



Features

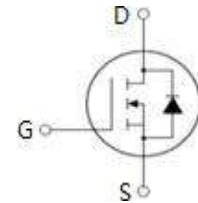
- Low On-Resistance
- Fast Switching Speed
- 100% avalanche tested
- Lead Free and Green Devices
Available (RoHS Compliant)

Product Summary

V_{DSS}	40	V
$R_{DS(ON)-Typ@V_{GS}=10V}$	4.0	m Ω
I_D	80	A

Application

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



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	$T_C=25^\circ\text{C}$ 80	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	

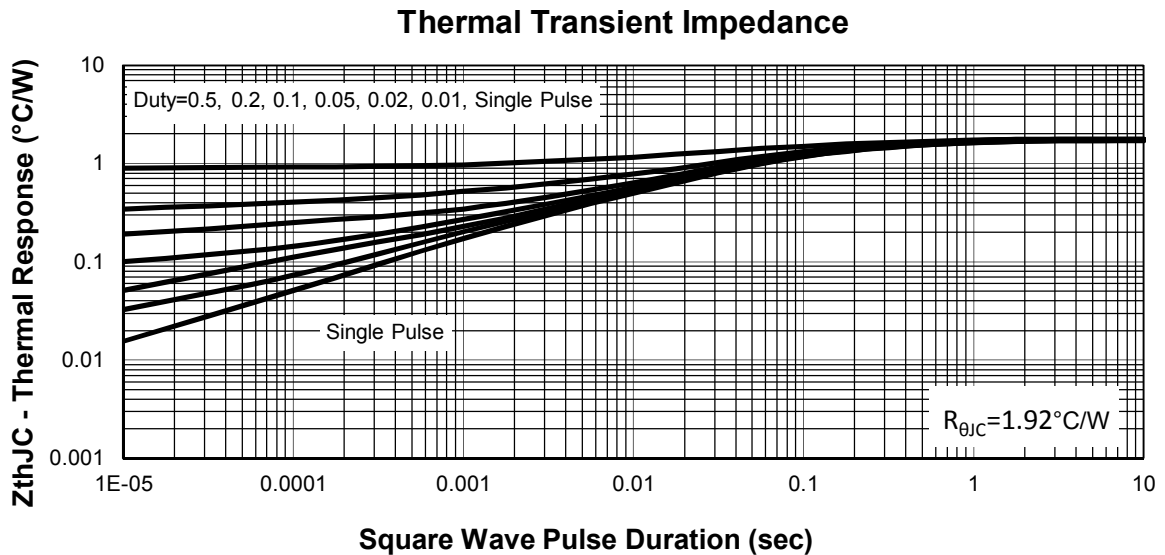
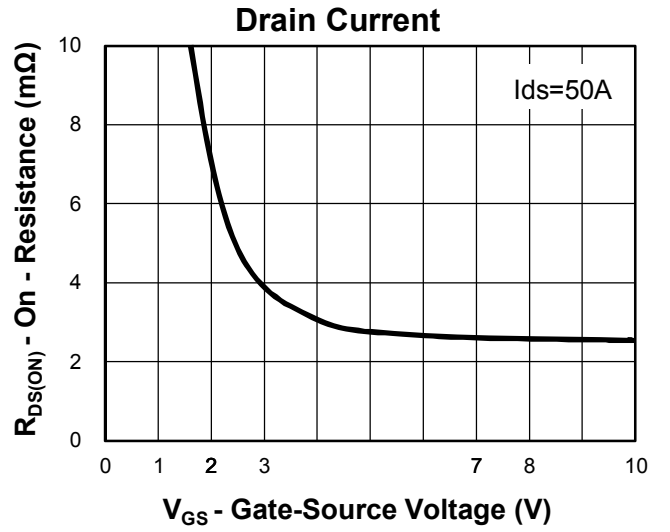
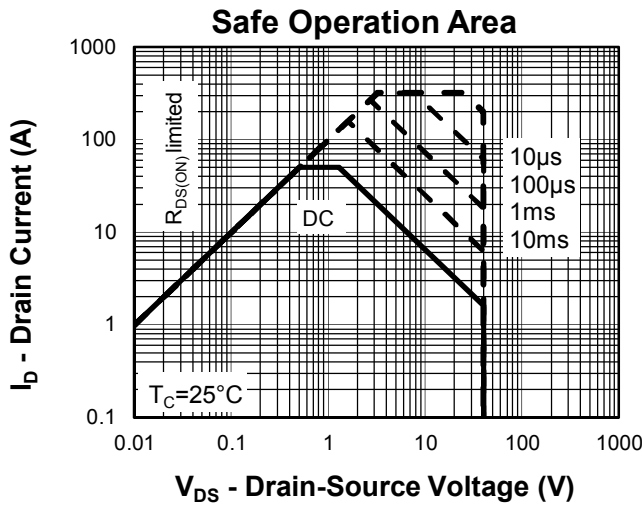
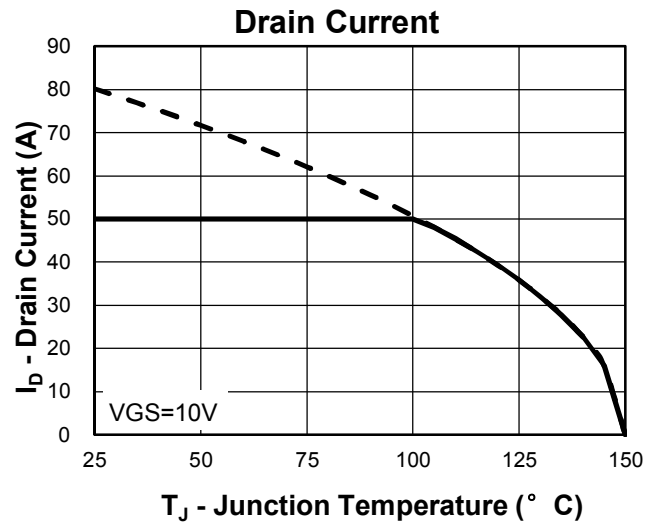
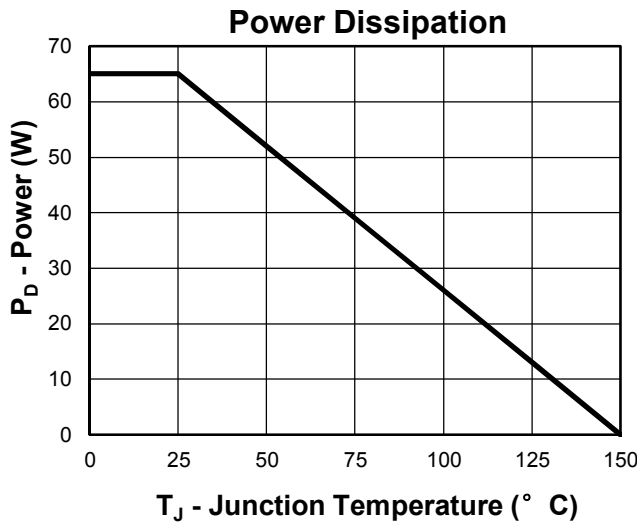
Symbol	Parameter	Rating	Unit
$R_{\theta JC}$	Thermal Resistance-Junction to Case	2.4	$^\circ\text{C}/\text{W}$
$R_{\theta JA}^{(3)}$	Thermal Resistance-Junction to Ambient	62	$^\circ\text{C}/\text{W}$
Drain-Source Avalanche Ratings			
$E_{AS}^{(4)}$	Avalanche Energy, Single Pulsed	121	mJ

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

Symbol	Parameter	Test Condition	LIMIT			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	$V_{GS}=4.5V, I_{DS}=35A$		5.5	6.0	$m\Omega$
		$V_{GS}=10V, I_{DS}=50A$		4.0	4.5	$m\Omega$
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		3027		pF
C_{oss}	Output Capacitance			1513		
C_{rss}	Reverse Transfer Capacitance			155		
$t_{d(ON)}$	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		



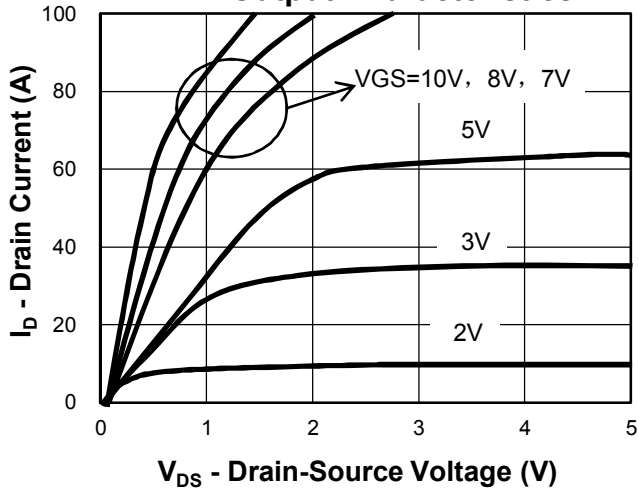
Typical Characteristics



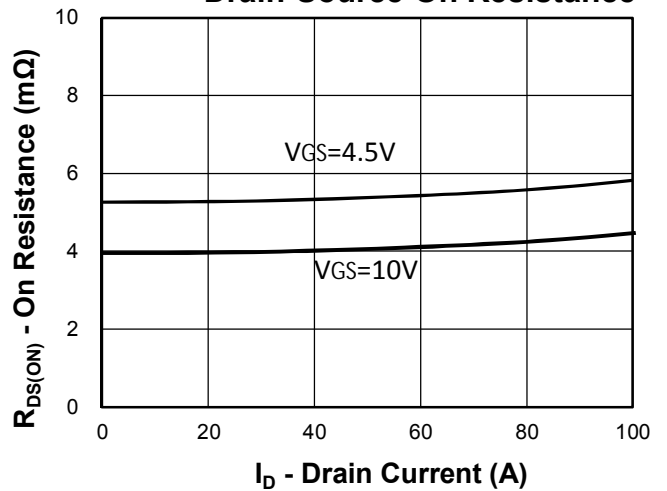


Typical Characteristics

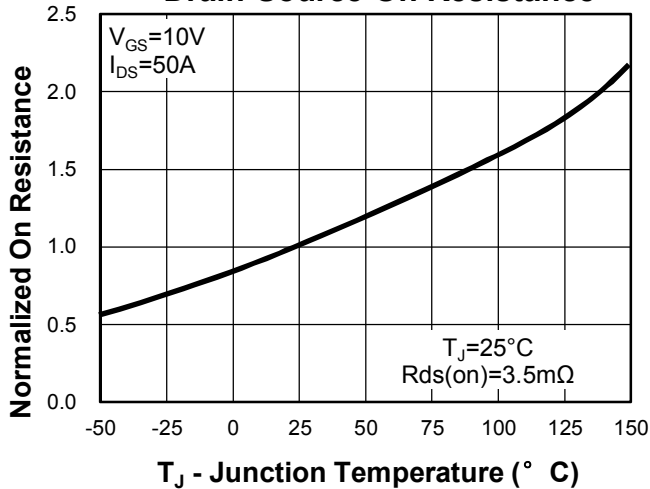
Output Characteristics



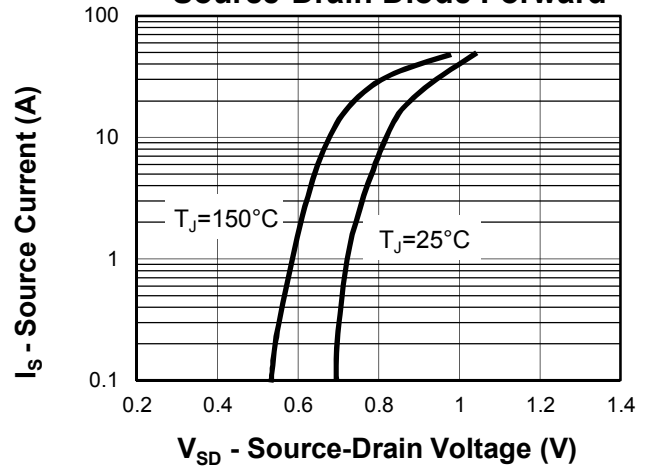
Drain-Source On Resistance



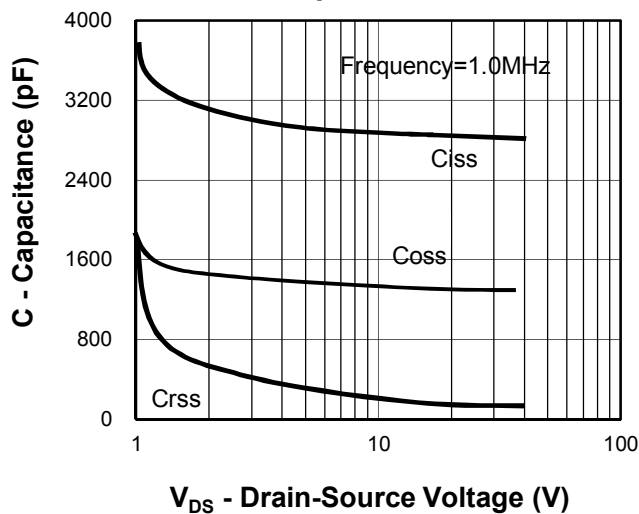
Drain-Source On Resistance



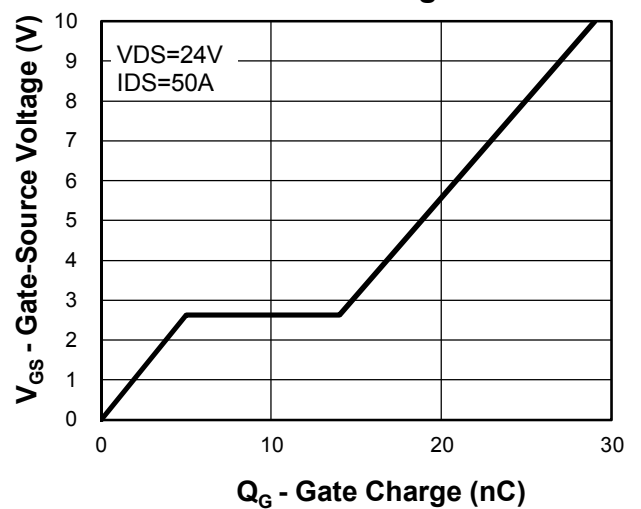
Source-Drain Diode Forward



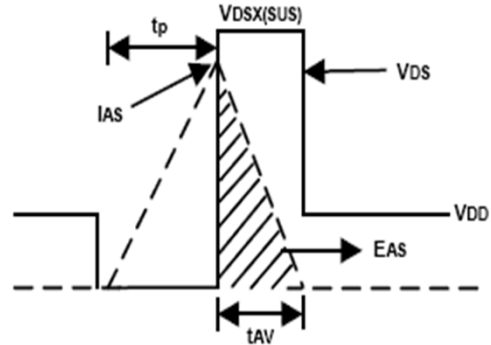
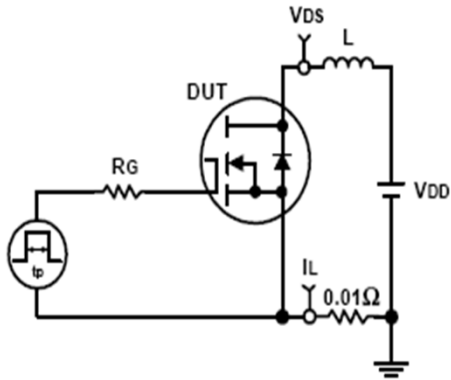
Capacitance



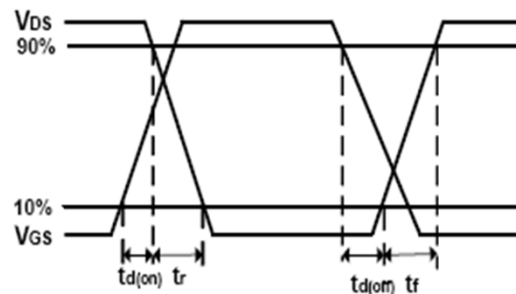
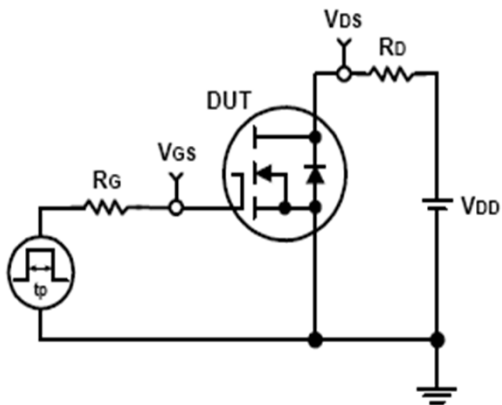
Gate Charge



Avalanche Test Circuit and Waveforms

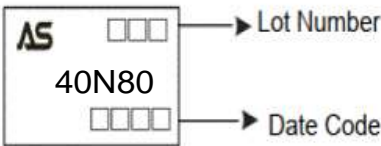


Switching Time Test Circuit and Waveforms

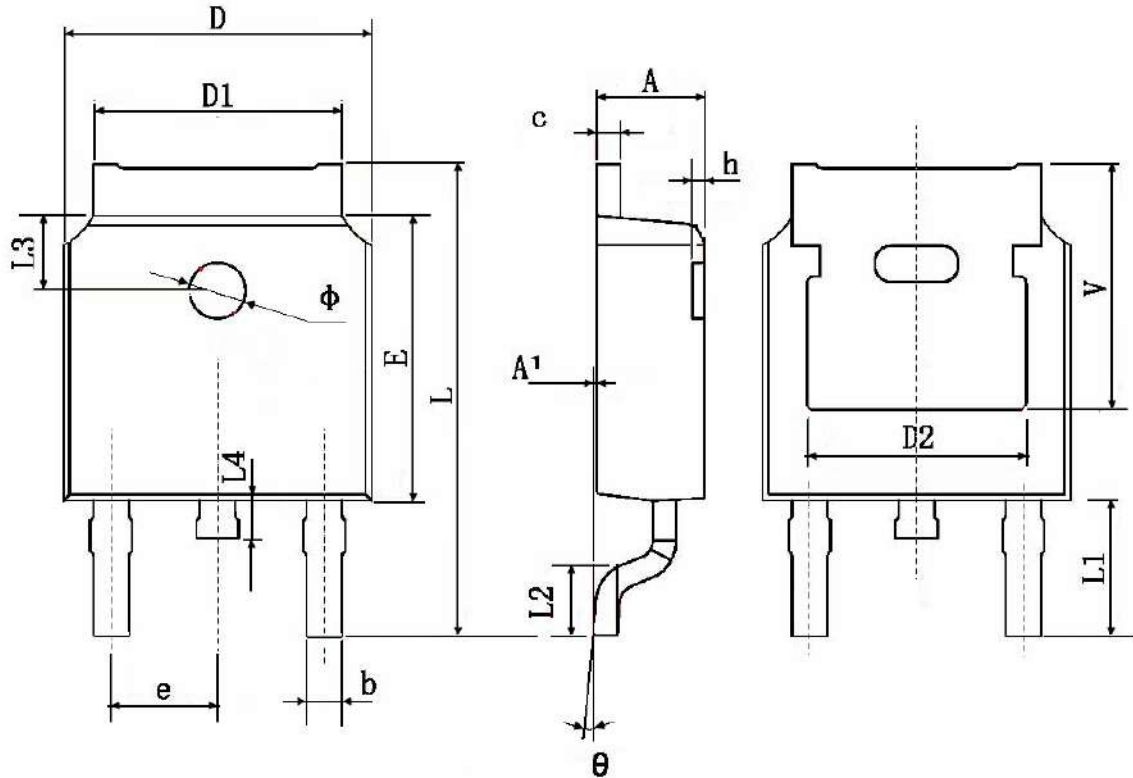


Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM40N80KQ-R	40N80	TO-252	Tape&Reel	2500/Reel

PACKAGE	MARKING
TO-252	 <p>AS □□□ → Lot Number 40N80 □□□□ → Date Code</p>

TO-252 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	0.483 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211 TYP.	

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