

60V N-Channel MOSFET

Product Summary

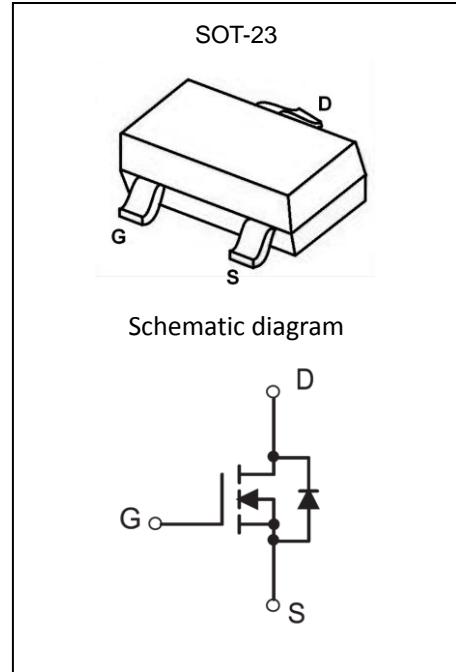
$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	5Ω@10V	115mA
	7Ω@5V	

Feature

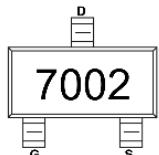
- High density cell design for Low $R_{DS(on)}$
- Voltage controlled small signal switch
- Rugged and reliable
- High saturation current capability
- AEC-Q101 qualified (Automotive grade with suffix " Q".)
- Expsemi electronics

Application

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



MARKING:



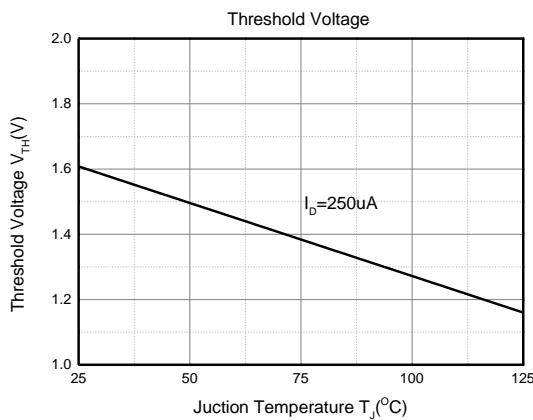
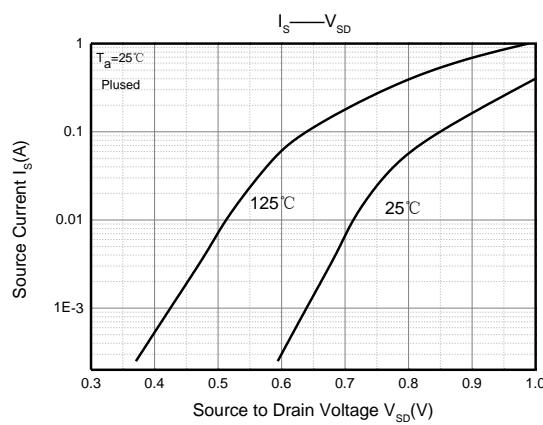
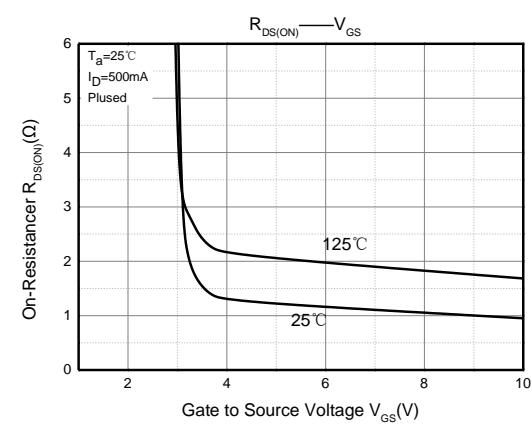
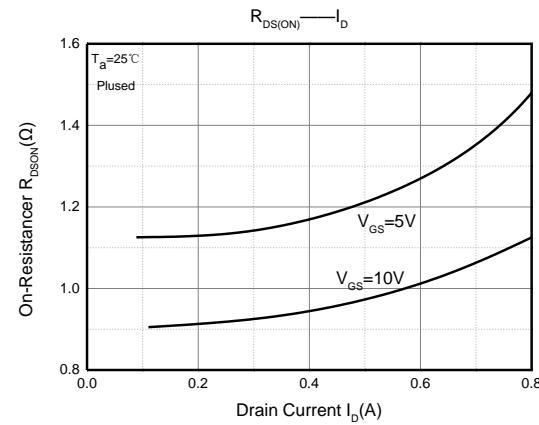
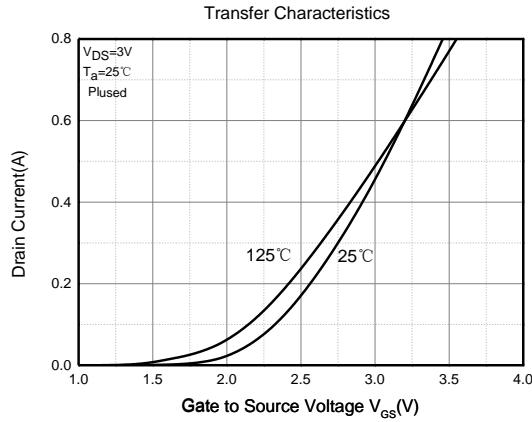
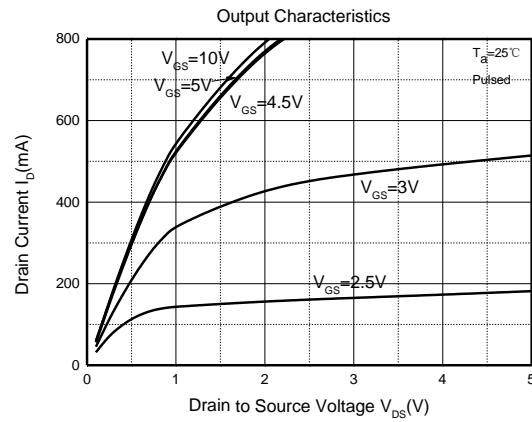
ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$ unless otherwise noted)

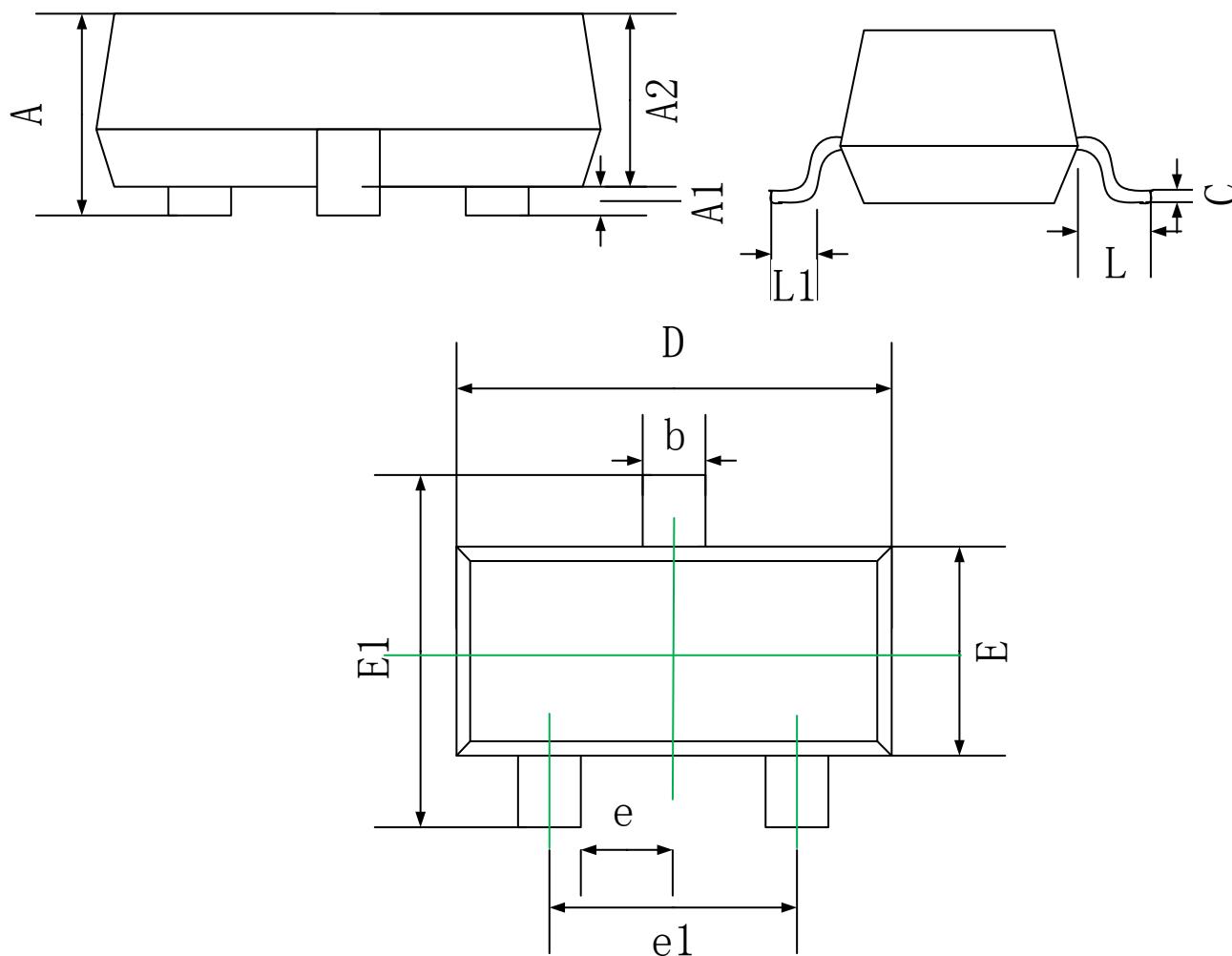
Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	115	mA
Power Dissipation	P_D	0.225	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	556	°C/W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55~+150	°C

MOSFET ELECTRICAL CHARACTERISTICS($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(\text{BR})\text{DSS}}$	$V_{\text{GS}} = 0\text{V}, I_D = 250\mu\text{A}$	60			V
Zero gate voltage drain current	I_{DSS}	$V_{\text{DS}} = 60\text{V}, V_{\text{GS}} = 0\text{V}$			80	nA
Gate-body leakage current	I_{GSS}	$V_{\text{GS}} = \pm 20\text{V}, V_{\text{DS}} = 0\text{V}$			± 80	nA
Gate threshold voltage	$V_{\text{GS}(\text{th})}$	$V_{\text{DS}} = V_{\text{GS}}, I_D = 250\mu\text{A}$	1	1.6	2.5	V
On-state drain current	$I_{\text{D}(\text{ON})}$	$V_{\text{GS}} = 10\text{V}, V_{\text{DS}} = 7\text{V}$	500			mA
Drain-source on-resistance	$R_{\text{DS}(\text{on})}$	$V_{\text{GS}} = 10\text{V}, I_D = 500\text{mA}$		0.9	5	Ω
		$V_{\text{GS}} = 5\text{V}, I_D = 50\text{mA}$		1.0	7	
On-state drain-source voltage	$V_{\text{DS}(\text{on})}$	$V_{\text{GS}} = 10\text{V}, I_D = 500\text{mA}$			3.75	V
		$V_{\text{GS}} = 5\text{V}, I_D = 50\text{mA}$			0.375	
Dynamic characteristics						
Input Capacitance*	C_{iss}	$V_{\text{DS}} = 25\text{V}, V_{\text{GS}} = 0\text{V}, f = 1\text{MHz}$			50	pF
Output Capacitance*	C_{oss}				25	
Reverse Transfer Capacitance*	C_{rss}				5	
Switching Characteristics						
Turn-on delay time*	$t_{\text{d}(\text{on})}$	$V_{\text{DD}} = 25\text{V}, R_L = 50\Omega$ $I_D = 500\text{mA}, V_{\text{GEN}} = 10\text{V}, R_G = 25\Omega$			20	ns
Turn-off delay time*	$t_{\text{d}(\text{off})}$				40	
Source-Drain Diode characteristics						
Diode Forward voltage	V_{SD}	$V_{\text{GS}} = 0\text{V}, I_S = 115\text{mA}$	0.55		1.2	V

*These parameters have no way to verify.

Typical Characteristics


SOT-23 Package Information


Symbol	Dimensions In Millimeters	
	Min.	Max.
A	0.90	1.15
A1	0.00	0.10
A2	0.90	1.05
b	0.30	0.50
c	0.08	0.15
D	2.80	3.05
E	1.20	1.40
E1	2.25	2.55
e	0.95 REF.	
e1	1.80	2.00
L	0.55 REF.	
L1	0.30	0.50

Ordering information

Device	Package	Shipping
2N7002	SOT-23	3000/Tape&Reel(7inches)