AG005NP100MSP

N and P-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
100V	27mΩ@10V	5A
	30mΩ@4.5V	

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-100V	110mΩ@-10V	-3A
	120mΩ@-4.5V	

Feature

- Trench Power LV MOSFET technology
- Excellent package for heat dissipation

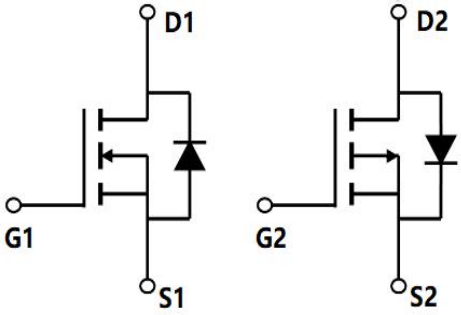
Application

- Load switching
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package

SOP-8

Circuit diagram



Marking

Absolute maximum ratings (T_A=25℃ unless otherwise noted)

Parameter	Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage	V_{DS}	100	-100	V
Gate-Source Voltage	V_{GS}	±20	±20	V
Continuous Drain Current	I_D	5	-3	A
Continuous Drain Current (T_A=100℃)	I_D (100℃)	3.2	-1.9	
Pulsed Drain Current[1)]	I_{DM}	30	-25	A
Power Dissipation[2)]	P_D	1.47	1.3	W
Thermal Resistance Junction to Ambient[3)]	$R_{\theta JA}$	85	90	℃/W
Operating Junction Temperature	T_J	-55 ~ +150	-55 ~ +150	℃
Storage Temperature	T_{STG}	-55 ~ +150	-55 ~ +150	℃

N-CH Electrical characteristics (T_J=25 ºC, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} =0V, I_D =250μA	100			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =100V, V_{GS} =0V			1	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±20V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1	1.8	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =5A		21	27	mΩ
		V_{GS} =4.5V, I_D =2A		24	30	
Dynamic characteristics[4)]						
Input Capacitance	C_{iss}	V_{DS} =50V, V_{GS} =0V, f =1MHz		1170		pF
Output Capacitance	C_{oss}			370		
Reverse Transfer Capacitance	C_{rss}			15		
Total Gate Charge	Q_g	V_{DS} =50V, V_{GS}=10V, I_D =5A		16		nC
Gtae-Source Charge	Q_{gs}			5.6		
Gtae-Drain Charge	Q_{gd}			2.4		
Turn-on delay time	$t_{d(on)}$	V_{DS} =50V, V_{GS} =10V, I_D =5A R_G =2.2Ω		39.2		nS
Turn-on rise time	t_r			11		
Turn-off delay time	$t_{d(off)}$			53.2		
Turn-off fall time	t_f			15.8		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				5	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S =5A			1.2	V
Reverse recover time	T_{rr}	I_F =5A, di/dt =-100A/us		39.8		nS
Reverse recovery charge	Q_{rr}			42		nC

P-CH Electrical characteristics (T_J=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} =0V, I_D =-250μA	-100			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-100V, V_{GS} =0V			-1	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±20V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-1	-1.7	-2.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =-10V, I_D =-3A		85	110	mΩ
		V_{GS} =-4.5V, I_D =-2A		95	120	
Dynamic characteristics[4]						
Input Capacitance	C_{iss}	V_{DS} =-50V, V_{GS} =0V, f =1MHz		1050		pF
Output Capacitance	C_{oss}			110		
Reverse Transfer Capacitance	C_{rss}			10		
Total Gate Charge	Q_g	V_{DS} =-50V, V_{GS}=-10V I_D =-3A		20.1		nC
Gtae-Source Charge	Q_{gs}			3.9		
Gtae-Drain Charge	Q_{gd}			4.3		
Turn-on delay time	$t_{d(on)}$	V_{DS} =-50V, V_{GS} =-10V I_D =-3A, R_G =2.2Ω		10		nS
Turn-on rise time	t_r			30		
Turn-off delay time	$t_{d(off)}$			77		
Turn-off fall time	t_f			81		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				-3	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S=-3A			-1.2	V
Reverse recover time	T_{rr}	I_F =-3A, di/dt =-100A/us		70		nS
Reverse recovery charge	Q_{rr}			140		nC

Notes:

1) Repetitive rating; pulse width limited by max. junction temperature.

2) Pd is based on max. junction temperature, using junction-case thermal resistance.

3) The value of $R_{\theta JA}$ is measured with the device mounted on the the minimum recommend pad size, in the still air environment with T_A=25℃.The maximum allowed junction temperature of 150℃. The value in any given application depends on the user's specific board design.

4) Guaranteed by design, not subject to production testing.

N-Channel Typical Characteristics

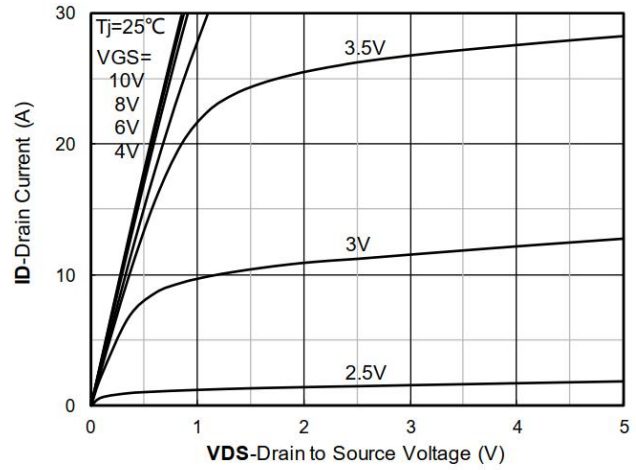


Figure 1. Output Characteristics

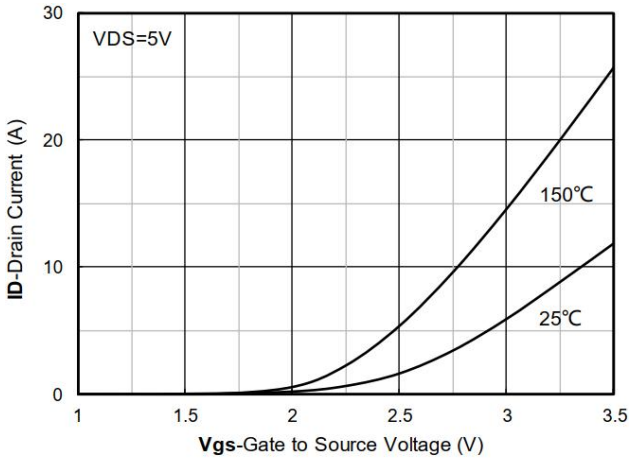


Figure 2. Transfer Characteristics

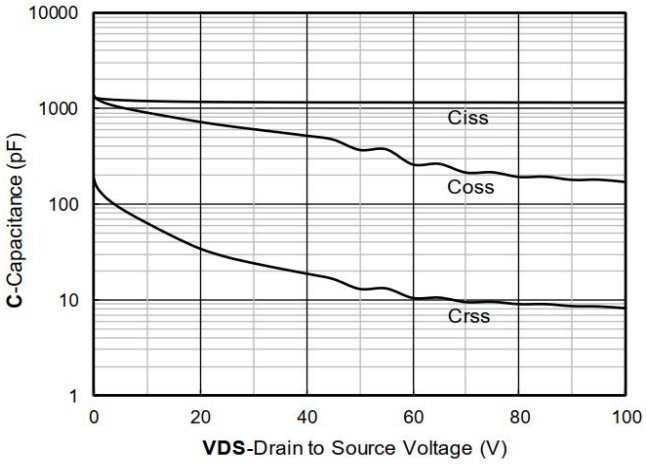


Figure 3. Capacitance Characteristics

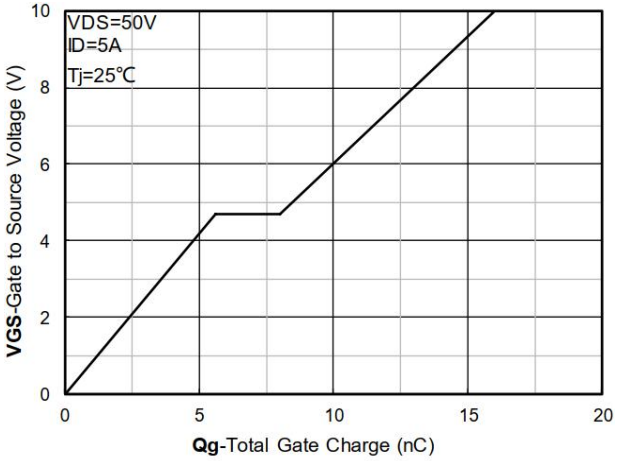


Figure 4. Gate Charge

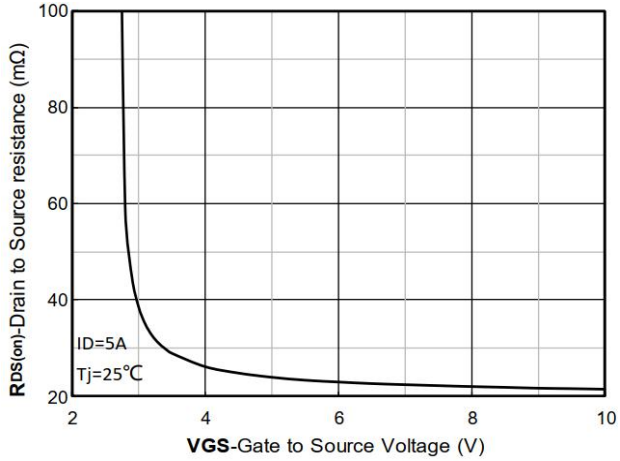


Figure 5. On-Resistance vs Gate to Source Voltage

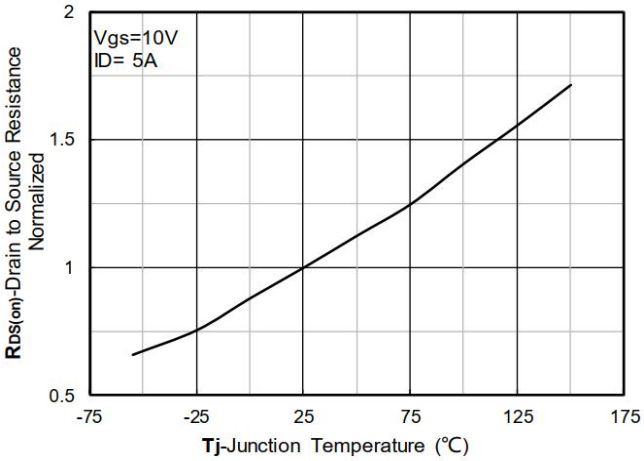


Figure 6. Normalized On-Resistan

N-Channel Typical Characteristics

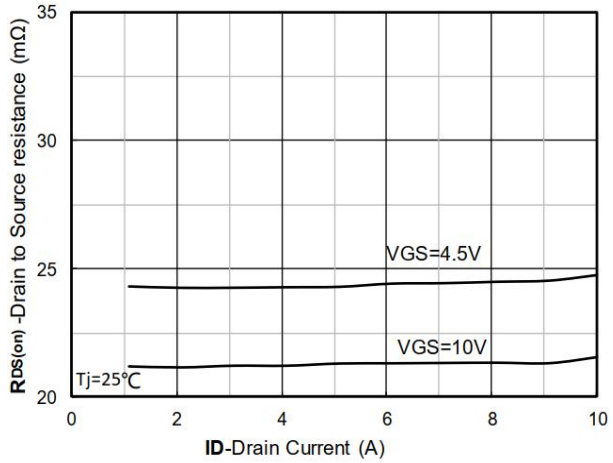


Figure 7. $R_{DS(on)}$ VS Drain Current

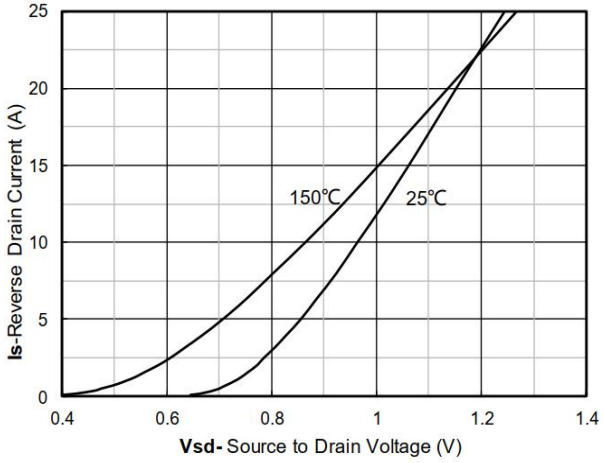


Figure 8. Forward characteristics of reverse diode

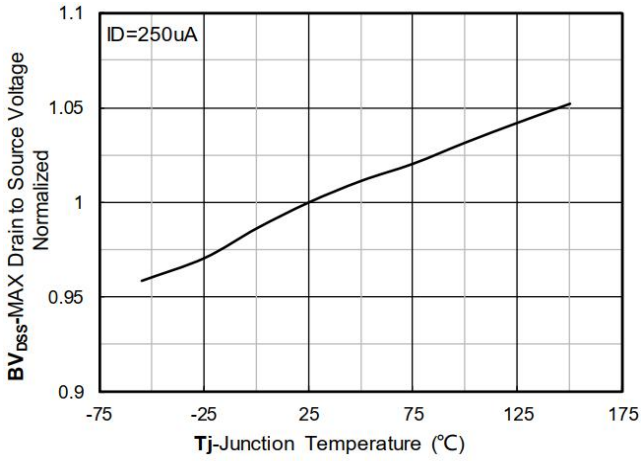


Figure 9. Normalized breakdown voltage

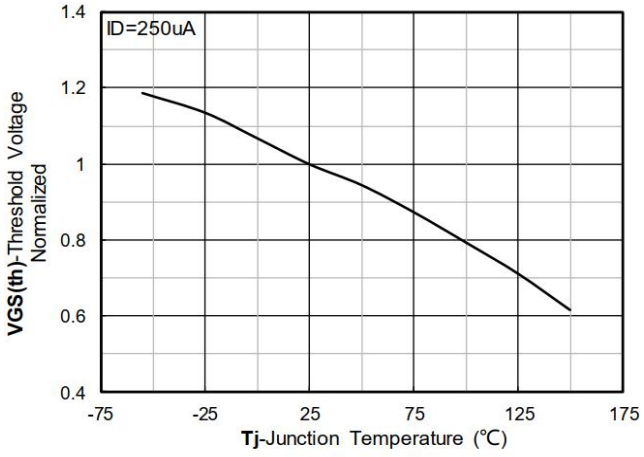


Figure 10. Normalized Threshold voltage

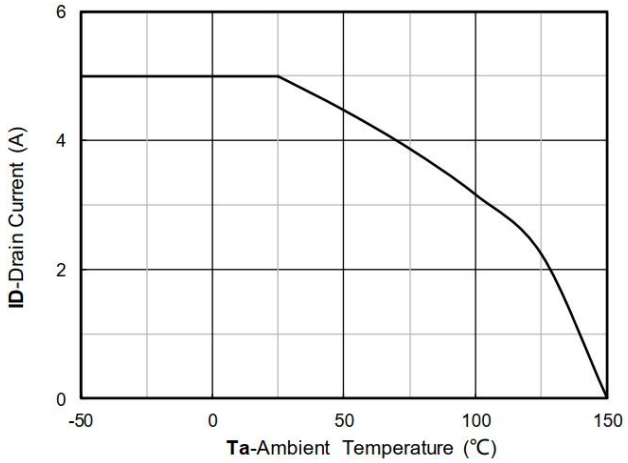


Figure 11. Current dissipation

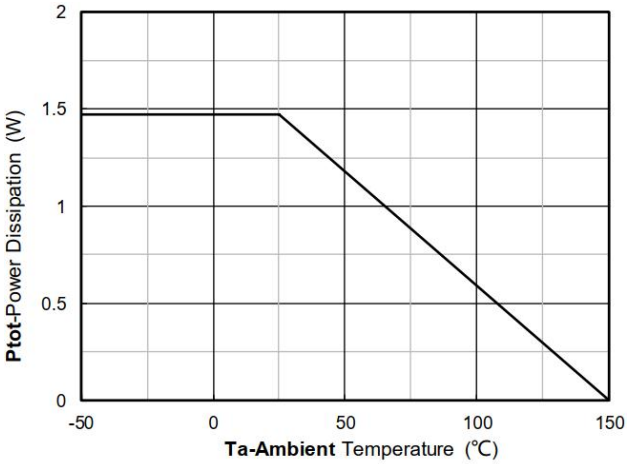


Figure 12. Power dissipation

N-Channel Typical Characteristics

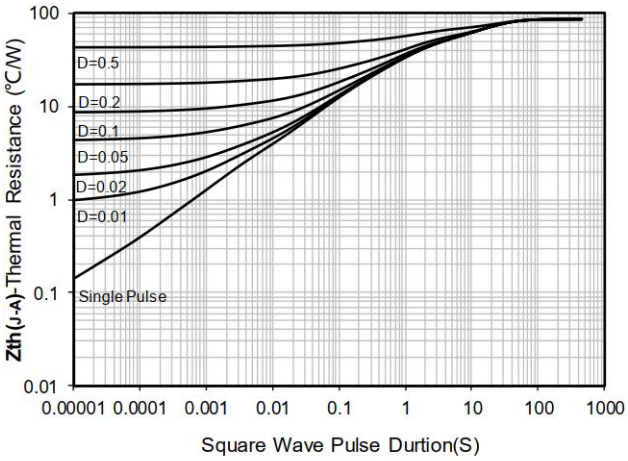


Figure 13. Maximum Transient Thermal Impedance

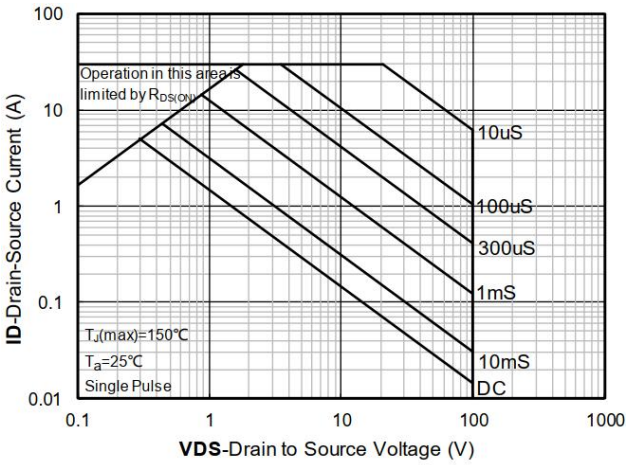


Figure 14. Safe Operation Area

P-Channel Typical Characteristics

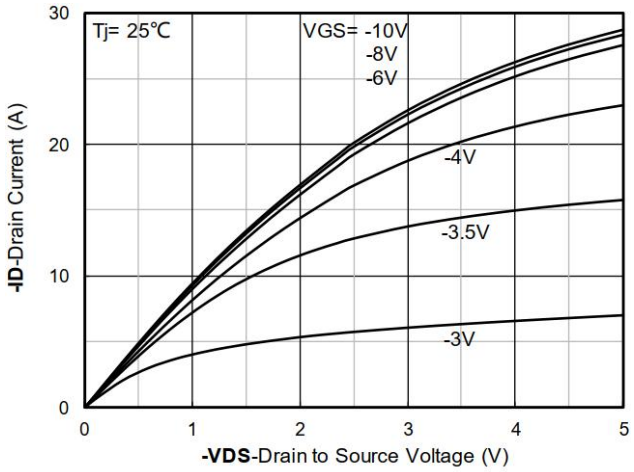


Figure 1. Output Characteristics

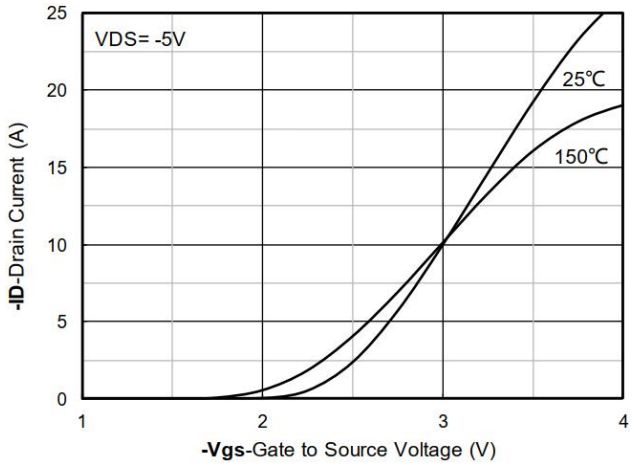


Figure 2. Transfer Characteristics

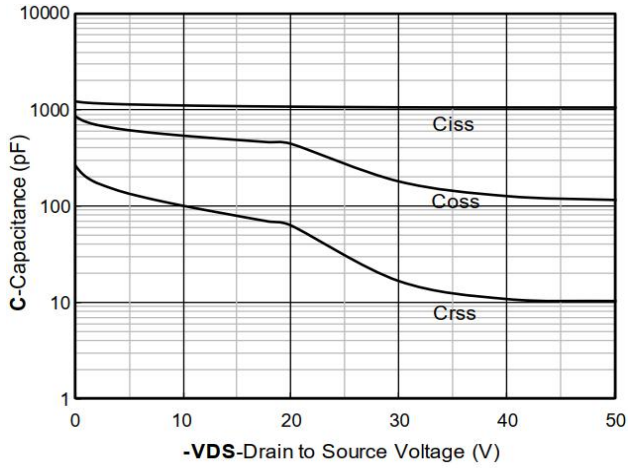


Figure 3. Capacitance Characteristics

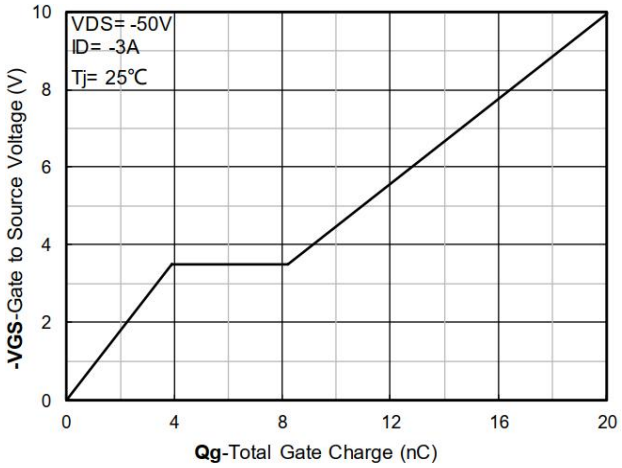


Figure 4. Gate Charge

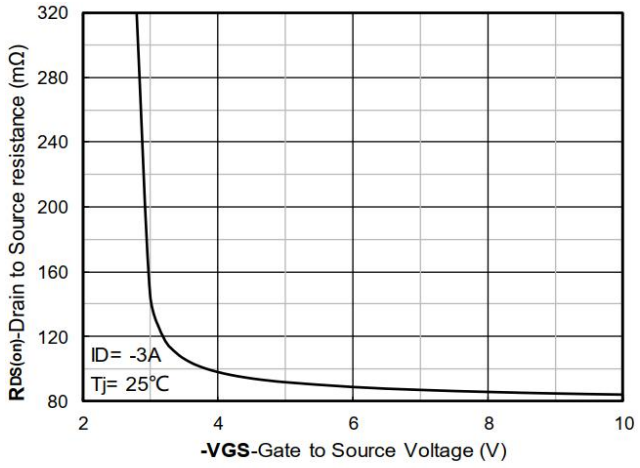


Figure 5. On-Resistance vs Gate to Source Voltage

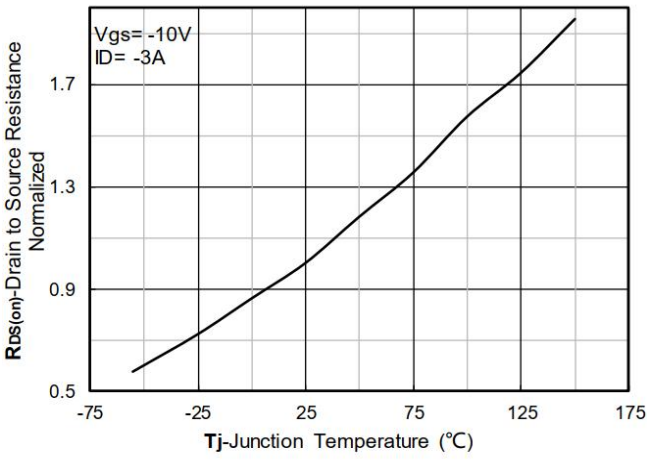


Figure 6. Normalized On-Resistance

P-Channel Typical Characteristics

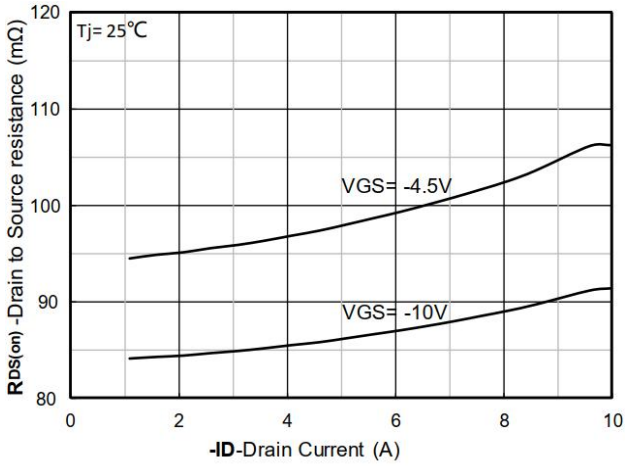


Figure 7. $R_{DS(on)}$ VS Drain Current

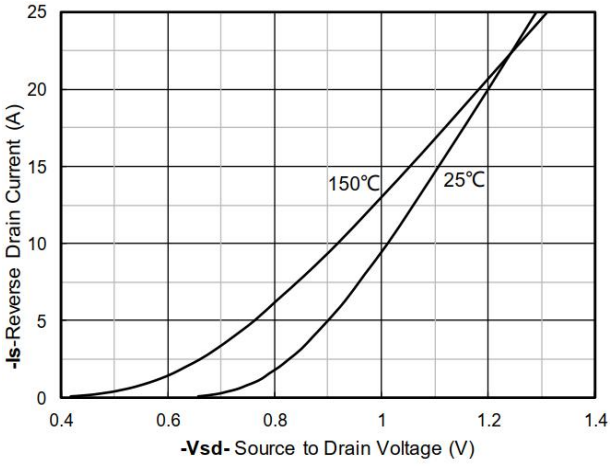


Figure 8. Forward characteristics of reverse diode

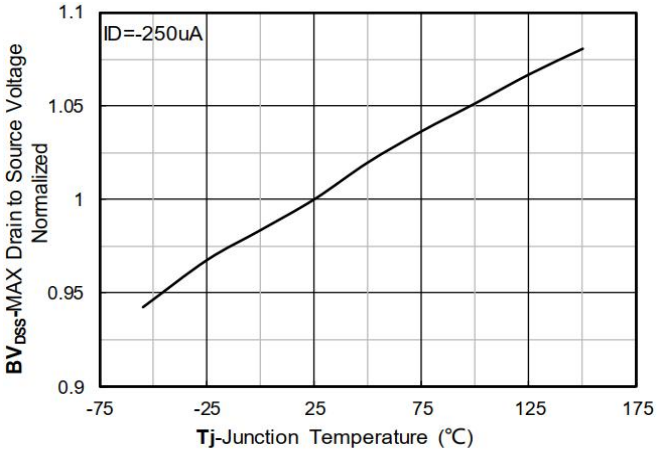


Figure 9. Normalized breakdown voltage

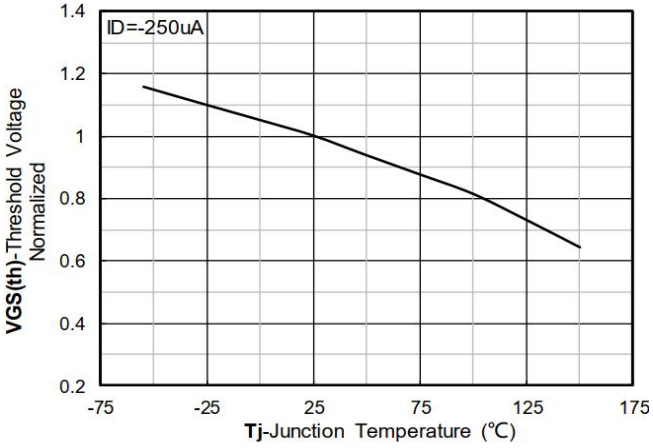


Figure 10. Normalized Threshold voltage

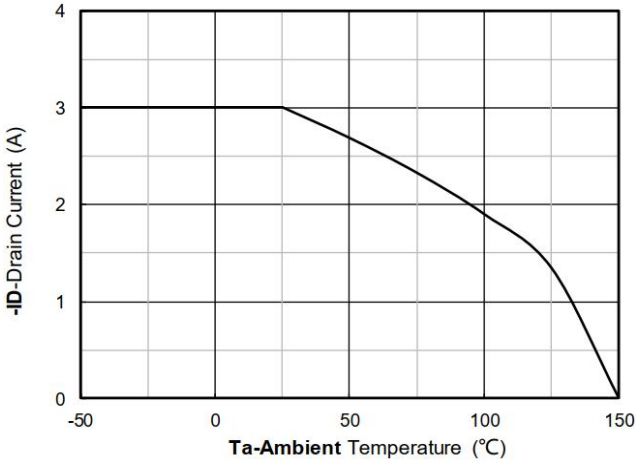


Figure 11. Current dissipation

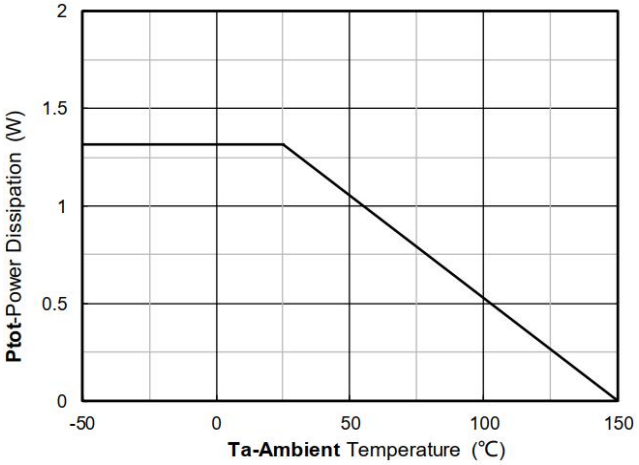


Figure 12. Power dissipation

Document ID	Issued Date	Revised Date	Revision	Page.
AS-3151421	2023/12/29	2026/04/24	B	10

P-Channel Typical Characteristics

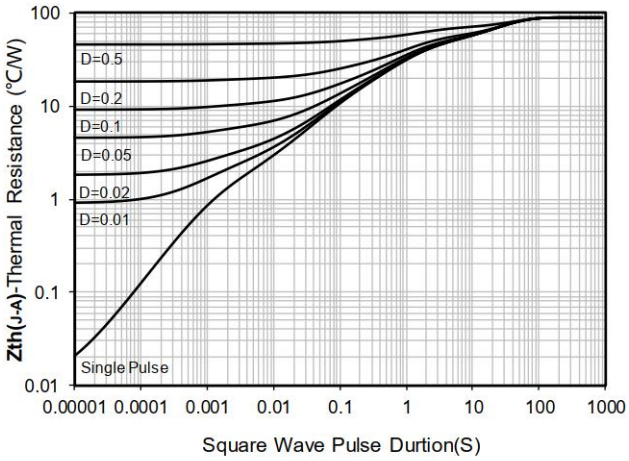


Figure 13. Maximum Transient Thermal Impedance

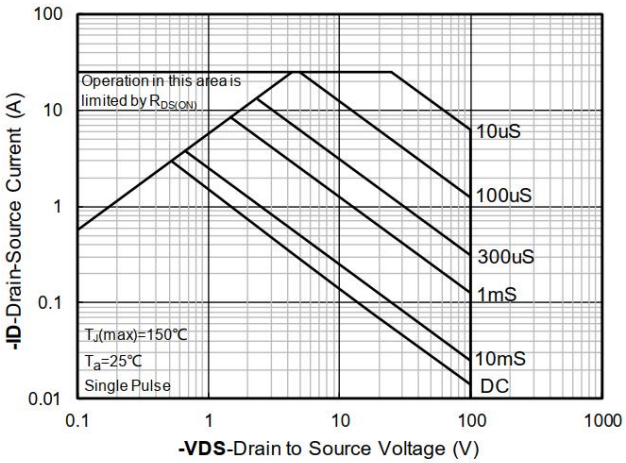
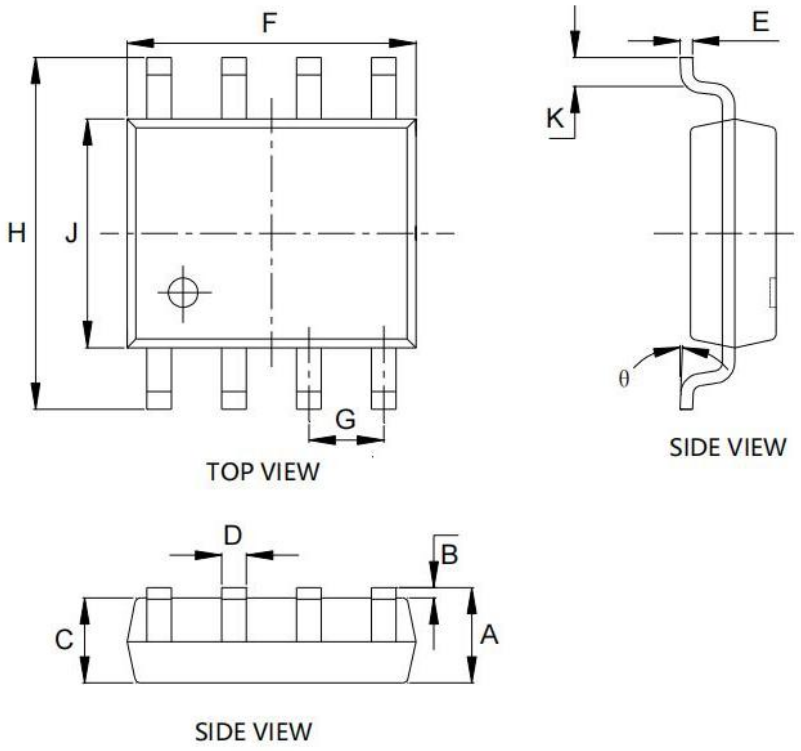


Figure 14. Safe Operation Area

SOP-8 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
B	0.100	0.250	0.004	0.010
C	1.350	1.550	0.053	0.061
D	0.330	0.510	0.013	0.020
E	0.170	0.250	0.007	0.010
F	4.800	5.000	0.189	0.197
G	1.270 BSC.		0.050 BSC.	
H	5.800	6.200	0.228	0.244
J	3.800	4.000	0.150	0.157
K	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°