AT2N7002

60V N-Channel MOSFET

Features

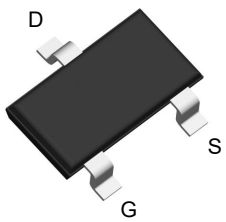
- High-speed switching
- Green Device Available
- ESD Protected 2KV Embedded

Product Summary

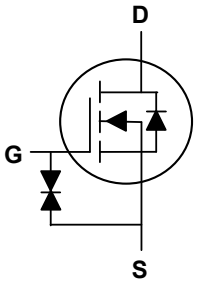
V_{DS}	60	V
I_D	0.3	A
$R_{DS(ON)}$ (at V_{GS}=10V)	2.2	Ω
$R_{DS(ON)}$ (at V_{GS}=4.5V)	3	Ω

Applications

- Power Management Load Switch
- Portable Applications such as Cell Phones,Media Players,Digital Cameras,Hand Held Computers,etc.
- Power Tools,LED Lighting.



SOT23 Top View



Absolute Maximum Ratings(T_A=25℃, unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D@T_A=25℃	0.3	A
Continuous Drain Current	I_D@T_A=100℃	0.19	A
Pulsed Drain Current[1]	I_{DM}	0.8	A
Total Power Dissipation	P_D	0.35	W
Storage Temperature Range	T_{STG}	-55 to 150	℃
Operating Junction Temperature Range	T_J	-55 to 150	℃

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance Junction-Ambient[1]	$R_{\theta JA}$	---	350	℃/W

Electrical Characteristics (T_J=25℃, unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V , I_D=250uA	60	68	---	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V , I_D=0.5A	---	1.8	2.2	Ω
		V_{GS}=4.5V , I_D=0.4A	---	1.95	3	Ω
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS} , I_D =250uA	0.7	1.2	1.9	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=60V , V_{GS}=0V , T_J=25℃	---	---	1	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V , V_{DS}=0V	---	---	±10	uA
Forward Transconductance	gfs	V_{DS}=10V , I_D=0.2A	0.1	--	---	S
Total Gate Charge	Q_g	V_{DS}=10V , V_{GS}=4.5V , I_D=0.3A	---	1.7	3	nC
Turn-On Delay Time	$T_{d(on)}$	V_{DD}=30V ,I_D=0.2A , V_{GS}=10V , R_G=10Ω	---	10	---	ns
Rise Time	T_r		---	50	---	
Turn-Off Delay Time	$T_{d(off)}$		---	17	---	
Fall Time	T_f		---	10	---	
Input Capacitance	C_{iss}	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	21	50	pF
Output Capacitance	C_{oss}		---	11	25	
Reverse Transfer Capacitance	C_{rss}		---	4.2	5	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current[2]	I_S		---	---	0.3	A
Diode Forward Voltage[3]	V_{SD}	V_{GS}=0V , I_S=0.2A , T_J=25℃	---	---	1.2	V

Note:

1.Repetitive Rating: Pulse width limited by maximum junction temperature.

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

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

Typical Characteristics

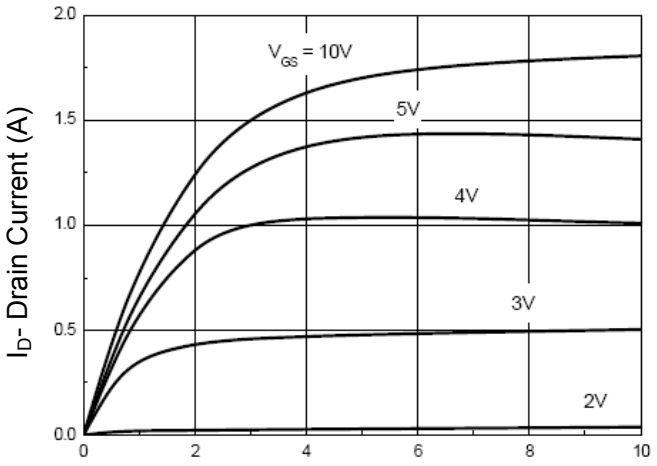


Figure 1 Output Characteristics

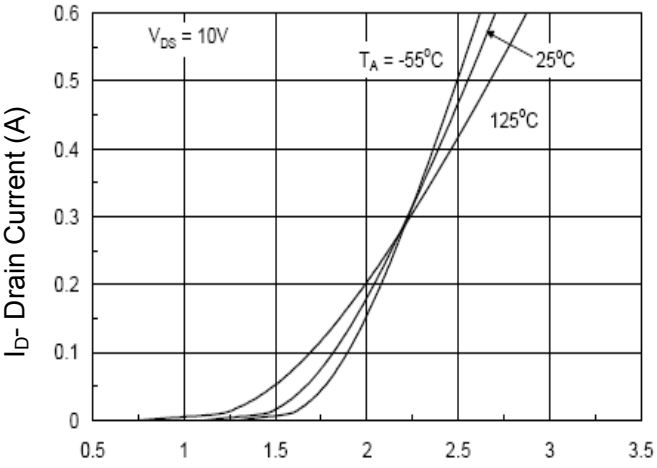


Figure 2 Transfer Characteristics

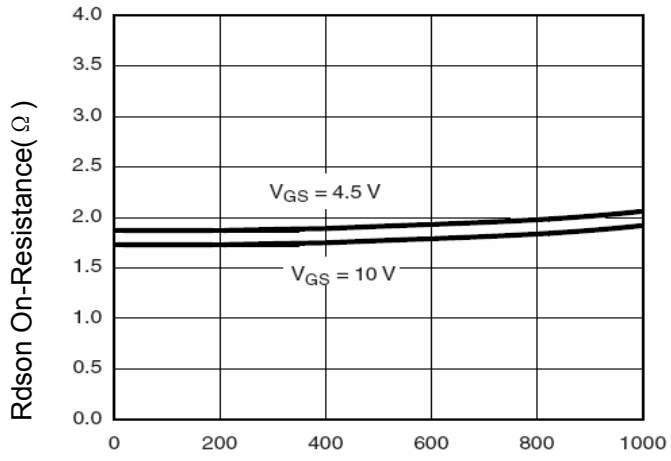


Figure 3 Drain-Source On-Resistance

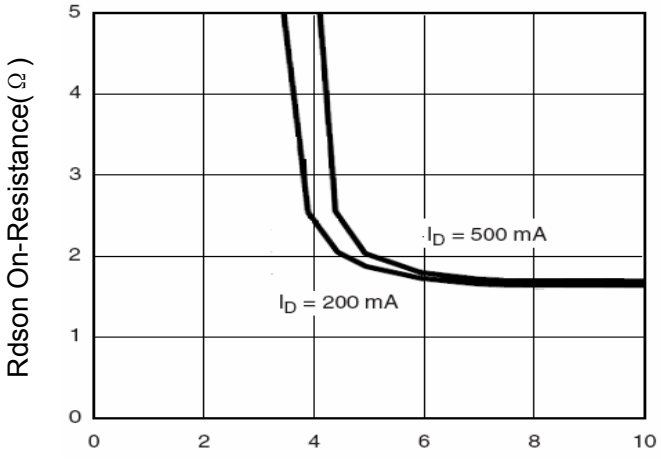


Figure 4 Rdson vs Vgs

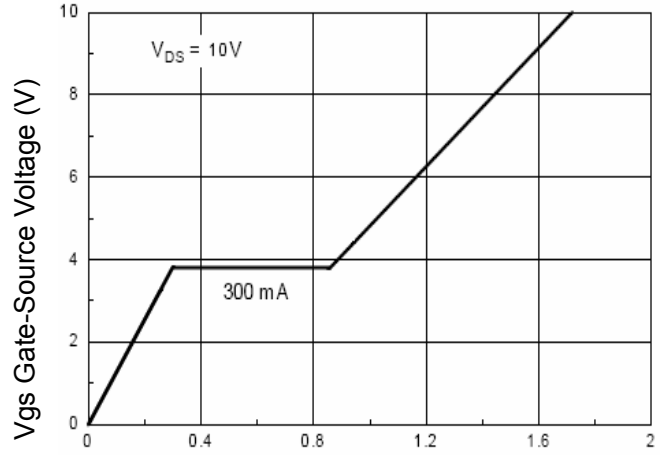


Figure 5 Gate Charge

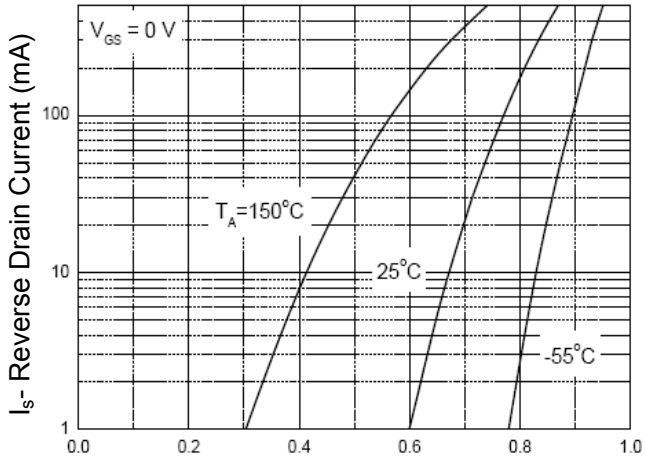


Figure 6 Source-DrainDiode Forward

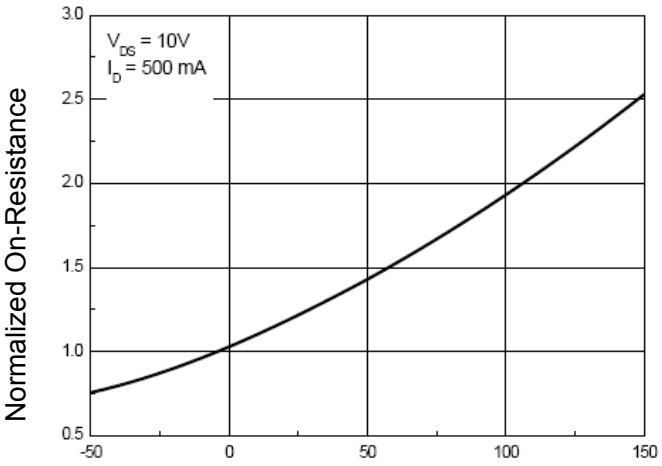


Figure 7 Drain-Source On-Resistance

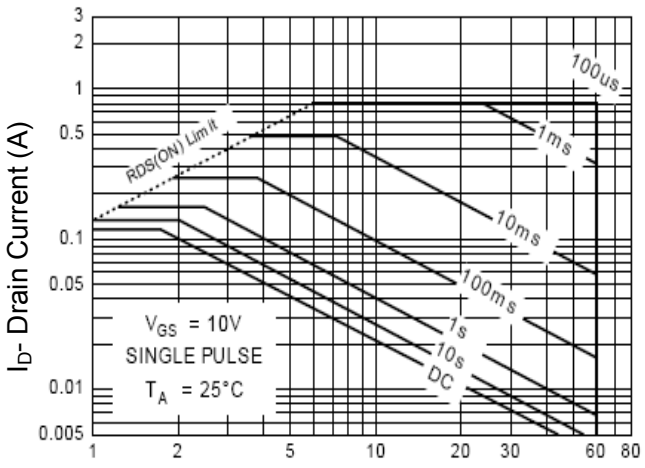


Figure 8 Safe Operation Area

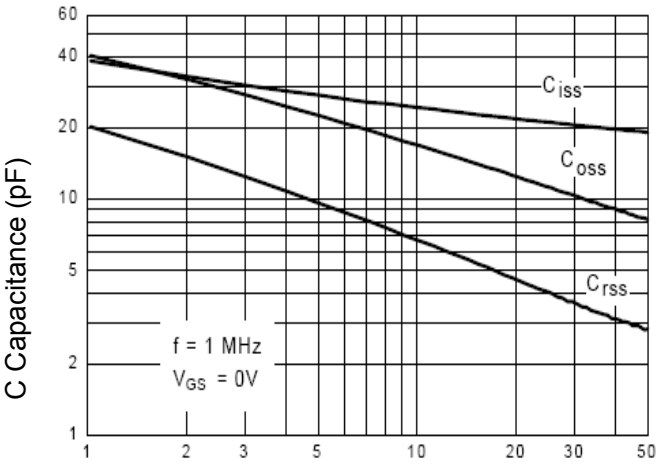


Figure 9 Capacitance vs Vds

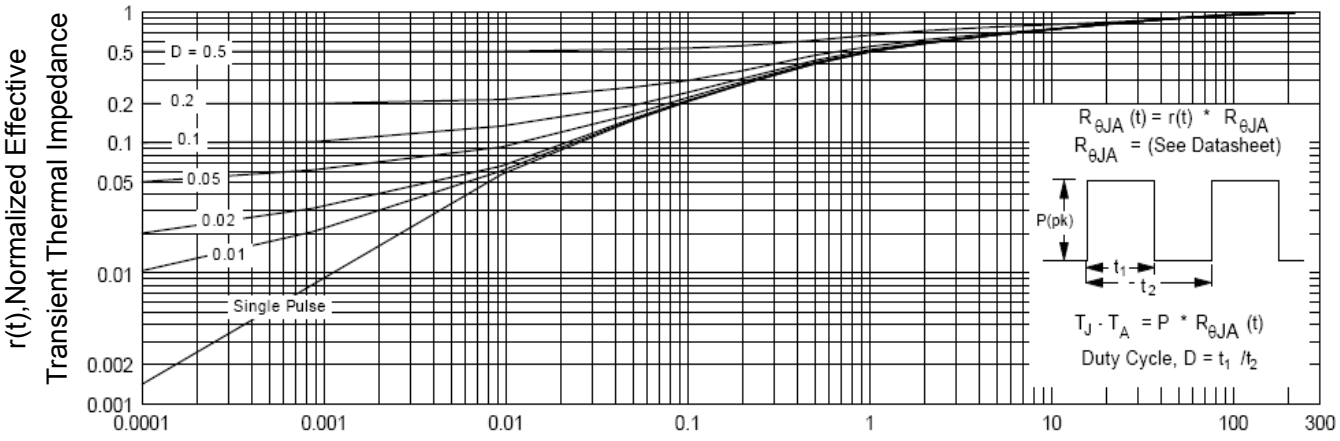
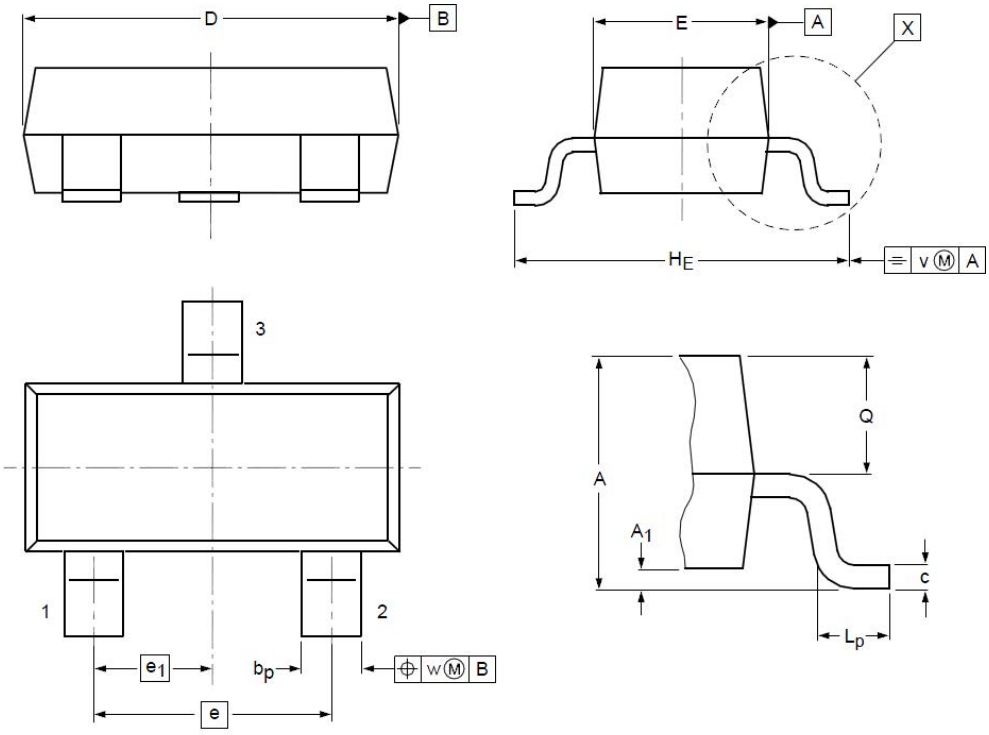


Figure 10 Normalized Maximum Transient Thermal Impedance

SOT23 Package Outline Dimensions



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	0.90	1.05	1.20	**e_1**	--	0.95	--
A_1	0.01	0.05	0.10	**H_E**	2.10	2.40	2.50
b_p	0.38	0.42	0.48	**L_P**	0.40	0.50	0.60
c	0.09	0.13	0.15	**Q**	0.45	0.49	0.55
D	2.80	2.92	3.00	**V**	--	0.20	--
E	1.20	1.33	1.40	**W**	--	0.10	--
e	--	1.90	--				