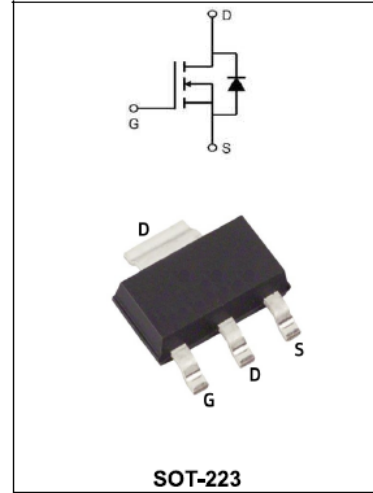


600V N-CHANNEL ENHANCEMENT MODE MOSFET
MAIN CHARACTERISTICS

I_D	1A
V_{DSS}	600V
R_{DS(on)-typ(@V_{GS}=10V)}	< 11Ω


Application

- ◆Uninterruptible Power Supply(UPS)
- ◆Power Factor Correction (PFC)

Product Specification Classification

Part Number	Package	Marking
AKS1N60MSI	SOT-223	1N60MSI

Maximum Ratings at T_c=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	600	V
Gate - Source Voltage	V_{GS}	±30	V
Continuous Drain Current T _c =25°C	I_D	1.0	A
Continuous Drain Current T _c =100°C	I_D	0.6	A
Drain Current- Pulsed	I_{DM}	4.0	A
Power Dissipation (T _L =25°C)	P_D	20	W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55 to +150	°C
Single Pulse Avalanche Energy	E_{AS}	14	mJ

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	600	-	-	V
BVDSS Voltage Temperature Coefficient	Reference to 25°C , $I_D=250\mu A$	$\Delta BV_{DSS}/\Delta T_J$	-	0.6	-	V/°C
Gate -Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	2.0	-	4.0	V
Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=0.5A$ ③	$R_{DS(on)}$	-	8.5	11	Ω
Input Capacitance	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$	C_{iss}	-	150	-	pF
Output Capacitance		C_{oss}	-	25	-	
Reverse Transfer Capacitance		C_{rss}	-	5.4	-	
Turn-on delay time	$V_{DD}=300V, I_D=1.0A$ $R_G=25\Omega$ ③	$t_{d(on)}$	-	13	-	ns
Total Gate Charge	$I_D=1.0A$ $V_{DS}=480V$ $V_{GS}=10V$ ③	Q_g	-	4.8	-	nC
Gate-to Source Charge		Q_{gs}	-	0.7	-	
Gate-to Drain Charge		Q_{gd}	-	2.7	-	
Continuous Diode Forward Current		I_s	-	-	1.0	
Drain -Source Leakage Current	$V_{DS}=600V, V_{GS}=0V, T_J=25^\circ C$	I_{DSS}	-	-	25	μA
	$V_{DS}=480V, V_{GS}=0V, T_J=125^\circ C$		-	-	250	
Forward Transconductance	$V_{DS}=40V, I_D=0.5A$ ③	g_{fs}	0.5	-	-	S
Gate- body Leakage Current	$V_{GS}=\pm 30V, V_{DS}=0V$	I_{GSS}	-	-	±100	nA
Diode Forward Voltage	$V_{GS}=0V, I_s=0.5A, T_J=25^\circ C$ ③	V_{SD}	-	-	1.4	V
Reverse Recovery Time	$I_F=1.0A, di/dt=100A/\mu s,$ $T_J=25^\circ C$ ③	t_{rr}	-	190	-	ns
Reverse Recovery Charge		Q_{rr}	-	0.53	-	nC

(Notes):

- 1、 Repetitive rating: Pulse width limited by maximum junction temperature
- 2、 Starting $T_J=25^\circ C, V_{DD}=50V, L=30mH, R_G=25\Omega, I_{AS}=1.0A$
- 3、 Pulse Test : Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$ erating Area

Typical Characteristics

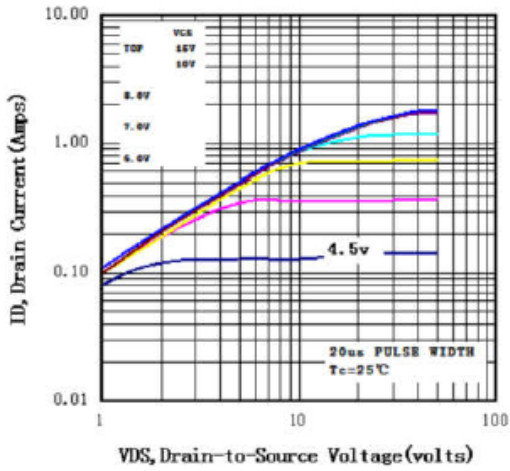


Fig1 Typical Output Characteristics, Tc=25°C

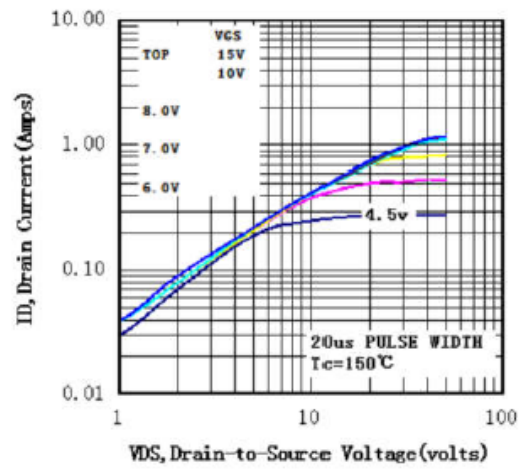


Fig2 Typical Output Characteristics, Tc=150°C

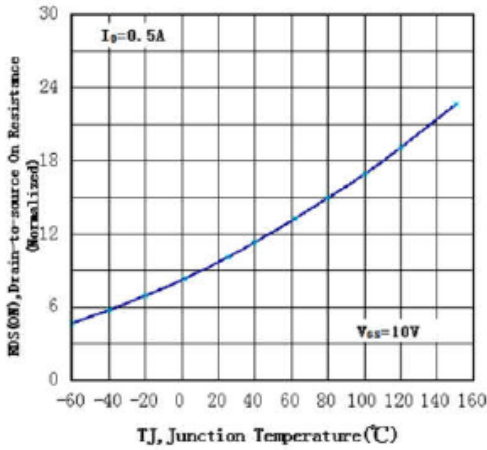


Fig3 Normalized On-Resistance Vs. Temperature

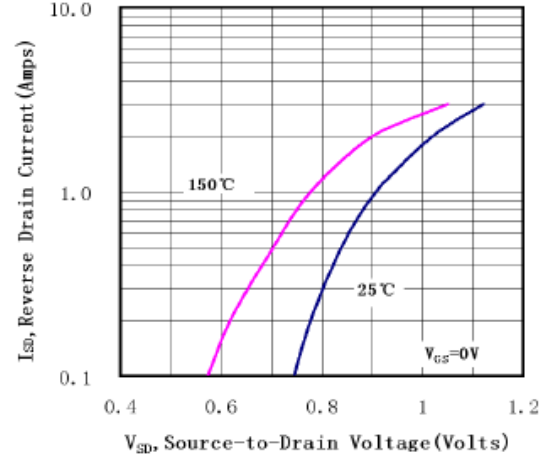


Fig4 Typical Source-Drain Diode Forward Voltage

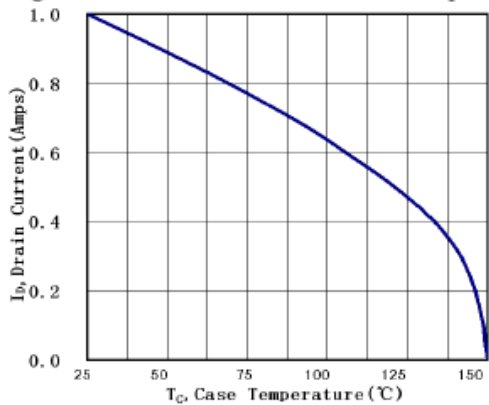


Fig5 Maximum Drain Current Vs. Case Temperature

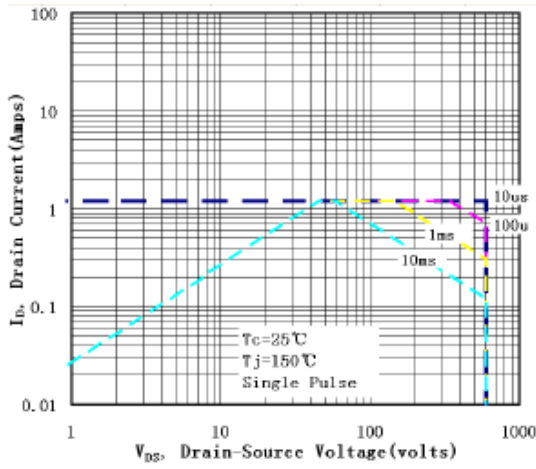


Fig6 Maximum Safe Operating Area

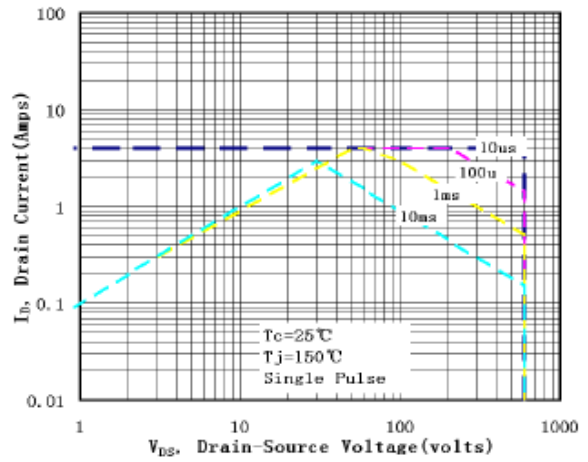


Fig 7 Maximum Safe Operating Area

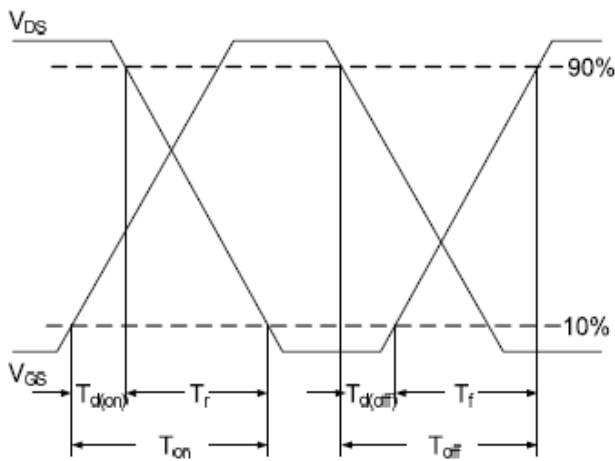


Fig.8 Switching Time Waveform

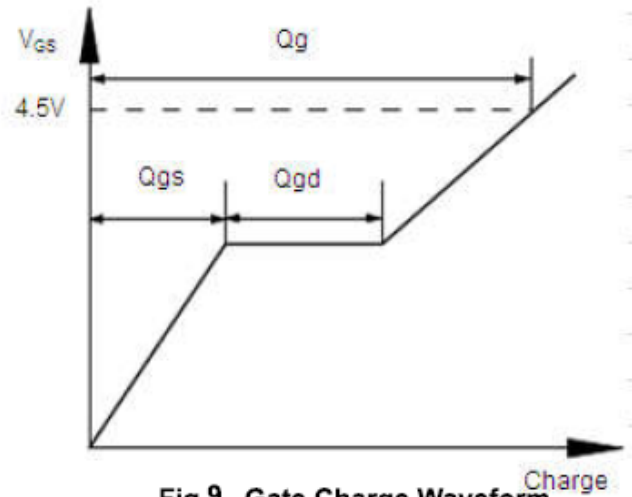
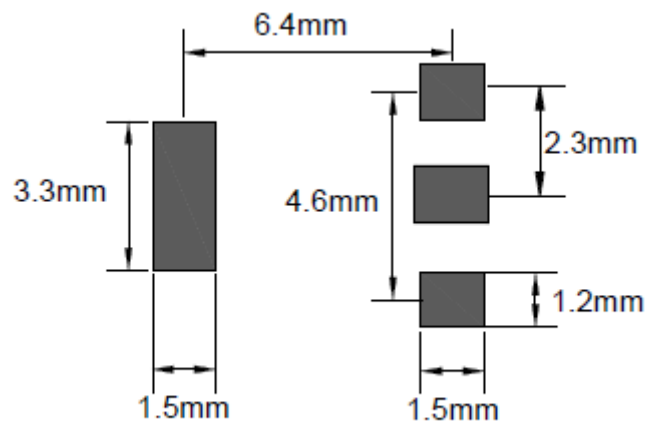


Fig.9 Gate Charge Waveform

Package	Packing Description	Base Quantity	Packing Quantity
SOT-223	Tape/Reel, 7" reel	1000pcs/Reel	6000PCS/Box 30000PCS/Carton
	Tape/Reel, 13" reel	2500pcs/Reel	5000PCS/Box 30000PCS/Carton

SOT-223

Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	1.50	1.80	0.059	0.071
A1	0.00	0.10	0.000	0.004
A2	1.50	1.70	0.059	0.067
b	0.65	0.75	0.026	0.030
c	0.20	0.30	0.008	0.012
D	6.40	6.60	0.252	0.260
D1	2.90	3.10	0.114	0.122
E	3.30	3.70	0.130	0.146
E1	6.85	7.15	0.270	0.281
e	2.20	2.40	0.087	0.094
e1	4.40	4.80	0.173	0.189
L	1.65	1.85	0.065	0.073
L1	0.90	1.15	0.035	0.045



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