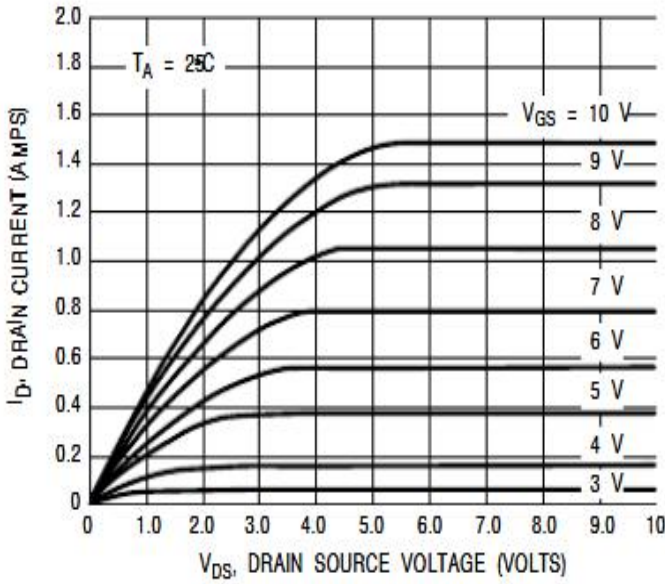


Figure 1. Ohmic Region

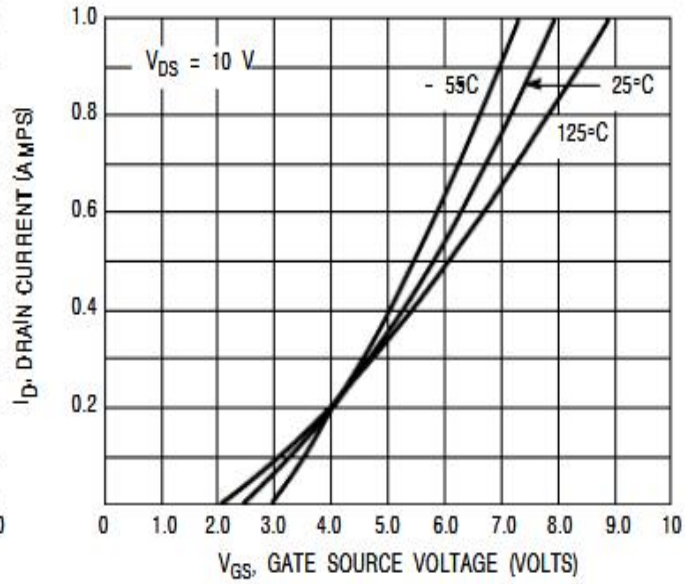


Figure 2. Transfer Characteristics

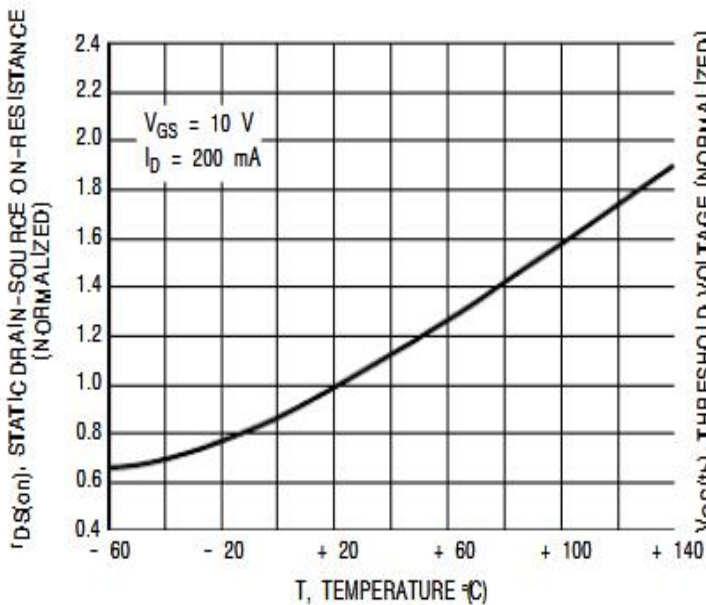


Figure 3. Temperature versus Static Drain-Source On-Resistance

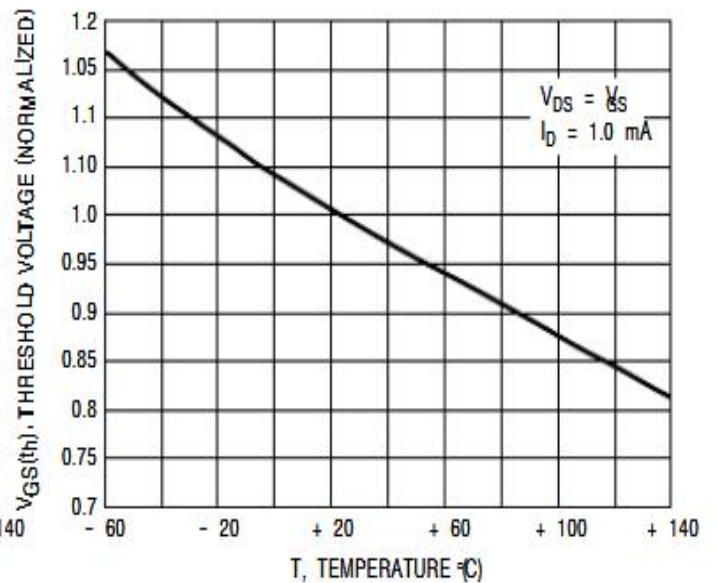
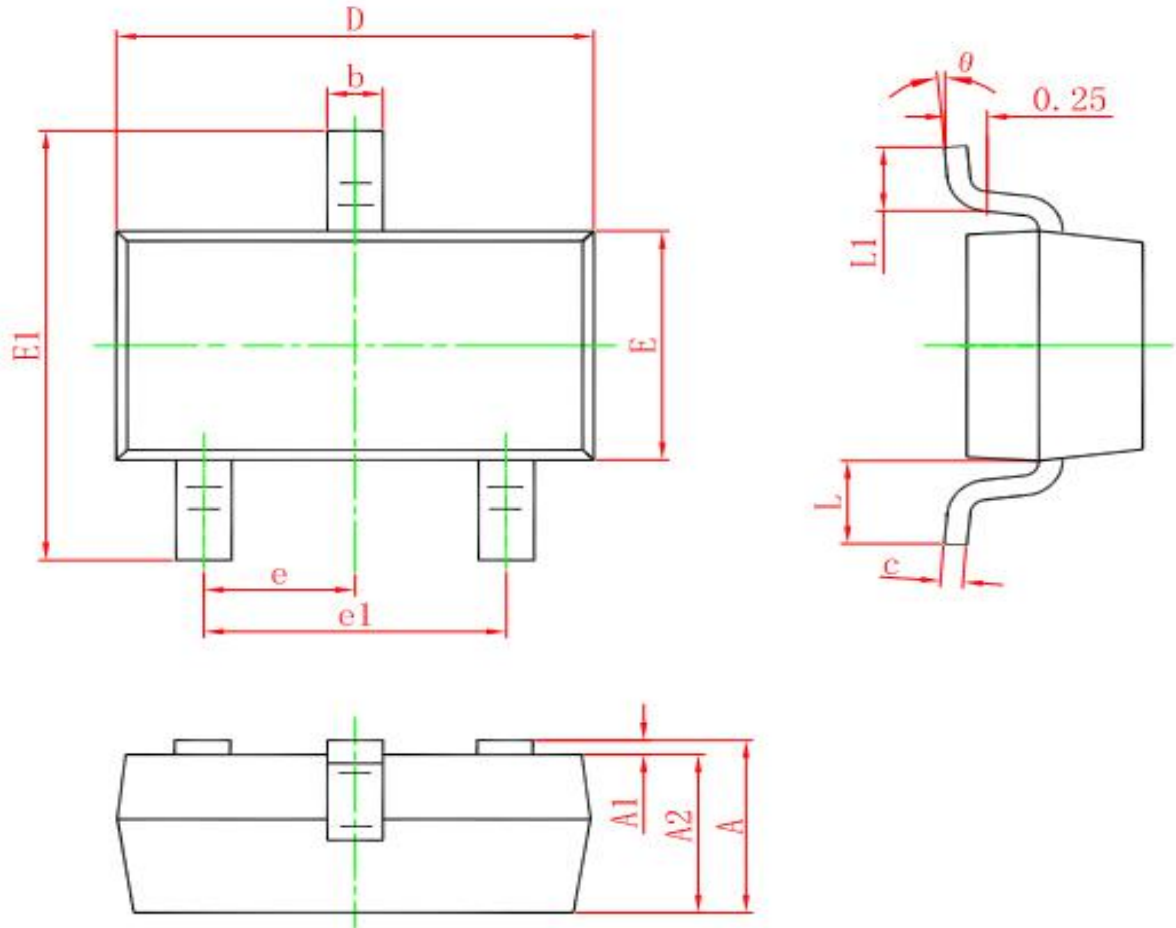


Figure 4. Temperature versus Gate Threshold Voltage



SOT-23 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
theta	0°	8°	0°	8°