



## General Features

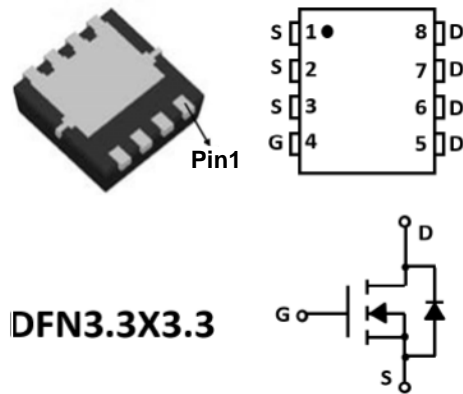
- Low On-Resistance
- 100% avalanche tested
- Fast Switching Speed
- Excellent package for good heat dissipation

## Product Summary

$V_{DSS}$	40	V
$R_{DS(ON)-Typ}$	4.2	m $\Omega$
$I_D$	52	A

## Application

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



## Absolute Maximum Ratings (T<sub>C</sub>=25°C unless otherwise specified)

Symbol	Parameter	Max.	Units	
$V_{DSS}$	Drain-Source Voltage	40	V	
$V_{GSS}$	Gate-Source Voltage	±20	V	
$I_D$	Continuous Drain Current	T <sub>C</sub> = 25°C	52	A
		T <sub>C</sub> = 100°C	35	A
$I_{DM}$	Pulsed Drain Current <sup>note1</sup>	220	A	
EAS	Single Pulsed Avalanche Energy <sup>note2</sup>	100	mJ	
$P_D$	Power Dissipation	T <sub>C</sub> = 25°C	65	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.92	°C/W	
T <sub>J</sub> , T <sub>STG</sub>	Operating and Storage Temperature Range	-55 to +150	°C	

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

Symbol	Parameter	Test Condition	ASDM40N52			Unit
			Min.	Typ.	Max.	
<b>Static Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	40	45		V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=40V, V_{GS}=0V$			1	$\mu A$
		$T_J=125^\circ C$			30	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	1	1.6	2.5	V
$I_{GSS}$	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$			$\pm 100$	nA
$R_{DS(on)}^{①}$	Drain-Source On-state Resistance	$V_{GS}=4.5V, I_{DS}=20A$		6.5	10	$m\Omega$
		$V_{GS}=10V, I_{DS}=30A$		4.2	5.5	$m\Omega$
<b>Diode Characteristics</b>						
$V_{SD}^{①}$	Diode Forward Voltage	$I_{SD}=26A, V_{GS}=0V$			1.2	V
$t_{rr}$	Reverse Recovery Time	$I_{SD}=26A, di_{SD}/dt=100A/\mu s$		14		ns
$Q_{rr}$	Reverse Recovery Charge			32		nC
<b>Dynamic Characteristics</b> <sup>②</sup>						
$R_G$	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$		1.2		$\Omega$
$C_{iss}$	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=20V,$ Frequency=1.0MHz		980		pF
$C_{oss}$	Output Capacitance			160		
$C_{rss}$	Reverse Transfer Capacitance			80		
$t_{d(on)}$	Turn-on Delay Time	$V_{DD}=20V, I_{DS}=26A,$ $V_{GS}=10V, R_G=4.7\Omega$		6		ns
$t_r$	Turn-on Rise Time			10		
$t_{d(off)}$	Turn-off Delay Time			24		
$t_f$	Turn-off Fall Time			5		
<b>Gate Charge Characteristics</b> <sup>②</sup>						
$Q_g$	Total Gate Charge	$V_{DS}=32V, V_{GS}=10V,$ $I_{DS}=26A$		18	23	nC
$Q_{gs}$	Gate-Source Charge			2.5		
$Q_{gd}$	Gate-Drain Charge			5		

**Notes:**① Pulse test; Pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .

② Guaranteed by design, not subject to production testing.



### Test Circuit

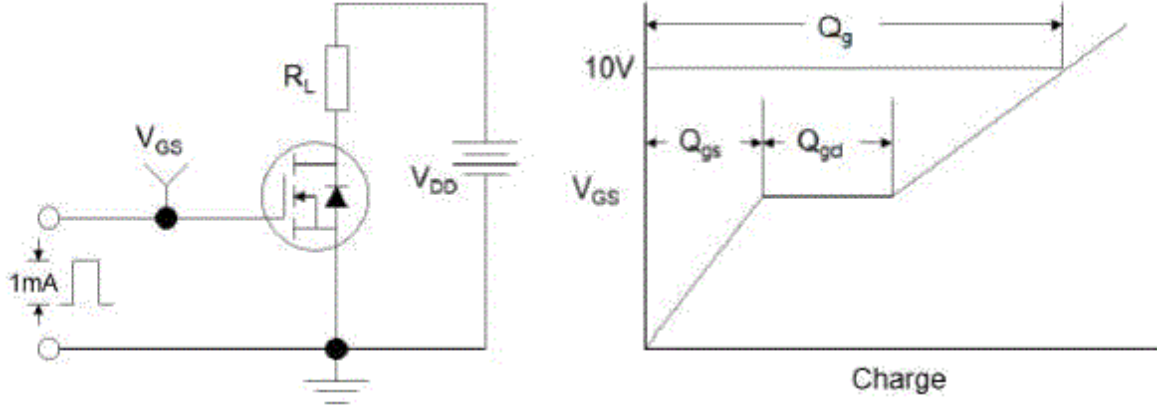


Figure1:Gate Charge Test Circuit & Waveform

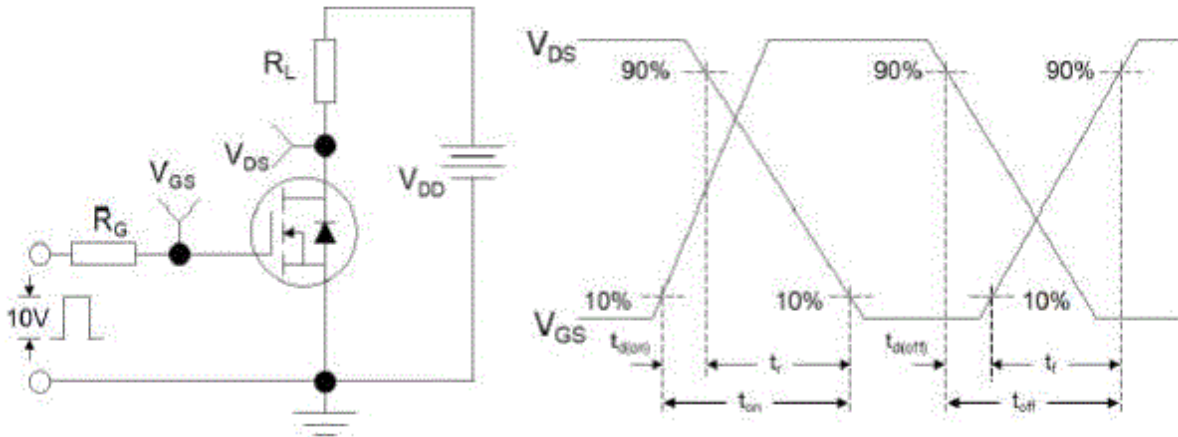


Figure 2: Resistive Switching Test Circuit & Waveforms

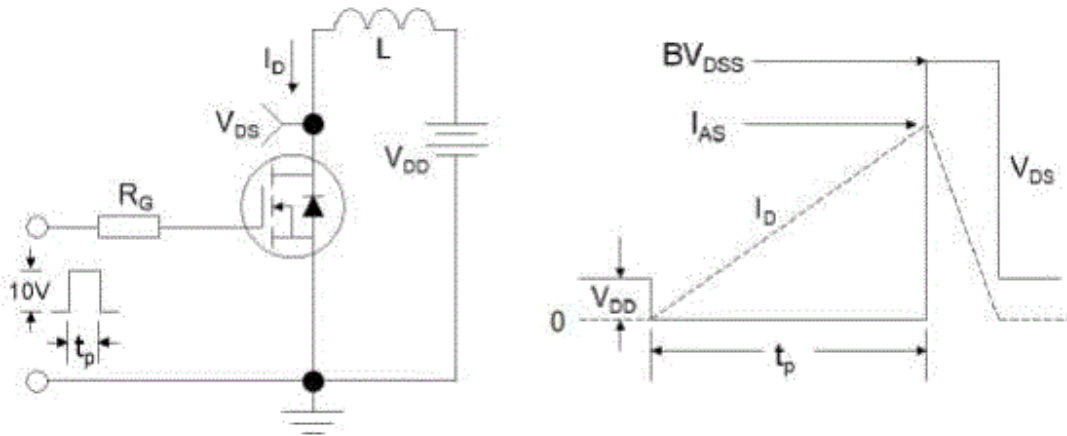
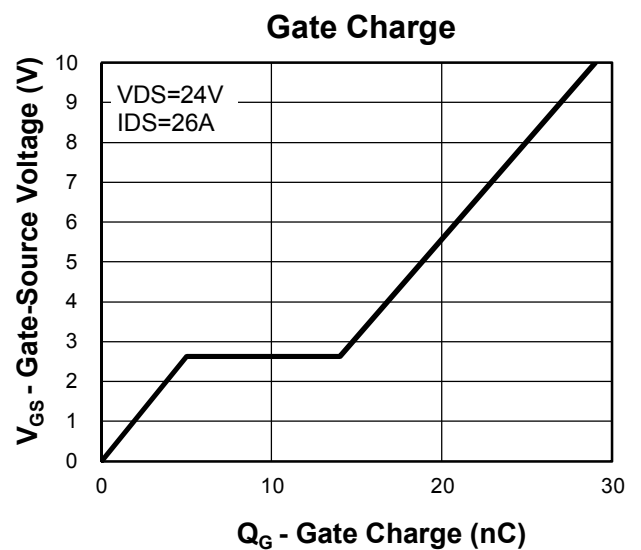
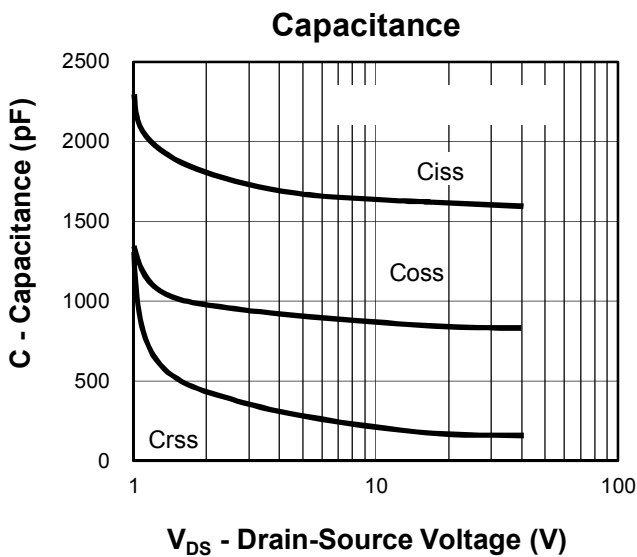
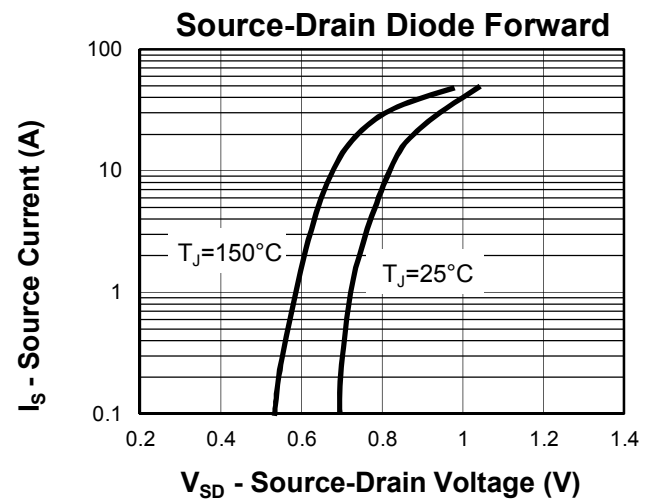
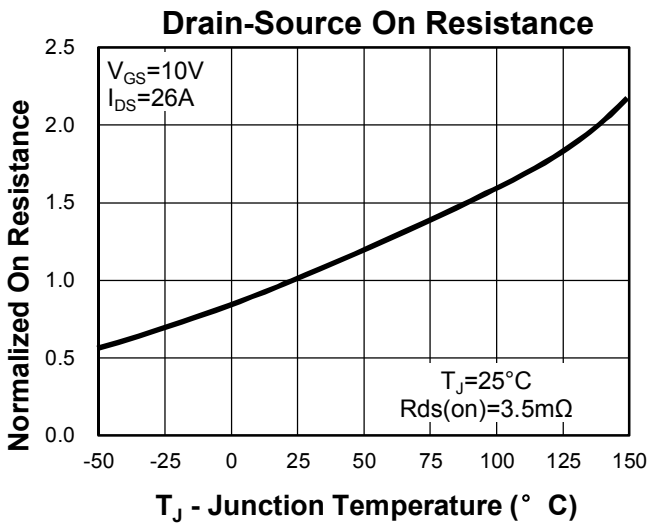
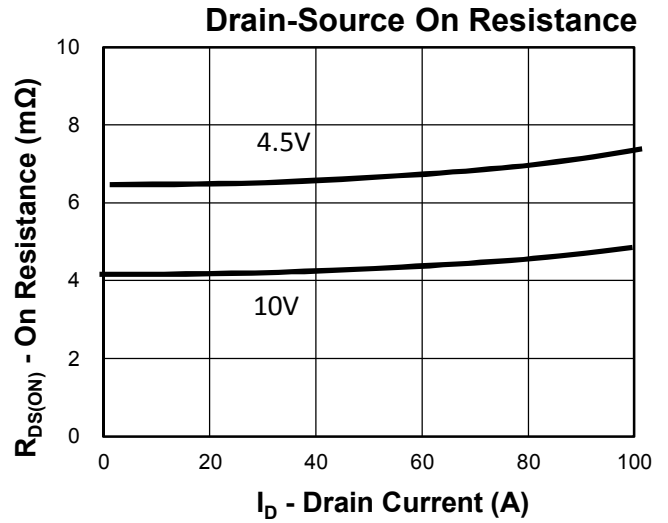
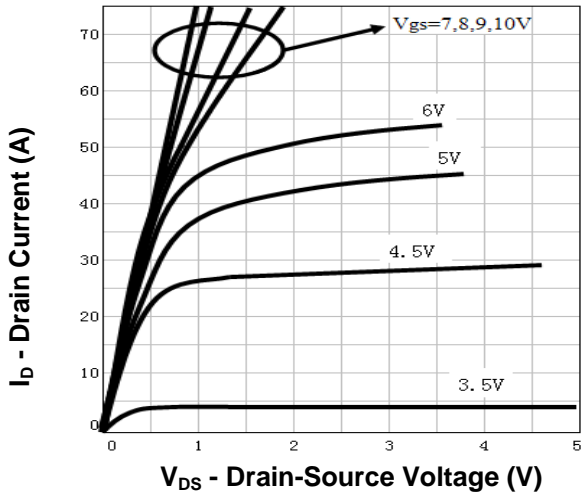
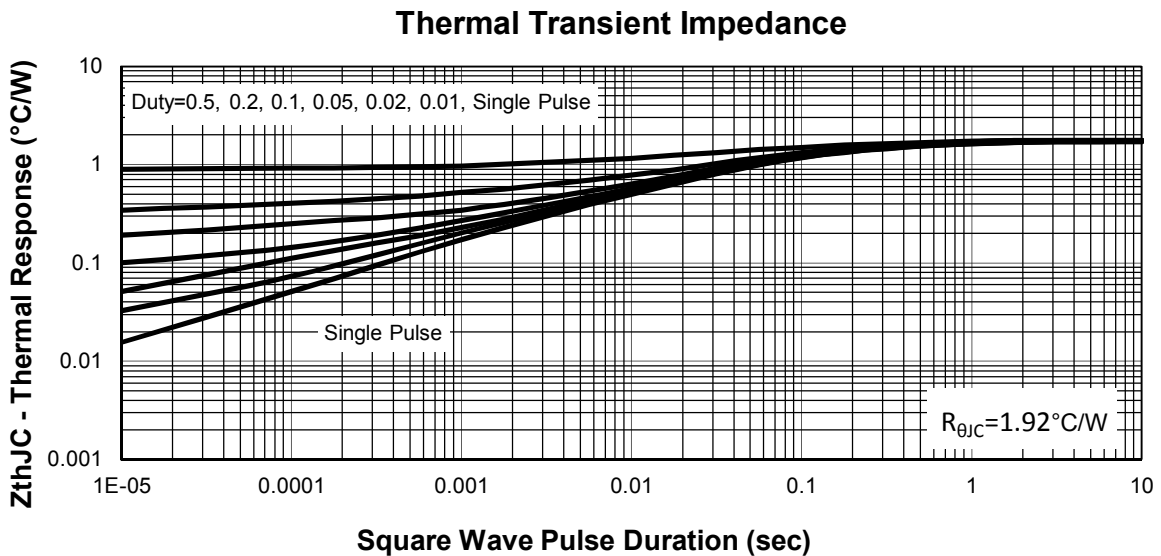
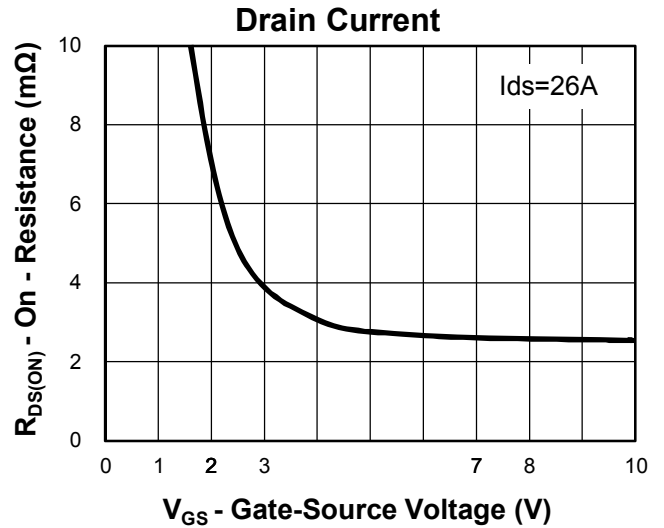
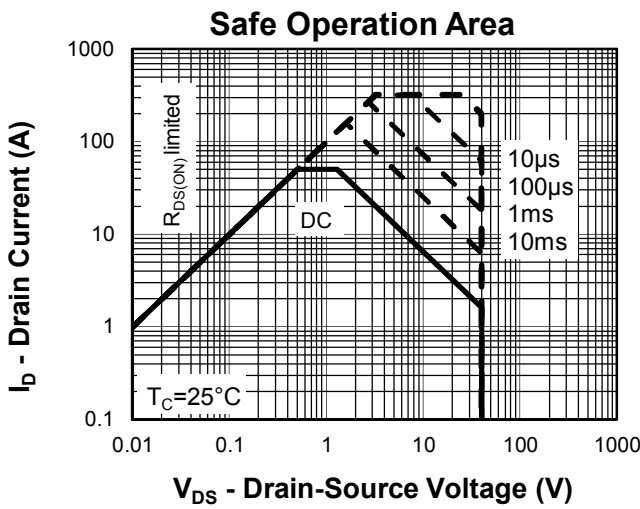
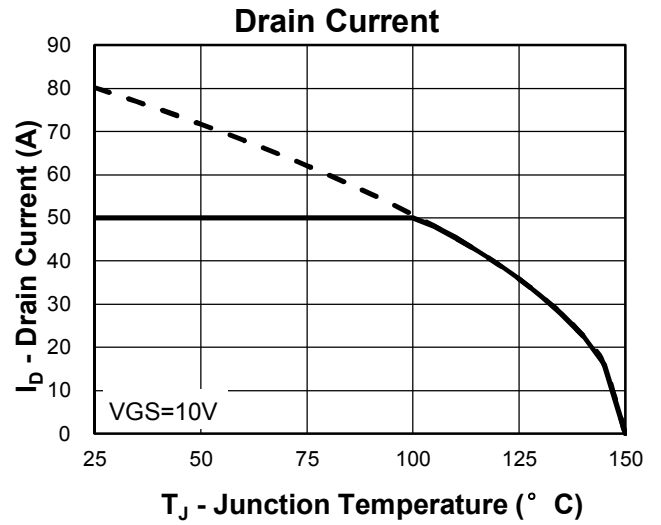
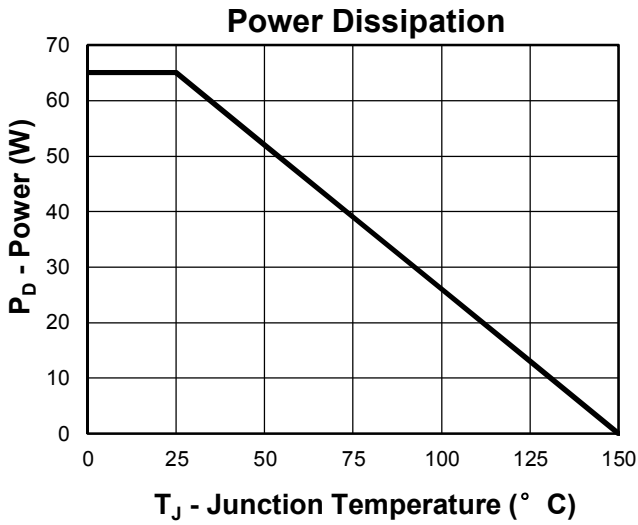


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

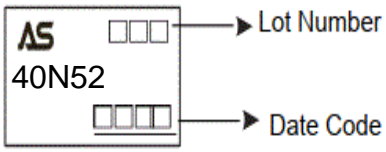
### Typical Electrical and Thermal Characteristics (Curves)



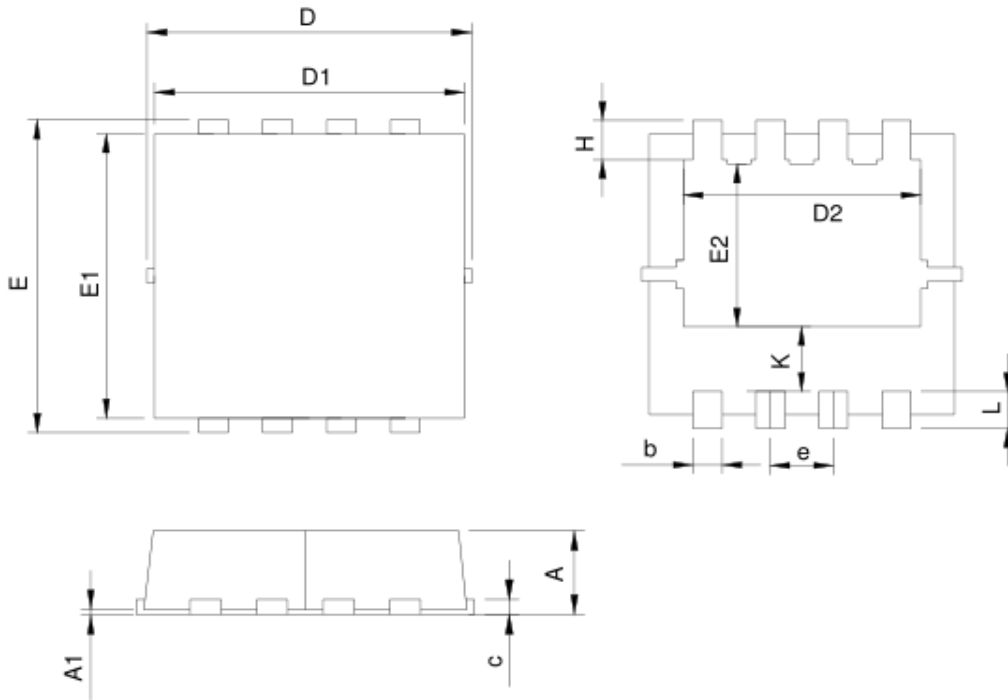


### Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM40N52E-R	40N52	DFN3.3x3.3	Tape&Reel	4000/Reel

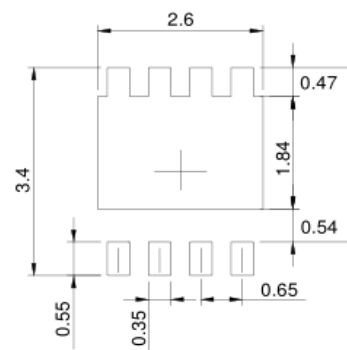
PACKAGE	MARKING
DFN-3.3x3.3	 <p>AS    □□ → Lot Number 40N52 □□□□ → Date Code</p>

### Dimensions(DFN3x3)



SYMBOL	DFN3.3x3.3-8			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.70	1.00	0.028	0.039
A1	0.00	0.05	0.000	0.002
b	0.25	0.35	0.010	0.014
c	0.14	0.20	0.006	0.008
D	3.10	3.50	0.122	0.138
D1	3.05	3.25	0.120	0.128
D2	2.35	2.55	0.093	0.100
E	3.10	3.50	0.122	0.138
E1	2.90	3.10	0.114	0.122
E2	1.64	1.84	0.065	0.072
e	0.65 BSC		0.026 BSC	
H	0.32	0.52	0.013	0.020
K	0.59	0.79	0.023	0.031
L	0.25	0.55	0.010	0.022

### RECOMMENDED LAND PATTERN



UNIT: mm

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