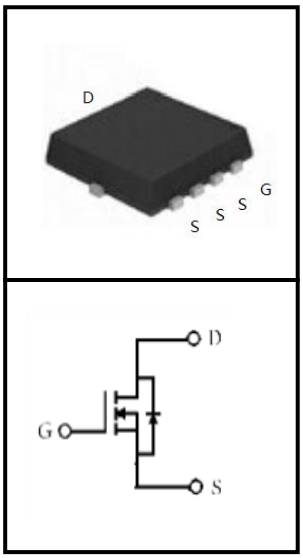
40V N-Channel Split Gate MOSFET

FEATURES

- Super Low Gate Charge
- 100% EAS Guaranteed
- RoHS compliant
- Green Device Available
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology



APPLICATIONS

- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

RoHS

Device Marking and Package Information		
Device	**Package**	**Marking**
CSNC04N8P5	DFN3*3	CSNC04N8P5

Absolute Maximum Ratings at T_j= 25ºC unless otherwise noted			
Parameter	**Symbol**	**Value**	**Unit**
Drain-Source Voltage (V_{GS} = 0V)	V_{DSS}	40	V
Drain Current-Continuous(Tc=25℃) (note1)	I_D	60	A
Drain Current-Continuous(Tc=100℃) (note1)		40	
Gate Source Voltage	V_{GSS}	±20	A
Pulsed Drain Current (note2)	I_{DM}	350	A
Single Pulse Avalanche Energy	E_{AS}	48	mJ
Power Dissipation T_C = 25ºC (note4)	P_D	62.5	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 To 175	℃

Thermal Characteristics			
Parameter	**Symbol**	**Value**	**Unit**
Thermal resistance, junction-case (note1)	$R_{\theta JC}$	2.4	ºC/W
Thermal resistance, junction-ambient(note1)	$R_{\theta JA}$	55	

Electrical Characteristics T_j= 25ºC unless otherwise specified						
Parameter	**Symbol**	**Test Conditions**	**Value**			**Unit**
			Min.	**Typ.**	**Max.**	
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	40	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 32V, V_{GS} = 0V, T_J = 25ºC	--	--	1	uA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 32V, V_{GS} = 0V, T_J = 100ºC	--	--	5	
Gate-Source Leakage	I_{GSS}	V_{GS} = ±20V, , V_{GS} = 0V	--	--	±100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.2	1.5	2.5	V
Drain-Source On-Resistance (note2)	$R_{DS(on)}$	V_{GS} = 10V, I_D = 12A	--	6.8	8.5	mΩ
		V_{GS} = 4.5V, I_D = 10A	--	10	15.0	mΩ
Dynamic						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 15V, f = 1.0MHz	--	690	--	pF
Output Capacitance	C_{oss}		--	193	--	
Reverse Transfer Capacitance	C_{rss}		--	38	--	
Total Gate Charge （4.5V）	Q_g	V_{DS} = 15V, I_D = 12A, V_{GS} =4.5V	--	5.8	--	nC
Gate-Source Charge	Q_{gs}		--	3	--	
Gate-Drain Charge	Q_{gd}		--	1.2	--	
Turn-on Delay Time	$t_{d(on)}$	V_{DS} = 15V, I_D =12A,R_G = 3.3Ω V_{GS} = 10V	--	14.3	--	ns
Turn-on Rise Time	t_r		--	5.6	--	
Turn-off Delay Time	$t_{d(off)}$		--	20	--	
Turn-off Fall Time	t_f		--	11	--	
Body Diode Characteristics						
Continuous Body Diode Current	I_{SD}	T_C = 25 ºC	--	--	60	A
Pulsed Diode Forward Current	I_{SM}		--	--	125	
Body Diode Voltage	V_{SD}	T_J = 25ºC, I_{SD} = 1A, V_{GS} = 0V	--	--	1.2	V

Notes

1. The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
2. The data tested by pulsed , pulse width≦300us , duty cycle≦2%
3. The EAS data shows Max. rating . The test condition is VDD =25V,VGS =10V,L=0.1mH
4. The power dissipation is limited by 175℃ junction temperature
5. The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation

Typical Characteristics T_J = 25ºC, unless otherwise noted

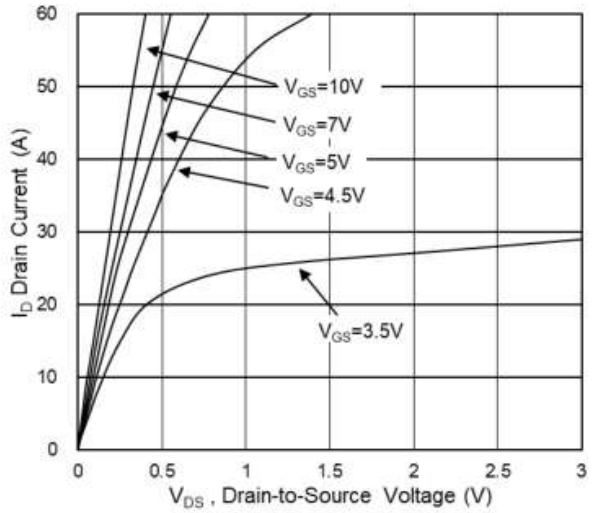


Fig.1 Typical Output Characteristics

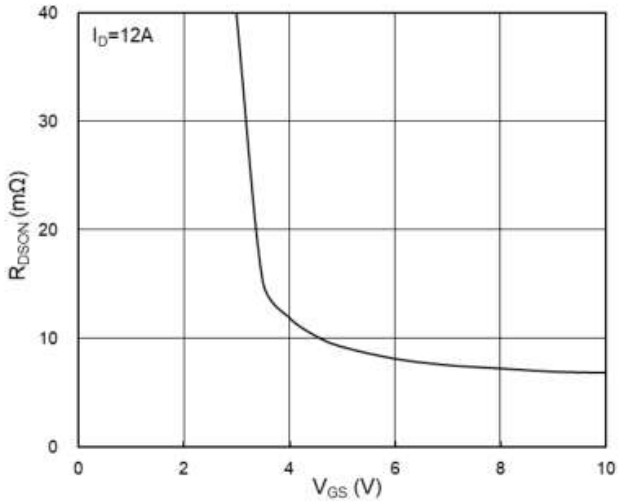


Fig.2 On-Resistance v.s Gate-Source

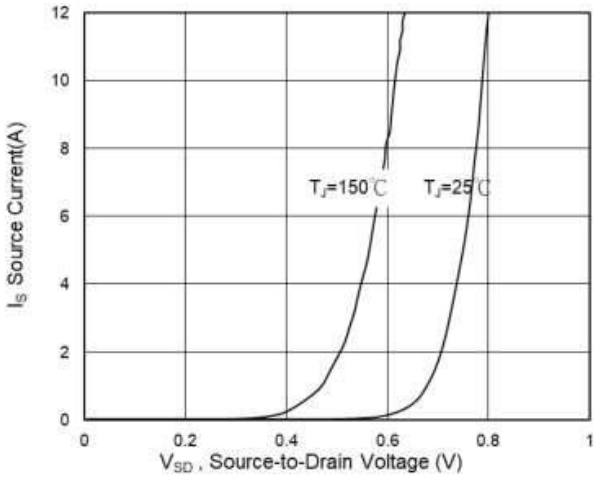


Fig.3 Forward Characteristics of Reverse diode

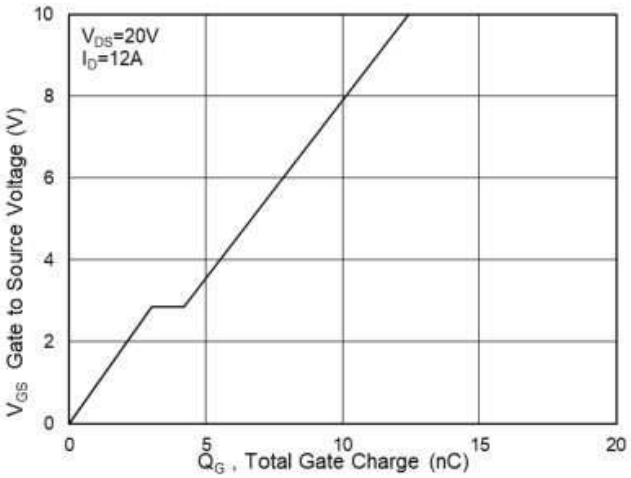


Fig.4 Gate-Charge Characteristics

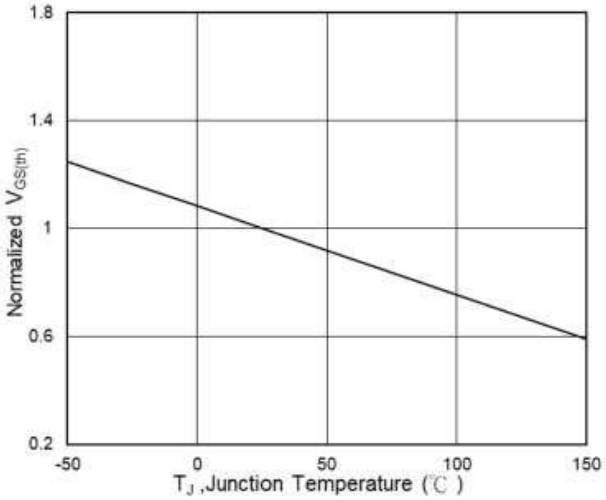


Fig.5 Normalized VGS(th) v.s TJ

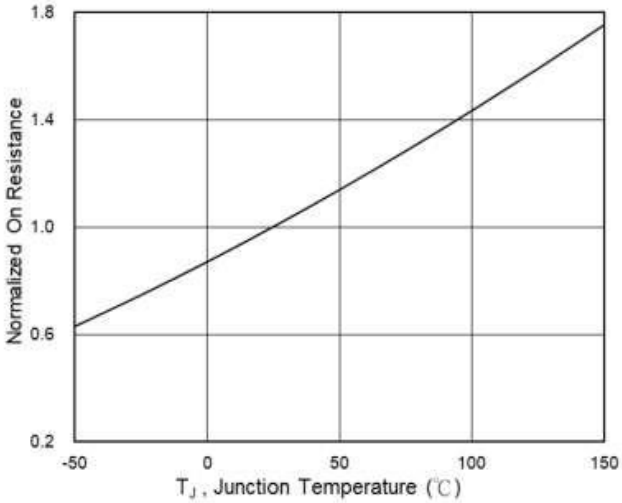


Fig.6 Normalized RDSON v.s TJ

Typical Characteristics T_J = 25ºC, unless otherwise noted

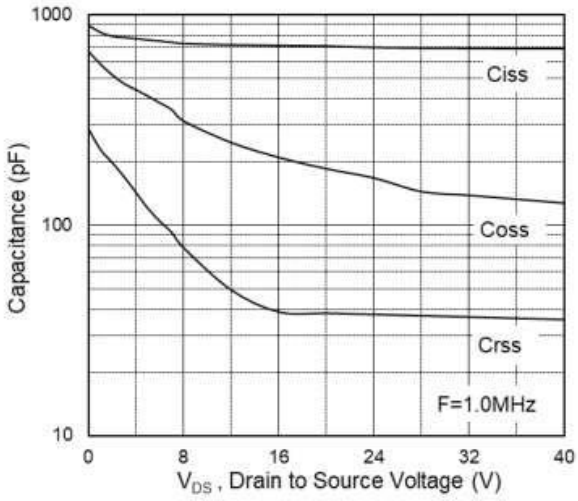


Fig.7 Capacitance

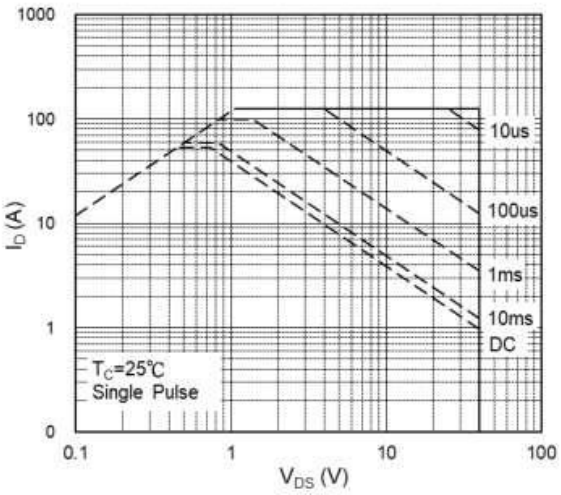


Fig.8 Safe Operating Area

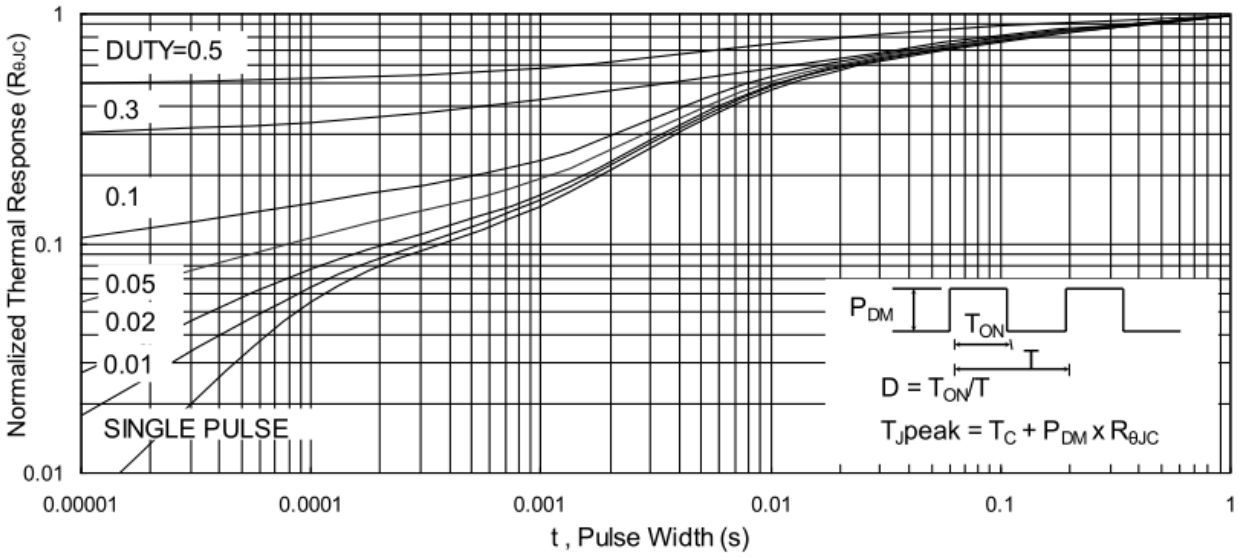


Fig.9 Normalized Maximum Transient Thermal Impedance

Figure A：Gate Charge Test Circuit and Waveform

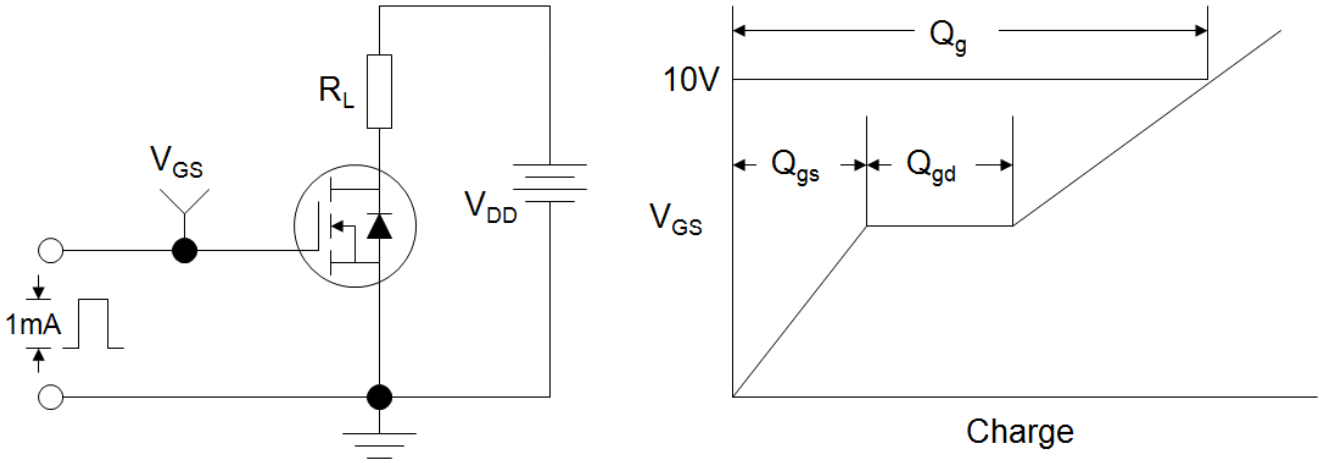


Figure B：Resistive Switching Test Circuit and Waveform

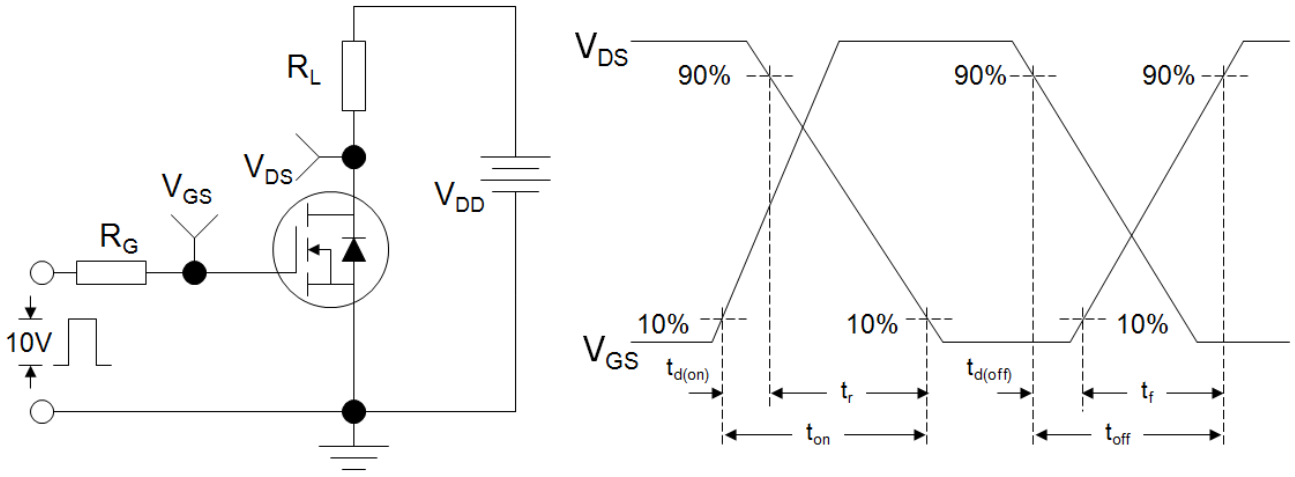
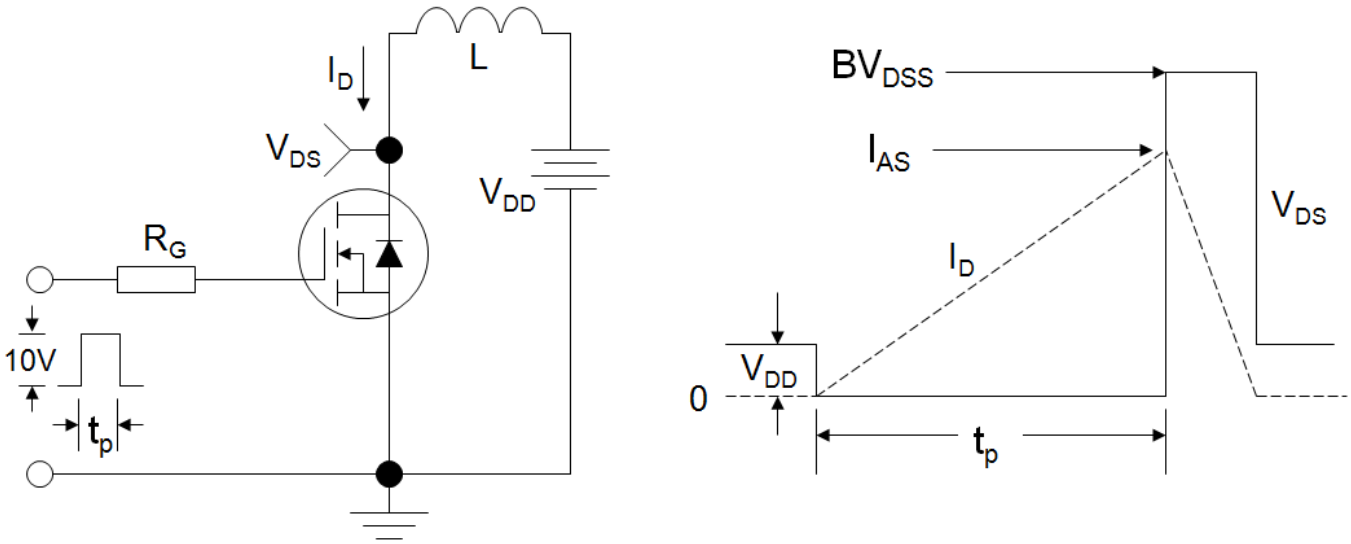
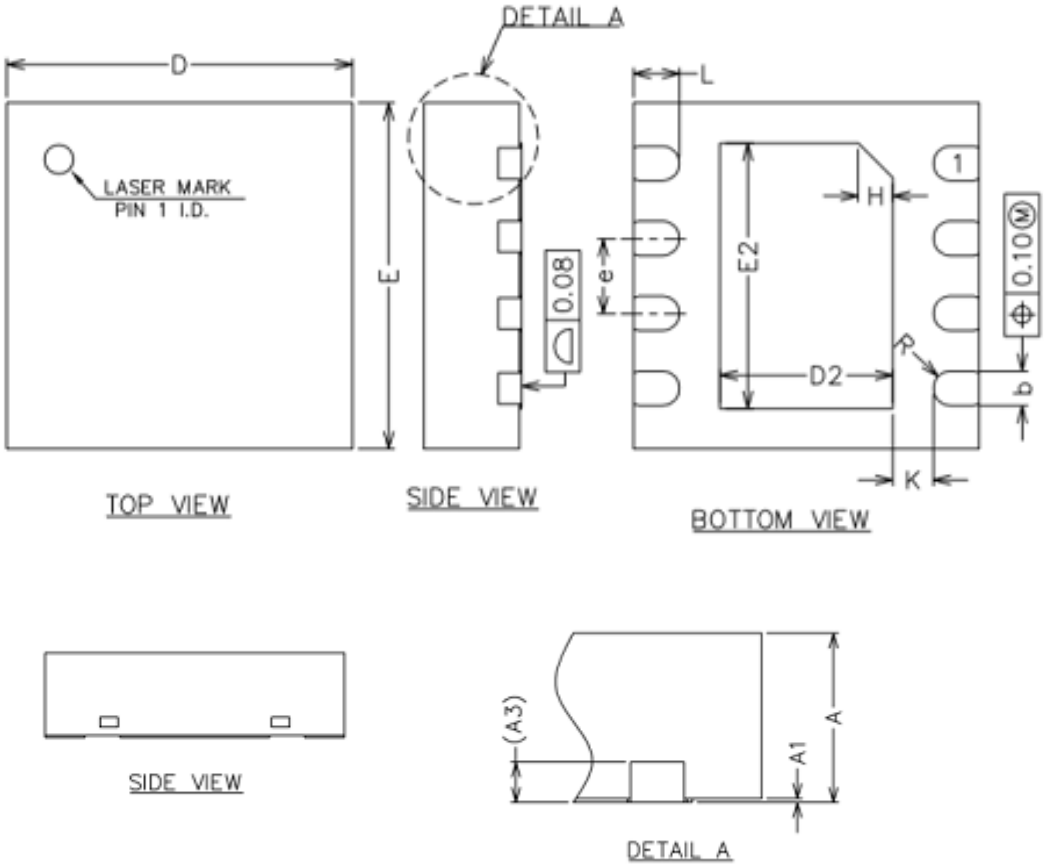


Figure C：Unclamped Inductive Switching Test Circuit and Waveform



DFN3X3



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	0.80	0.85	0.90
A1	0.00	0.02	0.05
A3		0.20REF	
b	0.25	0.30	0.35
D	2.90	3.00	3.10
E	2.90	3.00	3.10
D2	1.40	1.50	1.60
E2	2.20	2.30	2.40
e	0.55	0.65	0.75
H		0.30REF	
K	0.25	0.35	0.45
L	0.35	0.40	0.45
R	0.13	–	–

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