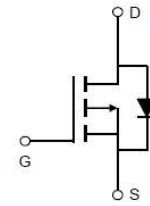


AP20P10K

P-Channel Enhancement Mosfet

Features

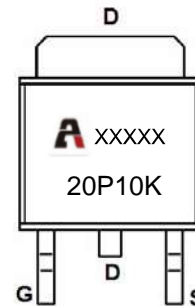
- -100V,-20A
 $R_{DS(ON)} < 180m\Omega @ V_{GS} = -10V$ TYP:165m Ω
 $R_{DS(ON)} < 190m\Omega @ V_{GS} = -4.5V$ TYP:175 m Ω
- Surface-mounted package
- Low gate charge



Schematic Diagram

Applications

- Motor driver appliances
- Adapter appliances
- High power inverter system



Marking and pin assignment

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
20P10K	AP20P10K	TO-252	-	-	2500

ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_c = 25^\circ\text{C}$)	I_D	-20	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	-44	A
Drain Power Dissipation	P_D	35	W
Thermal Resistance from Junction to Case ⁽²⁾	$R_{\theta JC}$	2.5	$^\circ\text{C}/\text{W}$
Thermal Resistance- Junction to Ambient ⁽³⁾	$R_{\theta JA}$	62.5	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~ +150	$^\circ\text{C}$

Notes:

1. Pulse width $\leq 300 \mu\text{s}$, duty cycle $\leq 2\%$
2. Mounted on PCB of 1 in2 pad area
3. Mounted on Large Heat Sink

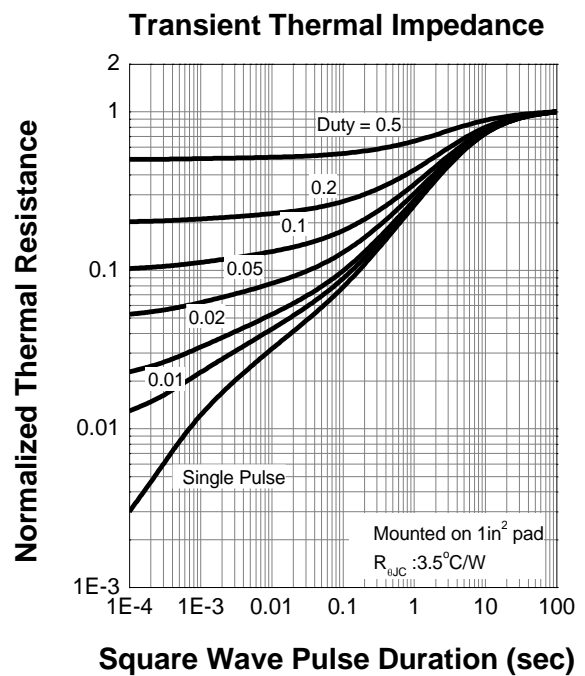
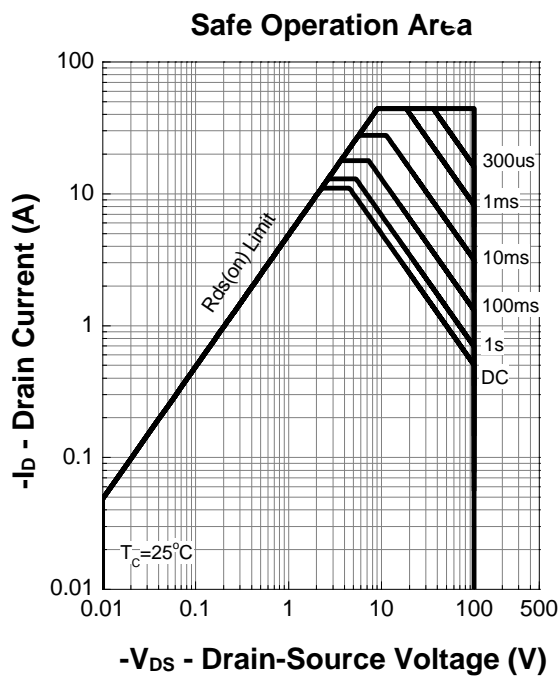
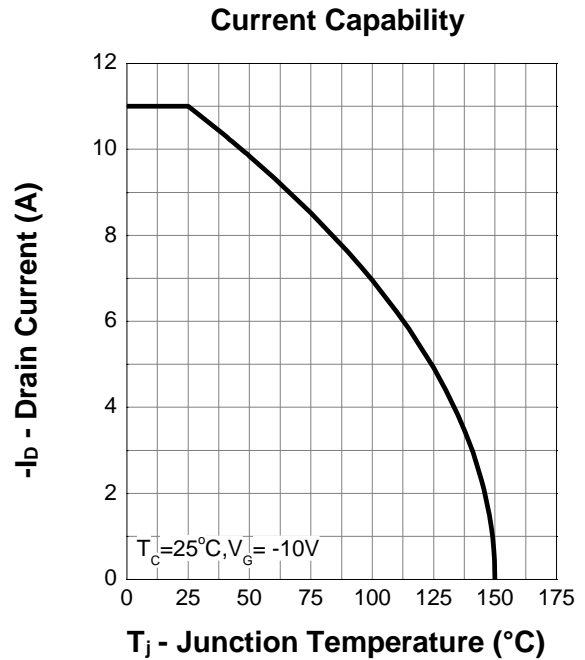
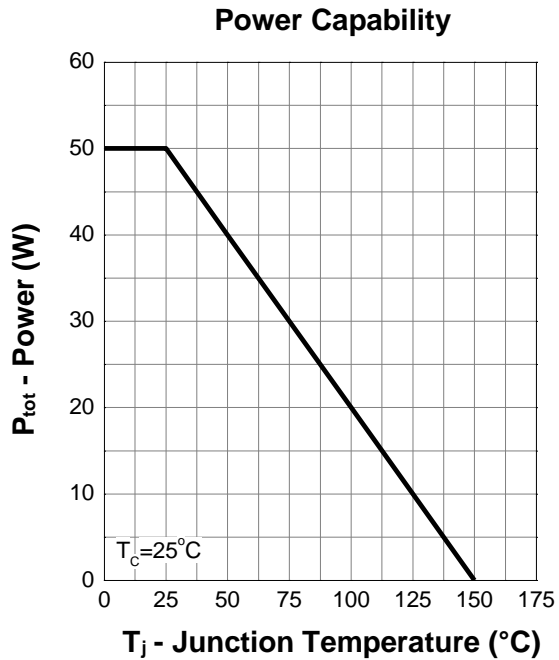
MOSFET ELECTRICAL CHARACTERISTICS(T_a=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-100	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} = -80V, V _{GS} = 0V	-	-	-1	μA
Gate-body 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	-1.0	-	-2.5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} = -10V, I _D = -2A	-	165	180	mΩ
		V _{GS} = -4.5V, I _D = -1A	-	175	190	mΩ
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} = -50V, V _{GS} = 0V, f = 1.0MHz	-	1545	-	pF
Output Capacitance	C _{oss}		-	37	-	
Reverse Transfer Capacitance	C _{rss}		-	25	-	
Switching characteristics						
Turn-on delay time	t _{d(on)}	V _{DD} = -50V, I _D = -2A, R _G = 4.5Ω, V _{GS} = -10V, R _L = 25Ω	-	10	-	ns
Turn-on rise time	t _r		-	27	-	
Turn-off delay time	t _{d(off)}		-	288	-	
Turn-off fall time	t _f		-	88	-	
Total Gate Charge	Q _g	V _{DS} = -50V, I _D = -2A, V _{GS} = -10V	-	65.5	-	nC
Gate-Source Charge	Q _{gs}		-	16	-	
Gate-Drain Charge	Q _{gd}		-	19.5	-	
Source-Drain Diode characteristics						
Diode Forward voltage	V _{SD}	T _c = 25°C, V _{GS} = 0V, I _S = -2A	-	-	-1.3	V
Diode Forward current	I _S	T _c = 25°C	-	-	-20	A
Body Diode Reverse Recovery Time	t _{rr}	T _c = 25°C, I _F = -6A, di/dt = 100A/us		40		ns
Body Diode Reverse Recovery Charge	Q _{rr}	T _c = 25°C, I _F = -6A, di/dt = 100A/us		90		uc

Notes:

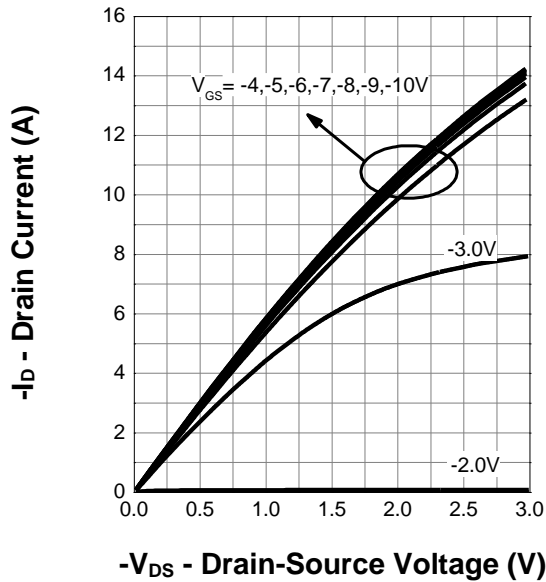
1. Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2%
2. Guaranteed by design, not subject to production testing

Typical Characteristics (Cont.)

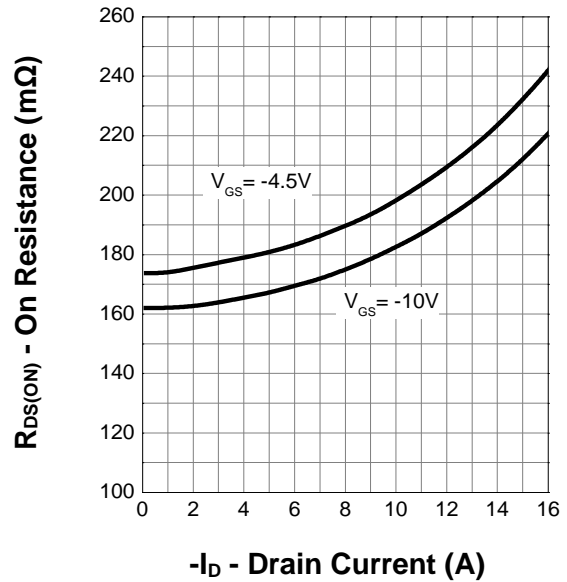


Typical Characteristics (Cont.)

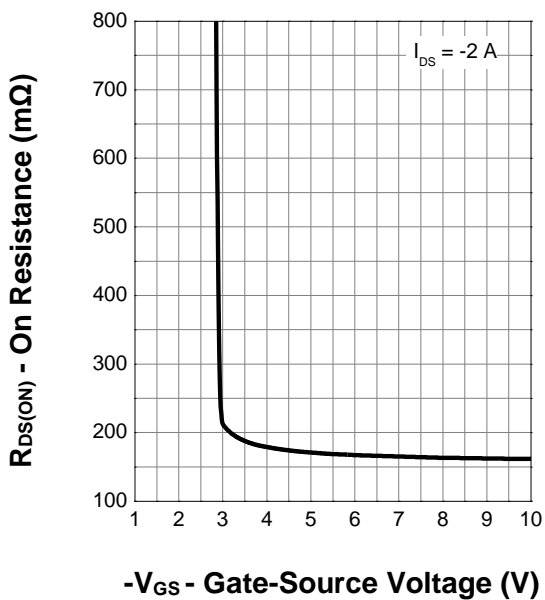
Output Characteristics



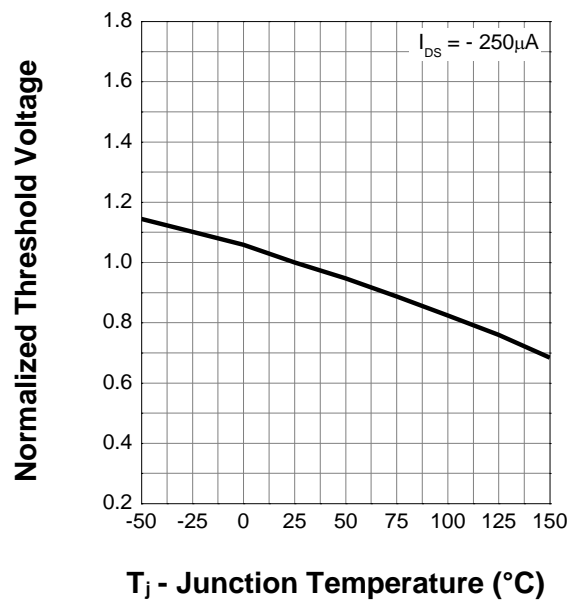
Drain-Source On Resistance



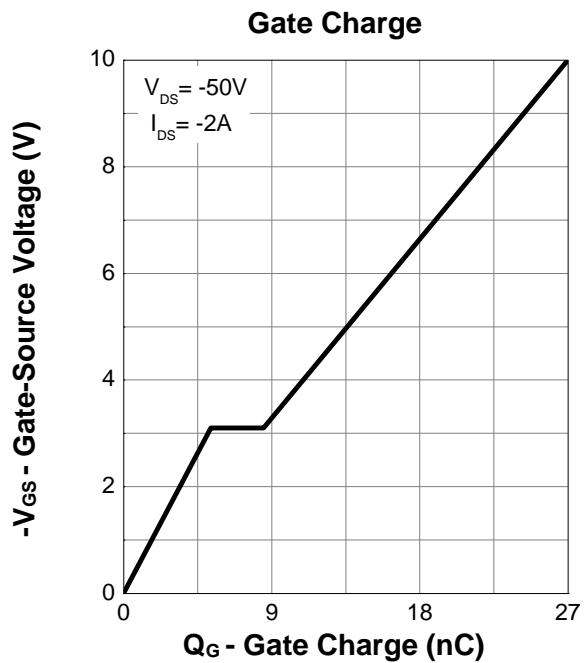
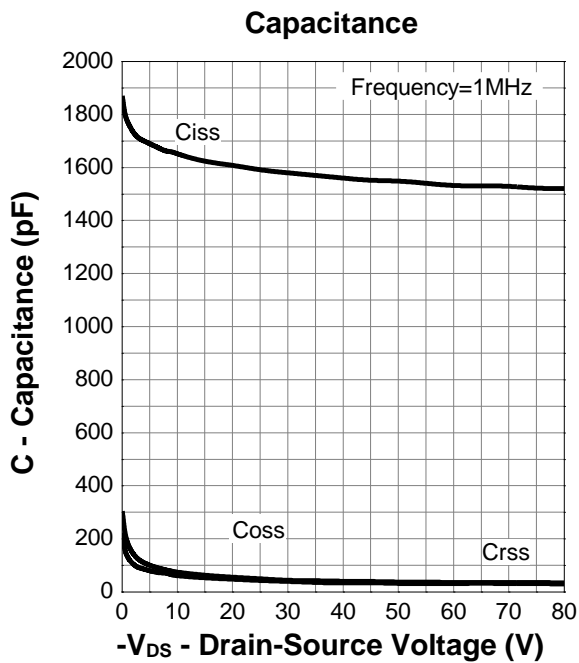
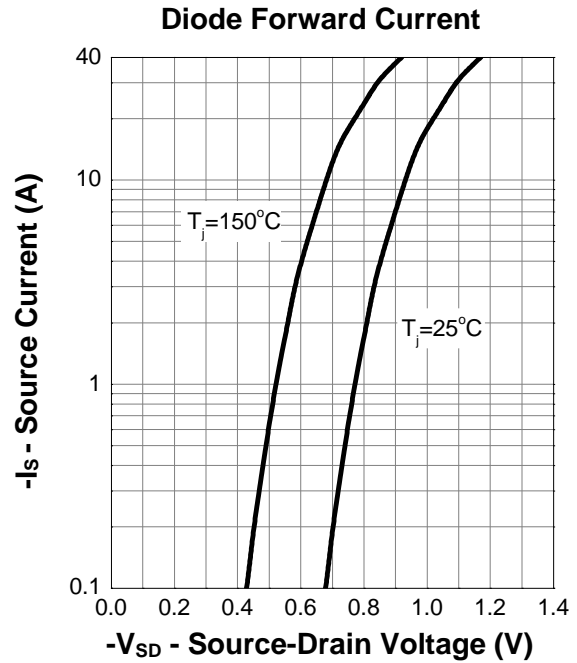
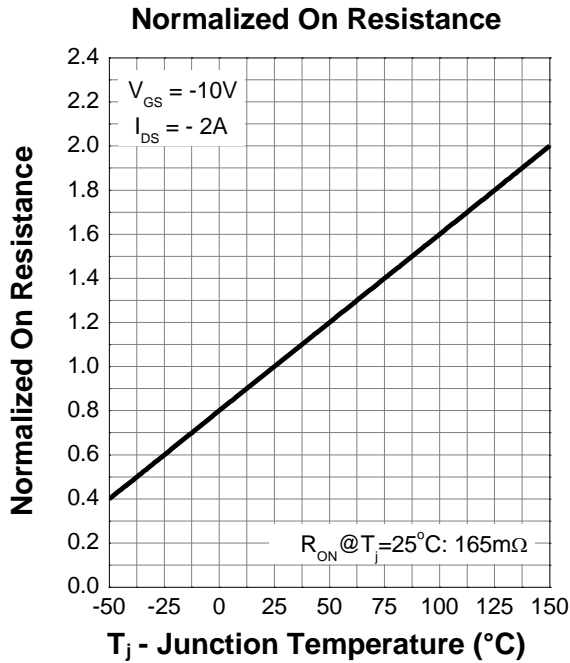
Transfer Characteristics



Normalized Threshold Voltage

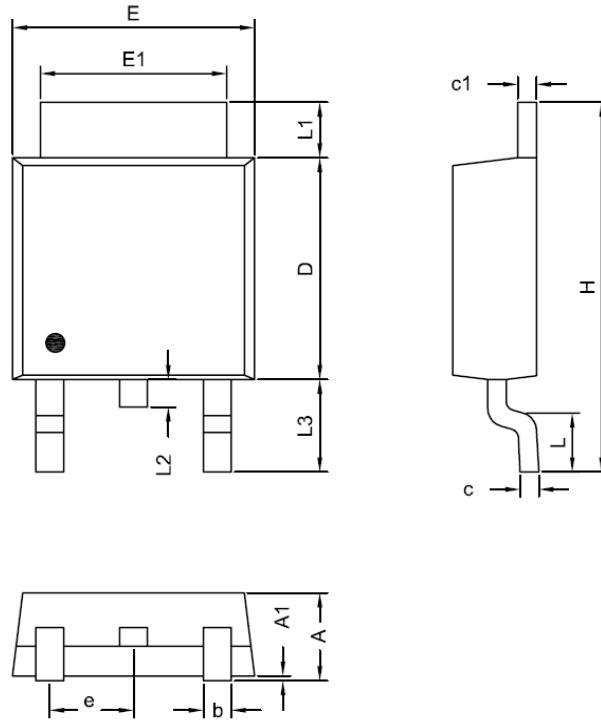


Typical Characteristics (Cont.)



Package Dimensions

TO-252



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	2.19	2.38
A1	0.02	0.13
D	5.30	6.40
E	6.35	6.80
E1	5.20	5.50
c	0.40	0.60
c1	0.40	0.60
b	0.55	0.85
e	2.30 BCS	
L	1.00	1.80
L1	0.70	1.80
L2	0.70 BCS	
L3	2.40	2.80
H	9.20	10.40