



Features

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

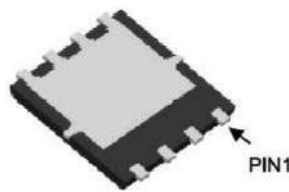
Product Summary

V_{DSS}	40	V
$R_{DS(ON)-Typ@V_{GS}=10V}$	3.5	m Ω
I_D	80	A

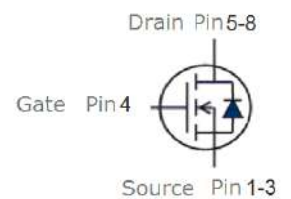
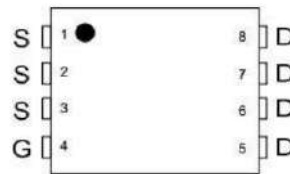
Application

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

top view



DFN5x6-8



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			
$I_{DP}^{(1)}$	300 μs Pulse Drain Current Tested	$T_C=25^\circ\text{C}$ 320	A
$I_D^{(2)}$	Continuous Drain Current@ $T_C(V_{GS}=10V)$	$T_C=25^\circ\text{C}$ 80	A
		$T_C=100^\circ\text{C}$ 51	
	Continuous Drain Current@ $T_A(V_{GS}=10V)^{(3)}$	$T_A=25^\circ\text{C}$ 25	
		$T_A=70^\circ\text{C}$ 19	
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	1.92	$^{\circ}C/W$
$R_{\theta JA}$ ^③	Thermal Resistance-Junction to Ambient	30	$^{\circ}C/W$
Drain-Source Avalanche Ratings			
E_{AS} ^④	Avalanche Energy, Single Pulsed	121	mJ

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

Symbol	Parameter	Test Condition	LIMITS			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	40			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=40V, V_{GS}=0V$			1	μA
		$T_J=125^{\circ}C$			30	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	1		2.5	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
$R_{DS(ON)}$ ^⑤	Drain-Source On-state Resistance	$V_{GS}=4.5V, I_{DS}=35A$		4.5	5.5	m Ω
		$V_{GS}=10V, I_{DS}=50A$		3.5	4.5	m Ω
Diode Characteristics						
V_{SD} ^⑤	Diode Forward Voltage	$I_{SD}=50A, V_{GS}=0V$			1.2	V
t_{rr}	Reverse Recovery Time	$I_{SD}=50A, di_{SD}/dt=100A/\mu s$		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	$V_{GS}=0V, V_{DS}=20V, Frequency=1.0MHz$		1560		pF
C_{oss}	Output Capacitance			780		
C_{rss}	Reverse Transfer Capacitance			80		
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=20V, I_{DS}=50A, V_{GEN}=10V, R_G=4.7\Omega$		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		



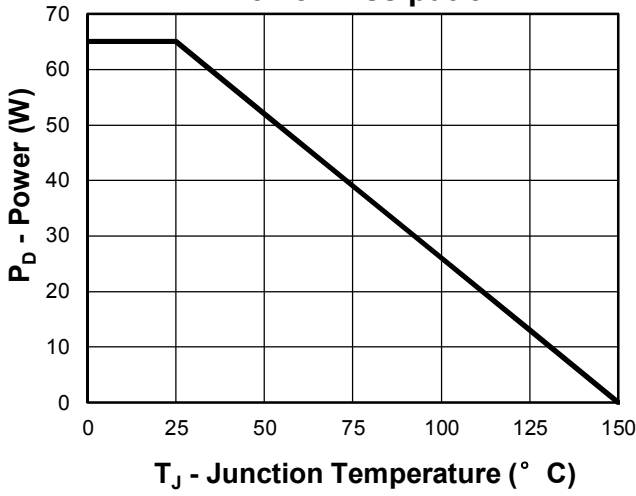
Notes:

- ①Pulse width limited by safe operating area.
- ②Calculated continuous current based on maximum allowable junction temperature. The package limitation current is 50A.
- ③When mounted on 1 inch square copper board, $t \leq 10\text{sec}$.
- ④Limited by $T_{J\text{max}}$, $I_{AS} = 22\text{A}$, $V_{DD} = 24\text{V}$, $R_G = 50\Omega$, 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.

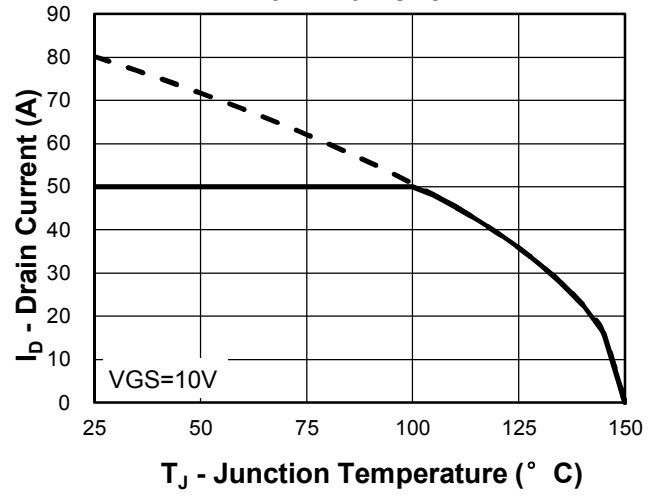


Typical Characteristics

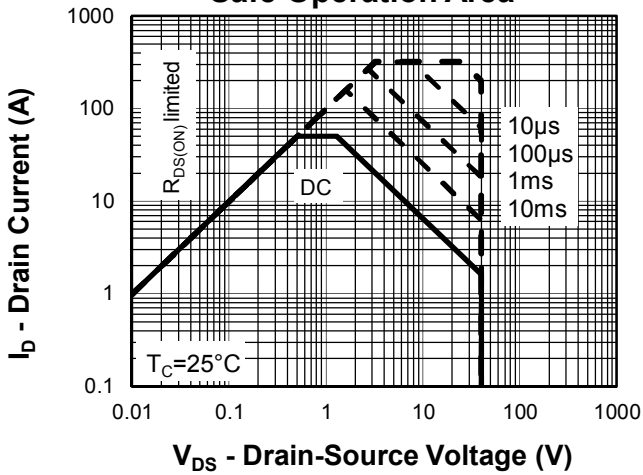
Power Dissipation



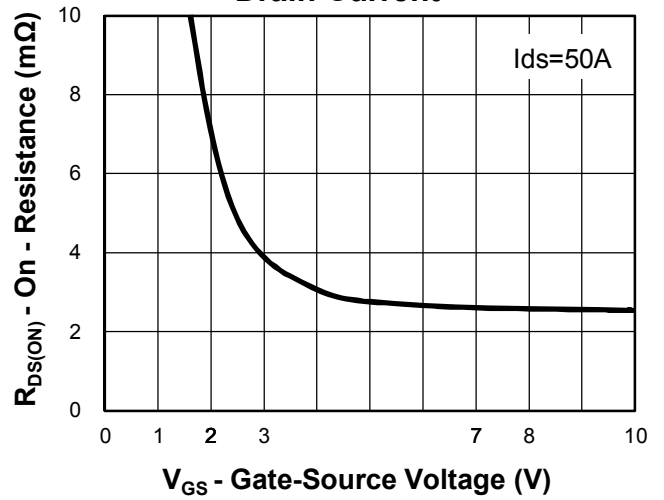
Drain Current



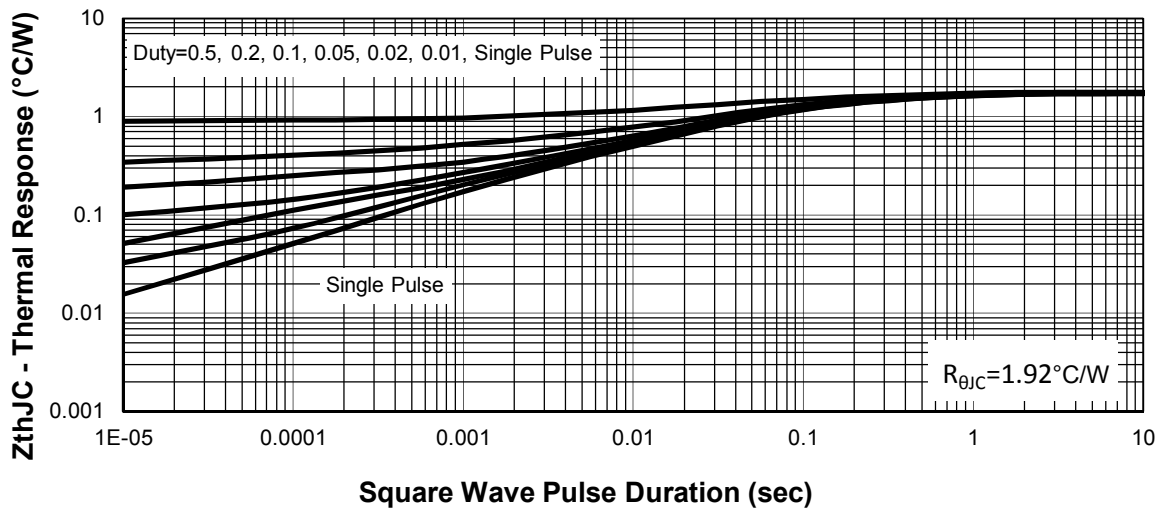
Safe Operation Area



Drain Current



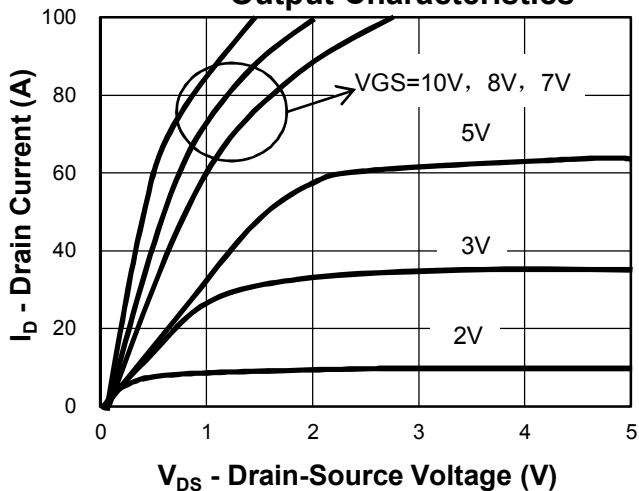
Thermal Transient Impedance



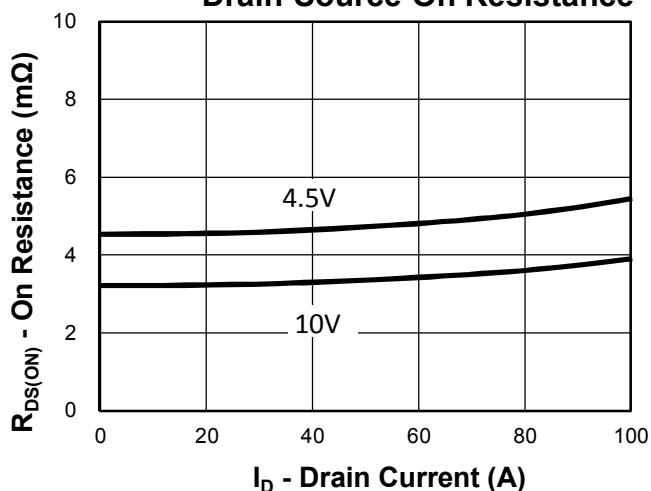


Typical Characteristics

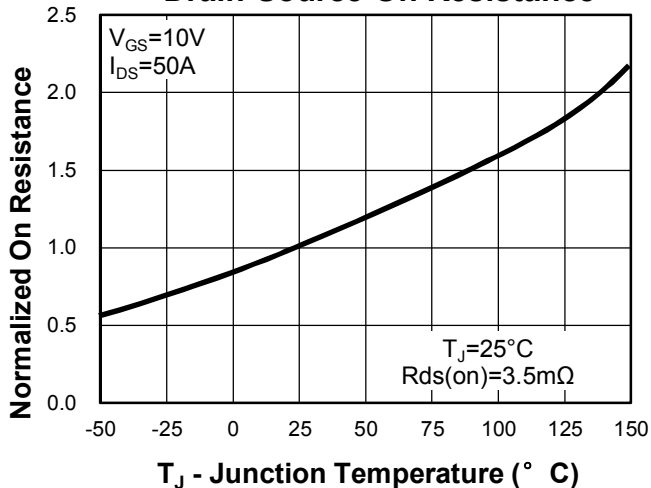
Output Characteristics



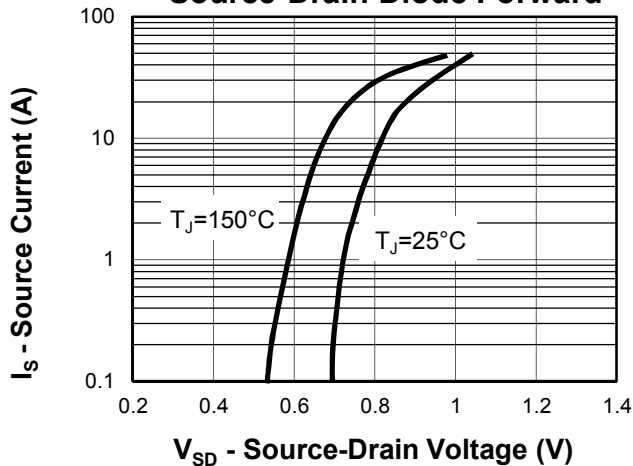
Drain-Source On Resistance



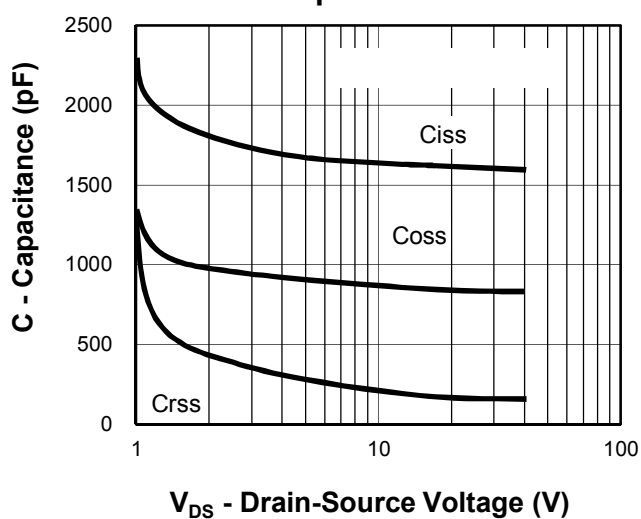
Drain-Source On Resistance



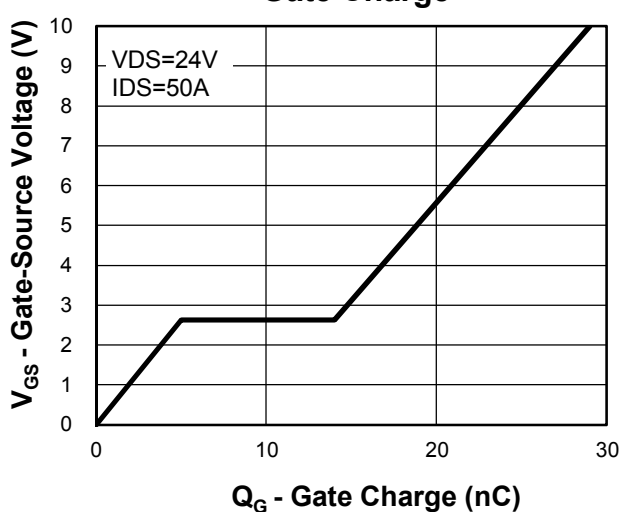
Source-Drain Diode Forward



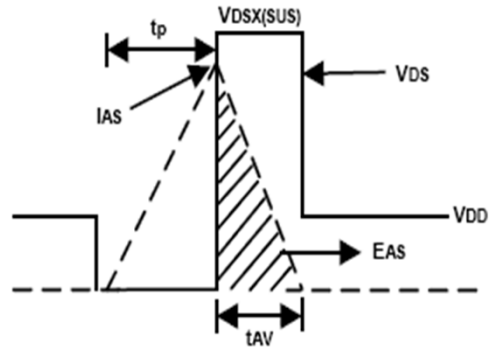
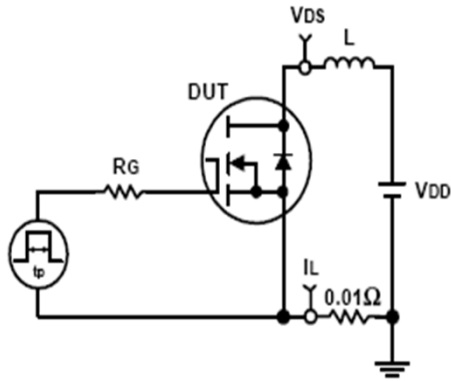
Capacitance



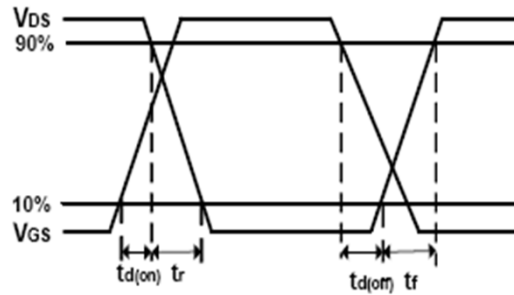
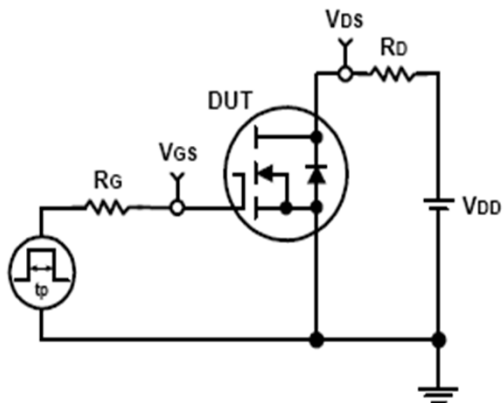
Gate Charge



Avalanche Test Circuit and Waveforms

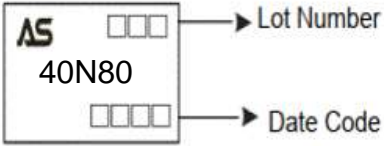


Switching Time Test Circuit and Waveforms

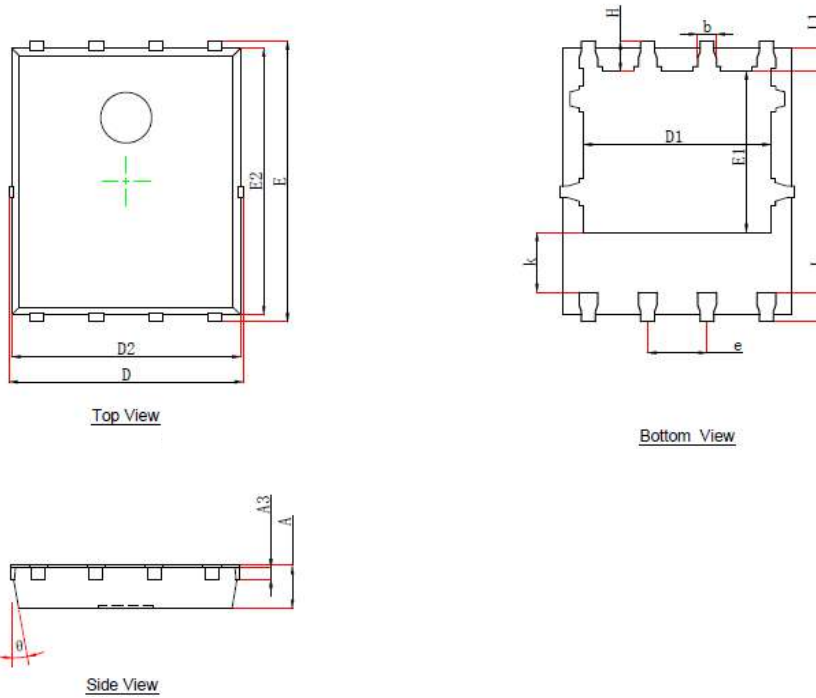


Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM40N80Q	40N80	DFN5*6-8	Tape&Reel	4000

PACKAGE	MARKING
DFN5*6-8	 <p>The diagram shows a rectangular marking area on a component. It contains the following elements: <ul style="list-style-type: none"> Top left: 'AS' logo Top right: two empty square boxes, with an arrow pointing to the text 'Lot Number'. Center: '40N80' part number Bottom right: four empty square boxes, with an arrow pointing to the text 'Date Code'. </p>

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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