DESCRIPTION

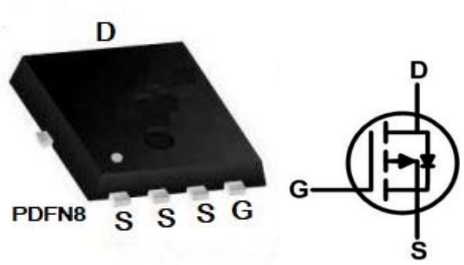
The AM80P04 is available in PDFN8(5×6) Package.

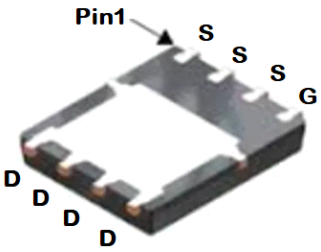
BVDSS	RDSON	ID
-40V	4.3mΩ	-80A

FEATURE

- Fast Switching
- $R_{DS(ON),\ typ.}$= 4.3mΩ@V_{GS}=-10V
- Low On-Resistance
- Low Gate Charge
- Low Reverse transfer capacitances
- High avalanche ruggedness

PIN DESCRIPTION





ORDERING INFORMATION

Package Type	Part Number	
PDFN8 (5×6) SPQ:5,000pcs /Reel	PJ8	AM80P04PJ8R
		AM80P04PJ8VR
Note	V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

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

ABSOLUTE MAXIMUM RATINGS

T_A = 25°C, unless otherwise specified.

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	-40	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current, V_{GS} @ -10V (1)	T_A=25℃	I_D	-80	A
	T_C=100℃		-56	A
Pulsed Drain Current (2)		I_{DM}	-320	A
Single Pulse Avalanche Energy (3)		E_{AS}	576	mJ
Avalanche Current		I_{AS}	-56	A
Total Power Dissipation (4)		P_D	58	W
Storage Temperature Range		T_{STG}	-55 to 175	℃
Junction Temperature		T_J	175	℃
THERMAL RESISTANCE				
Thermal Resistance Junction-ambient (1) (t≦10S)		$R_{\theta JA}$	20	℃/W
Thermal Resistance Junction-ambient (1) (Steady State)			50	
Thermal Resistance Junction-case (1)		$R_{\theta JC}$	1.6	

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.

(1) Repetitive Rating: Pulse width limited by maximum junction temperature.
(2) E_{AS} condition: T_A=25℃,V_{DD}=15V,V_G=-10V, Rg=25Ω, L=0.5mH.
(3) Repetitive Rating: Pulse width limited by maximum junction temperature.
(4) The power dissipation is limited by 150℃ junction temperature

ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	-40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-40V, V_{GS}=0V	-	-	-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=+20V, VDS=0V	-	-	±100	nA
ON CHARACTERISTICS						
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-20A	-	4.3	5.3	mΩ
		V_{GS}=-4.5V, I_D=-20A	-	5.9	7.6	mΩ
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=-250μA	-1	-1.7	-2.5	V
Forward Transconductance	g_{fs}	V_{DS}=-5V, I_D=-20A	-	63	-	S
Dynamic CHARACTERISTICS						
Input Capacitance	C_{iss}	V_{DS}=-20V, V_{GS}=0V, f=1.0MHz	-	6638	-	pF
Output Capacitance	C_{oss}		-	545	-	
Reverse Transfer Capacitance	C_{rss}		-	345	-	
Gate resistance	R_G	V_{GS}=0V, V_{DS}=0V, f=1.0MHz	-	2.2	-	Ω
Switching CHARACTERISTICS						
Turn-on Delay Time	$t_{d\ (ON)}$	V_{GS}=-10V, V_{DS}=-20V, R_L=1Ω, R_{GEN}=3Ω	-	16	-	nS
Rise Time	t_r		-	17	-	
Turn-Off Delay Time	$t_{d\ (OFF)}$		-	68	-	
Fall Time	t_f		-	31	-	
Total Gate Charge	Q_g	V_{GS}=-10V, V_{DS}=-20V, I_D=-20A	-	118	-	nC
Gate-Source Charge	Q_{gs}		-	13	-	
Gate-Drain Charge	Q_{gd}		-	22	-	
Source-Drain Diode CHARACTERISTICS						
Source-Drain Current (Body Diode)	I_S		-	-	-80	A
Forward on Voltage (3)	V_{SD}	V_{GS}=0V, I_S=-20A	-	-	-1.2	V
Reverse Recovery Time	t_{rr}	I_F=-20A, di/dt=500A/μs	-	24	-	ns
Reverse Recovery Charge	Q_{rr}		-	140	-	nC

(3) Repetitive Rating: Pulse width limited by maximum junction temperature.

TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Output Characteristics

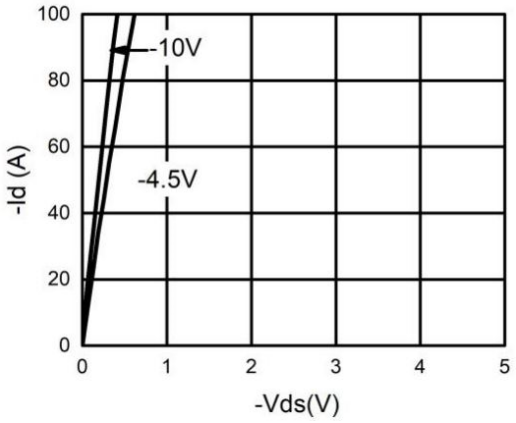


Fig 2. Transfer Characteristics

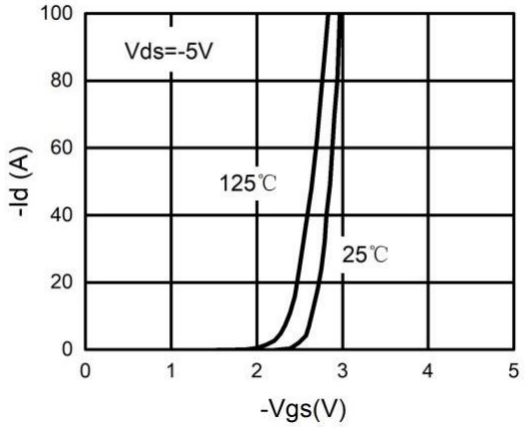


Fig 3. Power Dissipation

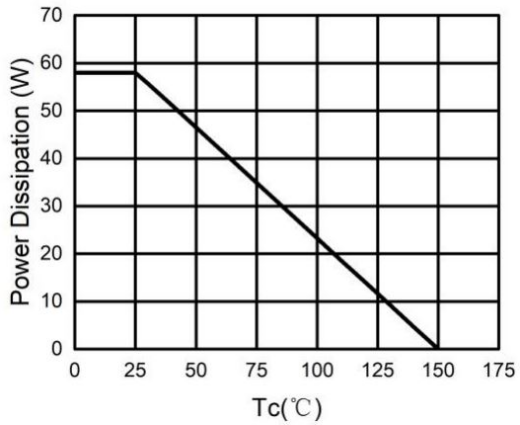


Fig 4. Drain Current

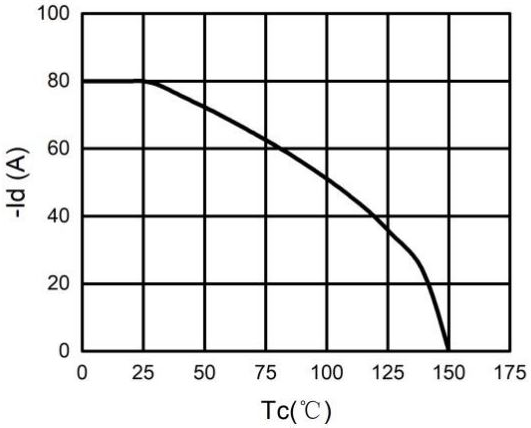


Fig 5. BVDSS vs Junction Temperature

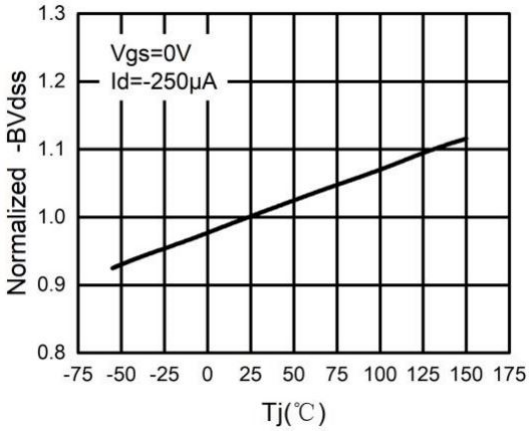


Fig 6. RDS(ON) vs Junction Temperature

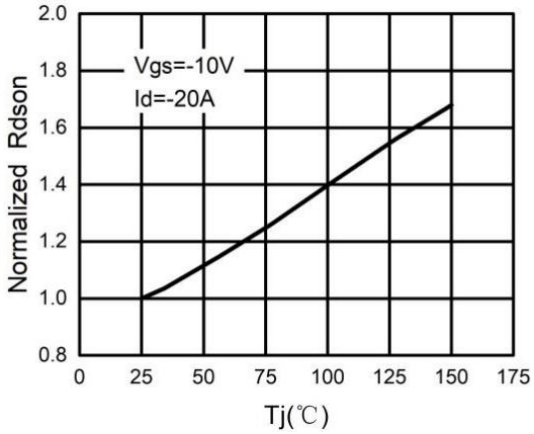


Fig7. Gate Charge Waveforms

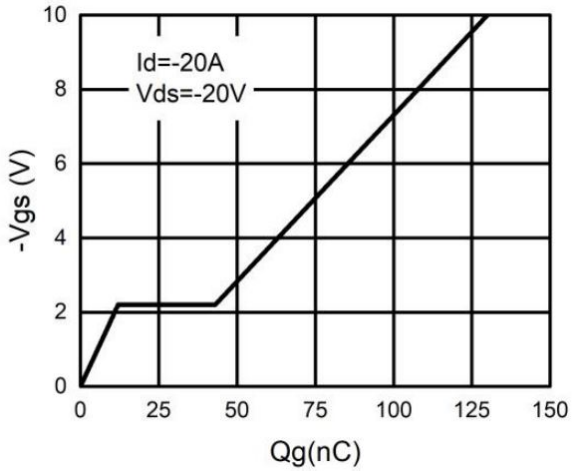


Fig 8. Capacitance

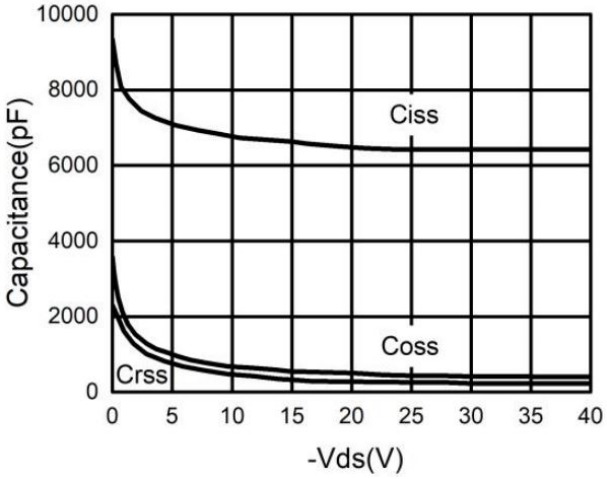


Fig 9. Body-Diode Characteristics

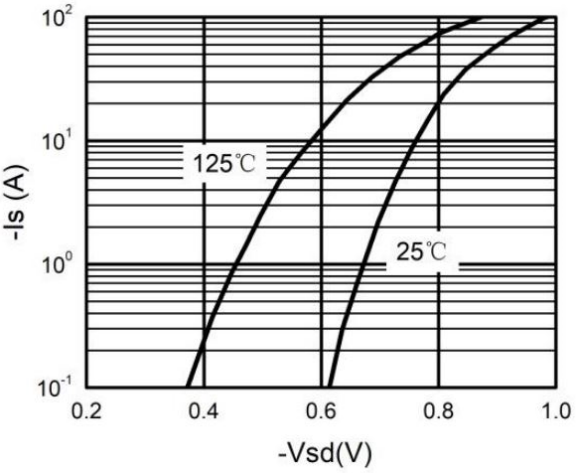


Fig 10. Maximum Safe Operating Area

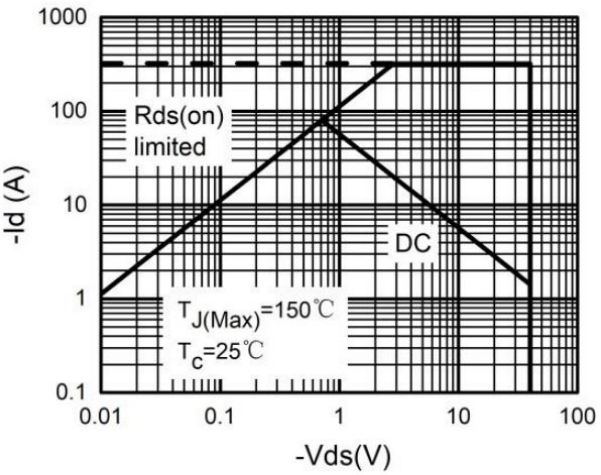
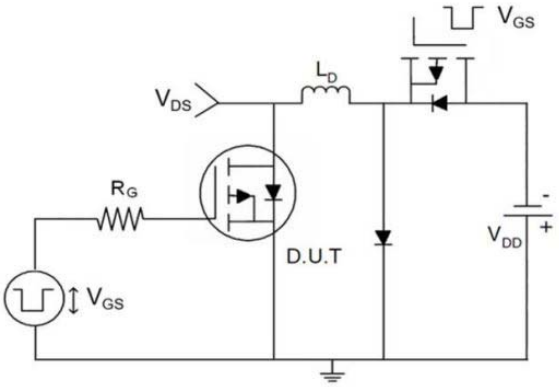


Fig 11. E_{AS} Test Circuits



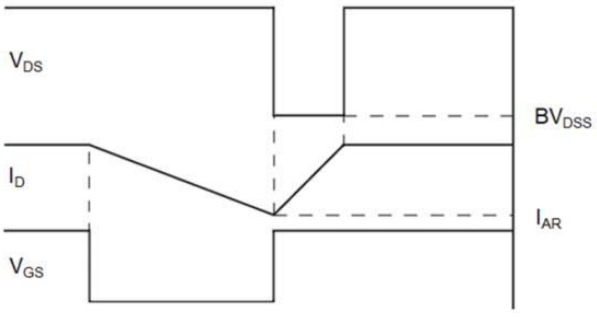
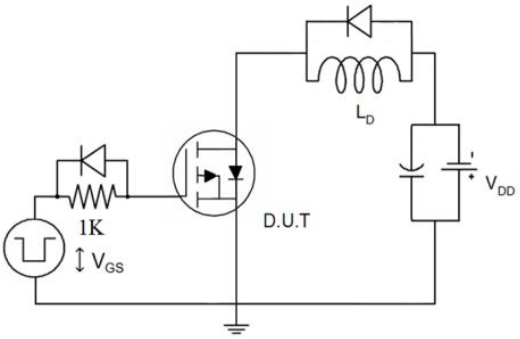


Fig 12. Gate Charge Test Circuit



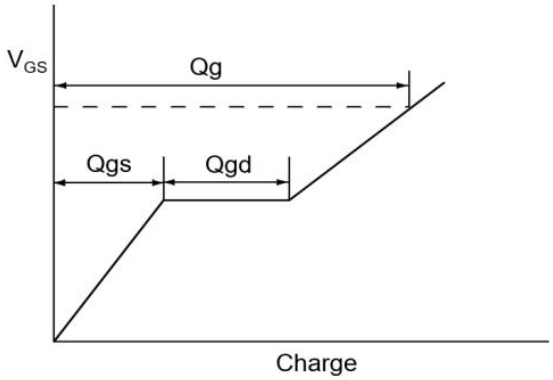
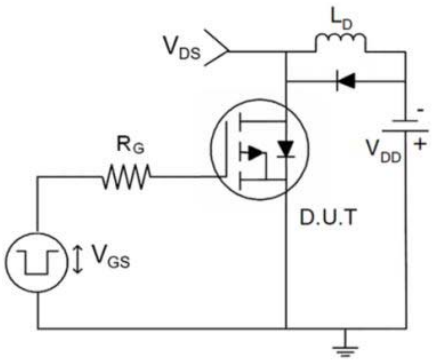
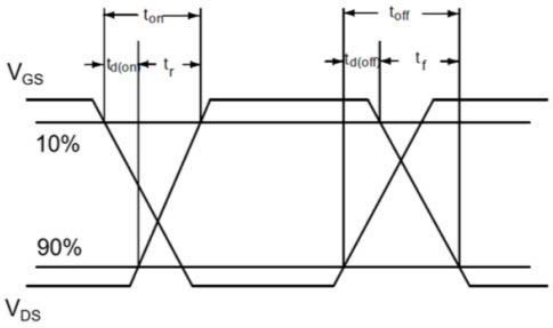


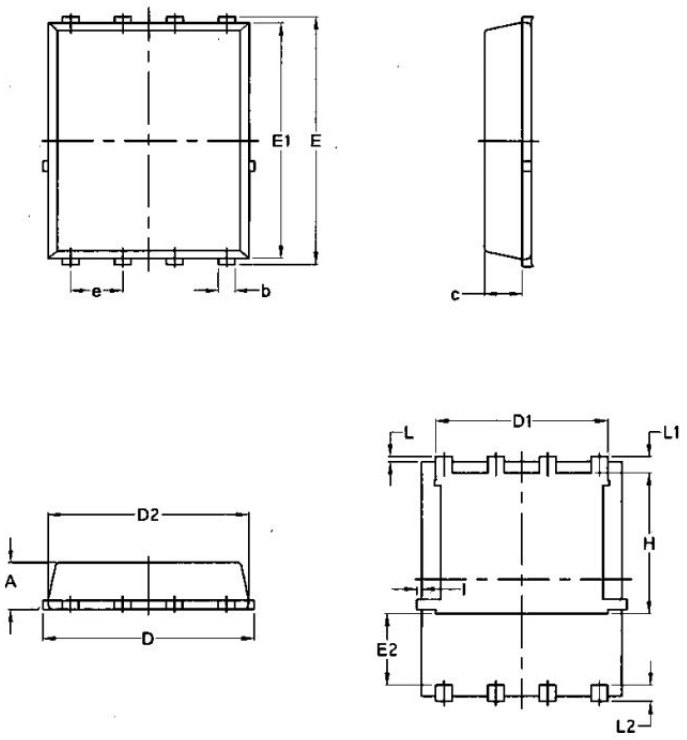
Fig 13. Switch Time Test Circuit





PACKAGE INFORMATION

Dimension in PDFN8 (5×6) (Unit: mm)



Symbol	Min.	Max.
A	1.0300	1.1700
b	0.3400	0.4800
c	0.8240	0.0970
D	4.8000	5.4000
D1	4.1100	4.3100
D2	4.8000	5.0000
E	5.9500	6.1500
E1	5.6500	5.8500
E2	1.6000	-
e	1.27BSC	
L	0.0500	0.2500
L1	0.3800	0.5000
L2	0.3800	0.5000
H	3.3000	3.5000
I	-	0.1800

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