

Features

- Low On-Resistance
- Fast Switching Speed
- 100% avalanche tested
- Halogen Free and Green Devices
- Available (RoHS Compliant)

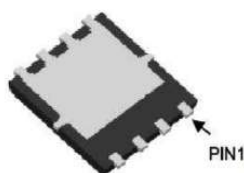
Application

- DC/DC Converters
- On board power for server
- Synchronous rectification

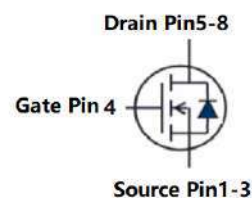
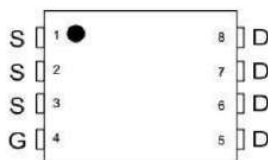
Product Summary



V_{DSS}	40	V
$R_{DS(ON)-Typ@V_{GS}=10V}$	1.6	mΩ
I_D	100	A



DFN5*6-8



N-Channel

Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
Common Ratings ($T_C=25^{\circ}\text{C}$ Unless Otherwise Noted)			
V_{DSS}	Drain-Source Voltage	40	V
V_{GSS}	Gate-Source Voltage	± 20	
T_J	Maximum Junction Temperature	150	$^{\circ}\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^{\circ}\text{C}$
I_S	Diode Continuous Forward Current	$T_C=25^{\circ}\text{C}$ 50	A
Mounted on Large Heat Sink			
$I_{DP}^{①}$	300μs Pulse Drain Current Tested	$T_C=25^{\circ}\text{C}$ 320	A
$I_D^{②}$	Continuous Drain Current@ $T_C(V_{GS}=10V)$	$T_C=25^{\circ}\text{C}$ 100	A
		$T_C=100^{\circ}\text{C}$ 70	
	Continuous Drain Current@ $T_A(V_{GS}=10V)^{③}$	$T_A=25^{\circ}\text{C}$ 30	
		$T_A=70^{\circ}\text{C}$ 21	
P_D	Maximum Power Dissipation@ T_C	$T_C=25^{\circ}\text{C}$ 65	W
		$T_C=100^{\circ}\text{C}$ 26	
	Maximum Power Dissipation@ $T_A^{③}$	$T_A=25^{\circ}\text{C}$ 4.2	
		$T_A=70^{\circ}\text{C}$ 2.7	

Symbol	Parameter	Rating	Unit
$R_{\theta JC}$	Thermal Resistance-Junction to Case	1.50	°C/W
$R_{\theta JA}^{(3)}$	Thermal Resistance-Junction to Ambient	50	°C/W
Drain-Source Avalanche Ratings			
$E_{AS}^{(4)}$	Avalanche Energy, Single Pulsed	180	mJ

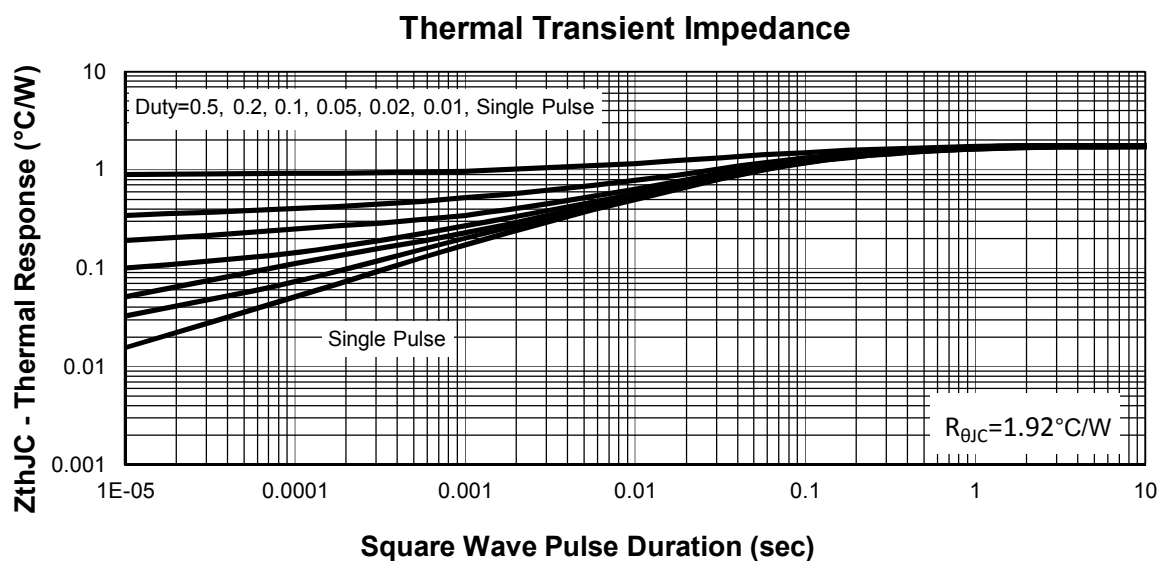
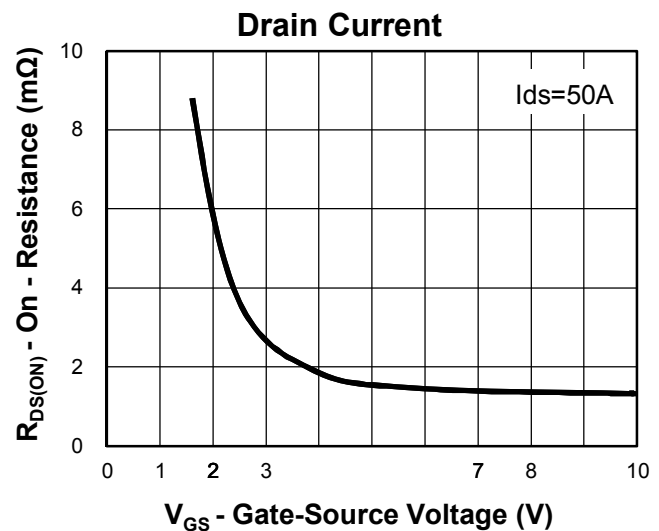
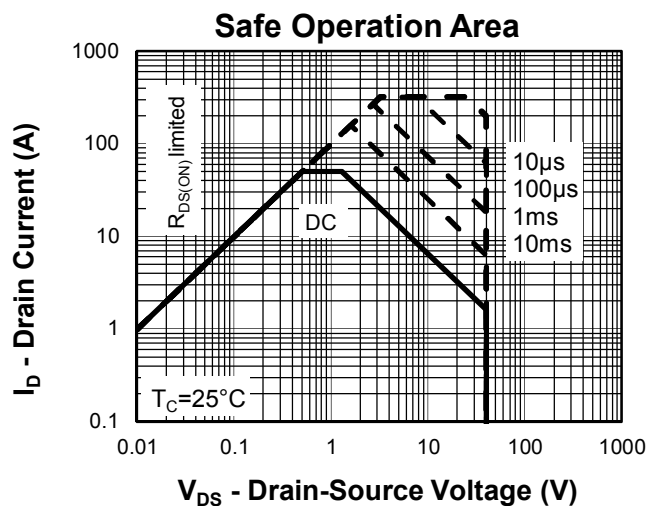
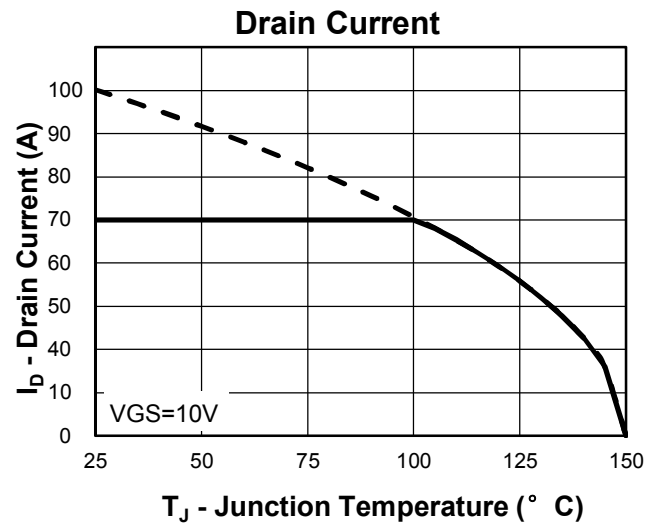
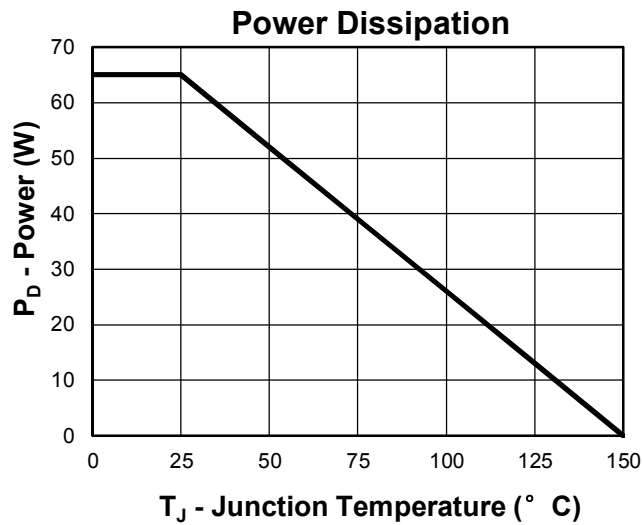
Electrical Characteristics ($T_C=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	ASDM40N100Q			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	40			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =40V, V _{GS} =0V			1	μA
			T _J =125°C		30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1	17	2.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V			±100	nA
R _{DS(ON)} ⑤	Drain-Source On-state Resistance	V _{GS} =4.5V, I _{DS} =35A		2.3	2.8	mΩ
		V _{GS} =10V, I _{DS} =50A		1.6	2.0	mΩ
Diode Characteristics						
V _{SD} ⑤	Diode Forward Voltage	I _{SD} =50A, V _{GS} =0V			1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =50A, dI _{SD} /dt=100A/μs		18		ns
Q _{rr}	Reverse Recovery Charge			29		nC
Dynamic Characteristics ⑥						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		1.3		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =20V, Frequency=1.0MHz		2649		pF
C _{oss}	Output Capacitance			1324		
C _{rss}	Reverse Transfer Capacitance			136		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =20V, I _{DS} =50A, V _{GEN} =10V, R _G =4.7Ω		13		ns
t _r	Turn-on Rise Time			21		
t _{d(OFF)}	Turn-off Delay Time			29		
t _f	Turn-off Fall Time			9		
Gate Charge Characteristics ⑥						
Q _g	Total Gate Charge	V _{DS} =32V, V _{GS} =10V, I _{DS} =50A		29		nC
Q _{gs}	Gate-Source Charge			5		
Q _{gd}	Gate-Drain Charge			9		

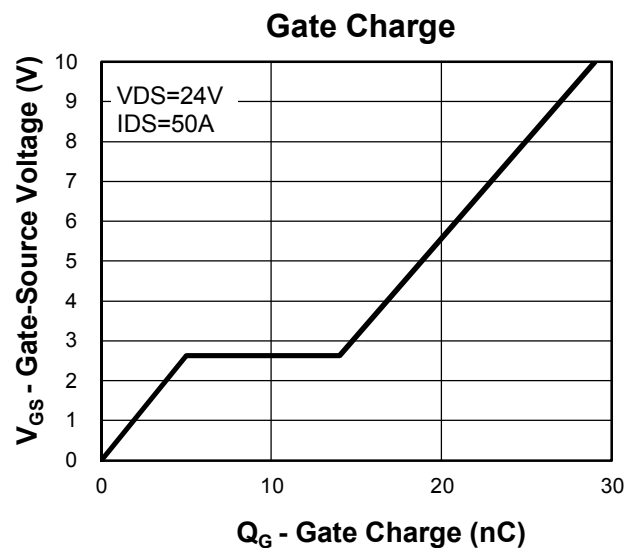
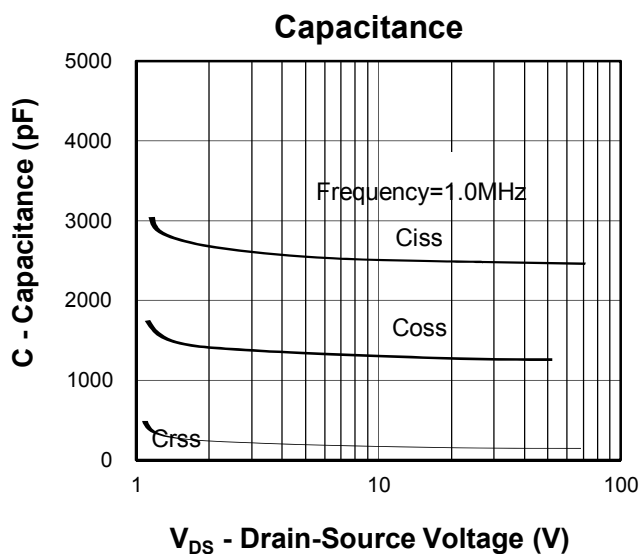
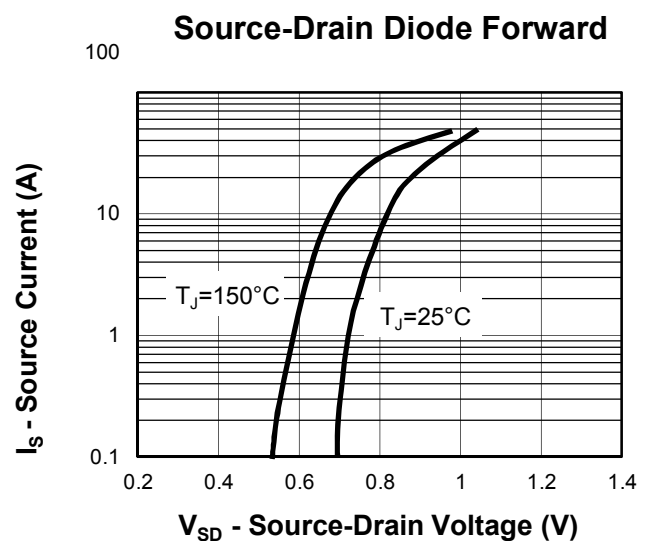
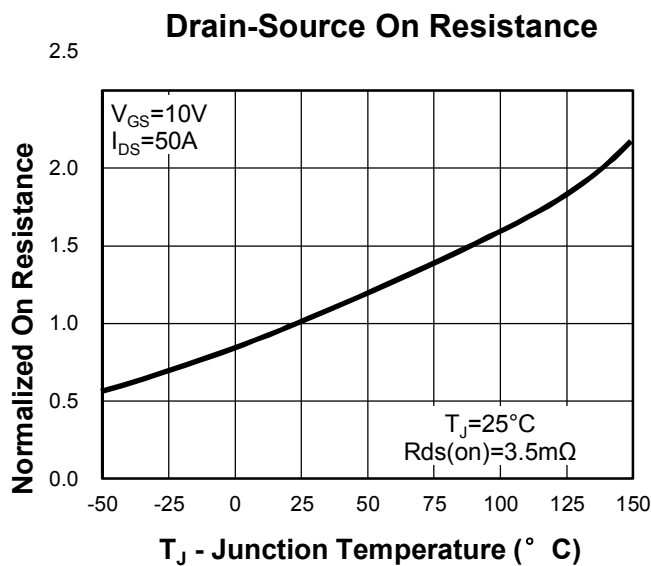
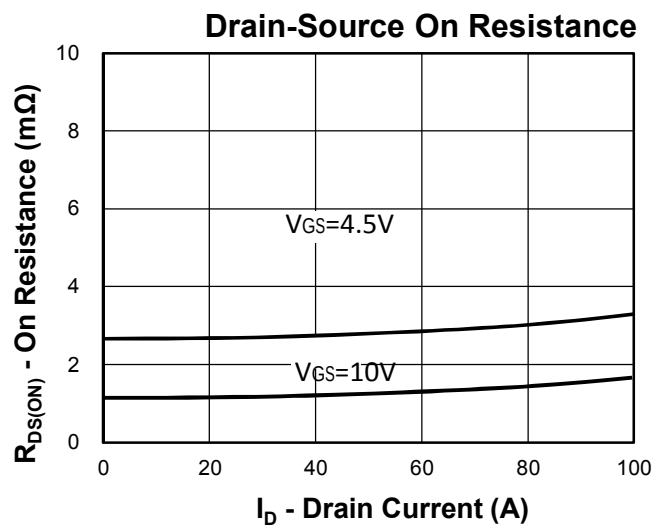
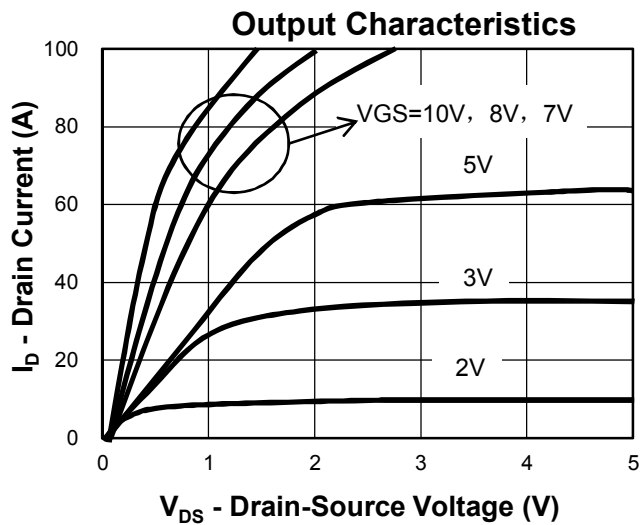
Notes:

- ①Pulse width limited by safe operating area.
- ②Calculated continuous current based on maximum allowable junction temperature.
The package limitation current is 100A.
- ③When mounted on 1 inch square copper board, $t \leq 10\text{sec}$.
- ④Limited by $T_{J\max}$, $I_{AS} = 50\text{A}$, $V_{DD} = 34\text{V}$, $R_G = 50\Omega$, Starting $T_J = 25^\circ\text{C}$.
- ⑤Pulse test;Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
- ⑥Guaranteed by design, not subject to production testing.

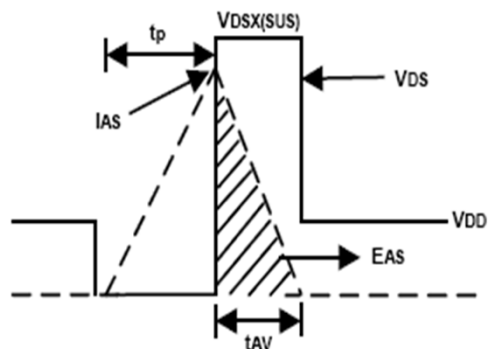
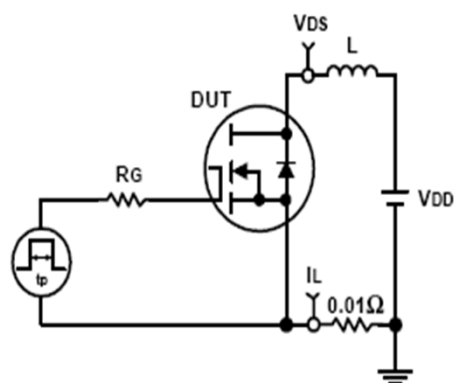
Typical Characteristics



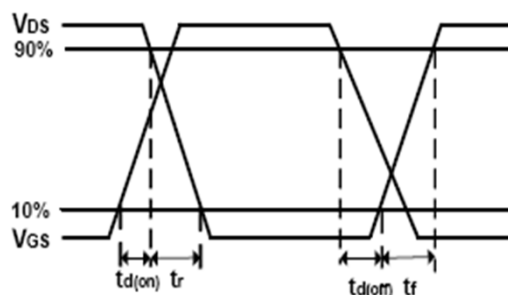
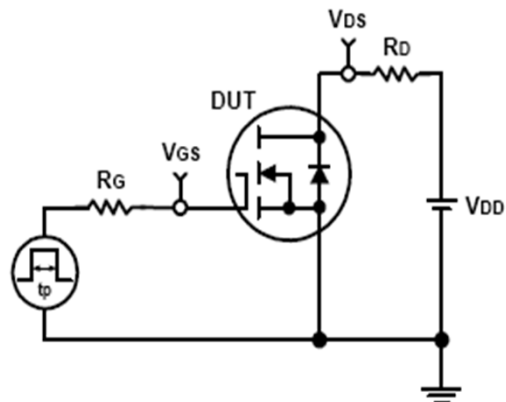
Typical Characteristics



Avalanche Test Circuit and Waveforms

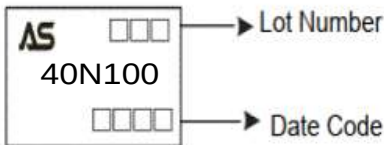


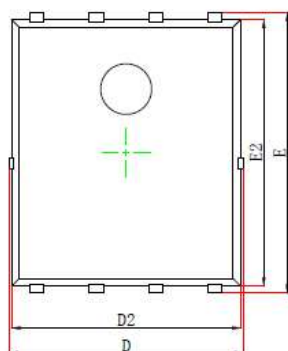
Switching Time Test Circuit and Waveforms



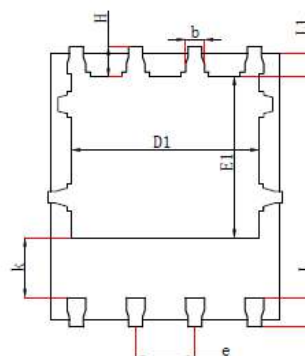
Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM40N100Q-R	40N100	DFN5*6-8	Tape&Reel	4000/Reel

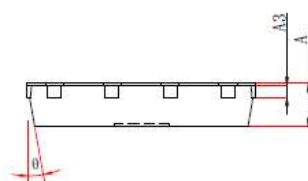
PACKAGE	MARKING
DFN5*6-8	 AS □□ → Lot Number 40N100 □□□□ → Date Code

DFN5*6- 8 PACKAGE INFORMATION


Top View
[顶视图]



Bottom View
[背视图]



Side View
[侧视图]

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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