AER007N04S

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
40V	0.7mΩ@10V	370A

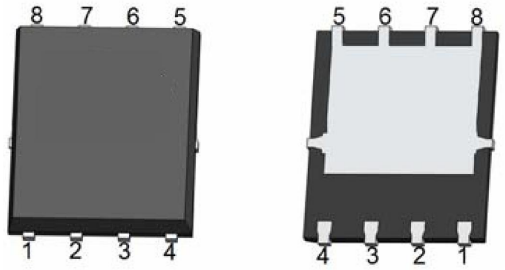
Feature

- Excellent package for heat dissipation
- High density cell design for low RDS(on)

Application

- Power switching application
- Uninterruptible power supply
- DC-DC Converter

Package



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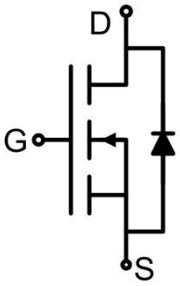
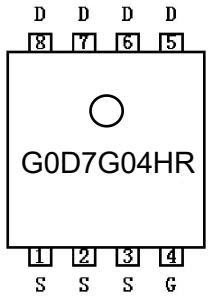
Circuit diagram



Marking



Absolute maximum ratings (Ta=25℃,unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current[1,2] (T_C =25℃)	I_D	370	A
Continuous Drain Current[1,2] (T_C =100℃)	I_D(100℃)	263	A
Pulsed Drain Current, t_p≦10μs (T_C =25℃)	I_{DM}	1480	A
Power Dissipation[1,2] (T_C =25℃)	P_D	176	W
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	0.85	℃/W
Single pulse avalanche energy[3]	E_{AS}	600.25	mJ
Junction Temperature	T_J	175	℃
Storage Temperature	T_{STG}	-55 ~ +175	℃

Electrical characteristics (Tj=25℃, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}= 0V, I_D =250μA	40			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =32V,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	2.2	3.0	3.7	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =50A		0.52	0.7	mΩ
Dynamic characteristics[4]						
Input Capacitance	C_{iss}	V_{DS} =20V, V_{GS} =0V, f =1MHz		5810		pF
Output Capacitance	C_{oss}			3450		
Reverse Transfer Capacitance	C_{rss}			180		
Total Gate Charge	Q_g	V_{DS} =20V, V_{GS} =10V, I_D =50A		81.1		nC
Gate-Source Charge	Q_{gs}			25.3		
Gate-Drain Charge	Q_{gd}			18.8		
Turn-on delay time	$t_{d(on)}$	V_{DS}=20V, V_{GS}=10V, I_D =50A, R_{GEN}=3.0Ω		19.3		nS
Turn-on rise time	t_r			81.5		
Turn-off delay time	$t_{d(off)}$			55.9		
Turn-off fall time	t_f			43.4		
Source-Drain Diode characteristics						
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S=50A			1.2	V
Reverse recover time	t_{rr}	I_F=50A,di/dt=100A/us, V_R=20V, V_{GS}=0V		49.3		nS
Reverse recovery charge	Q_{rr}			45		nC

Notes:

1) The entire application environment impacts the thermal resistance values shown, they are not constants and are only valid for the particular conditions noted.

2) Thermal resistance from junction to soldering point (on the exposed drain pad).

3) T_J=25℃, V_G=10V, R_G=25Ω, L=0.5mH, IAS=49A.

4) Guaranteed by design, not subject to production testing.

Typical Characteristics

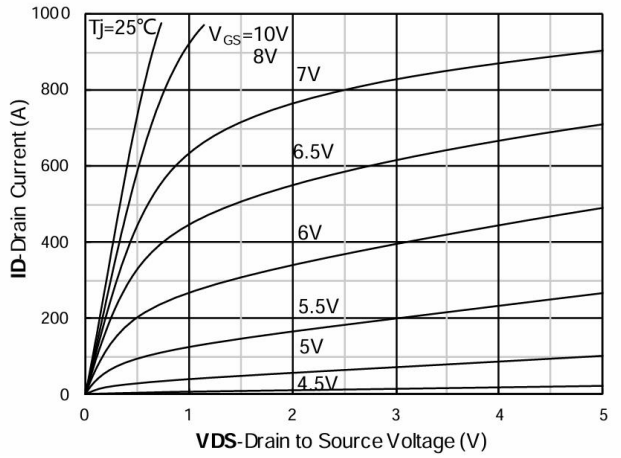


Figure 1. Output Characteristics; typical values

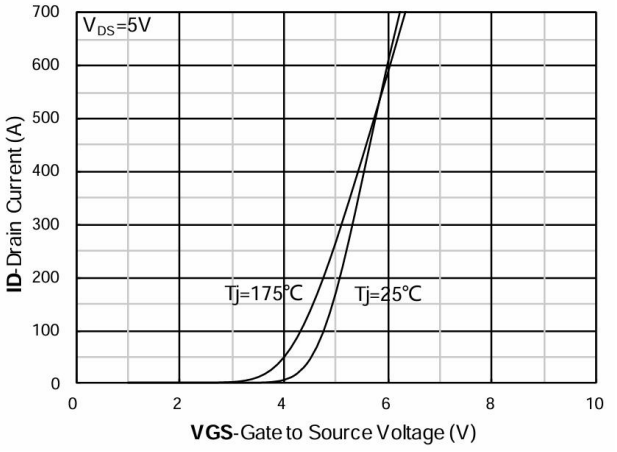


Figure 2. Transfer Characteristics; typical values

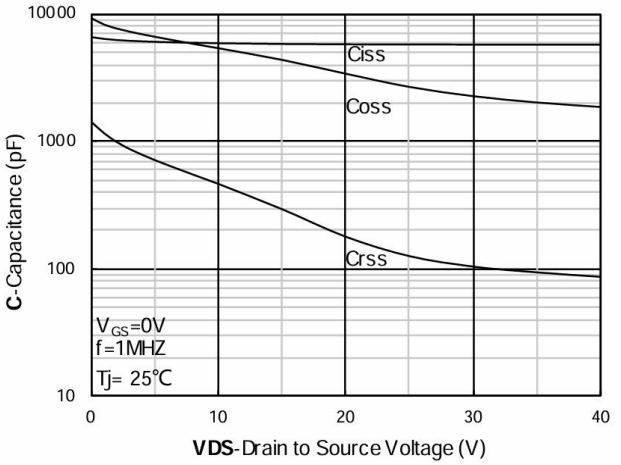


Figure 3. Capacitance Characteristics; typical values

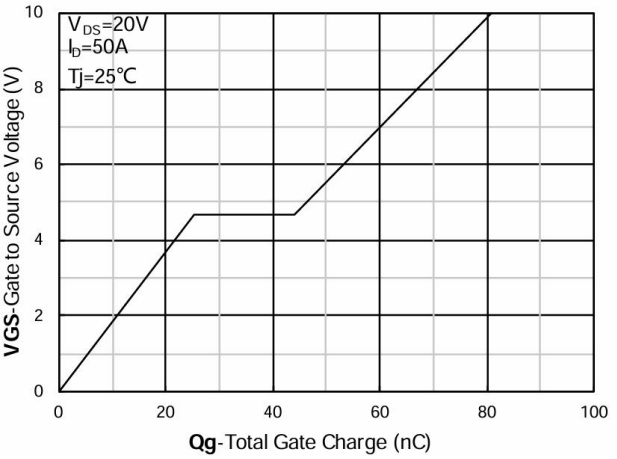


Figure 4. Gate Charge; typical values

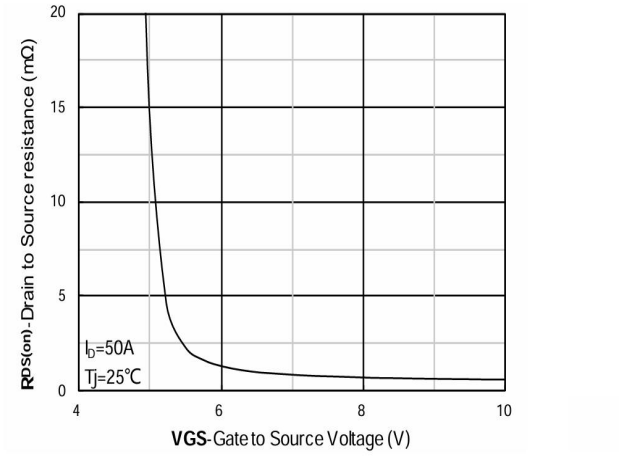


Figure 5. On-Resistance vs. Gate to Source Voltage; typical values

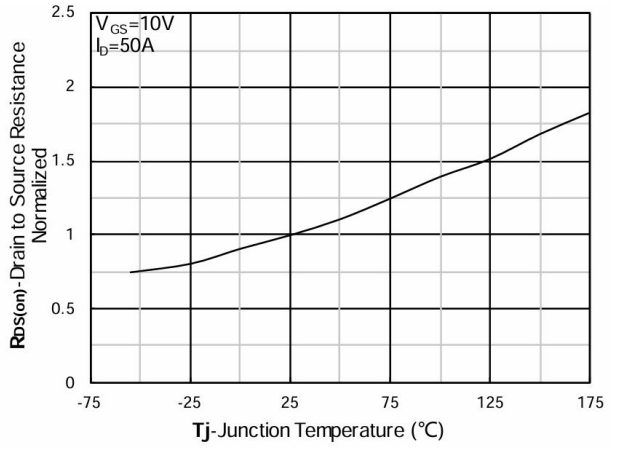


Figure 6. Normalized On-Resistance

Typical Characteristics

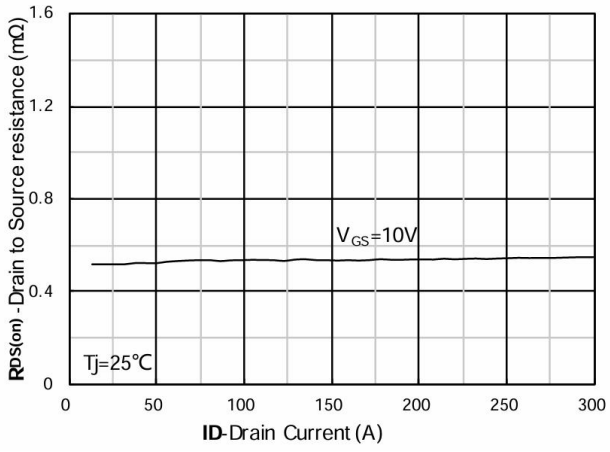


Figure 7. $R_{DS(on)}$ vs. Drain Current; typical values

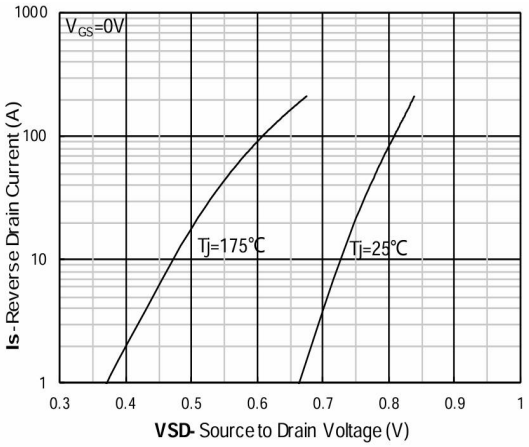


Figure 8. Forward characteristics of reverse diode; typical values

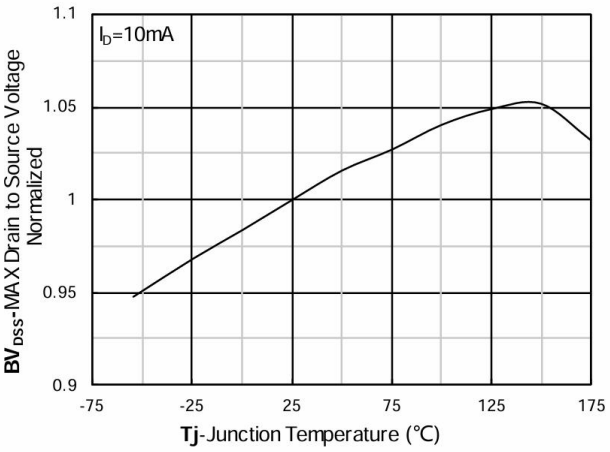


Figure 9. Normalized breakdown voltage

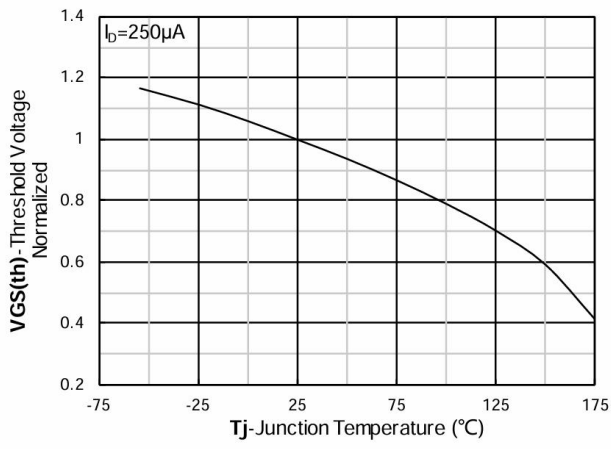


Figure 10. Normalized Threshold voltage

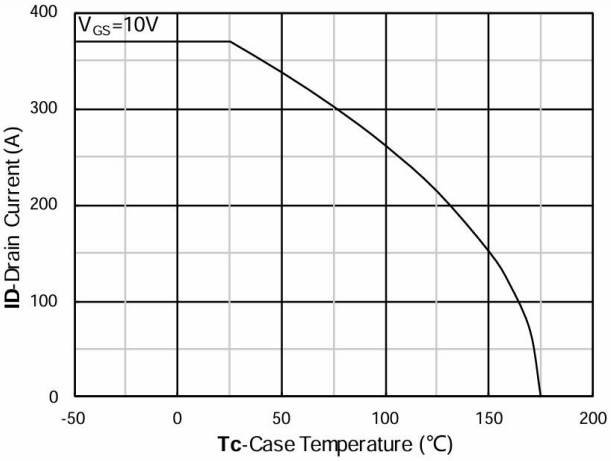


Figure 11. Current dissipation

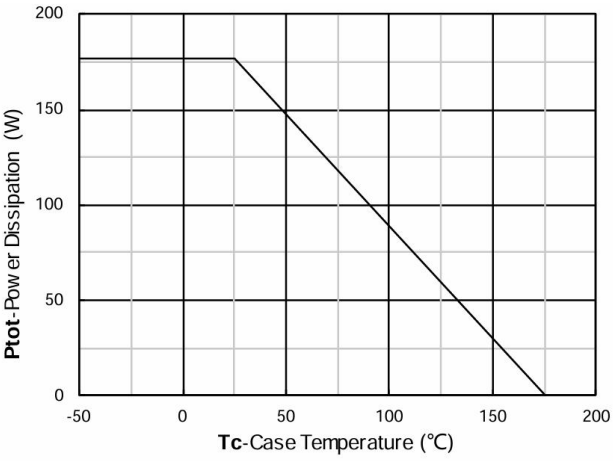


Figure 12. Power dissipation

Document ID	Issued Date	Revised Date	Revision	Page.
AS-3150709	2023/06/08	2025/06/03	B	6

Typical Characteristics

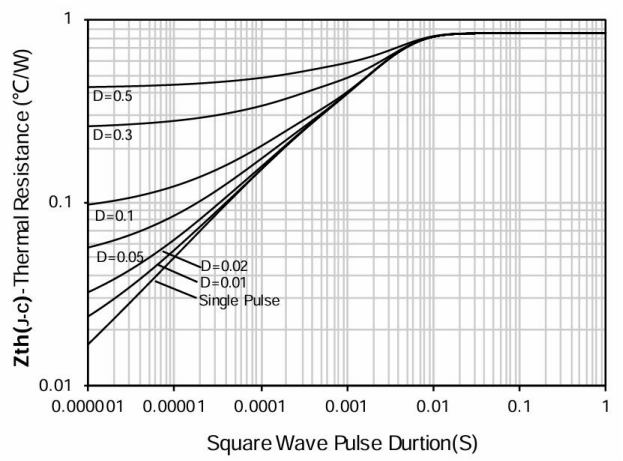


Figure 13. Maximum Transient Thermal Impedance

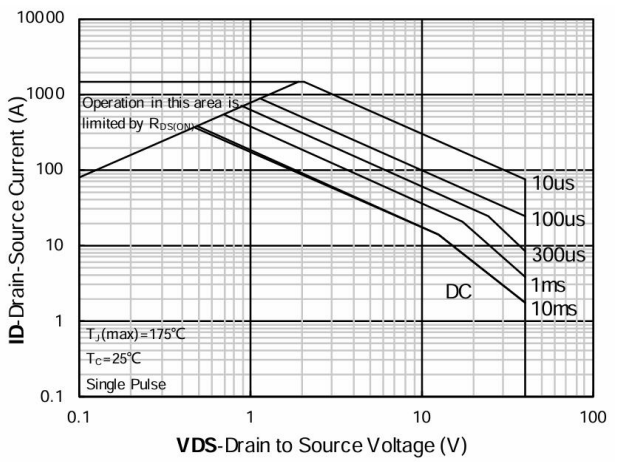
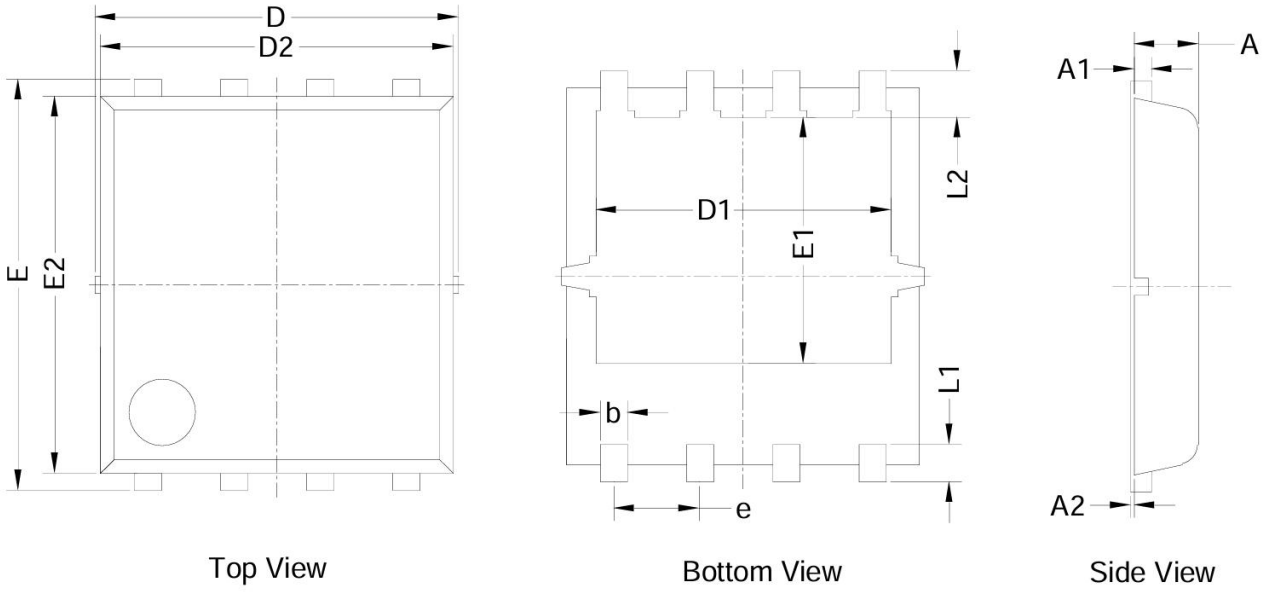


Figure 14. Safe Operation Area

PDFN5*6-8L Package Information



Top View　　Bottom View　　Side View

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
D	5.150	5.550	0.203	0.219
E	5.950	6.150	0.234	0.242
A	0.850	1.050	0.033	0.041
A1	0.203 BSC.		0.008 BSC.	
A2	-	0.080	-	0.003
D1	4.250	4.450	0.167	0.175
E1	3.525	3.725	0.139	0.147
D2	5.200 BSC.		0.205 BSC.	
E2	5.550 BSC.		0.219 BSC.	
L1	0.450	0.650	0.018	0.026
L2	0.680 BSC.		0.027 BSC.	
b	0.300	0.500	0.012	0.020
e	1.270 BSC.		0.050 BSC.	