

General Features

- Excellent gate charge x $R_{DS(on)}$ product(FOM)
- Very low on-resistance $R_{DS(on)}$
- 150 °C operating temperature
- Pb-free lead plating
- 100% UIS tested

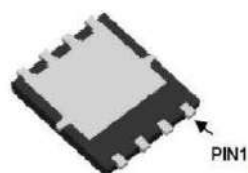
Application

- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

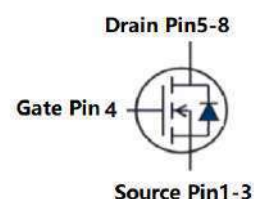
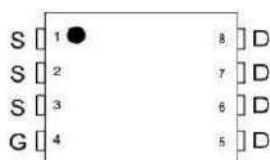
Product Summary



V_{DS}	40	V
$R_{DS(on), Typ @ V_{GS}=10 V}$	1.2	mΩ
I_D	200	A



DFN5*6-8



N-Channel

Absolute Maximum Ratings ($T_C=25^{\circ}\text{C}$ unless otherwise noted)

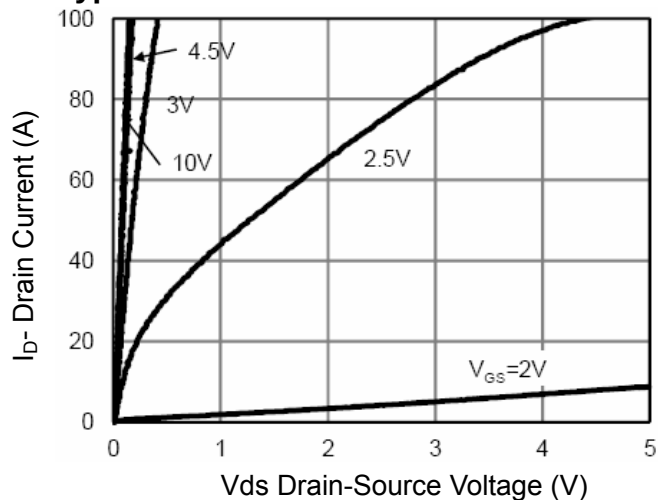
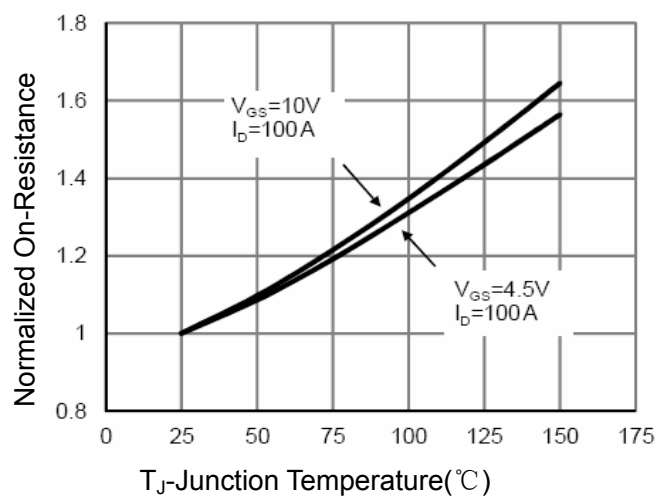
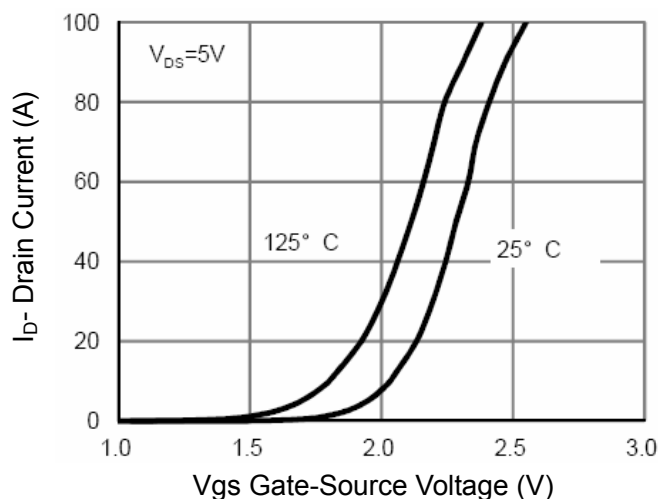
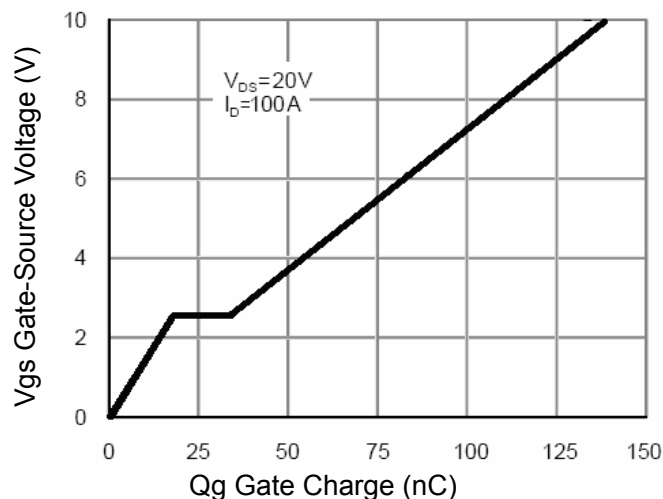
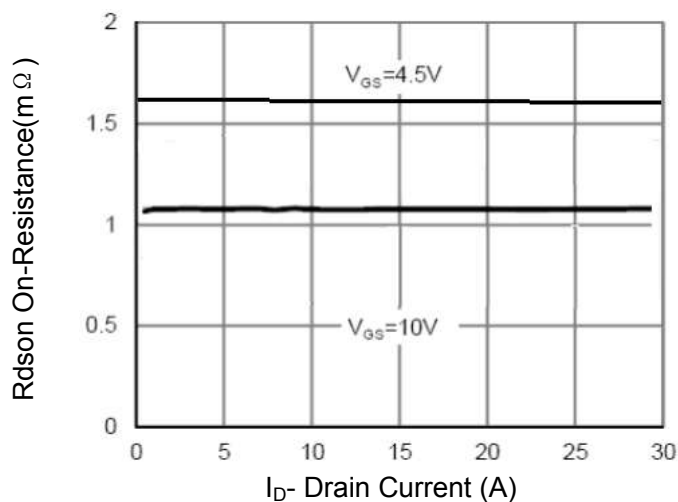
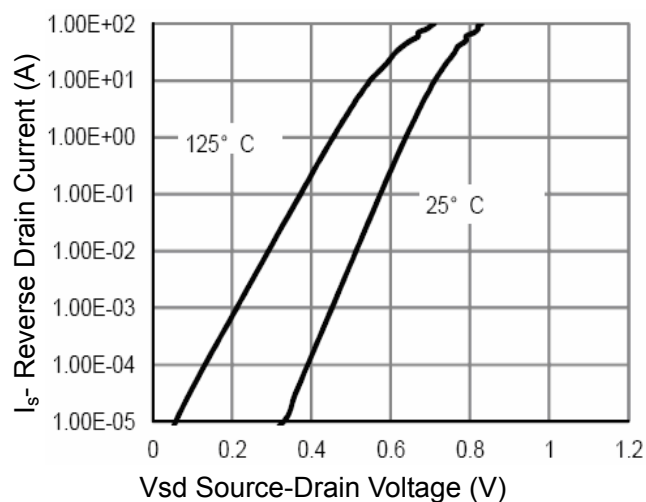
Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous (Silicon Limited)	I_D	200	A
Drain Current-Continuous($T_C=100^{\circ}\text{C}$)	$I_D (100^{\circ}\text{C})$	145	A
Pulsed Drain Current	I_{DM}	800	A
Maximum Power Dissipation	P_D	114	W
Derating factor		0.91	W/°C
Single pulse avalanche energy	E_{AS}	238	mJ
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	°C

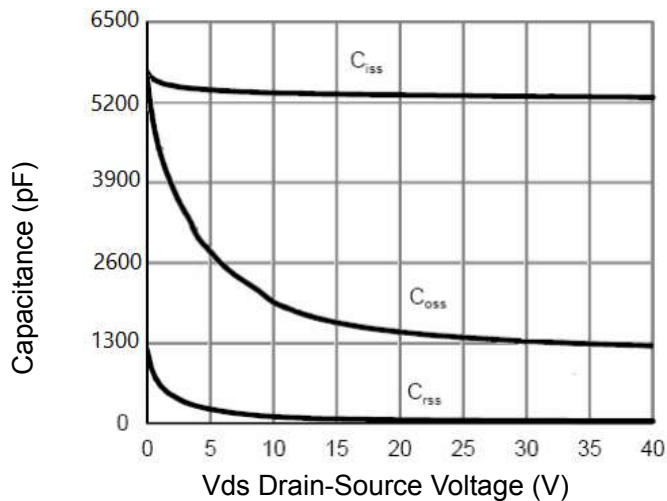
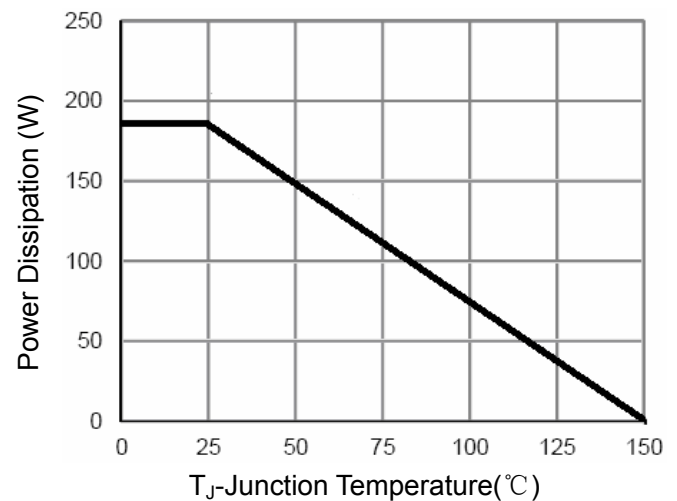
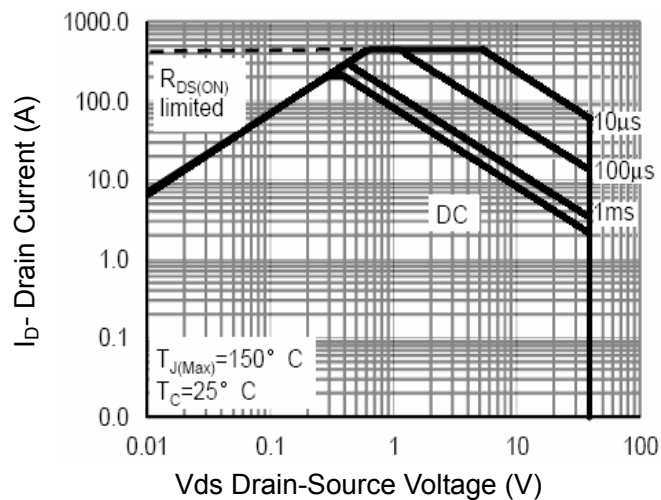
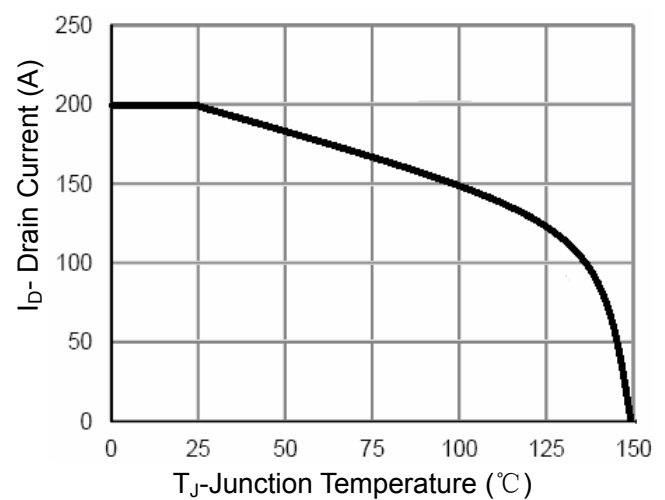
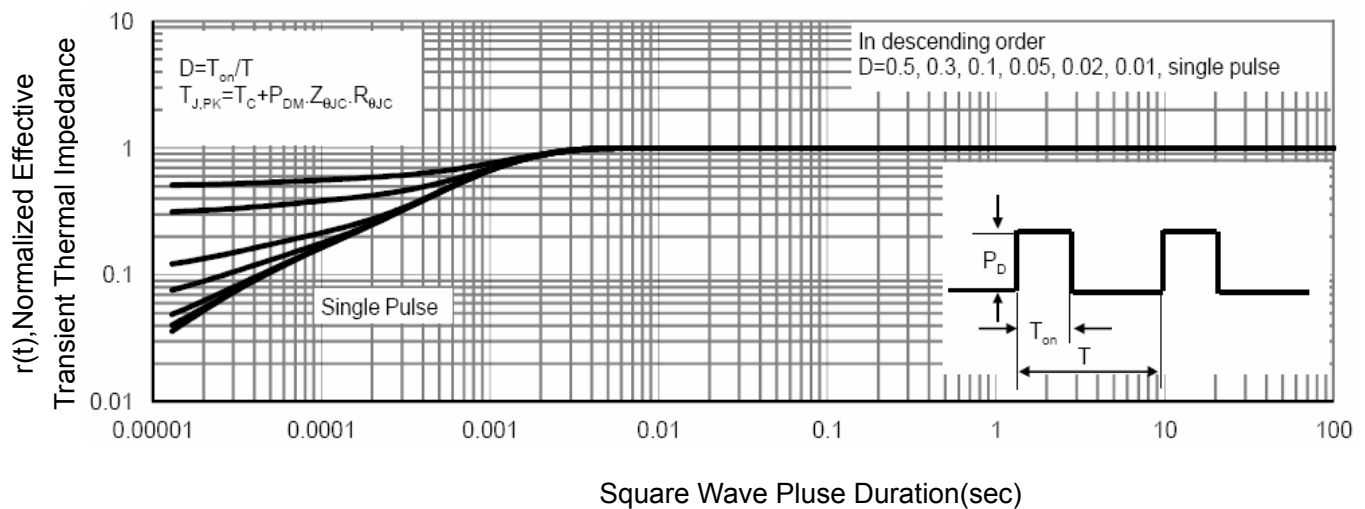
Thermal Characteristic

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.1	°C/W
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Electrical Characteristics ($T_C=25^{\circ}\text{C}$ unless otherwise noted)

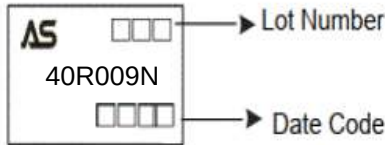
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =250μA	40	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =40V, V _{GS} =0V	-	-	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.0	-	2.5	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =100A	-	1.2	1.4	mΩ
		V _{GS} =4.5V, I _D =100A	-	1.5	1.8	mΩ
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =100A	-	160	-	S
Dynamic Characteristics						
Input Capacitance	C _{ISS}	V _{DS} =20V, V _{GS} =0V, F=1.0MHz	-	5346	-	PF
Output Capacitance	C _{OSS}		-	1404	-	PF
Reverse Transfer Capacitance	C _{RSS}		-	80	-	PF
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =20V, I _D =100A V _{GS} =10V, R _G =1.6Ω	-	24	-	nS
Turn-on Rise Time	t _r		-	84	-	nS
Turn-Off Delay Time	t _{d(off)}		-	62	-	nS
Turn-Off Fall Time	t _f		-	20	-	nS
Total Gate Charge	Q _g	V _{DS} =20V, I _D =100A, V _{GS} =10V	-	45	-	nC
Gate-Source Charge	Q _{gs}		-	15	-	nC
Gate-Drain Charge	Q _{gd}		-	18	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =100A	-	-	0.8	V
Diode Forward Current	I _S		-	-	50	A
Reverse Recovery Time	t _{rr}	T _J = 25°C, I _F = I _S di/dt = 100A/μs ^(Note3)	-	88	-	nS
Reverse Recovery Charge	Q _{rr}		-	185	-	nC

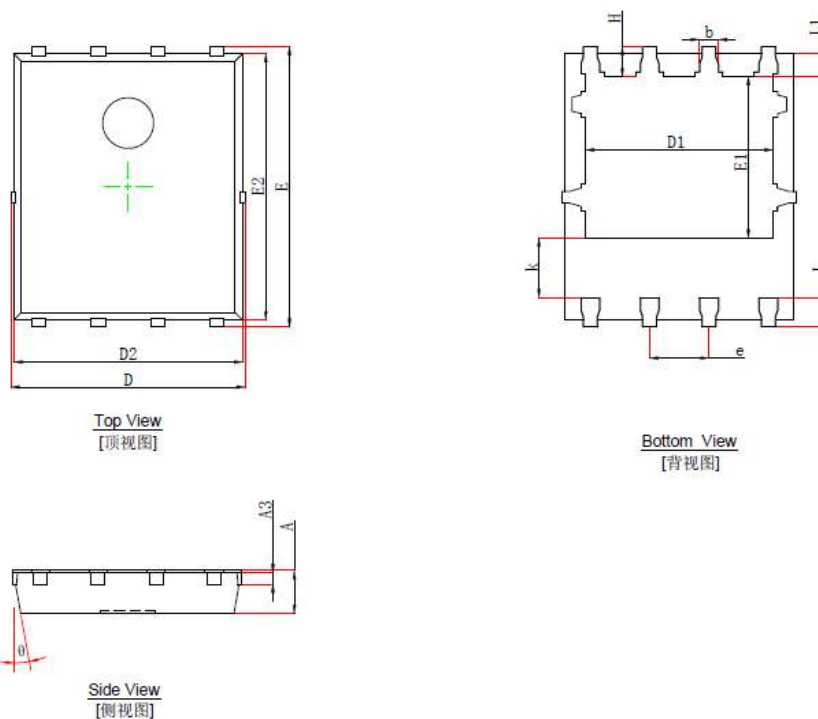
Typical Electrical and Thermal Characteristics

Figure 1 Output Characteristics

Figure 4 Rdson-Junction Temperature

Figure 2 Transfer Characteristics

Figure 5 Gate Charge

Figure 3 Rdson- Drain Current

Figure 6 Source- Drain Diode Forward


Figure 7 Capacitance vs Vds

Figure 9 Power De-rating

Figure 8 Safe Operation Area

Figure 10 Current De-rating

Figure 11 Normalized Maximum Transient Thermal Impedance

Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM40R009NQ-R	40R009N	DFN5*6-8	Tape&Reel	4000/Reel

PACKAGE	MARKING
DFN5*6-8	

DFN5x6_P, 8 Leads


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°	12°	10°	12°

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