N-Channel 60V(D-S) MOSFET

Product summary		
V_{DS}	60	V
$R_{DS(ON)}$(at V_{GS}=10V) Typ.	1.9	Ω
$R_{DS(ON)}$(at V_{GS}=4.5V) Typ.	2.0	Ω
I_D(T_A=25℃)	0.26	A

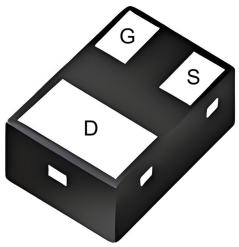
Features

- Low input Capacitance
- Trench Power MV MOSFET technology
- Voltage controlled small signal switch

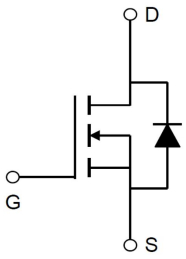
Applications

- Small signal application
- Load switch

Pin Configuration



DFN1006



Packing Information

Device	Package	Reel Size	Quantity(Min. Package)
2N7002AB	DFN1006	7″	10000pcs

Absolute Maximum Ratings (at T_A=25℃ Unless Otherwise Noted)

Symbol	Parameter		Rating	Units
V_{DS}	Drain-Source Voltage		60	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current [A]	T_A=25℃	0.26	A
		T_A=70℃	0.21	A
I_{DM}	Pulse Drain Current Tested [B]		1.2	A
P_D	Power Dissipation [A]	T_A=25℃	0.20	W
T_J,T_{STG}	Junciton and Storage Temperature Range		-55 to +150	℃

Thermal Characteristics

Symbol	Parameter	Typical	Units
$R_{\theta JA}$	Thermal Resistance-Junction to ambient [A]	625	℃/W

Electrical Characteristics (at T_J =25℃ Unless Otherwise Noted)

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
Static Parameters						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250uA	60	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=60V,V_{GS}=0V	--	--	1	uA
I_{GSS}	Gate-Body Leakage Current	V_{DS}=0V,V_{GS}=±20V	--	--	±10	uA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	1.0	1.5	2.0	V
$R_{DS(ON)}$	Drain-Source On-State Resistance [B]	V_{GS}=10V,I_D=0.26A	--	1.9	2.5	Ω
		V_{GS}=4.5V,I_D=0.20A	--	2.0	3.0	Ω
V_{SD}	Diode Forward Voltage	I_{SD}=0.26A,V_{GS}=0V	--	--	1.2	V
Dynamic Parameters [C]						
C_{iss}	Input Capacitance	V_{GS}=0V,V_{DS}=30V f=1MHZ	--	22	--	pF
C_{oss}	Output Capacitance		--	10	--	pF
C_{rss}	Reverse Transfer Capacitance		--	5	--	pF
Q_g	Total Gate Charge	V_{DS}=30V,I_D=0.26A V_{GS}=10V	--	1.2	--	nC
Q_{gs}	Gate-Source Charge		--	0.5	--	nC
Q_{gd}	Gate-Drain Charge		--	0.2	--	nC
$t_{D(on)}$	Turn-on Delay Time	V_{DD}=50V I_D=0.26A,R_{GEN}=50 Ω,V_{GS}=10V	--	7	--	ns
t_r	Turn-on Rise Time		--	20	--	ns
$t_{D(off)}$	Turn-off Delay Time		--	21	--	ns
t_f	Turn-off Fall Time		--	84	--	ns

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

B. Pulse Test: Pulse Width≤300us,Duty cycle≤2%.

C. Guaranteed by design, not subject to production testing.

Typical Characteristics

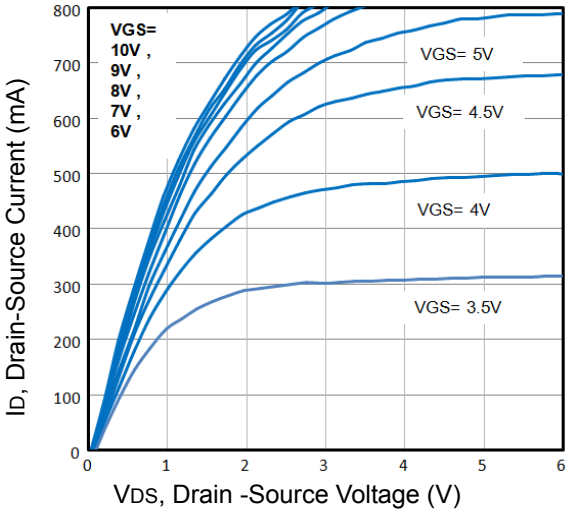


Fig1. Typical Output Characteristics

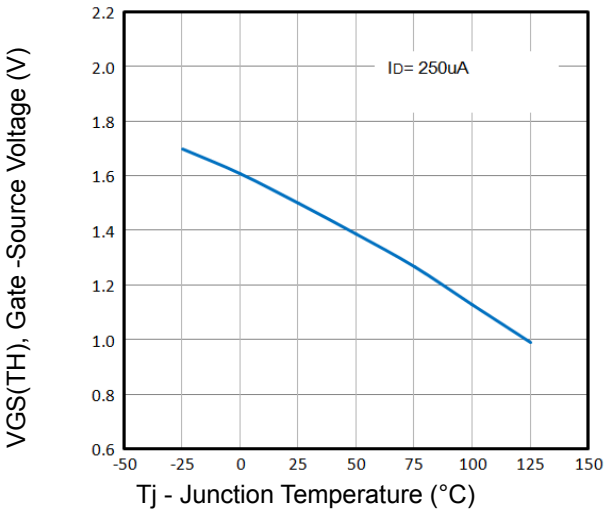


Fig2. Normalized Threshold Voltage Vs. Temperature

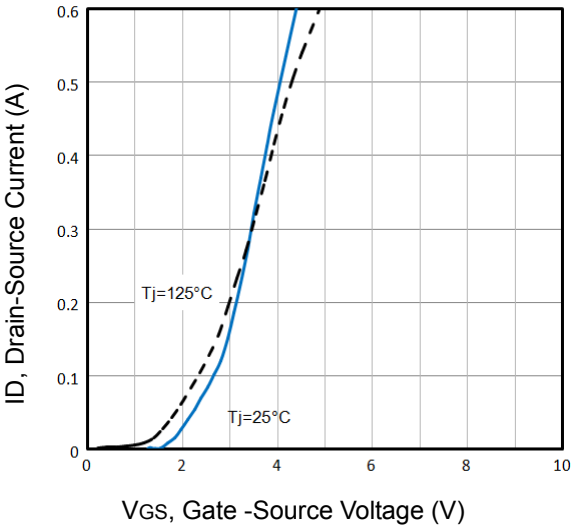


Fig3. Typical Transfer Characteristics

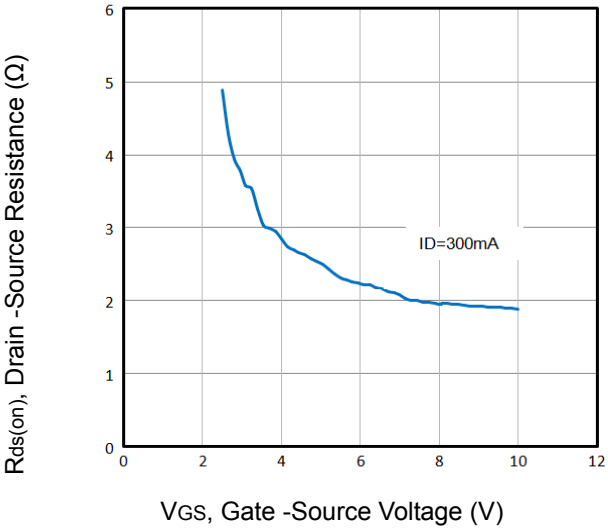


Fig4. Rds(on) vs Gate -Source Voltage

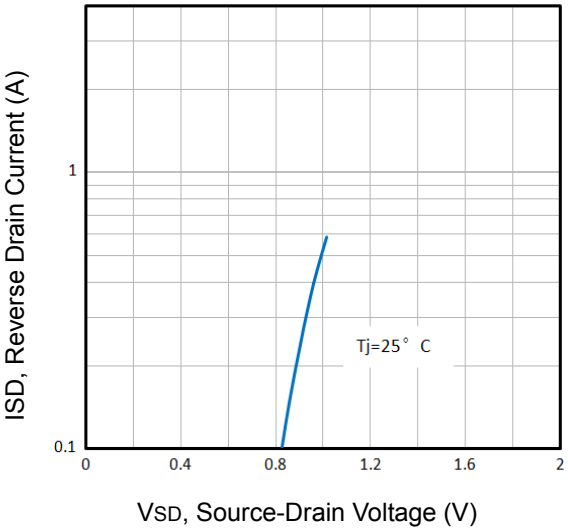


Fig5. Typical Source-Drain Diode Forward Voltage

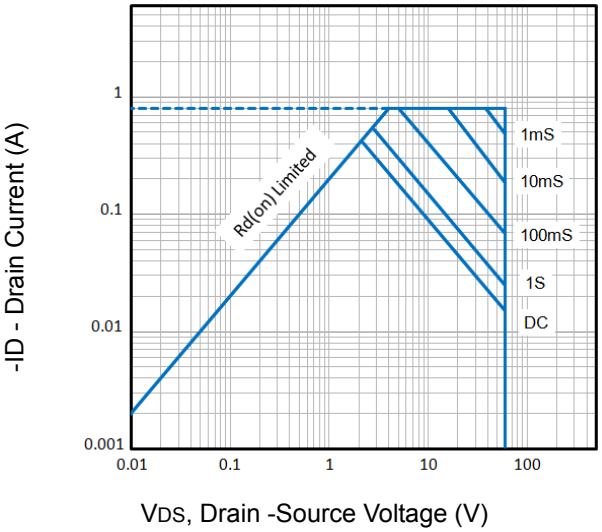


Fig6. Maximum Safe Operating Area

Typical Characteristics

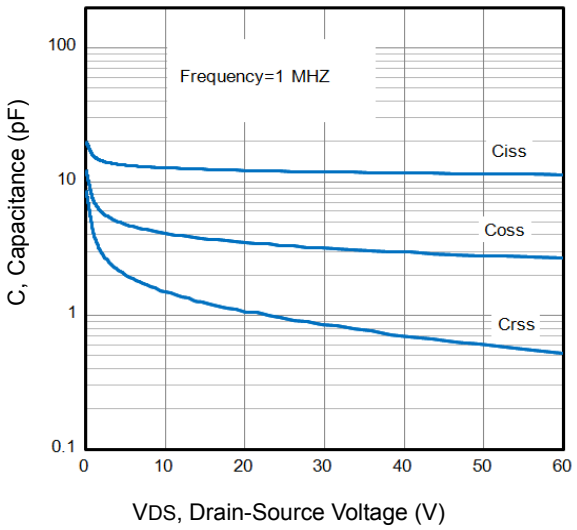


Fig7. Typical Capacitance Vs. Drain-Source Voltage

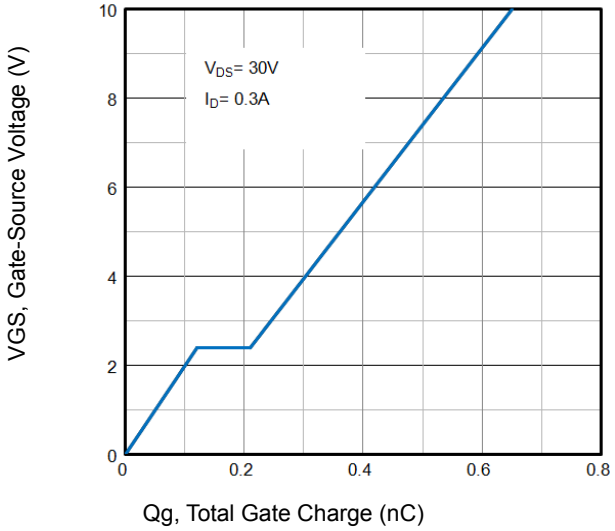


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

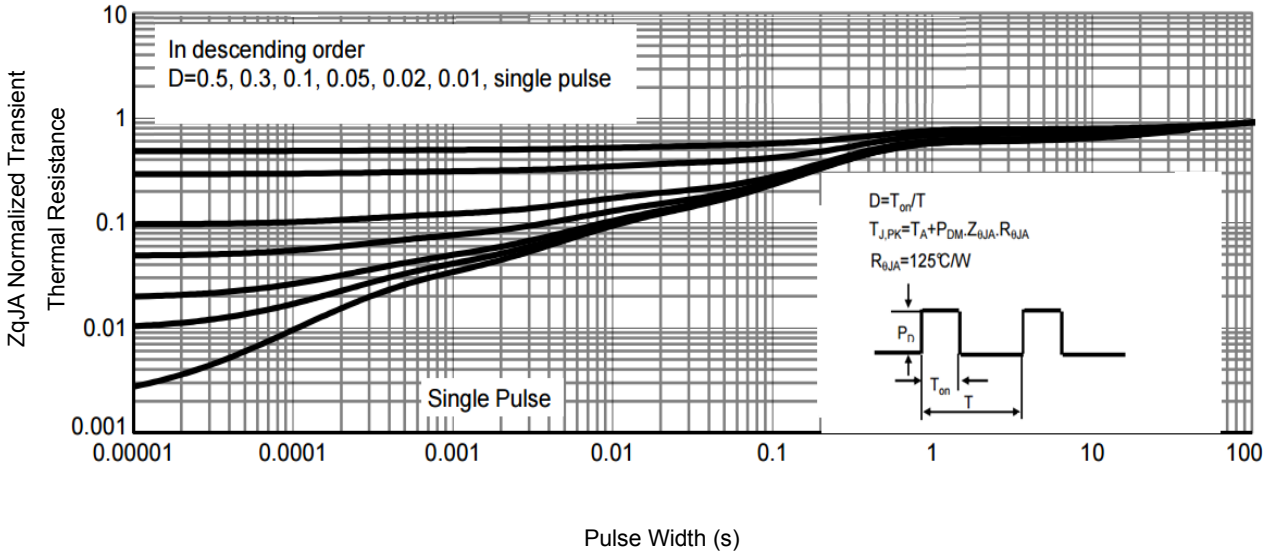


Fig9. Normalized Maximum Transient Thermal Impedance

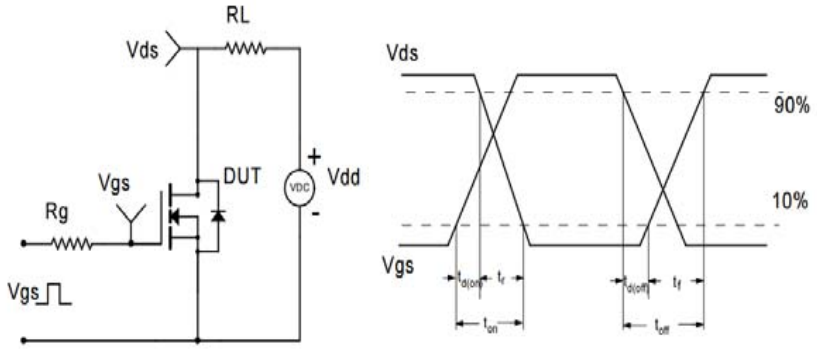
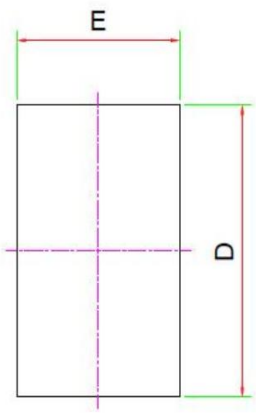
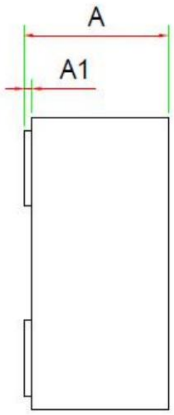


Fig10. Switching Time Test Circuit and waveforms

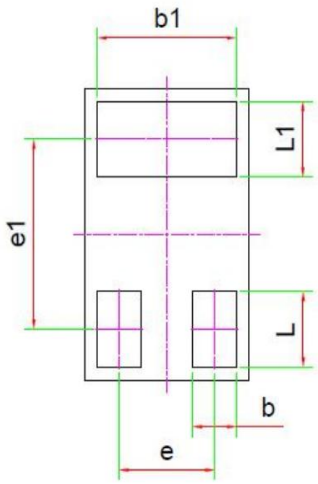
DFN1006 Package Information



TOP VIEW



SIDE VIEW



BOTTOM VIEW

SYMBOL	MIN	NOM	MAX
A	0.45	0.50	0.55
A1	0.00	NA	0.03
L	0.22	0.26	0.30
b	0.12	0.16	0.20
D	0.95	1.00	1.05
E	0.55	0.60	0.65
L1	0.22	0.26	0.30
b1	0.47	0.51	0.55
e	0.35 BSC		
e1	0.65 BSC		