



**Advanced Power
Electronics Corp.**

AP2306AGN-HF

Halogen-Free Product

N-CHANNEL ENHANCEMENT MODE

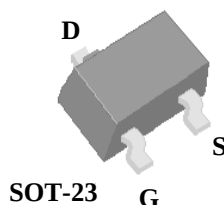
POWER MOSFET

▼ Capable of 1.8V Gate Drive

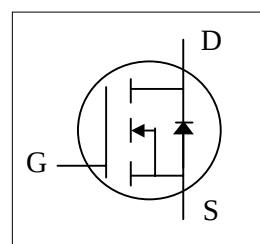
▼ Lower On-resistance

▼ Surface Mount Package

▼ RoHS Compliant



BV_{DSS}	30V
$R_{DS(ON)}$	35m Ω
I_D	5A



Description

Advanced Power MOSFETs utilized advanced processing techniques to achieve the lowest possible on-resistance, extremely efficient and cost-effectiveness device.

The SOT-23 package is widely used for all commercial-industrial applications.

Absolute Maximum Ratings@ $T_J=25^{\circ}\text{C}$ (unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 8	V
$I_D@T_A=25^{\circ}\text{C}$	Drain Current ³ , V_{GS} @ 4.5V	5	A
$I_D@T_A=70^{\circ}\text{C}$	Drain Current ³ , V_{GS} @ 4.5V	4	A
I_{DM}	Pulsed Drain Current ¹	20	A
$P_D@T_A=25^{\circ}\text{C}$	Total Power Dissipation	1.38	W
T_{STG}	Storage Temperature Range	-55 to 150	$^{\circ}\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^{\circ}\text{C}$

Thermal Data

Symbol	Parameter	Value	Unit
R_{thj-a}	Maximum Thermal Resistance Junction-ambient ³	90	$^{\circ}\text{C}/\text{W}$



Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	30	-	-	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =4.5V, I _D =5A	-	-	35	mΩ
		V _{GS} =2.5V, I _D =2.6A	-	-	50	mΩ
		V _{GS} =1.8V, I _D =1.0A	-	-	80	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	0.3	-	1.2	V
g _{fs}	Forward Transconductance	V _{DS} =5V, I _D =5A	-	9	-	S
I _{DSS}	Drain-Source Leakage Current	V _{DS} =24V, V _{GS} =0V	-	-	10	uA
I _{GSS}	Gate-Source Leakage	V _{GS} = ±8V, V _{DS} =0V	-	-	±100	nA
Q _g	Total Gate Charge ²	I _D =5A	-	8.5	15	nC
Q _{gs}	Gate-Source Charge	V _{DS} =16V	-	1	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =4.5V	-	3	-	nC
t _{d(on)}	Turn-on Delay Time ²	V _{DS} =15V	-	5	-	ns
t _r	Rise Time	I _D =1A	-	9	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =3.3Ω	-	20	-	ns
t _f	Fall Time	V _{GS} =5V	-	5	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	400	1050	pF
C _{oss}	Output Capacitance	V _{DS} =25V	-	90	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	70	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =1.2A, V _{GS} =0V	-	-	1.2	V

Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse test
- 3.Surface mounted on 1 in² copper pad of FR4 board, t ≤ 10s ; 270°C/W when mounted on min. copper pad.

THIS PRODUCT IS SENSITIVE TO ELECTROSTATIC DISCHARGE, PLEASE HANDLE WITH CAUTION.

USE OF THIS PRODUCT AS A CRITICAL COMPONENT IN LIFE SUPPORT OR OTHER SIMILAR SYSTEMS IS NOT AUTHORIZED.

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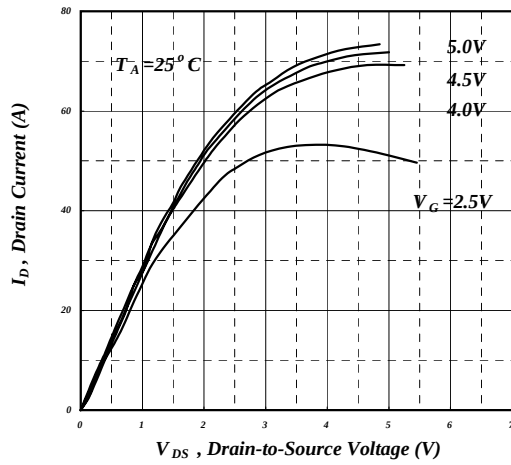


Fig 1. Typical Output Characteristics

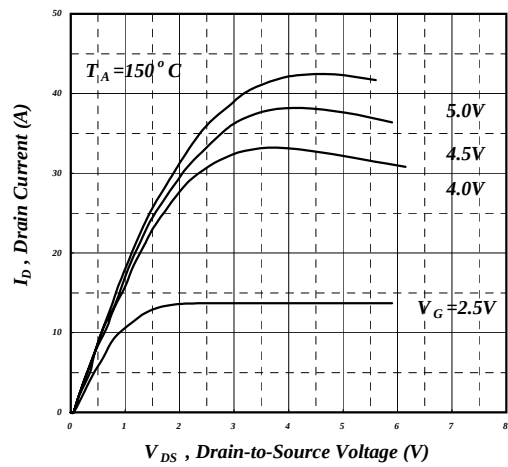


Fig 2. Typical Output Characteristics

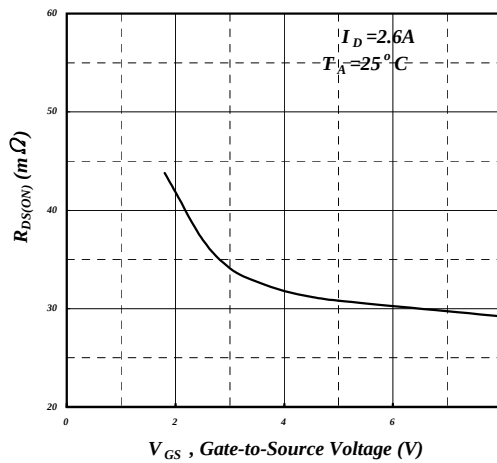


Fig 3. On-Resistance v.s. Gate Voltage

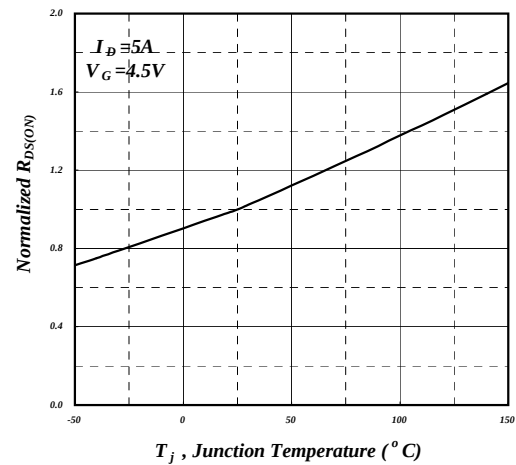


Fig 4. Normalized On-Resistance v.s. Junction Temperature

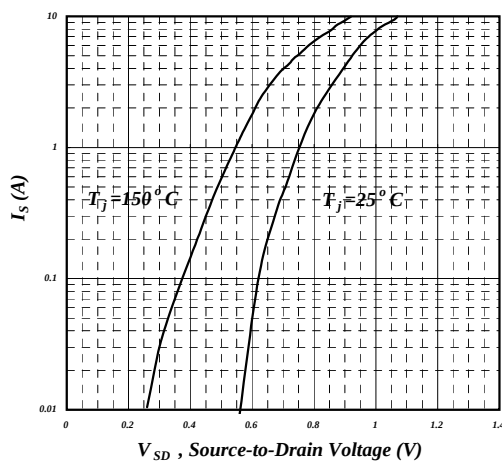


Fig 5. Forward Characteristic of Reverse Diode

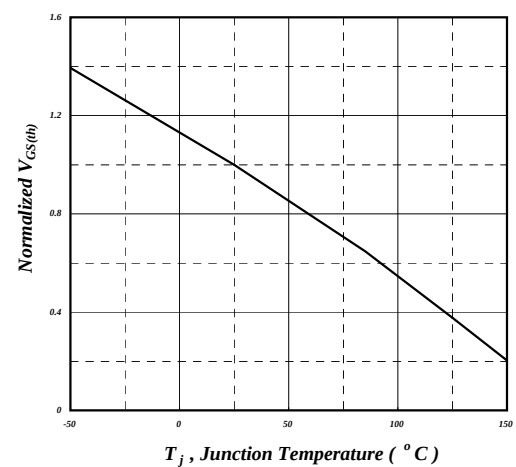


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

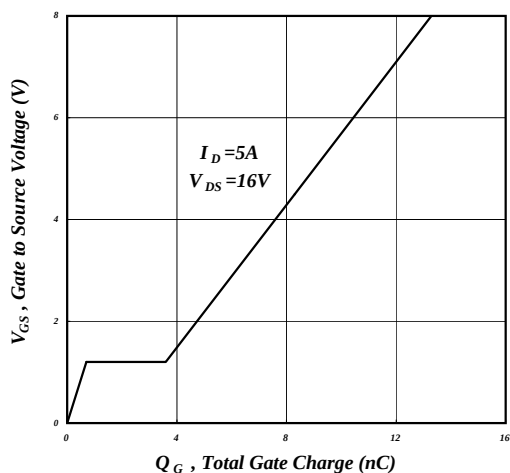


Fig 7. Gate Charge Characteristics

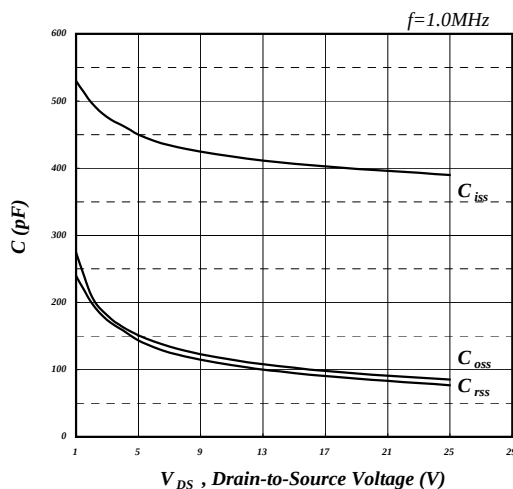


Fig 8. Typical Capacitance Characteristics

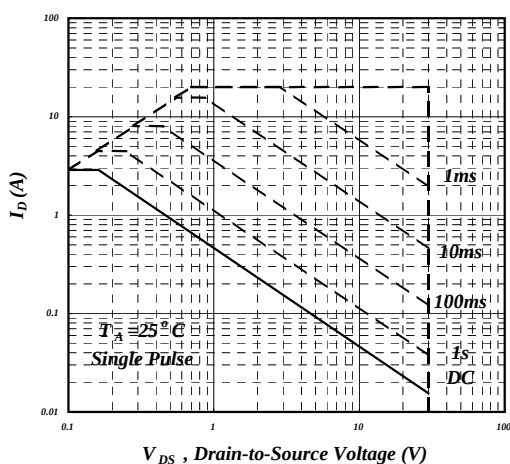


Fig 9. Maximum Safe Operating Area

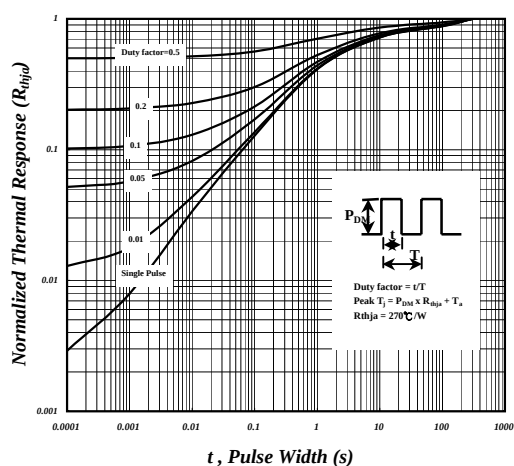


Fig 10. Effective Transient Thermal Impedance

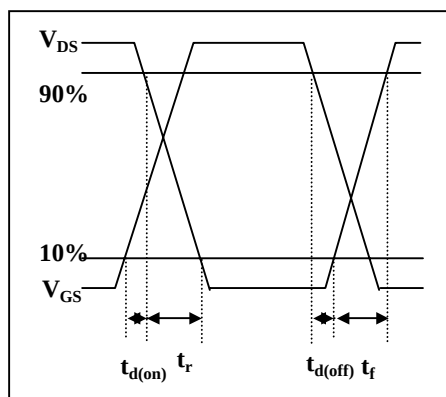


Fig 11. Switching Time Waveform

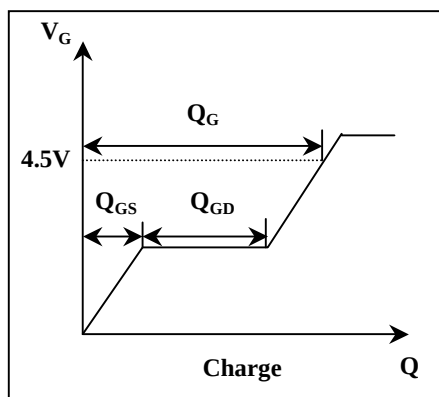
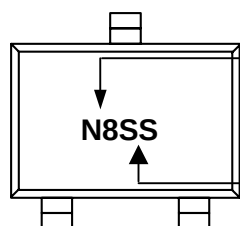


Fig 12. Gate Charge Waveform



MARKING INFORMATION



Part Number : N8

Date Code : SS

SS:2004,2008,2012...

SS:2003,2007,2011...

SS:2002,2006,2010...

SS:2001,2005,2009...