

-30V_{DS}/±20V_{GS} P-Channel Enhancement Mode MOSFET

Features

- $V_{DS}=-30V, I_D=-45A$
- $R_{DS(ON)}=9m\Omega$ (TYP.) $V_{GS}=-10V$
- $R_{DS(ON)}=15m\Omega$ (TYP.) $V_{GS}=-4.5V$
- Fast Switching
- Low On-Resistance

Applications

- Switch switching
- Power management in portable/desktop PCs

Ordering Information

Device	package	Device Marking	Package Qty.
AP20P30Q	PDFN3*3	**	5000/PCS

Absolute Maximum Ratings (T_C=25°C, unless otherwise noted)

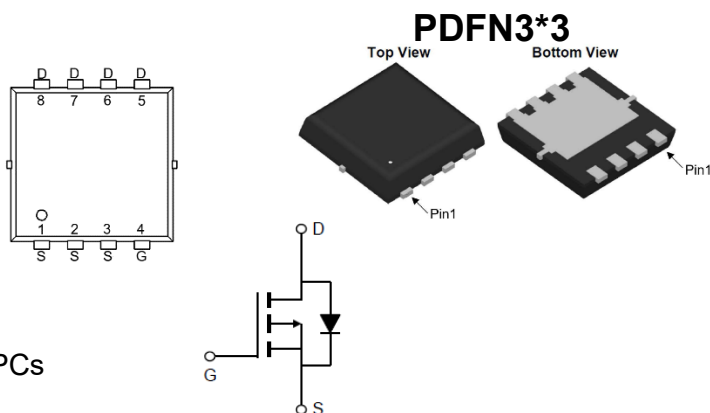
Parameter	Symbol	Value	Unit
Drain-Source Voltage (V _{GS} =0V)	V _{DS}	-30	V
Gate-Source Voltage (V _{GS} =0V, static)	V _{GS}	±20	V
Continuous Drain Current (T _C =25°C)	I _D	-45	A
Continuous Drain Current (T _C =100°C)		-28	A
Pulsed Drain Current	I _{DM}	-120	A
Avalanche Energy, Single Pulsed	E _{AS}	102	mJ
Maximum Power Dissipation (T _C =25°C)	P _D	35	W
Operating, Storage Temperature Range	T _J , T _{STG}	-55~150	°C

Electrical Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250μA	-30	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-30V, V _{GS} =0V	-	-	-1	μA
Gate -Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =-250μA	-0.5	-0.8	-1.1	V
Drain-Source On-stage Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-1A	-	7.5	10	mΩ
		V _{GS} =-4.5V, I _D =-1A	-	11	15	
		V _{GS} =-2.5V, I _D =-1A	-	-	-	
Body Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _{SD} =-1A	-	-0.75	-1	V

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Case	R _{θJC}	-	3.8	-	°C/ W
Thermal Resistance, Junction-to-Ambient	R _{θJA}	-	59	-	°C/ W



Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Input capacitance	C_{iss}	$V_{DS}=-15V$ $V_{GS}=0V$ $f=1MHz$	-	5270	-	pF
Output capacitance	C_{oss}		-	945	-	
Reverse transfer capacitance	C_{rss}		-	745	-	
Gate Resistance	R_g	$f=1MHz$	-	6	-	Ω
Total Gate Charge	Q_g	$V_{DS}=-15V$ $V_{GS}=-10V$ $I_D=-15A$	-	36	-	nC
Gate Source Charge	Q_{gs}		-	3	-	
Gate Drain Charge	Q_{gd}		-	9.5	-	
Turn-on delay Time	$t_{d(on)}$	$V_{GS}=-10V$ $V_{DS}=-15V$ $R_L=1\Omega$ $R_G=3\Omega$	-	16	-	ns
Rise time	t_r		-	19	-	
Turn-off delay Time	$t_{d(off)}$		-	70	-	
Fall time	t_f		-	41	-	
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_{SD}=-15A$ $dI/dt=100A/\mu s$	-	39	-	ns
Reverse Recovery Charge	Q_{rr}		-	26	-	nC

Electrical Characteristics Diagrames

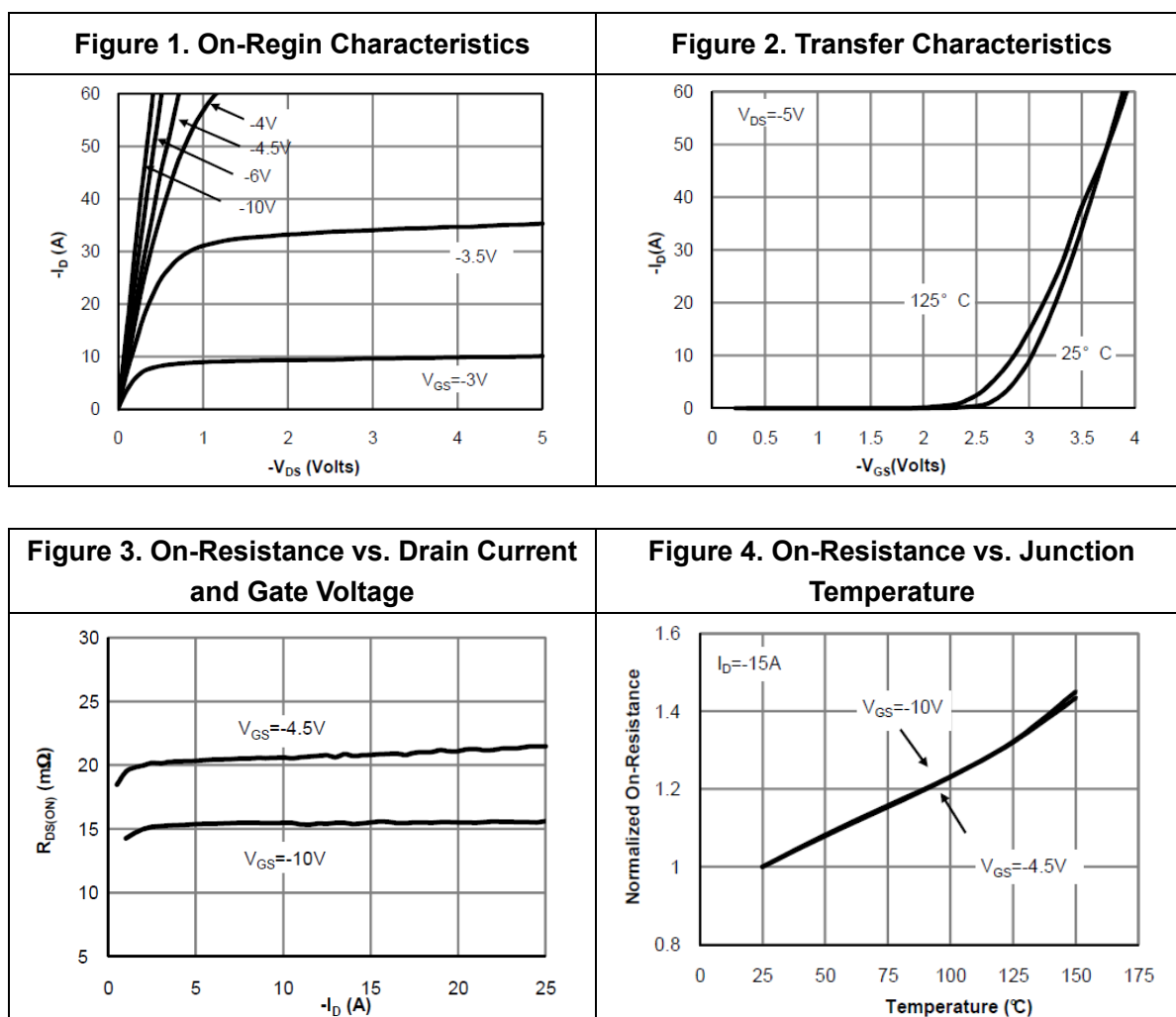


Figure 5. On-Resistance vs. Gate-Source Voltage

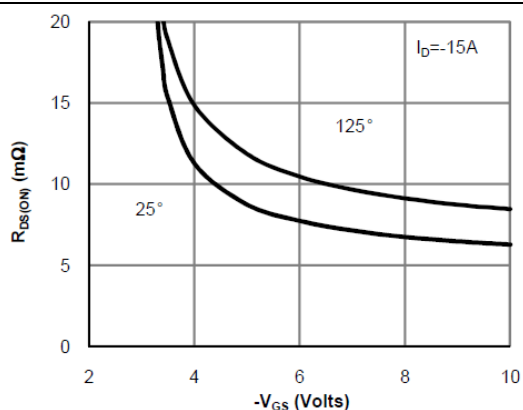


Figure 6. Body-Diode Characteristics

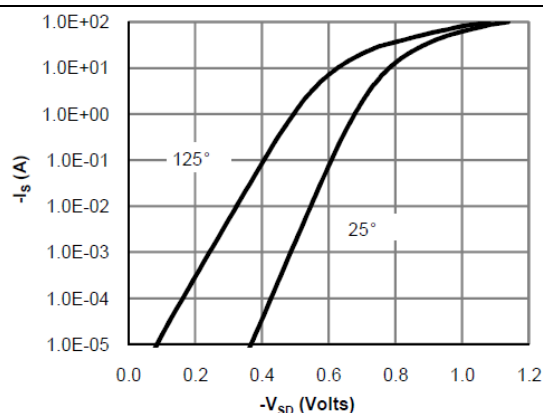


Figure 7. Gate-Charge Characteristics

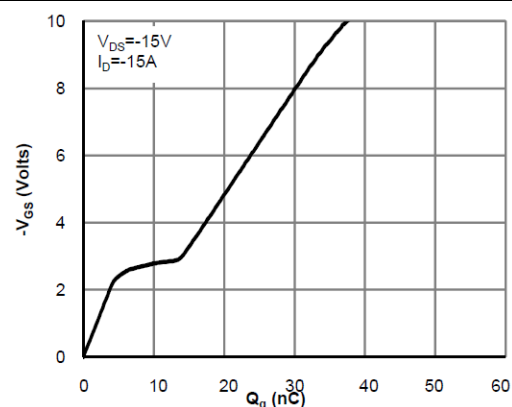


Figure 8. Capacitance Characteristics

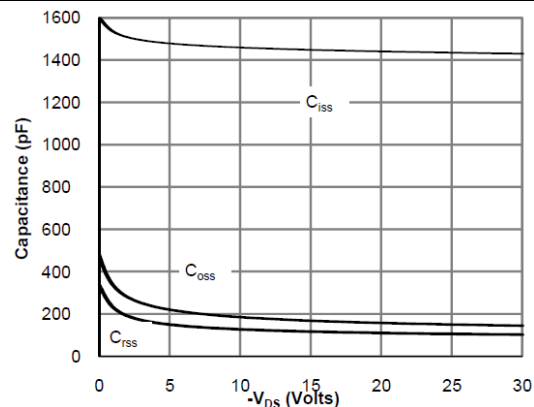


Figure 9. Maximum Forward Biased Safe Operating Area

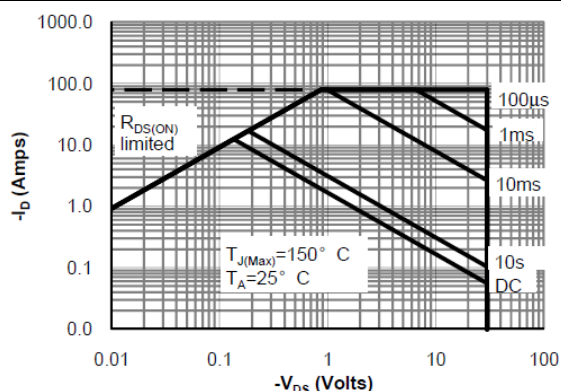
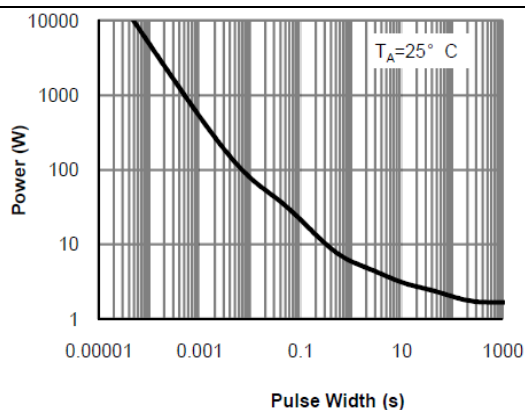


Figure 10. Single Pulse Power Rating Junction-to-Ambient



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