

Features

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

Application

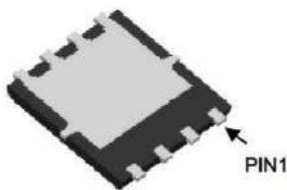
- DC/DC Converters
- On board power for server
- Synchronous rectification

Product Summary

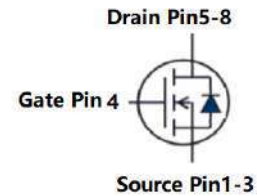
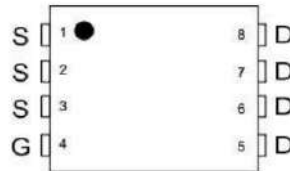


V_{DSS}	40	V
$R_{DS(ON)-Typ@V_{GS}=10V}$	3.5	m Ω
I_D	80	A

Top View



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			
$I_{DP}^{①}$	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	$^{\circ}C/W$
$R_{\theta JA}$ ^③	Thermal Resistance-Junction to Ambient	62	$^{\circ}C/W$
Drain-Source Avalanche Ratings			
E_{AS} ^④	Avalanche Energy, Single Pulsed	121	mJ

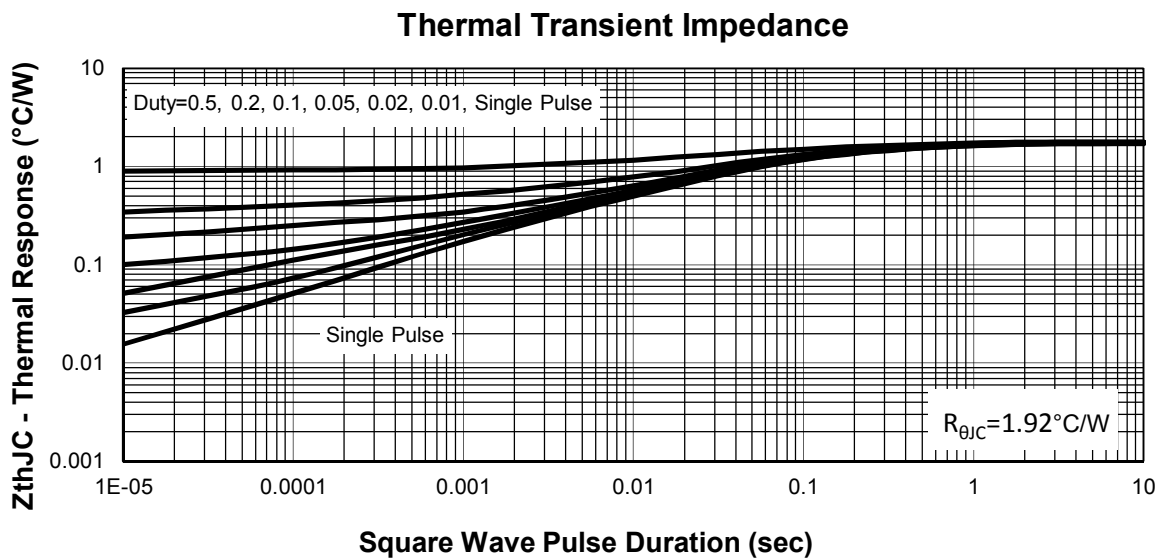
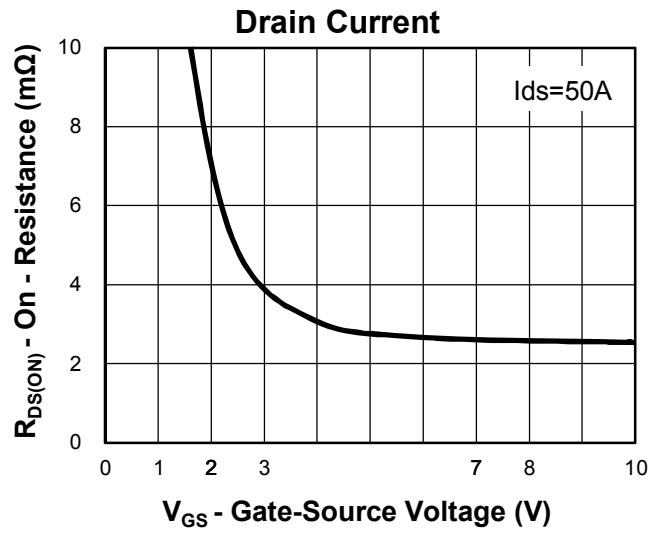
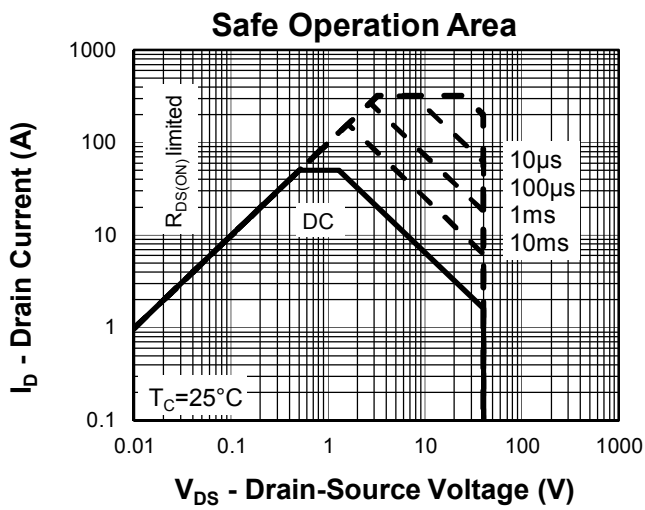
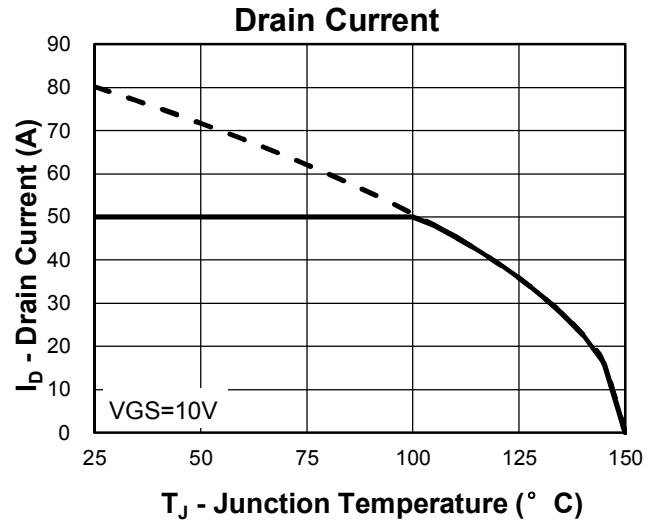
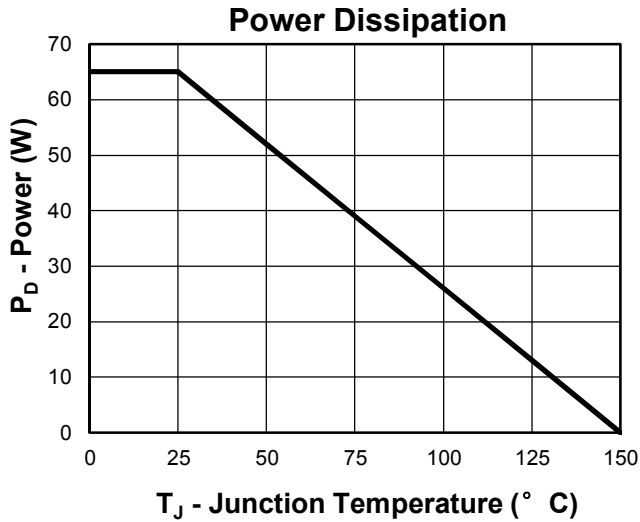
Electrical Characteristics ($T_C=25^{\circ}C$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	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	$V_{GS}=4.5V, I_{DS}=35A$	---	4.5	5.5	$m\Omega$
		$V_{GS}=10V, I_{DS}=50A$	---	3.5	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	$V_{GS}=0V, V_{DS}=20V, Frequency=1.0MHz$	---	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	---	

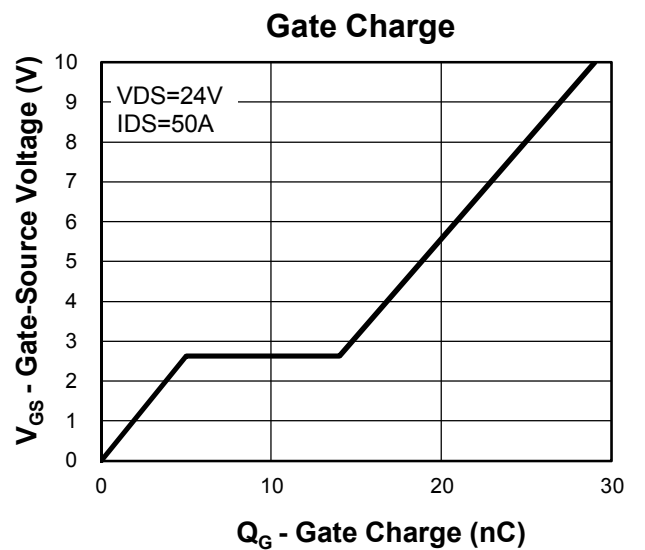
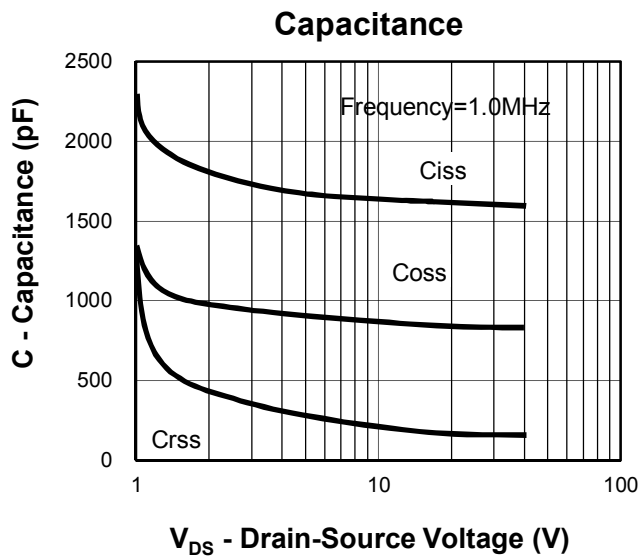
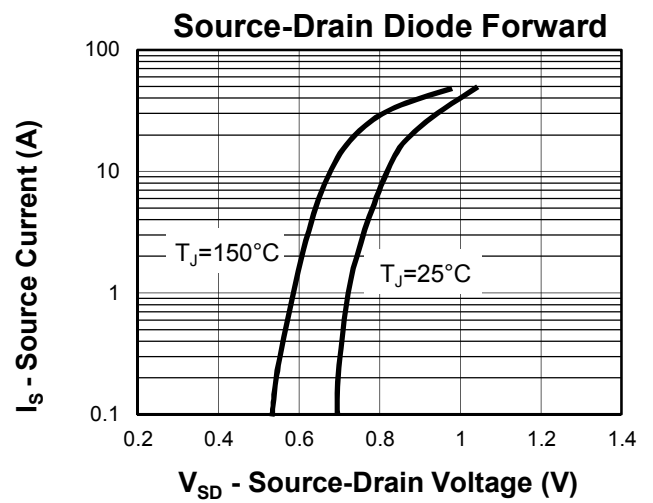
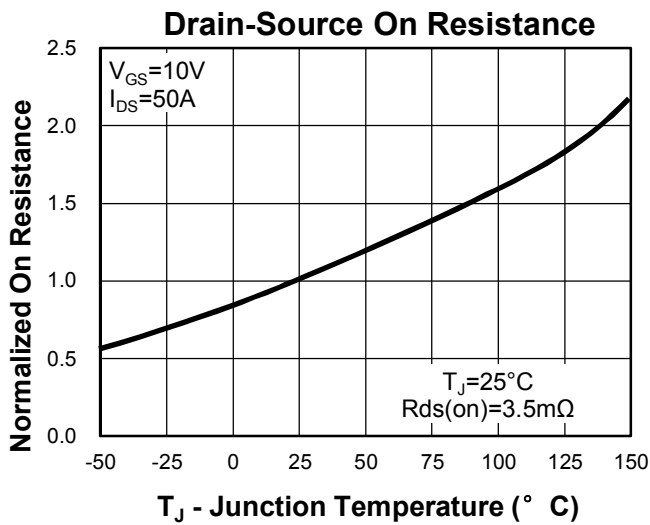
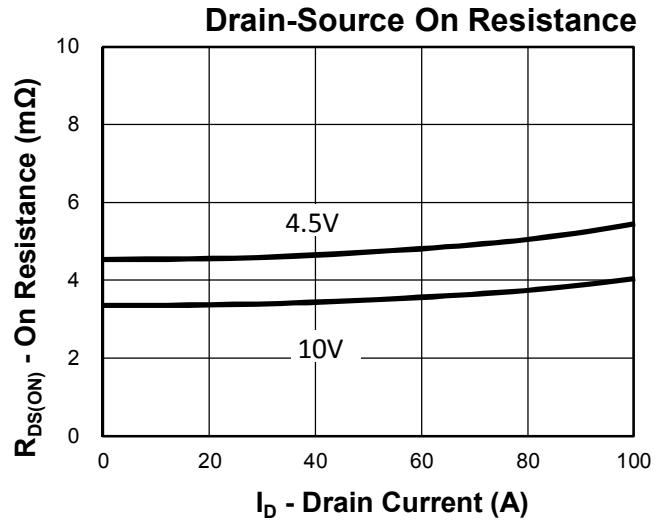
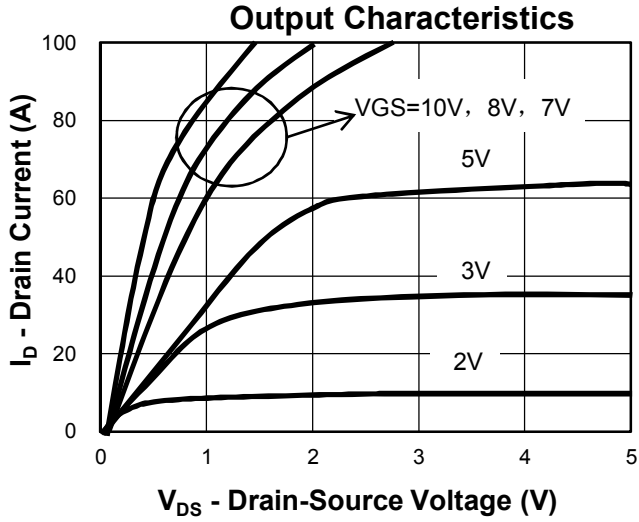
Notes:

- 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.

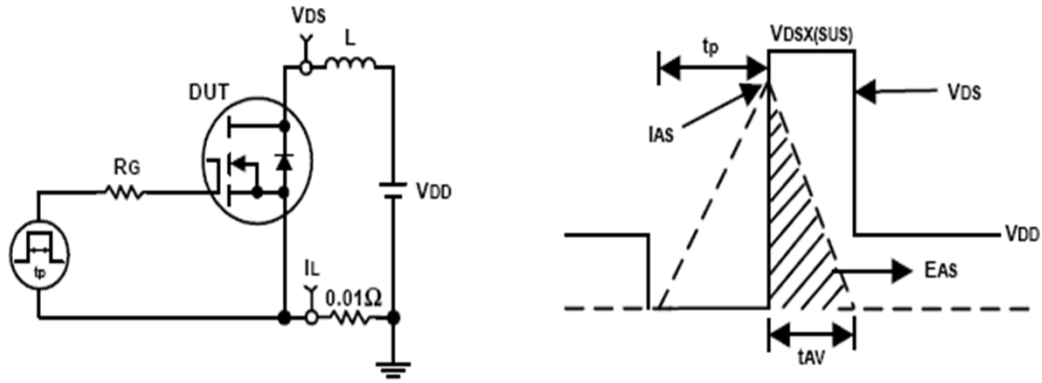
Typical Characteristics



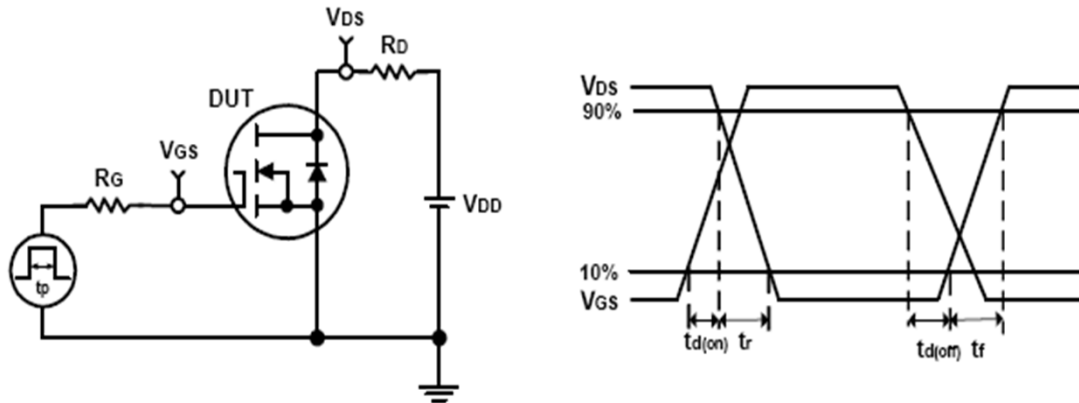
Typical Characteristics



Avalanche Test Circuit and Waveforms

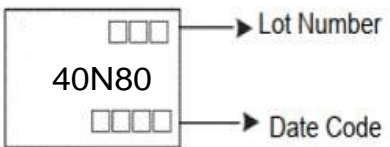


Switching Time Test Circuit and Waveforms

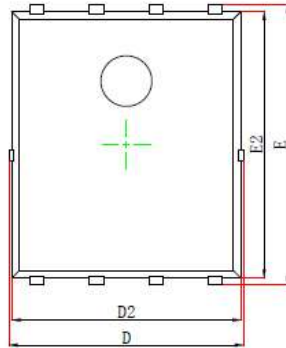


Ordering and Marking Information

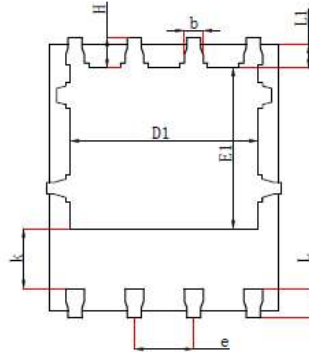
Ordering Device No.	Marking	Package	Packing	Quantity
JMN40N80Q-R	40N80	DFN5*6-8	Tape&Reel	4000/Reel

PACKAGE	MARKING
DFN5*6-8	 <p>The diagram shows a rectangular marking area containing the text '40N80'. Above this text are three small squares, with an arrow pointing to the label 'Lot Number'. Below the text are four small squares, with an arrow pointing to the label 'Date Code'.</p>

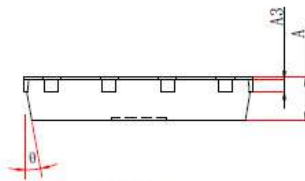
DFN5*6- 8 PACKAGE IN FORMATION



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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