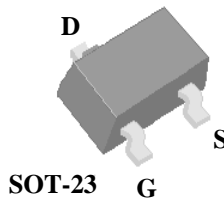


AP2305BGN-HF

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

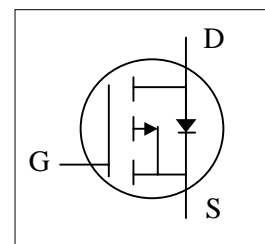


BV_{DSS}	-20V
$R_{DS(ON)}$	65mΩ
I_D	-4.2A

Description

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

The SOT-23 package is widely preferred for 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	- 20	V
V_{GS}	Gate-Source Voltage	± 12	V
$I_D@T_A=25^\circ C$	Continuous Drain Current ³ , @ $V_{GS}=-4.5V$	-4.2	A
$I_D@T_A=70^\circ C$	Continuous Drain Current ³ , @ $V_{GS}=-4.5V$	-3.4	A
I_{DM}	Pulsed Drain Current ¹	-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-amb	Maximum Thermal Resistance, Junction-ambient ³	90	°C/W

AP2305BGN-HF

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	$V_{GS}=0V, I_D=-250\mu A$	-20	-	-	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance ²	$V_{GS}=-10V, I_D=-4.5A$	-	-	53	m Ω
		$V_{GS}=-4.5V, I_D=-4.2A$	-	-	65	m Ω
		$V_{GS}=-2.5V, I_D=-2.0A$	-	-	100	m Ω
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.5	-	-1.16	V
g_{fs}	Forward Transconductance	$V_{DS}=-5V, I_D=-4A$	-	14	-	S
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=-20V, V_{GS}=0V$	-	-	-1	μA
	Drain-Source Leakage Current ($T_j=55^{\circ}\text{C}$)	$V_{DS}=-16V, V_{GS}=0V$	-	-	-10	μA
I_{GSS}	Gate-Source Leakage	$V_{GS}=\pm 12V, V_{DS}=0V$	-	-	± 100	nA
Q_g	Total Gate Charge ²	$I_D=-4A$	-	13	21	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=-16V$	-	1.4	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	$V_{GS}=-4.5V$	-	4	-	nC
$t_{d(on)}$	Turn-on Delay Time ²	$V_{DS}=-10V$	-	8	-	ns
t_r	Rise Time	$I_D=-1A$	-	17	-	ns
$t_{d(off)}$	Turn-off Delay Time	$R_G=3.3\Omega, V_{GS}=-5V$	-	24	-	ns
t_f	Fall Time	$R_D=10\Omega$	-	33	-	ns
C_{iss}	Input Capacitance	$V_{GS}=0V$	-	920	1470	pF
C_{oss}	Output Capacitance	$V_{DS}=-20V$	-	90	-	pF
C_{rss}	Reverse Transfer Capacitance	$f=1.0\text{MHz}$	-	85	-	pF
R_g	Gate Resistance	$f=1.0\text{MHz}$	-	4.5	6.8	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	$I_S=-4A, V_{GS}=0V,$	-	27	-	ns
Q_{rr}	Reverse Recovery Charge	$dI/dt=100A/\mu s$	-	14	-	nC

Notes:

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