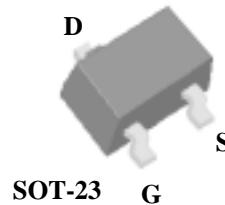


AP2311GN

- ▼ Simple Drive Requirement
- ▼ Small Package Outline
- ▼ Surface Mount Device
- ▼ RoHS Compliant

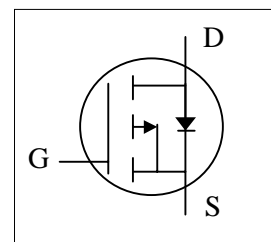


BV_{DSS}	-60V
$R_{DS(ON)}$	250mΩ
I_D	- 1.8A

Description

The Advanced Power MOSFETs from TY provide the designer with the best combination of fast switching, low on-resistance and cost-effectiveness.

The SOT-23 package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	- 60	V
V_{GS}	Gate-Source Voltage	±20	V
$I_D@T_A=25^{\circ}C$	Continuous Drain Current ³	- 1.8	A
$I_D@T_A=70^{\circ}C$	Continuous Drain Current ³	- 1.4	A
I_{DM}	Pulsed Drain Current ^{1,2}	-10	A
$P_D@T_A=25^{\circ}C$	Total Power Dissipation	1.38	W
	Linear Derating Factor	0.01	W/°C
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Value	Unit
Rthj-a	Thermal Resistance Junction-ambient ³	Max. 90	°C/W

Electrical Characteristics @ $T_J=25^{\circ}\text{C}$ (unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-60	-	-	V
$\Delta BV_{DSS}/\Delta T_J$	Breakdown Voltage Temperature Coefficient	Reference to 25°C , $I_D=-1\text{mA}$	-	-0.04	-	$V/^{\circ}\text{C}$
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=-10V, I_D=-1.8A$	-	200	250	$\text{m}\Omega$
		$V_{GS}=-4.5V, I_D=-1.4A$	-	240	300	$\text{m}\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1	-	-3	V
g_{fs}	Forward Transconductance	$V_{DS}=-10V, I_D=-1A$	-	2	-	S
I_{DSS}	Drain-Source Leakage Current ($T_J=25^{\circ}\text{C}$)	$V_{DS}=-60V, V_{GS}=0V$	-	-	-10	μA
	Drain-Source Leakage Current ($T_J=70^{\circ}\text{C}$)	$V_{DS}=-48V, V_{GS}=0V$	-	-	-25	μA
I_{GSS}	Gate-Source Leakage	$V_{GS}=\pm 20V$	-	-	± 100	nA
Q_g	Total Gate Charge ²	$I_D=-1A$	-	6	10	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=-48V$	-	1	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	$V_{GS}=-4.5V$	-	3	-	nC
$t_{d(on)}$	Turn-on Delay Time ²	$V_{DS}=-30V$	-	8	-	ns
t_r	Rise Time	$I_D=-1A$	-	5	-	ns
$t_{d(off)}$	Turn-off Delay Time	$R_G=3.3\Omega, V_{GS}=-10V$	-	22	-	ns
t_f	Fall Time	$R_D=30\Omega$	-	3	-	ns
C_{iss}	Input Capacitance	$V_{GS}=0V$	-	510	810	pF
C_{oss}	Output Capacitance	$V_{DS}=-25V$	-	50	-	pF
C_{rss}	Reverse Transfer Capacitance	$f=1.0\text{MHz}$	-	40	-	pF
R_g	Gate Resistance	$f=1.0\text{MHz}$	-	6.4	9.6	Ω

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
t_{rr}	Reverse Recovery Time ²	$I_S=-1A, V_{GS}=0V,$ $di/dt=100A/\mu s$	-	30	-	ns
Q_{rr}	Reverse Recovery Charge		-	38	-	nC

Notes:

1. Pulse width limited by Max. junction temperature.
2. Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Surface mounted on 1 in² copper pad of FR4 board, $t \leq 10\text{sec}$; $270^{\circ}\text{C}/W$ when mounted on Min. copper pad.