MX2N7002

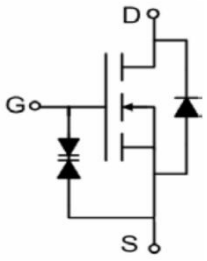
N-Channel Enhancement Mode Power MOSFET

Deneral Features

V_{DS} =60V，I_D = 0.3A

V_{GS}= 4.5V $R_{DS(ON)}$(Typ.)=2.5Ω

V_{GS}=10 V $R_{DS(ON)}$(Typ.)=1.8Ω

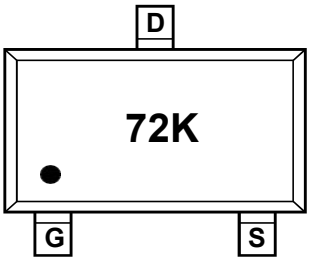


Schematic diagram

1.ESD Rating:HBM 2300V
2.Lead free product is acquired
3.Surface mount package

Application

1.Direct logic-level interface: TTL/CMOS
2.Drivers: relays, solenoids, lamps, hammers,display, memories, transistors, etc.
3.Battery operated systems
4.Solid-state relays



Marking and pin assignment

SOT-23 (TOP VIEW)

Absolute Maximum Ratings (TA=25℃ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current (T_J =150℃)	T_A =25℃	I_D	0.3	A
	T_A =100℃		0.19	
Drain Current-Pulsed (Note 1)		I_{DM}	0.8	A
Maximum Power Dissipation		P_D	0.35	W
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55 To 150	℃

Electrical Characteristics (TA=25℃ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V,V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±10V,V_{DS}=0V	-	-	±500	nA
		V_{GS}=±20V,V_{DS}=0V	-	±4	±10	uA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=1mA	1	1.5	2.4	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=5V, I_D=0.4A	-	1.8	7.5	Ω
		V_{GS}=10V, I_D=0.5A	-	2.5	7.5	Ω
Dynamic Characteristics (Note4)						
Input Capacitance	C_{lss}	V_{DS}=10V,V_{GS}=0V, F=1.0MHz	-	-	40	PF
Output Capacitance	C_{oss}		-	-	30	PF
Reverse Transfer Capacitance	C_{rss}		-	-	10	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=50V,I_D=0.2A V_{GS}=10V,R_G=50Ω	-	10	-	nS
Turn-on Rise Time	t_r		-	50	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	15	-	nS
Turn-Off Fall Time	t_f		-	10	-	nS
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=0.2A	-	-	1.5	V
Diode Forward Current (Note 2)	I_S		-	-	0.3	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

Thermal Characteristics

Thermal Resistance,Junction-to-Ambient (Note 2)	Rth JA	350	℃/W

Typical Performance Characteristics

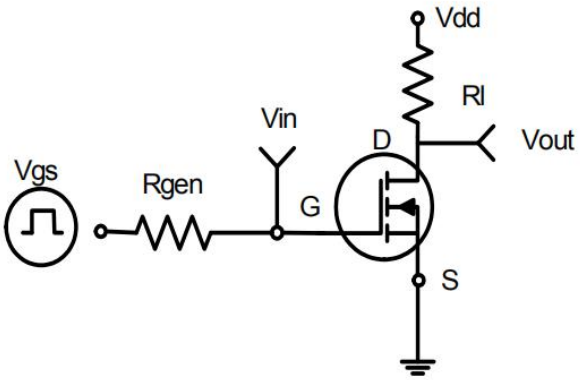


Figure 1:Switching Test Circuit

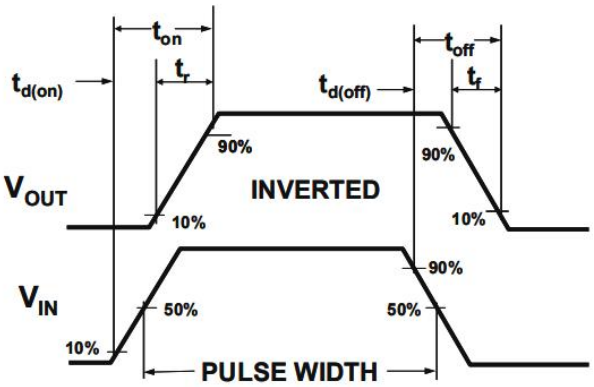
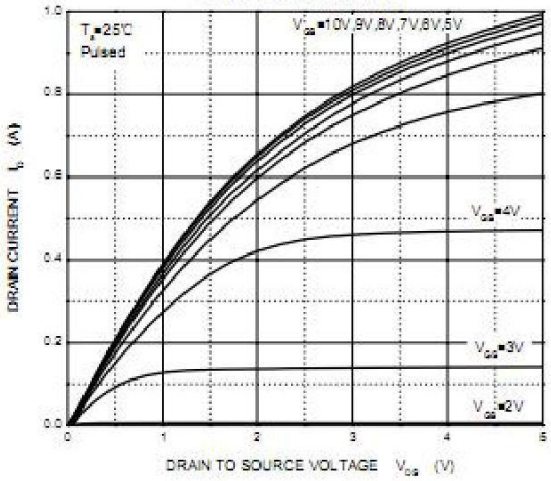
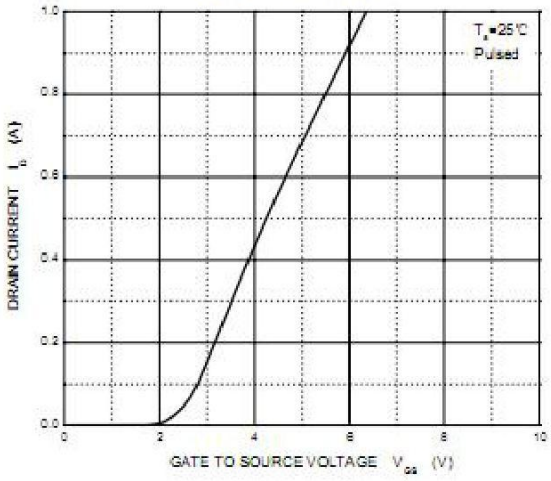


Figure 2:Switching Waveforms

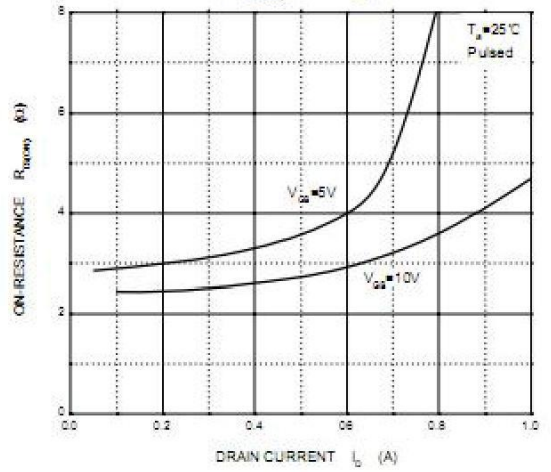
Output Characteristics



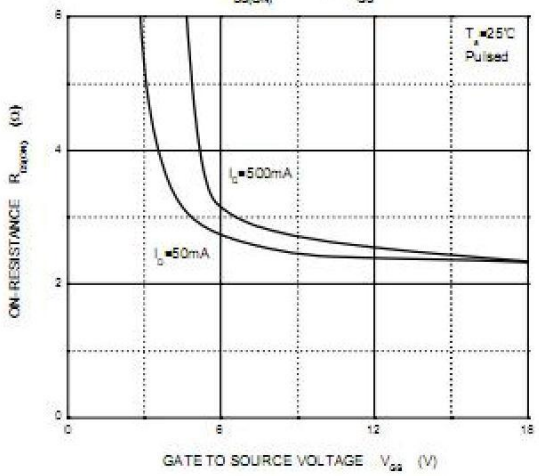
Transfer Characteristics



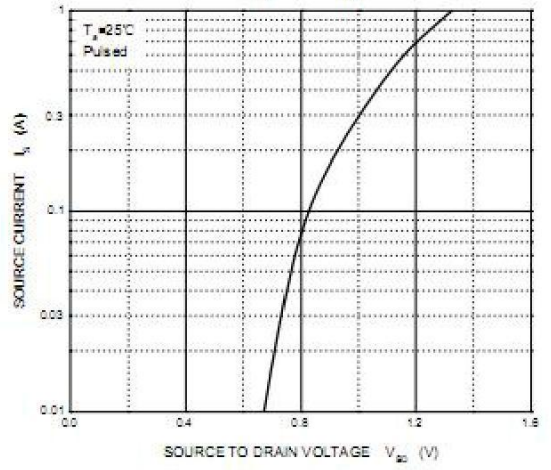
$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



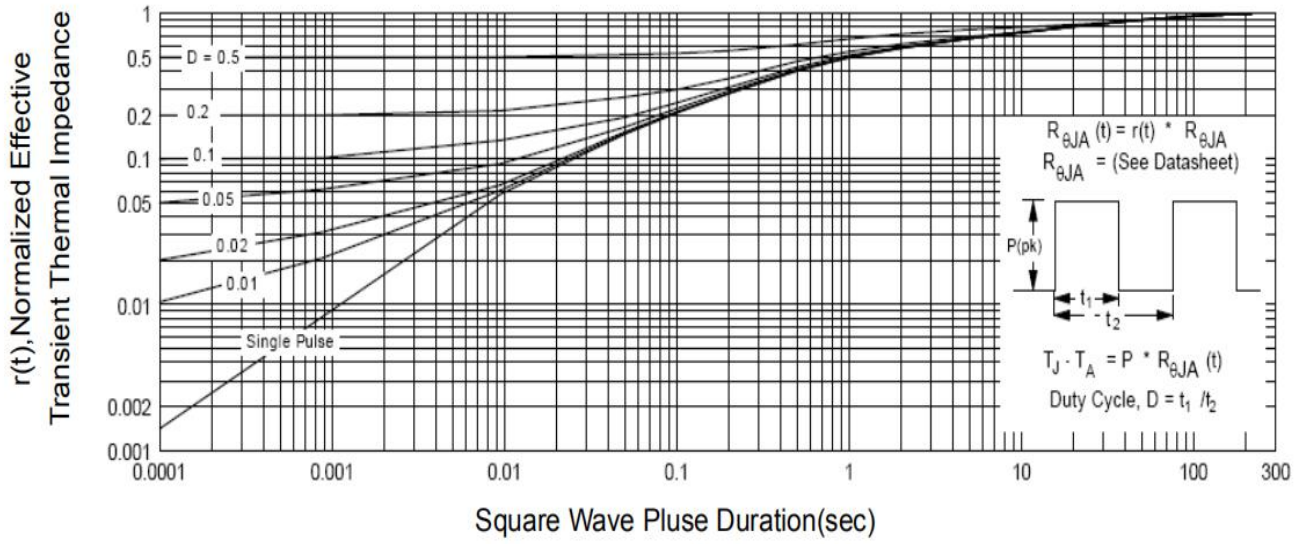
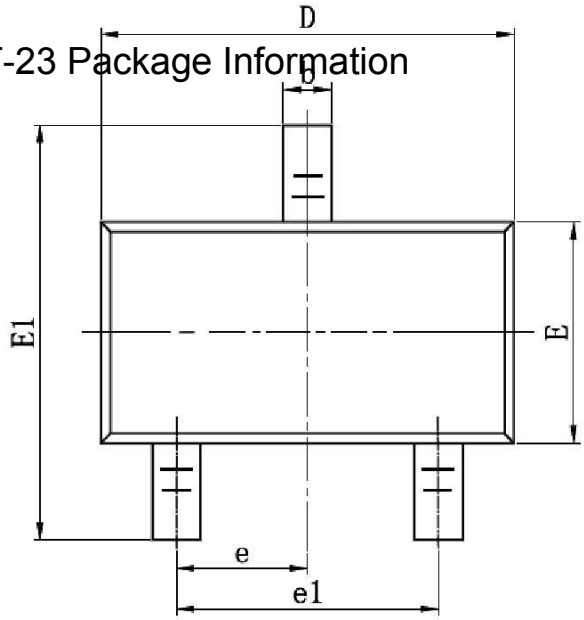
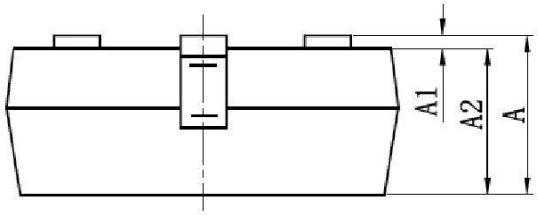
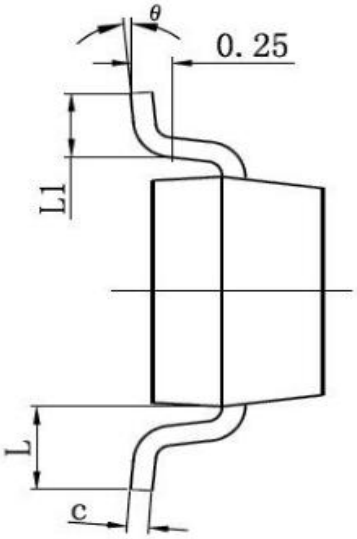


Figure 12 Normalized Maximum Transient Thermal Impedance

SOT-23 Package Information







Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

Notes

1. All dimensions are in millimeters.
2. Tolerance ±0.10mm (4 mil) unless otherwise specified
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 5 mils.
4. Dimension L is measured in gauge plane.
5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.