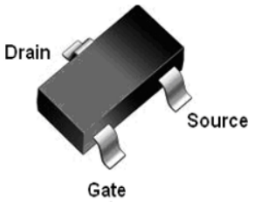
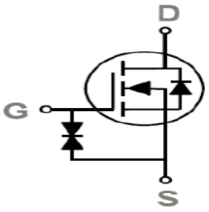
DONGGUAN NANJING ELECTRONICS LTD.,

SOT-23 Plastic-Encapsulate MOSFETS

NJ05N06 N Channel Advanced Power MOSFET



SOT23



Features

- *Low $R_{DS(on)}$ @V_{GS}=10V*
- *5V Logic Level Control*
- *HMB ESD Protection 2KV*
- *Pb−Free, RoHS Compliant*

Applications

- *LED Lighting Application,*
- *ON/OFF switch*

Order Information

Product	Package	Marking	Packing
NJ05N06	SOT23	702	3000PCS/Reel

Maximum ratings (T_a=25℃ unless otherwise noted)

Symbol	Parameter		Rating	Unit
Common Ratings (T_A=25°C Unless Otherwise Noted)				
V_{GS}	Gate-Source Voltage		±20	V
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		60	V
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-50 to 150	°C
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested①	T_A=25°C	1.8	A
I_D	Continuous Drain Current	T_A=25°C	0.5	A
		T_A=70°C	0.4	
P_D	Maximum Power Dissipation	T_A=25°C	0.3	W
		T_A=70°C	0.2	
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		400	°C/W

MOSFET ELECTRICAL CHARACTERISTICS

T_a=25℃ unless otherwise specified

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=250μA	60	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current(T_A=25℃)	V_{DS}=60V, V_{GS}=0V	--	--	1	μA
	Zero Gate Voltage Drain Current(T_A=125℃)	V_{DS}=50V, V_{GS}=0V	--	--	100	uA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V, V_{DS}=0V	--	--	±10	uA
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1.0	1.6	2.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance②	V_{GS}=10V, I_D=0.5A	--	1.9	3	Ω
$R_{DS(ON)}$	Drain-Source On-State Resistance②	V_{GS}=4.5V, I_D=0.3A	--	2.4	4	Ω
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	V_{DS}=30V, V_{GS}=0V, f=1MHz	--	23.8	--	pF
C_{oss}	Output Capacitance		--	3.9	--	pF
C_{rss}	Reverse Transfer Capacitance		--	1.5	--	pF
Q_g	Total Gate Charge	V_{DS}=30V I_D=0.5A, V_{GS}=10V	--	0.93	--	nC
Q_{gs}	Gate Source Charge		--	0.18	--	nC
Q_{gd}	Gate Drain Charge		--	0.31	--	nC
Switching Characteristics						
$t_{d(on)}$	Turn on Delay Time	V_{DD}=30V, I_D=0.3A, R_G=3.3Ω, V_{GS}=10V	--	6	--	ns
t_r	Turn on Rise Time		--	3.5	--	ns
$t_{d(off)}$	Turn Off Delay Time		-	20	--	ns
t_f	Turn Off Fall Time		--	5.9	--	ns
Source Drain Diode Characteristics						
I_{SD}	Source drain current(Body Diode)	T_A=25℃	--	--	0.2	A
V_{SD}	Forward on voltage②	T_j=25℃, I_{SD}=0.5A, V_{GS}=0V	--	0.78	1.2	V

Notes:

① Pulse width limited by maximum allowable junction temperature

②Pulse test ; Pulse width≤300μs, duty cycle≤2%.

Typical Characteristics

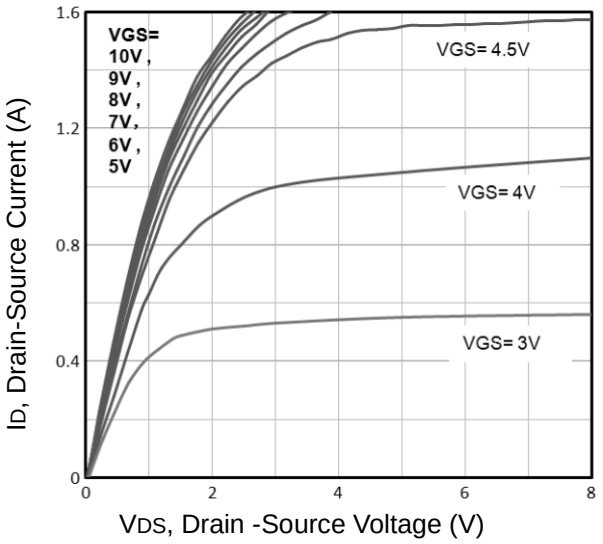


Fig1. Typical Output Characteristics

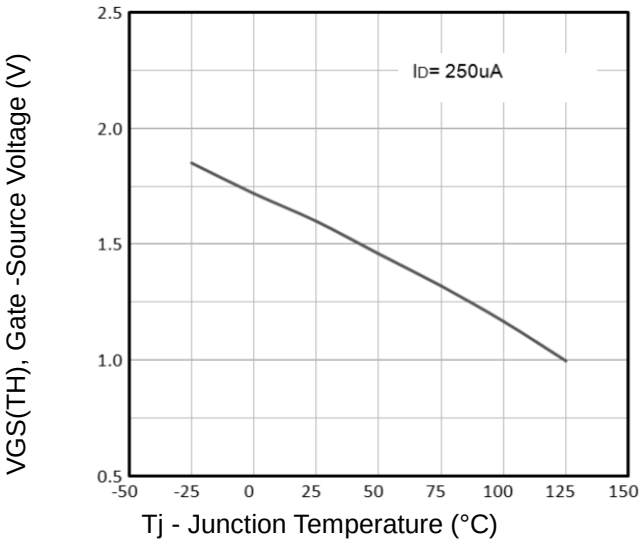


Fig2. Normalized Threshold Voltage Vs. Temperature

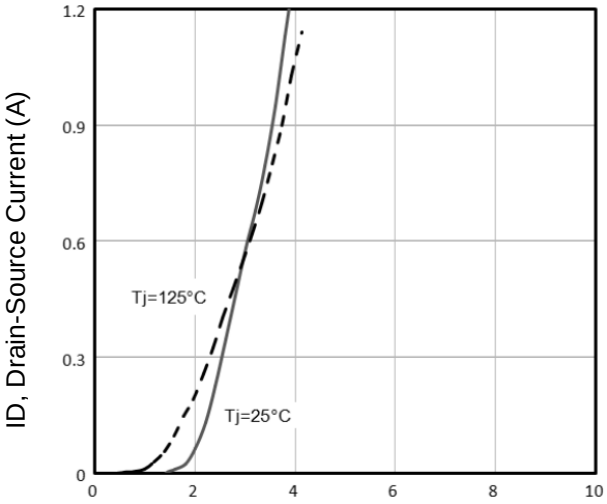


Fig3. Typical Transfer Characteristics

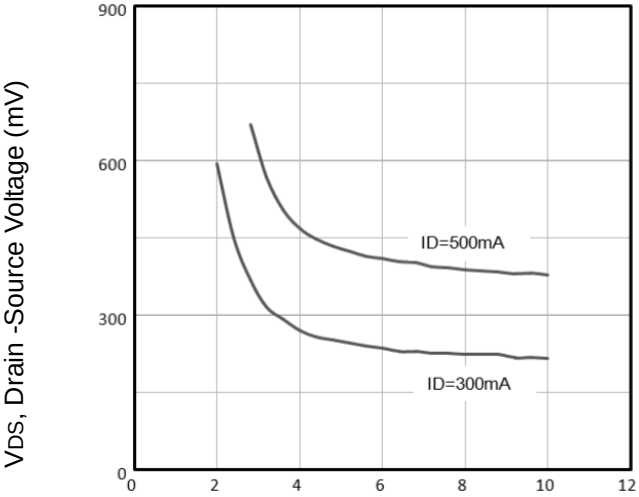


Fig4. Drain -Source Voltage vs Gate -Source Voltage

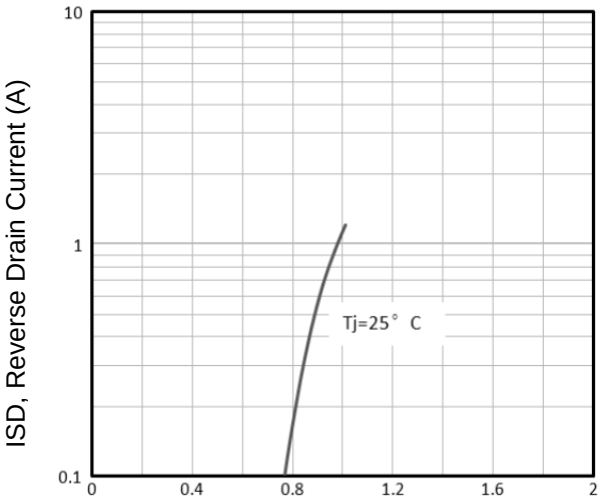


Fig5. Typical Source-Drain Diode Forward Voltage

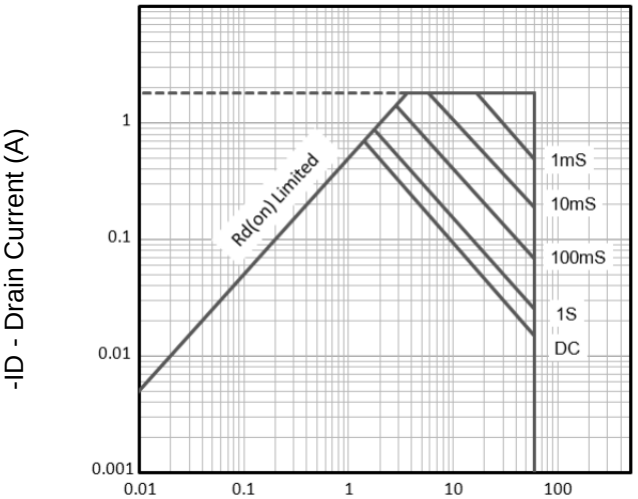


Fig6. Maximum Safe Operating Area

Typical Characteristics

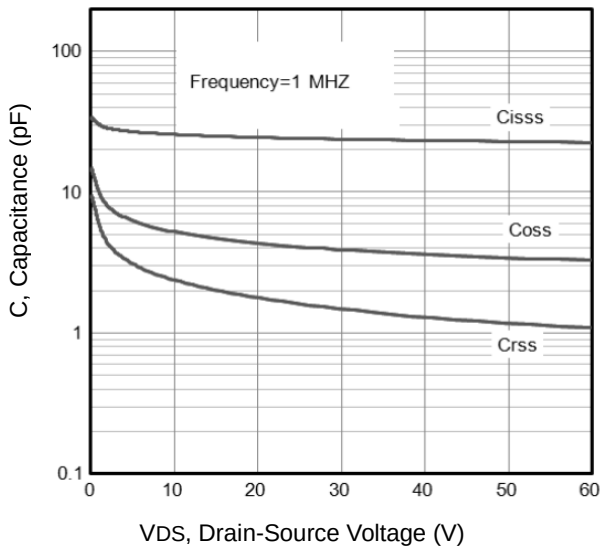


Fig7. Typical Capacitance Vs. Drain-Source Voltage

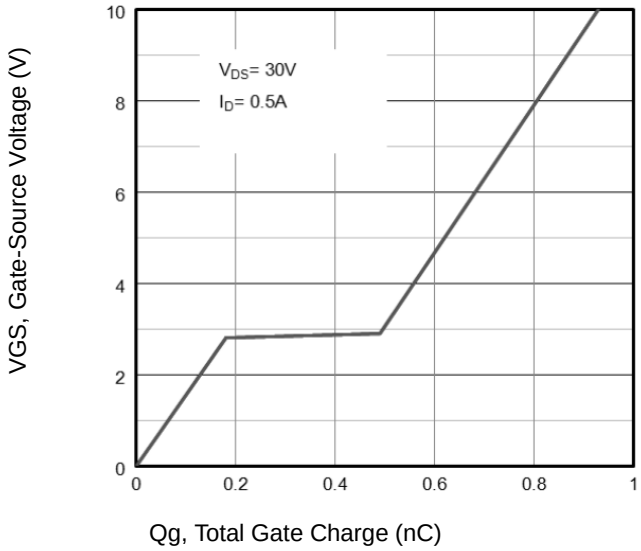


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

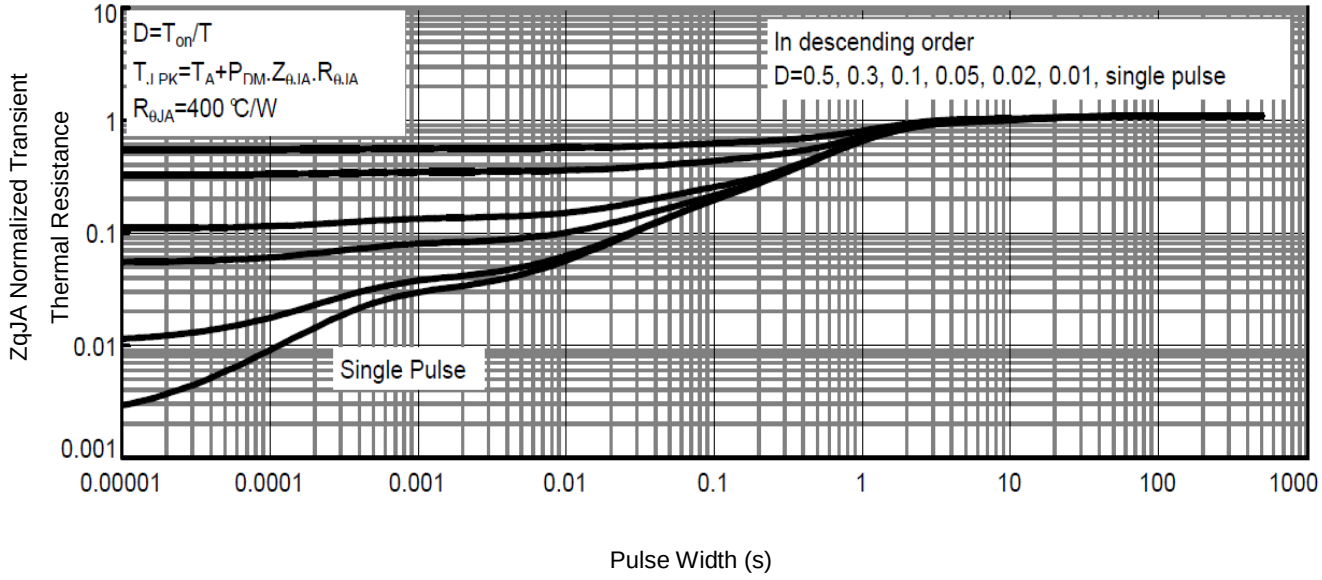


Fig9. Normalized Maximum Transient Thermal Impedance

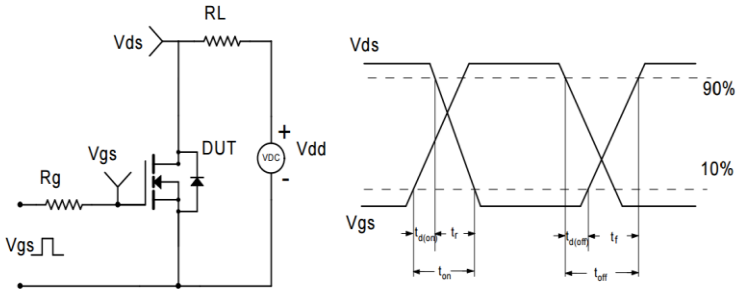
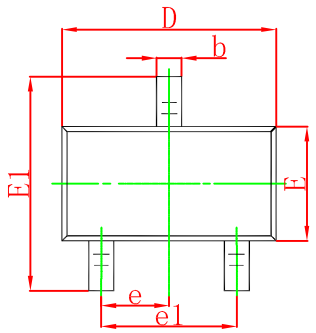
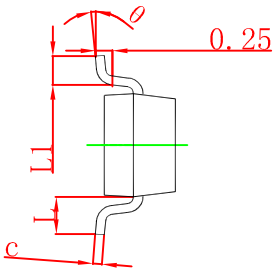
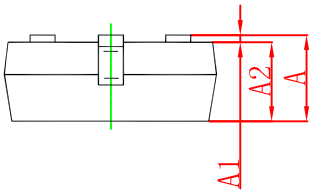


Fig10. Switching Time Test Circuit and waveforms

SOT-23 Package Outline Dimensions

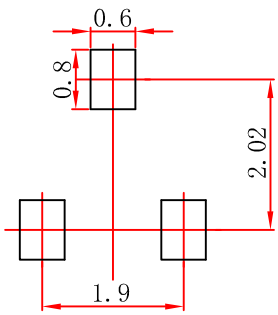






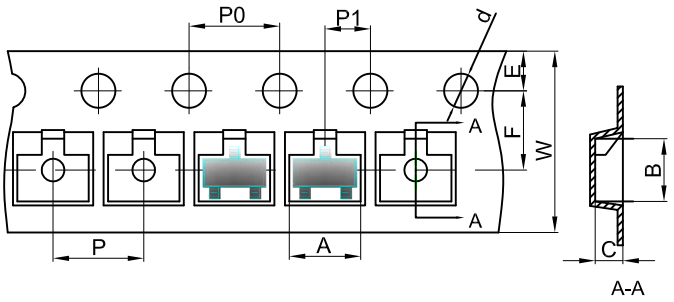
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 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
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



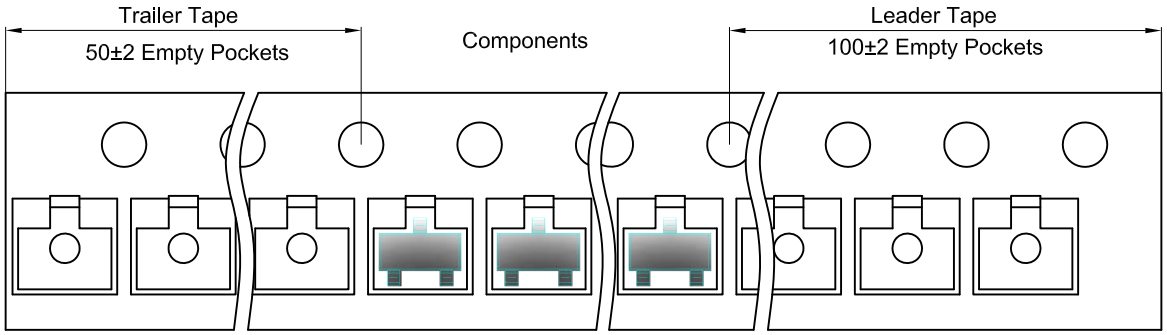
Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

SOT-23 Embossed Carrier Tape

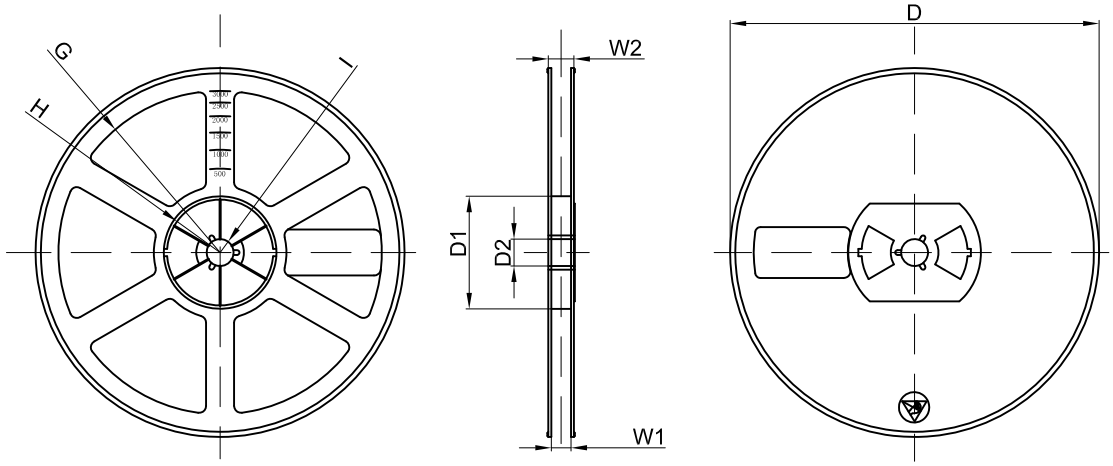


Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 Tape Leader and Trailer



SOT-23 Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	45,000 pcs	203×203×195	180,000 pcs	438×438×220	