AD40K20D3

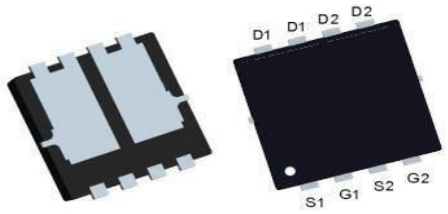
Nch 40V 37A Power MOSFET

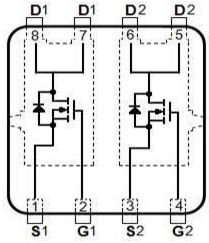
datasheet

V_{DSS}	40V
$R_{DS(on)}$(typ.)	12.5mΩ
I_D	37A
P_D	33W

Outline

P PAK 3X3





Features

- *40V, 37A, RDS(ON) =12.5mΩ@VGS = 10V*
- *Improved dv/dt capability*
- *Fast switching*
- *Green Device Available*

Applications

- *MB / VGA / Vcore*
- *POL Applications*
- *SMPS 2nd SR*

Type		
	Reel size (mm)	330
	Tape width (mm)	12
	Basic ordering unit (pcs)	5000
	Taping code	D3
	Marking	AD40K20D3

Absolute Maximum Ratings T_C=25°C unless otherwise noted

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_C=25°C	I_D	37	A
	T_C=100°C		23	
Pulsed Drain Current(Note 1)	T_C=25°C	I_{DM}	120	
Power Dissipation	T_C=25°C	P_D	33	W
	T_C=100°C		13	
Continuous Drain Current	T_A=25°C	I_D	9	A
	T_A=70°C		7	
Power Dissipation	T_A=25°C	P_D	2.0	W
	T_A=70°C		1.3	
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55~150	°C
Typical Thermal Resistance(Note 4,5)	Junction to Case	$R_{\theta JC}$	3.79	°C/W
	Junction to Ambient	$R_{\theta JA}$	62.5	

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Electrical Characteristics (T_A=25 °C unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250uA	40	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	1.0	1.75	2.5	
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=8A	-	12.5	15	mΩ
		V_{GS}=4.5V, I_D=6A	-	15.5	20	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=40V, V_{GS}=0V	-	-	1.0	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Dynamic (Note 6)						
Total Gate Charge	Q_g	V_{DS}=20V, I_D=10A, V_{GS}=4.5V (Note 2,3)	-	10	-	nC
Gate-Source Charge	Q_{gs}		-	3.5	-	
Gate-Drain Charge	Q_{gd}		-	3.6	-	
Input Capacitance	Ciss	V_{DS}=20V, V_{GS}=0V, f=1.0MHZ	-	1040	-	pF
Output Capacitance	Coss		-	117	-	
Reverse Transfer Capacitance	Crss		-	84	-	
Turn-On Delay Time	$td_{(on)}$	V_{DS}=20V, I_D=1A, V_{GS}=10V, R_G=6Ω (Note 2,3)	-	9.4	-	ns
Turn-On Rise Time	t_r		-	19	-	
Turn-Off Delay Time	$td_{(off)}$		-	66	-	
Turn-Off Fall Time	t_f		-	67	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	37	A
Diode Forward Voltage	V_{SD}	I_S=1A, V_{GS}=0V	-	0.7	1	V

NOTES:

1.Pulse width≤300us, Duty cycle≤2%.

2.Essentially independent of operating temperature typical characteristics.

3.Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150° C. Ratings are based on low frequency and duty cycles to keep initial T_J =25° C.

4.The maximum current rating is package limited.

5.$R_{\Theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. Mounted on a 1 $inch^2$ with 2oz.square pad of copper.

6.Guaranteed by design, not subject to production testing.

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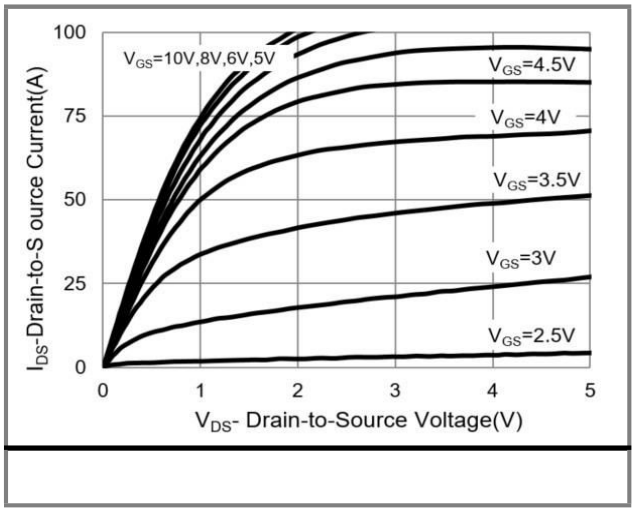

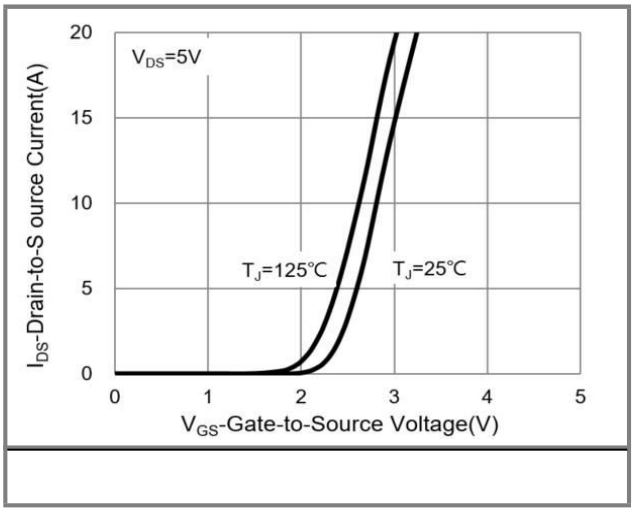

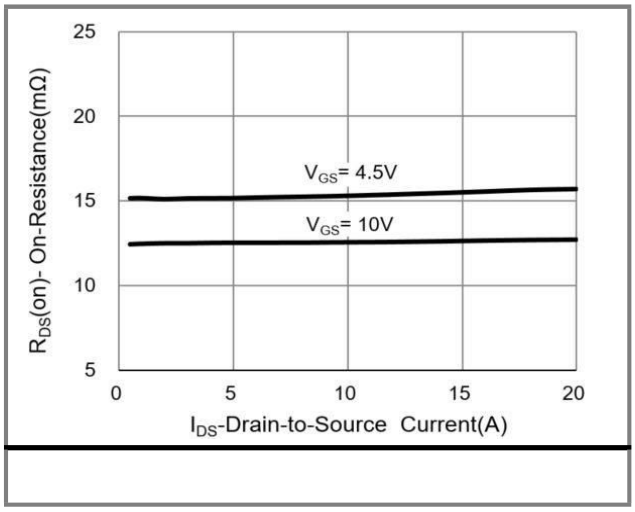

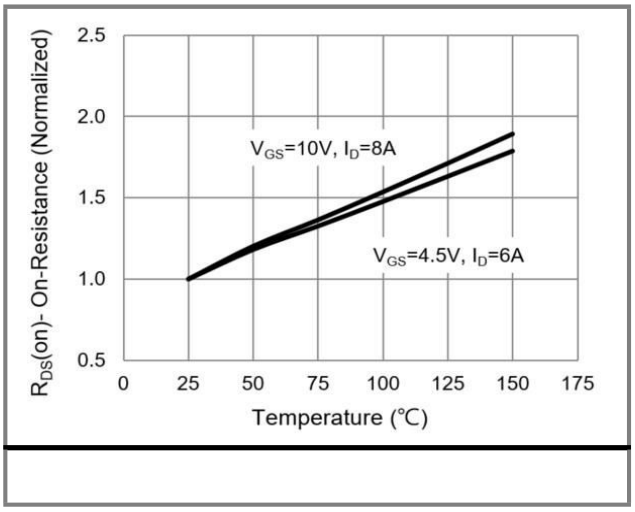

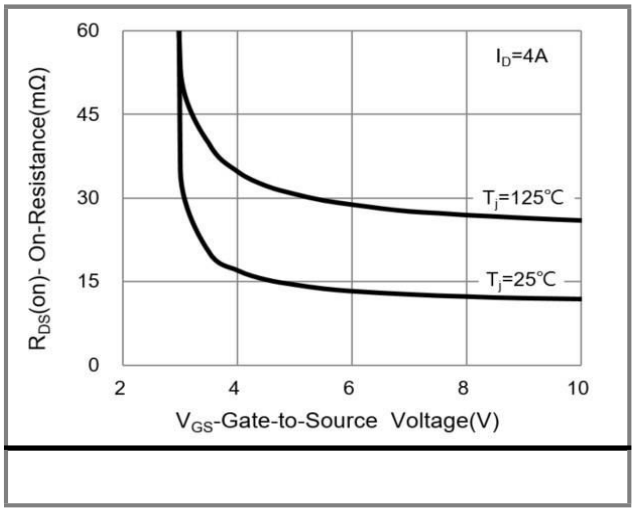

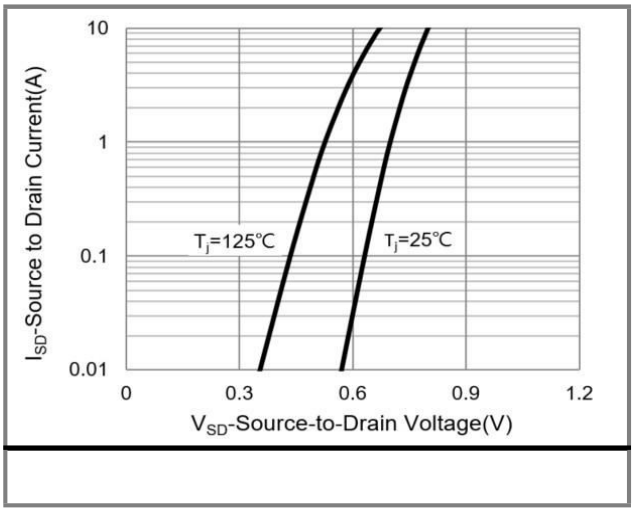

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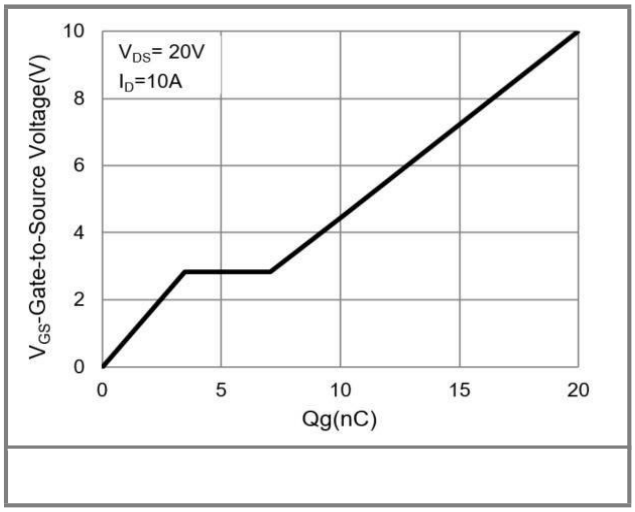

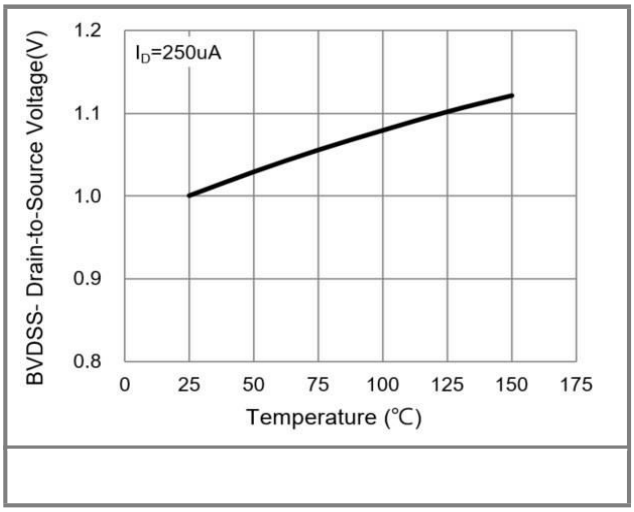

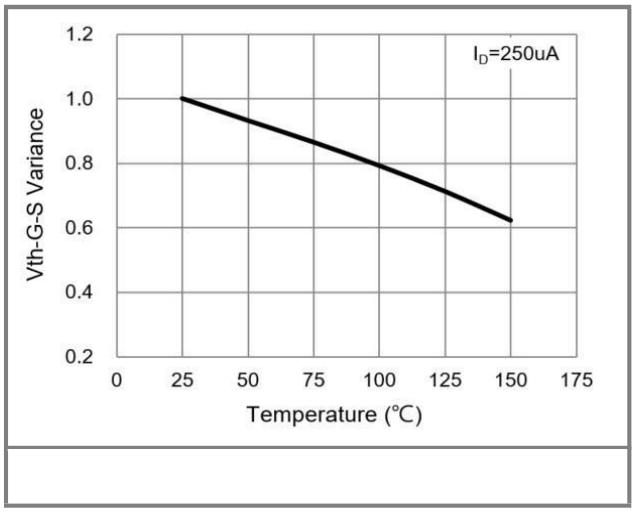

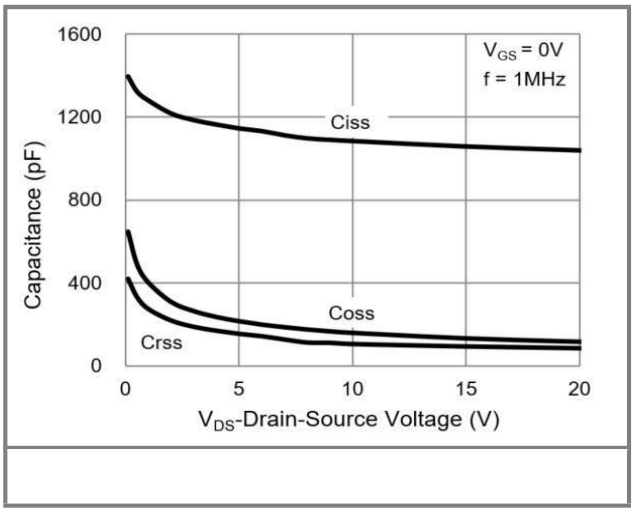

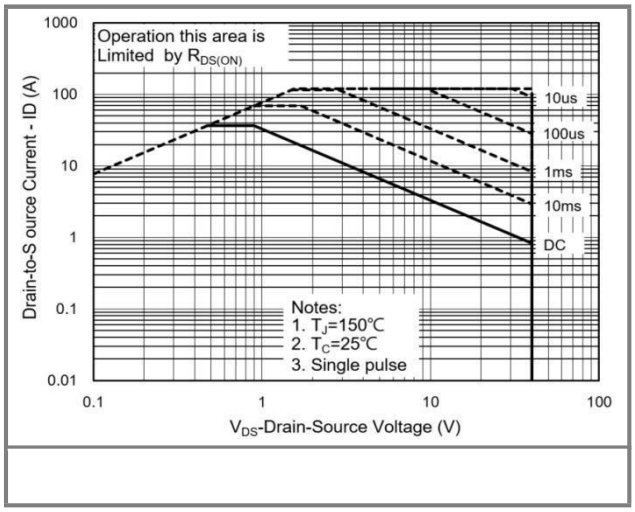

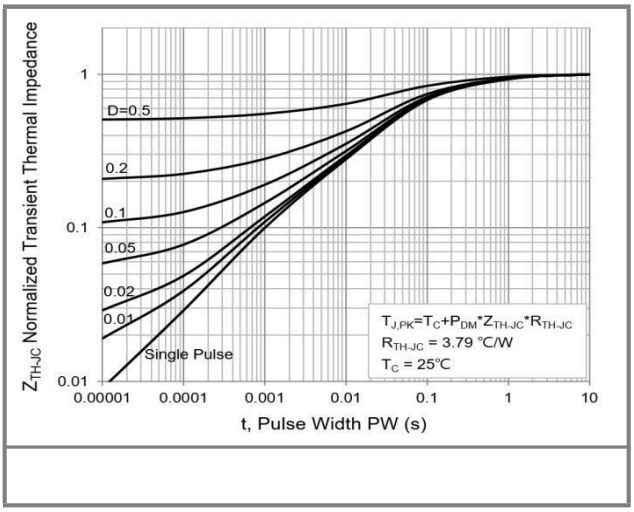

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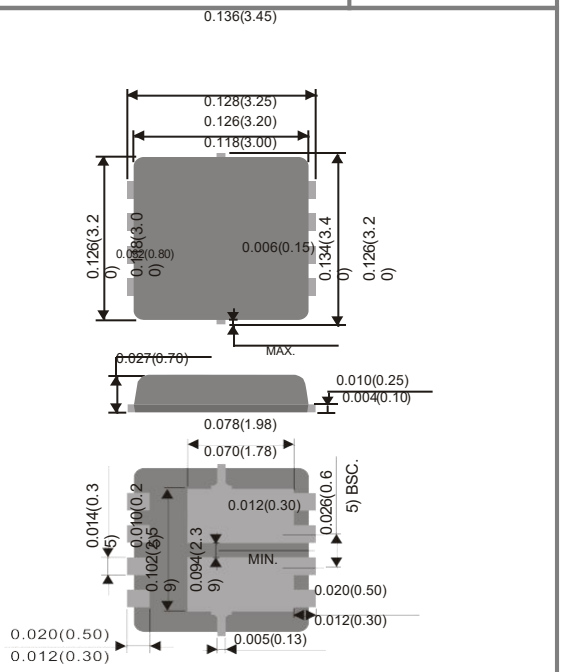
Packaging Information & Mounting Pad Layout

Unit: inch(mm)



Unit: inch(mm)