



DESCRIPTION

The AM40N04PJS is available in PDFN8(3x3) package.

BVDSS	RDSON	ID
40V	6.3mΩ	40A

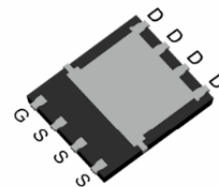
FEATURES

- $V_{DS} = 40V$, $I_D = 40A$
 $R_{DS(ON)}$ Typ = 6.3mΩ @ $V_{GS} = 10V$
- Low On-Resistance
- Low Input Capacitance

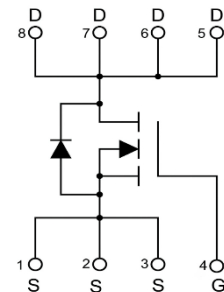
APPLICATION

- DC-DC Converters
- Motor Control
- Power Management Functions

PIN DESCRIPTION



PDFN8(3x3)



ORDERING INFORMATION

Package Type	Part Number	
PDFN8(3 x3)	PJS	AM40N04PJS
Note	SPQ:5,000pcs/Reel	
AiT provides all RoHS products		

Pin#	Symbol	Function
1, 2, 3	S	Source
4	G	Gate
5,6,7,8	D	Drain

ABSOLUTE MAXIMUM RATINGS

$T_J = 25^\circ\text{C}$, unless otherwise specified.

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	40	A
Pulsed Drain Current	I_{DM}	160	
Power Dissipation	P_D	41.7	W
Operation Junction and Storage Temperature Range	T_J, T_{STG}	-55 ~ 175	°C
Thermal Resistance, Junction-case	$R_{\theta JC}$	3	°C/W

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.



ELECTRICAL CHARACTERISTICS

T_J = 25°C, unless otherwise specified.

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
Off Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250uA	40	-	-	V
Drain- Source Leakage Current	I _{DSS}	V _{DS} =40V, V _{GS} =0V	-	-	1	μA
Gate- Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{GS} =0V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	1.0	1.5	2.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =8A	-	6.3	8.5	mΩ
		V _{GS} =4.5V, I _D =4A	-	9.5	12	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{GS} =0 V, V _{DS} =20 V, f=1.0MHz	-	1733	-	pF
Output Capacitance	C _{oss}		-	283	-	pF
Reverse Transfer Capacitance	C _{rss}		-	141	-	pF
Total Gate Charge	Q _g	V _{DS} =20V, I _D =20A, V _{GS} =10V	-	8.3	-	nC
Gate-Source Charge	Q _{gs}		-	2.4	-	nC
Gate-Drain Charge	Q _{gd}		-	3.4	-	nC
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{GS} =10V, V _{DD} =20V, R _L =1Ω, R _G =3Ω, I _D =2A	-	3.5	-	nS
Turn-on Rise Time	t _r		-	3.7	-	nS
Turn-off Delay Time	t _{d(off)}		-	17.1	-	nS
Turn-off Fall Time	t _f		-	6.4	-	nS
Drain-Source Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =1A	-	-	1.2	V
Reverse Recovery Time	T _{rr}	V _{GS} =0V, I _F =20A, di/dt=100 A/μs	-	19.8	-	nS
Reverse Recovery Charge	Q _{rr}		-	8.8	-	nC
Forward Turn-On Time	t _{on}	Intrinsic turn-on time is negligible (turn-on is dominated by LS+LD)				



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Typical Output Characteristic

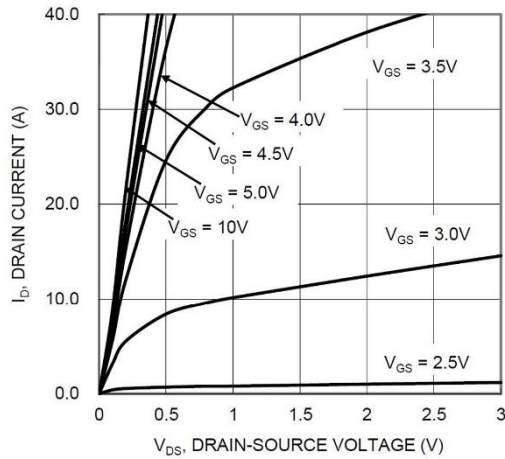


Fig 2. Typical Transfer Characteristic

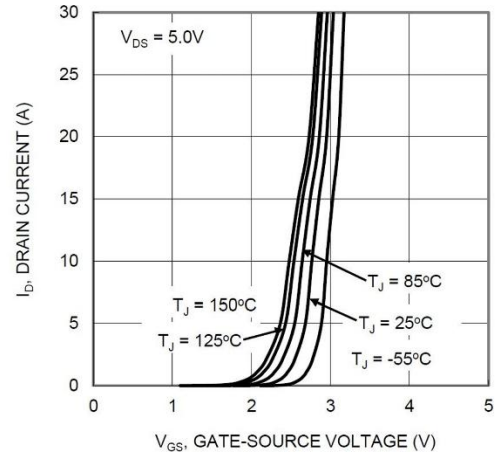


Fig 3. Typical On-Resistance vs. Drain Current and Gate Voltage

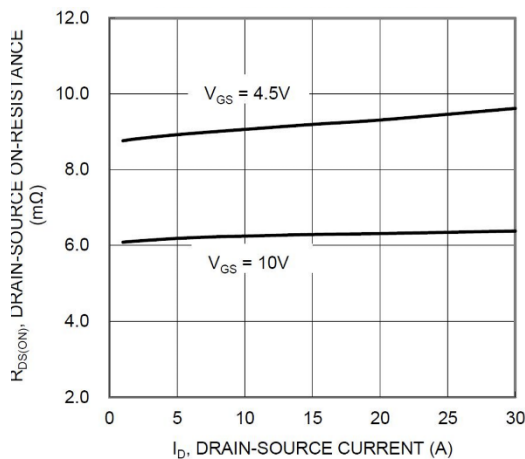


Fig 4. Typical Transfer Characteristic

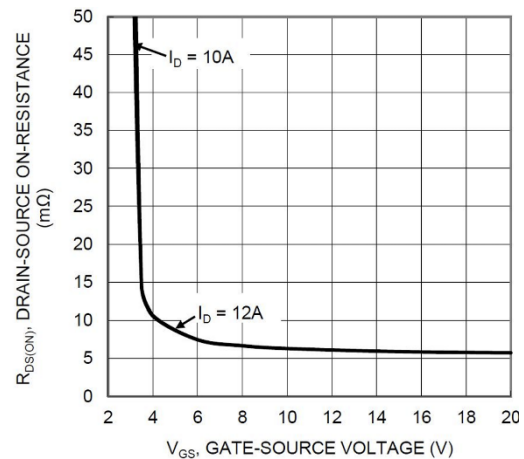


Fig 5. Typical On-Resistance vs. Drain Current and Temperature

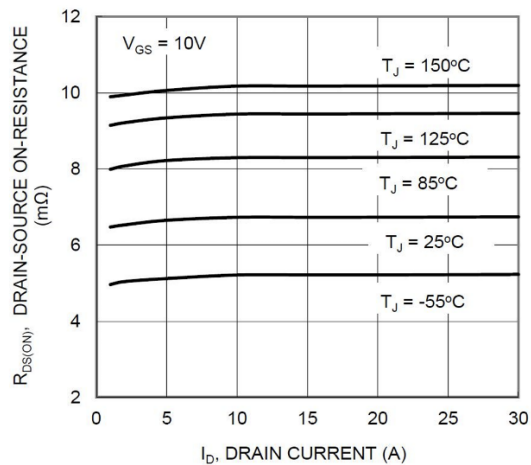


Fig 6. Normalized On-Resistance

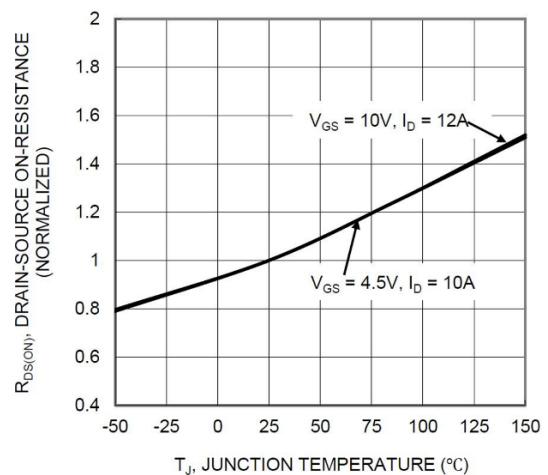




Fig 7. On-Resistance Variation with Temperature

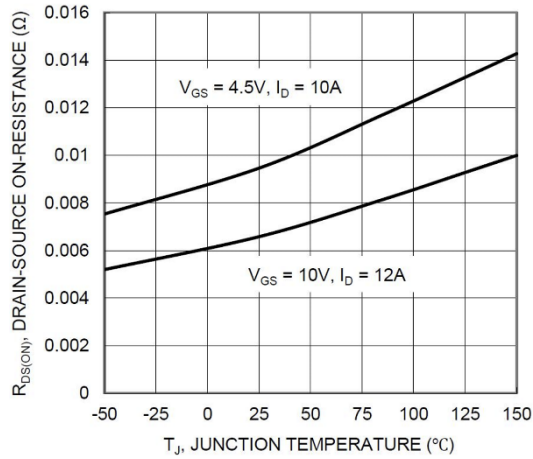


Fig 8. Gate Threshold Variation vs. Junction Temperature

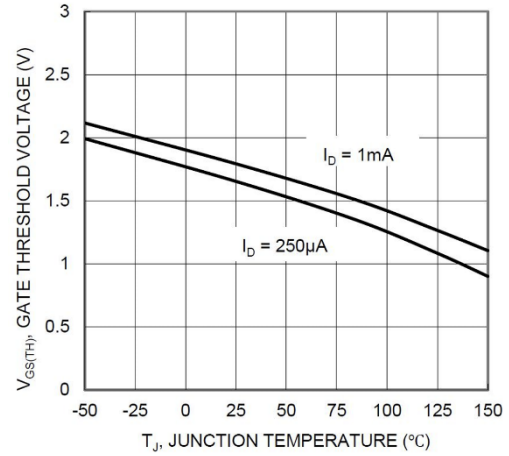


Fig 9. Diode Forward Voltage vs. Current

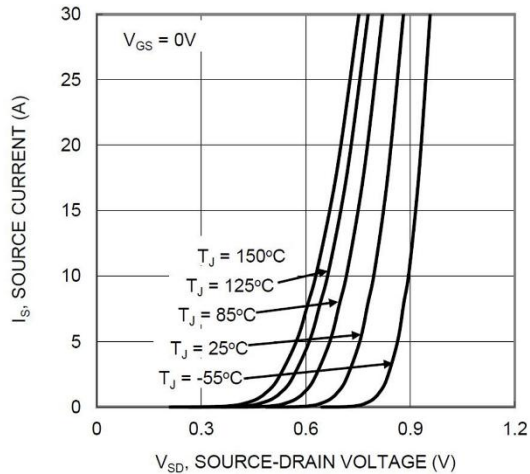


Fig 10. Typical Junction Capacitance

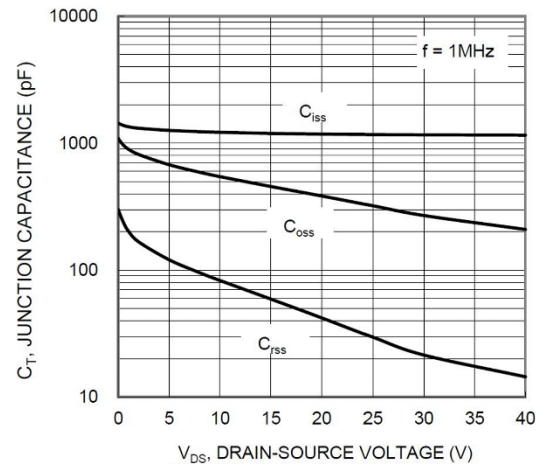


Fig 11. Gate Charge

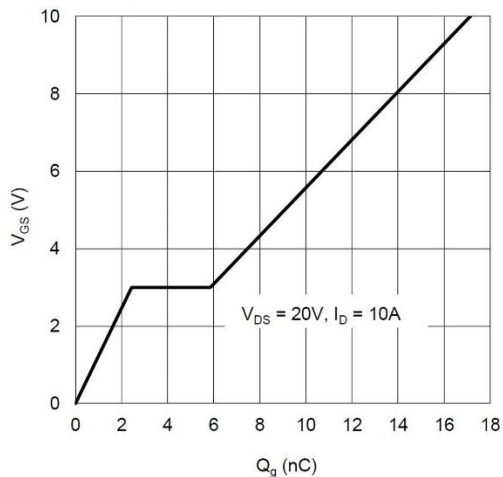


Fig 12. Safe Operation Area

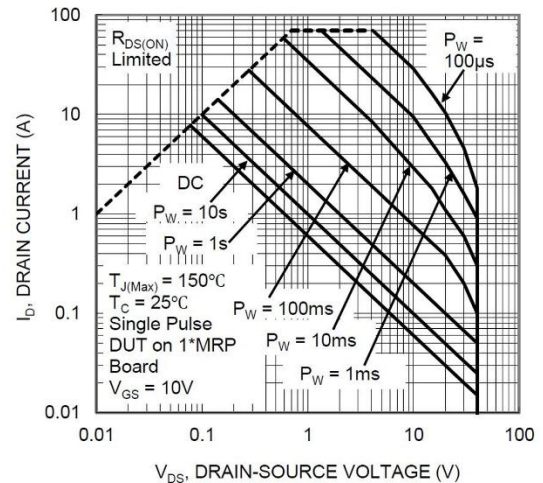
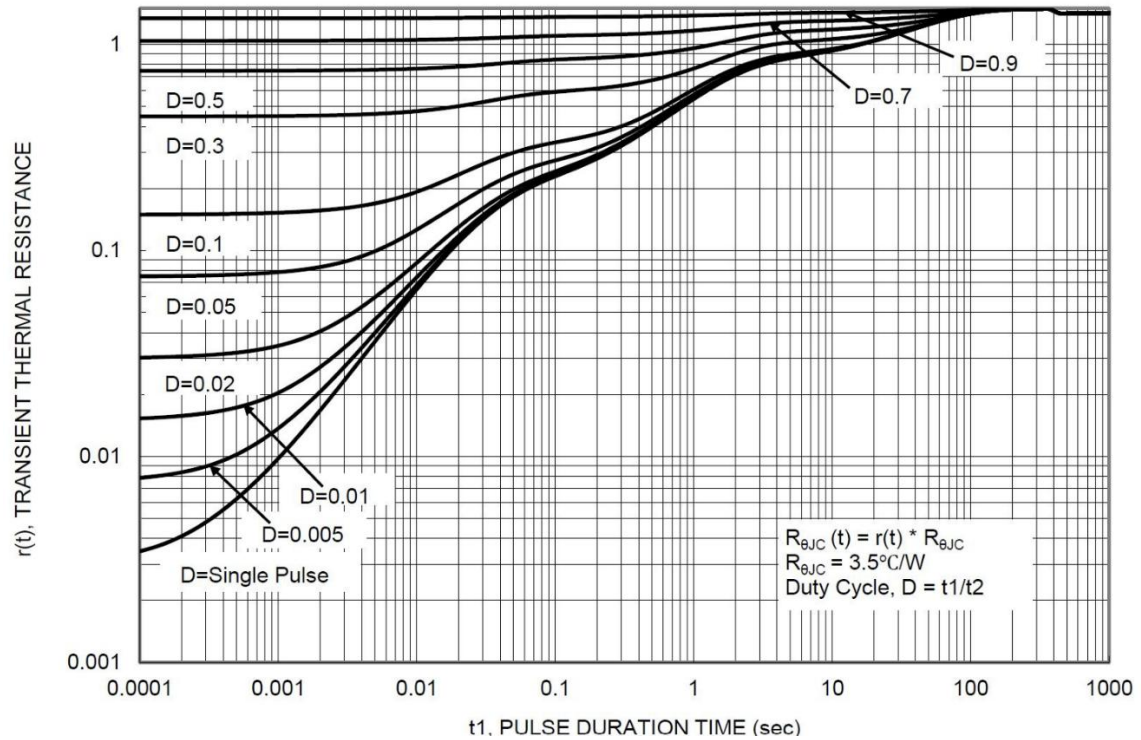




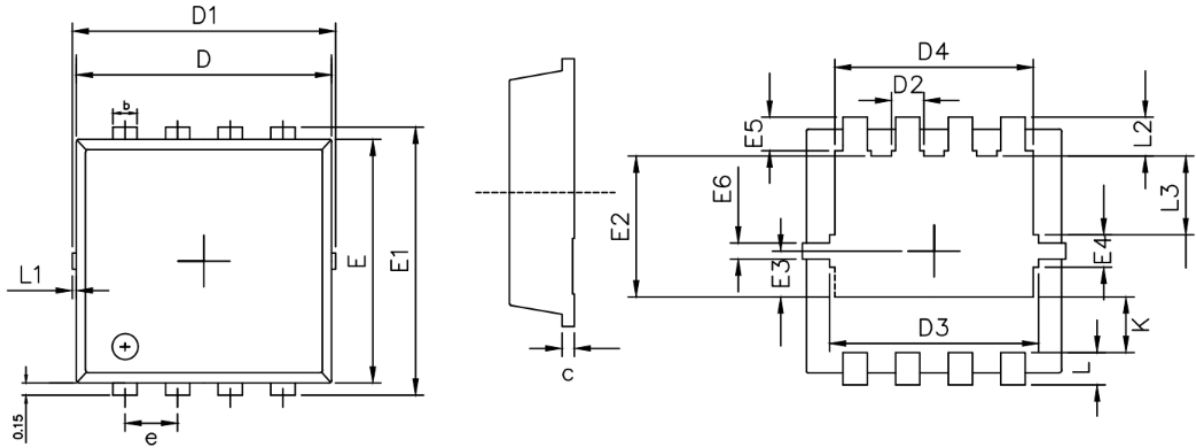
Fig 13. Transient Thermal Resistance





PACKAGE INFORMATION

Dimension in PDFN8(3x3) (Unit: mm)



Symbol	Millimeters (mm)	
	Min.	Max.
A	0.700	1.000
b	0.240	0.400
c	0.100	0.250
D	3.000	3.250
D1	3.100	3.500
D2	0.300	0.500
D3	2.500	2.700
D4	2.350	2.550
E	2.900	3.100
E1	3.150	3.450
E2	1.650	1.850
E3	0.480	0.680
E4	0.230	0.500
E5	0.200	0.400
E6	0.075	0.250
e	0.550	0.750
K	0.520	0.820
L	0.250	0.550
L1	0.000	0.100
L2	0.280	0.580
L3	0.880	1.080

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