

100P02AA

■ P-Ch 100V Fast Switching MOSFETs

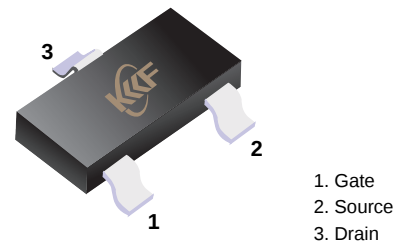
■ Description

The 100P02AA is the high cell density trench P-ch MOSFETs, which provides excellent RDSON and efficiency for most of the small power switching and load switch applications.

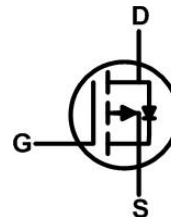
The 100P02AA meets the RoHS and Green Product requirement with full function reliability approved.

■ Features

- Super Low Gate Charge
- Excellent Cdv/dt effect decline
- Green Device Available
- Advanced high cell density Trench technology



■ Simplified outline(SOT-23)



BVDSS	RDSON	ID
-100V	0.65Ω	-2A

■ AbsoluteMaximumRatings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-100	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_A=25^{\circ}C$	Continuous Drain Current, $V_{GS} @ -10V^1$	-2	A
$I_D@T_A=70^{\circ}C$	Continuous Drain Current, $V_{GS} @ -10V^1$	-1.5	A
I_{DM}	Pulsed Drain Current ²	-3	A
$P_D@T_A=25^{\circ}C$	Total Power Dissipation ³	1	W
T_{STG}	Storage Temperature Range	-55 to 150	$^{\circ}C$
T_J	Operating Junction Temperature Range	-55 to 150	$^{\circ}C$

■ Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient ¹	---	125	$^{\circ}C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	---	80	$^{\circ}C/W$

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■ Electrical Characteristics Ta = 25°C

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250uA	-100	---	---	V
ΔBV _{DSS} /ΔT _J	BVDSS Temperature Coefficient	Reference to 25°C, I _D =-1mA	---	-0.0624	---	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =-10V, I _D =-1.5A	---	0.52	0.65	Ω
		V _{GS} =-4.5V, I _D =-1A	---	0.56	0.7	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-1.0	-1.5	-2.5	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	4.5	---	mV/°C
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-80V, V _{GS} =0V, T _J =25°C	---	---	10	uA
		V _{DS} =-80V, V _{GS} =0V, T _J =55°C	---	---	100	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =-5V, I _D =-0.8A	---	3	---	S
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	16	32	Ω
Q _g	Total Gate Charge (-4.5V)	V _{DS} =-15V, V _{GS} =-4.5V, I _D =-0.5A	---	4.5	---	nC
Q _{gs}	Gate-Source Charge		---	1.14	---	
Q _{gd}	Gate-Drain Charge		---	1.5	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =-50V, V _{GS} =-10V, R _G =3.3Ω I _D =-0.5A	---	13.6	---	ns
T _r	Rise Time		---	6.8	---	
T _{d(off)}	Turn-Off Delay Time		---	34	---	
T _f	Fall Time		---	3	---	
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz	---	553	---	pF
C _{oss}	Output Capacitance		---	29	---	
C _{rss}	Reverse Transfer Capacitance		---	20	---	

■ Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current ^{1,4}	V _G =V _D =0V, Force Current	---	---	-0.9	A
I _{SM}	Pulsed Source Current ^{2,4}		---	---	-1.8	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V, I _S =-1A, T _J =25°C	---	---	-1.2	V

Note :

1. The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
2. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%
3. The power dissipation is limited by 150°C junction temperature
4. The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

Typical Characteristics

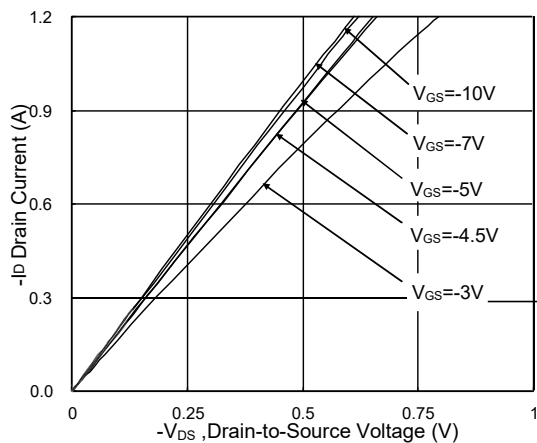


Fig.1 Typical Output Characteristics

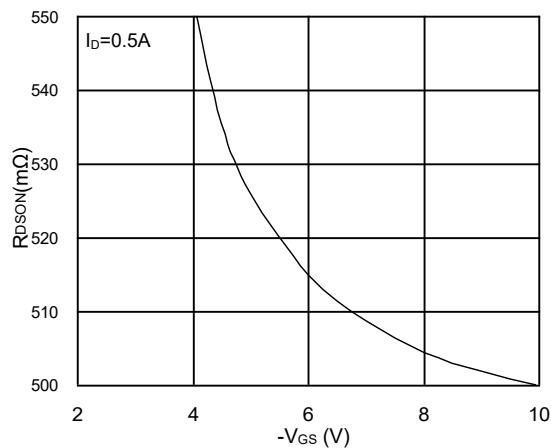


Fig.2 On-Resistance vs. Gate-Source

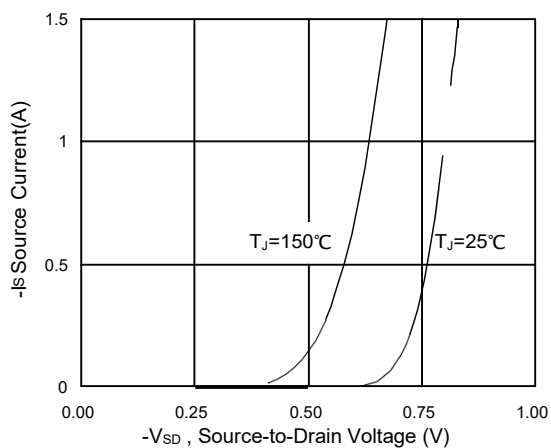


Fig.3 Forward Characteristics Of Reverse

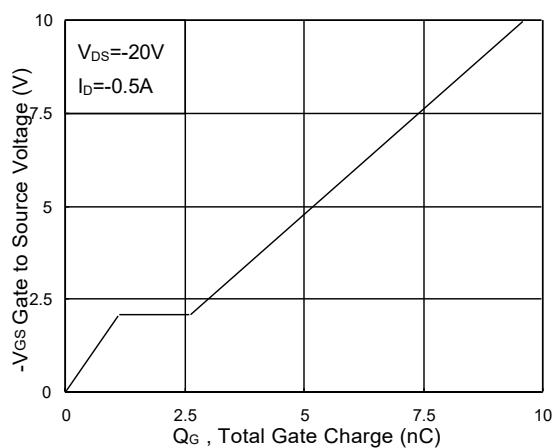


Fig.4 Gate-Charge Characteristics

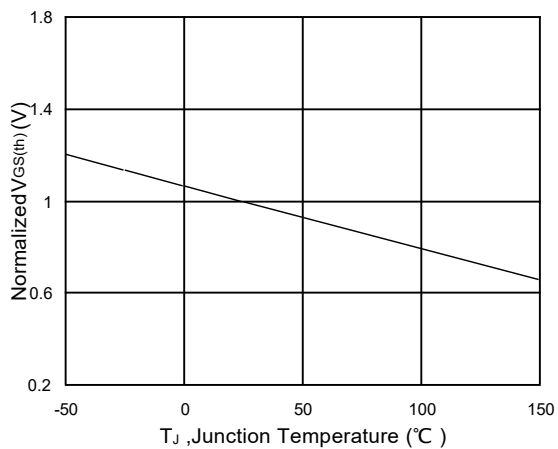


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

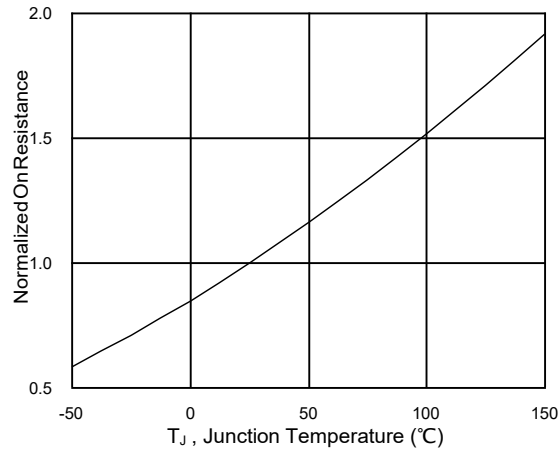


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

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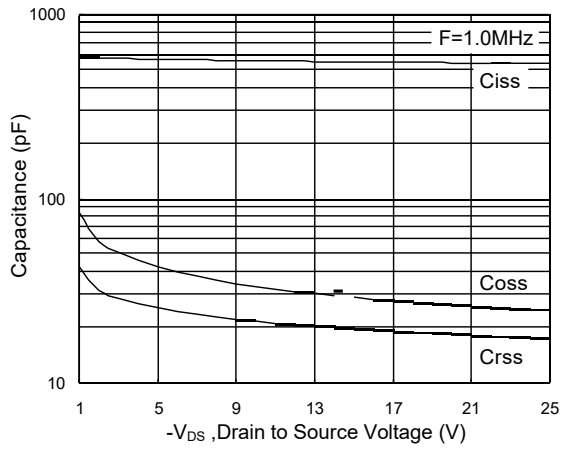


Fig.7 Capacitance

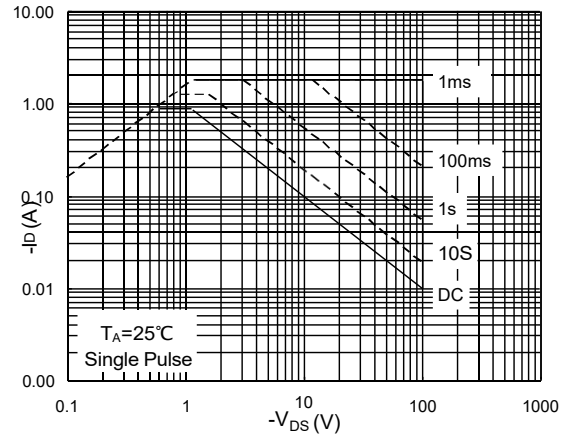


Fig.8 Safe Operating Area

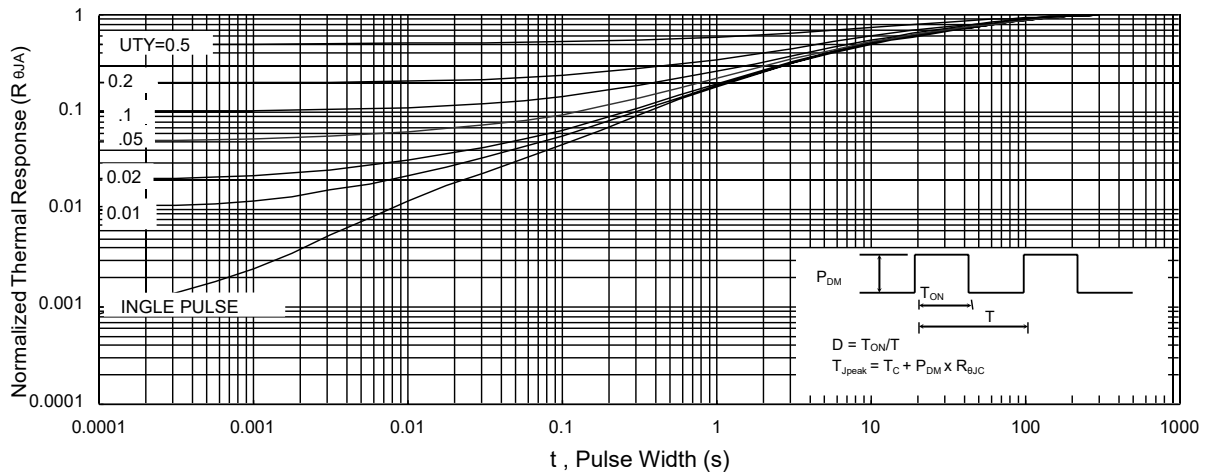


Fig.9 Normalized Maximum Transient Thermal Impedance

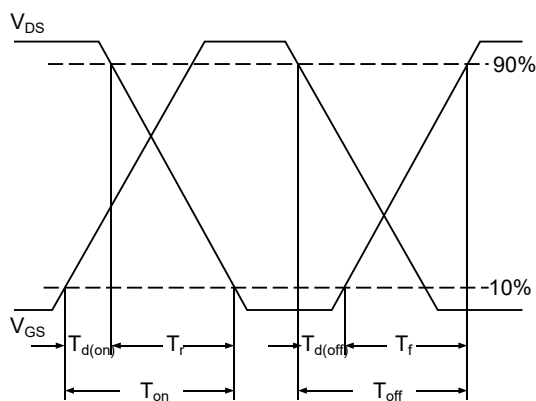


Fig.10 Switching Time Waveform

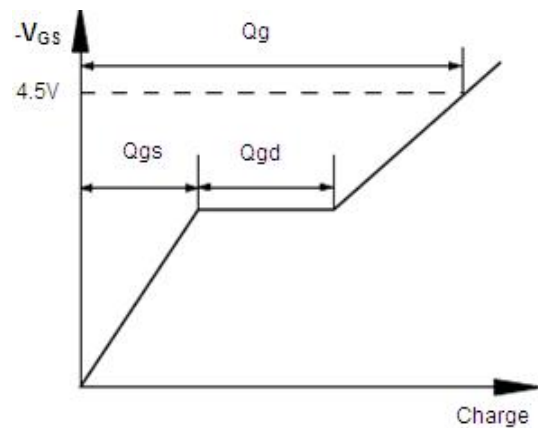
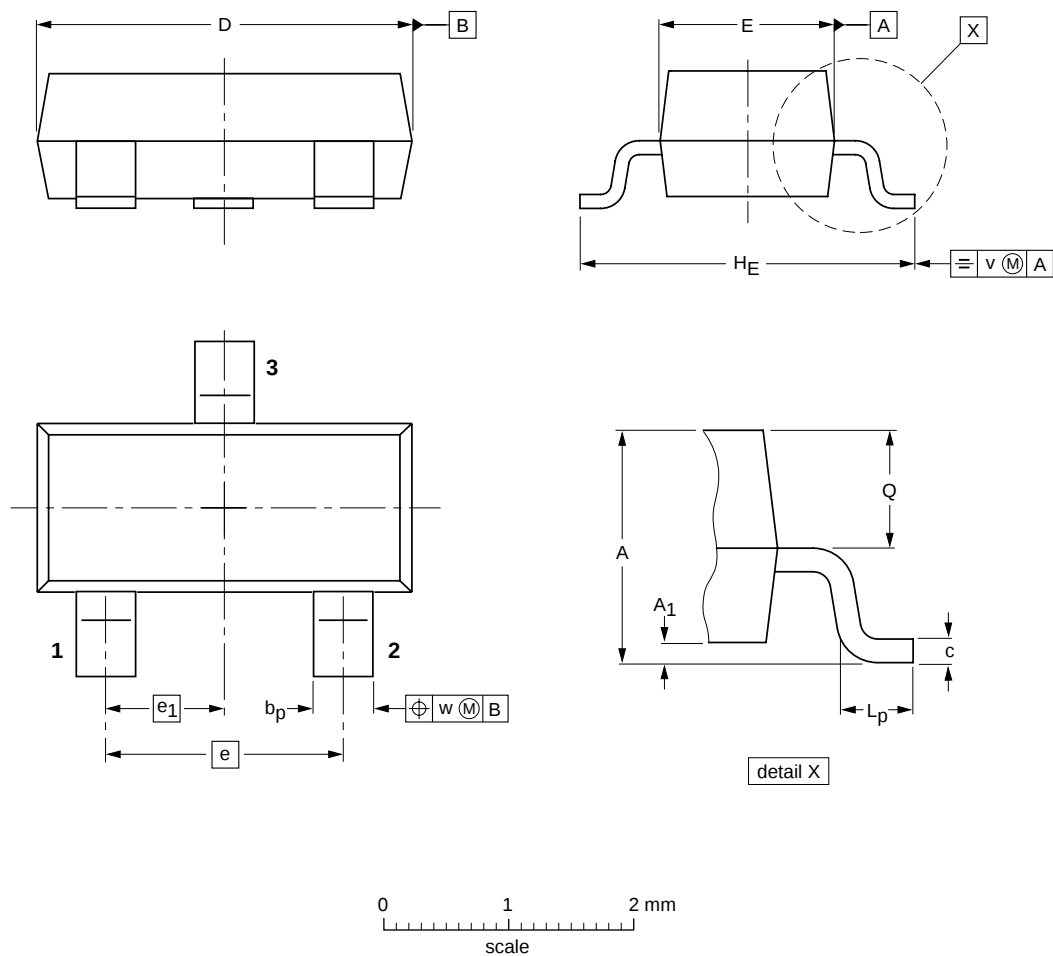


Fig.11 Gate Charge Waveform

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■ SOT-23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A ₁ max.	b _p	c	D	E	e	e ₁	H _E	L _p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1