



**Advanced Power
Electronics Corp.**

AP2320GN

RoHS-compliant Product

N-CHANNEL ENHANCEMENT MODE

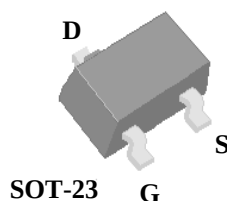
POWER MOSFET

▼ Simple Drive Requirement

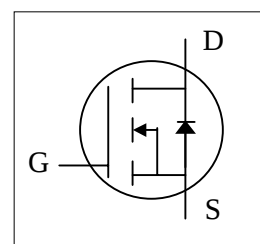
▼ Small Package Outline

▼ Surface Mount Device

▼ RoHS Compliant



BV_{DSS}	100V
$R_{DS(ON)}$	5Ω
I_D	0.25A



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 commercial-industrial applications.

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_A=25^\circ\text{C}$	Continuous Drain Current ³ , V_{GS} @ 10V	0.25	A
$I_D@T_A=70^\circ\text{C}$	Continuous Drain Current ³ , V_{GS} @ 10V	0.2	A
I_{DM}	Pulsed Drain Current ¹	1	A
$P_D@T_A=25^\circ\text{C}$	Total Power Dissipation	0.7	W
	Linear Derating Factor	0.005	W/ $^\circ\text{C}$
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
Rthj-a	Maximum Thermal Resistance, Junction-ambient ³	180	$^\circ\text{C}/\text{W}$



AP2320GN

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	100	-	-	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =0.25A	-	-	5	Ω
		V _{GS} =4.5V, I _D =0.2A	-	-	9	Ω
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1	-	3	V
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =0.2A	-	0.2	-	S
I _{DSS}	Drain-Source Leakage Current	V _{DS} =100V, V _{GS} =0V	-	-	10	uA
I _{GSS}	Gate-Source Leakage	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Q _g	Total Gate Charge ²	I _D =0.4A	-	2	3.2	nC
Q _{gs}	Gate-Source Charge	V _{DS} =80V	-	0.5	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =10V	-	0.5	-	nC
t _{d(on)}	Turn-on Delay Time ²	V _{DS} =50V	-	3	-	ns
t _r	Rise Time	I _D =0.4A	-	7	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =3.3Ω	-	9.5	-	ns
t _f	Fall Time	V _{GS} =10V	-	4.5	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	32	51	pF
C _{oss}	Output Capacitance	V _{DS} =25V	-	9.5	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	6	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =0.4A, V _{GS} =0V	-	-	1.5	V
t _{rr}	Reverse Recovery Time	I _S =1A, V _{GS} =0V,	-	27	-	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	28	-	nC

Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse test
- 3.Surface mounted on 1 in² copper pad of FR4 board ;400°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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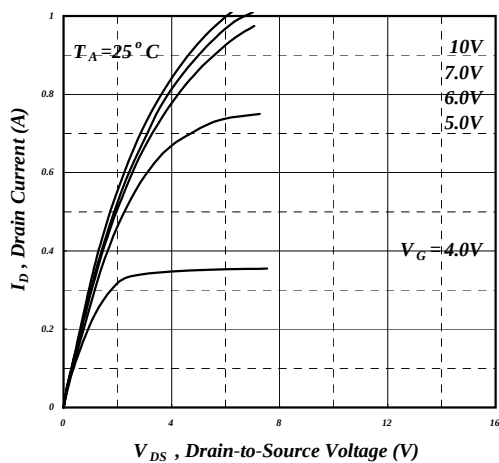


Fig 1. Typical Output Characteristics

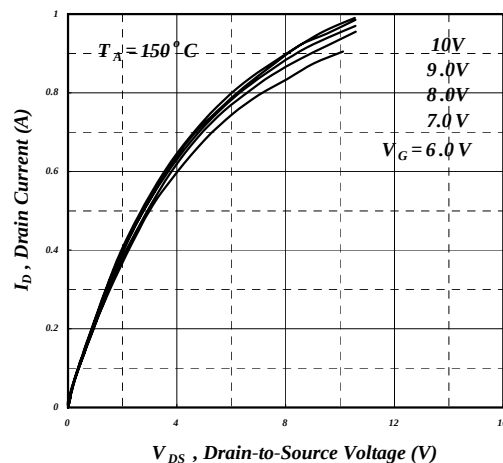


Fig 2. Typical Output Characteristics

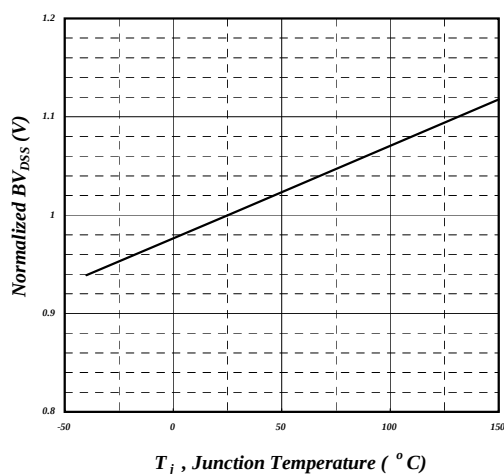


Fig 3. Normalized BV_{DSS} v.s. Junction Temperature

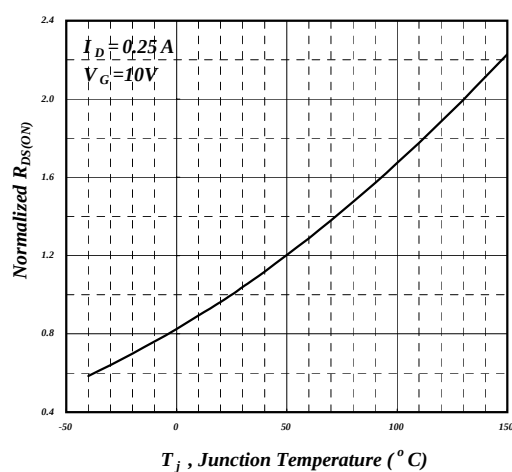


Fig 4. Normalized On-Resistance v.s. Junction Temperature

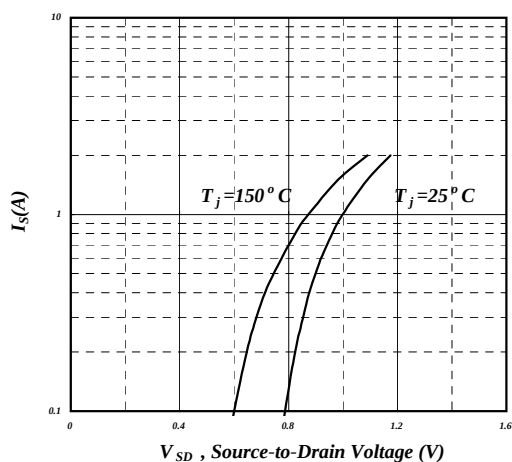


Fig 5. Forward Characteristic of Reverse Diode

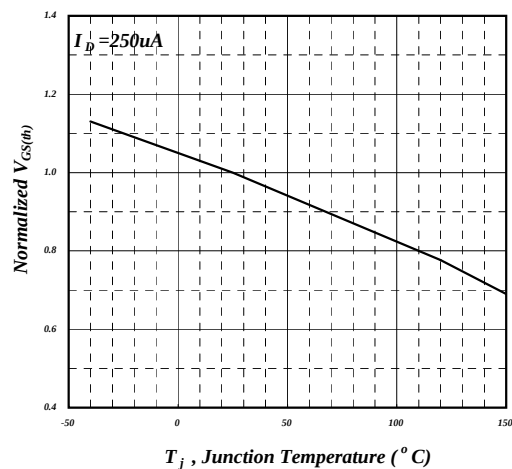


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

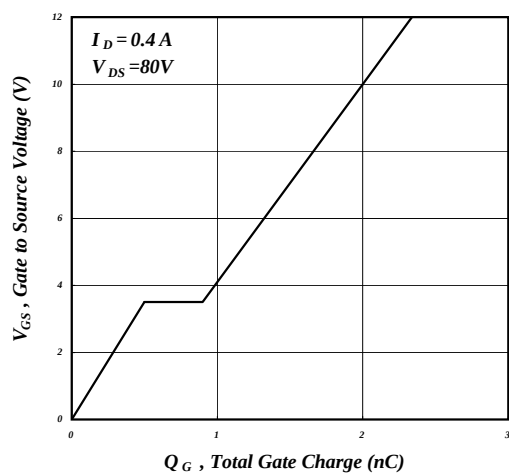


Fig 7. Gate Charge Characteristics

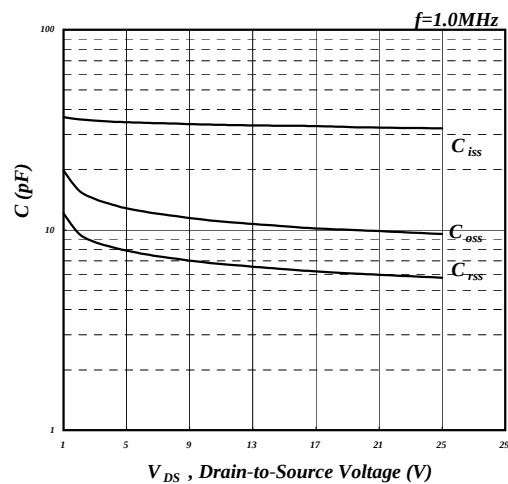


Fig 8. Typical Capacitance Characteristics

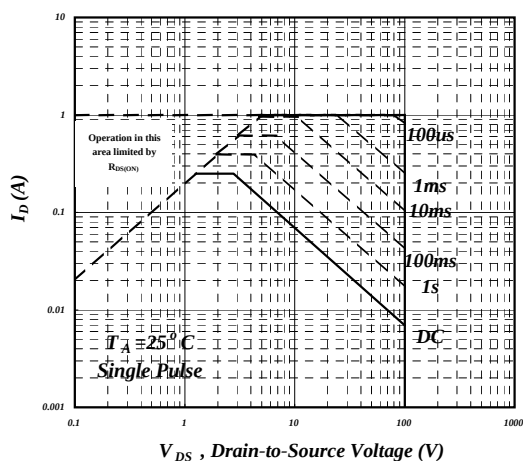


Fig 9. Maximum Safe Operating Area

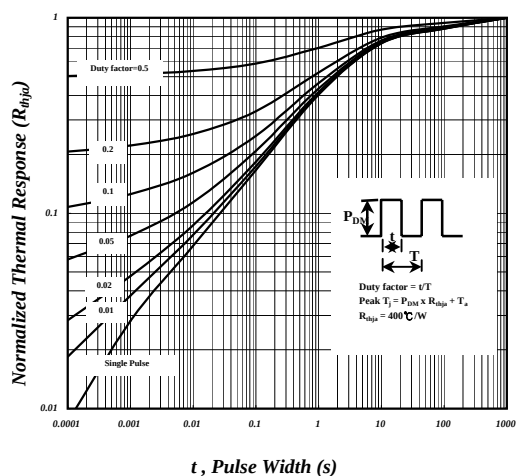


Fig 10. Effective Transient Thermal Impedance

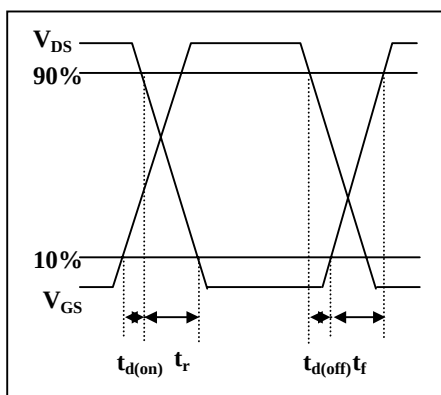


Fig 11. Switching Time Waveform

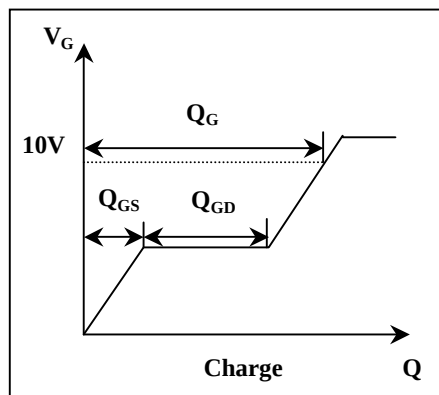


Fig 12. Gate Charge Waveform