Alfa-MOS Technology

AFP7115WS
100V P-Channel Enhancement Mode MOSFET

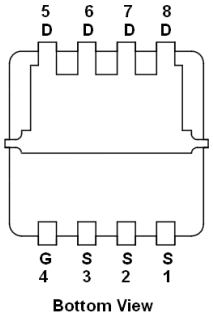
General Description

AFP7115WS, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.
These devices are particularly suited for low voltage power management, such as smart phone and notebook computer and other battery powered circuits, and low in-line power loss are needed in commercial industrial surface mount applications.

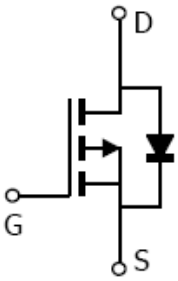
Features

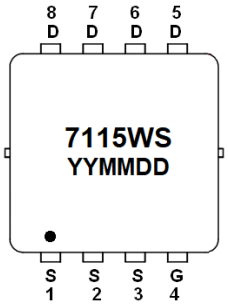
- -100/-4.0A,$R_{DS(ON)}$= 190mΩ@V_{GS}= -10V
- -100/-3.2A,$R_{DS(ON)}$= 210mΩ@V_{GS}= -4.5V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- Exceptional on-resistance and maximum DC current capability
- DFN3.3X3.3-8L package design

Pin Description (DFN3.3X3.3-8L)



Bottom View





Top View

Application

- DC-DC Converter
- POL

Pin Define

Pin	Symbol	Description
1	S	Source
2	S	Source
3	S	Source
4	G	Gate
5	D	Drain
6	D	Drain
7	D	Drain
8	D	Drain

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFP7115WSFN308RG	7115WS	DFN3.3X3.3-8L	Tape & Reel	5000 EA

※ YY year code
※ MM month code
※ DD date code
※ AFP7115WSFN308RG : 13”Tape & Reel ; Pb- Free ; Halogen –Free

Absolute Maximum Ratings

(T_A=25℃ Unless otherwise noted)

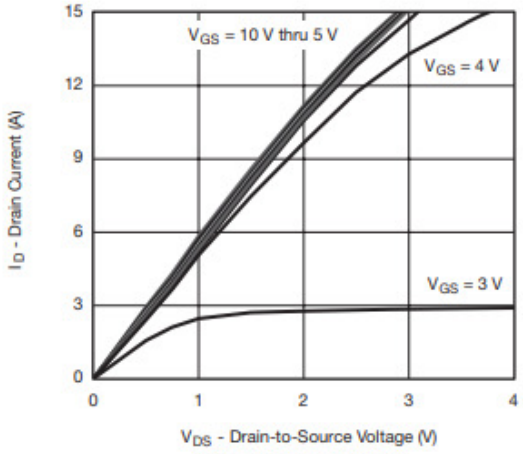
Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	-100	V
Gate –Source Voltage		V_{GSS}	±20	V
Continuous Drain Current(T_J=150℃)	T_C=25℃	I_D	-4.0	A
	T_C=70℃		-3.2	
Pulsed Drain Current		I_{DM}	-6.0	A
Continuous Source Current(Diode Conduction)		I_S	-3.0	A
Power Dissipation	T_A=25℃	P_D	28	W
	T_A=70℃		18	
Operating Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{STG}	-55/150	℃
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	120	℃/W

Electrical Characteristics

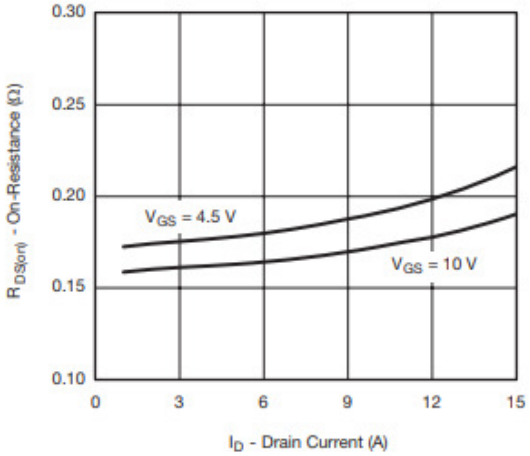
(T_A=25℃ Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D= -250uA	-100			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D= -250uA	-1.0		-2.5	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}= ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= -80V,V_{GS}=0V			-1	uA
		V_{DS}= -80V,V_{GS}=0V T_J=85℃			-30	
On-State Drain Current	$I_{D(on)}$	V_{DS}≧-10V,V_{GS}= -10V	-18			A
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = -10V,I_D=-4.0A		165	190	mΩ
		V_{GS} = -4.5V,I_D=-3.2A		185	210	
Forward Transconductance	g_{FS}	V_{DS}= -15V,I_D= -3.2A		12		S
Diode Forward Voltage	V_{SD}	I_S= -2A,V_{GS}=0V		-0.8	-1.3	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=-50V,V_{GS}=-4.5V I_D= -3.6A		12	20	nC
Gate-Source Charge	Q_{gs}			3.5		
Gate-Drain Charge	Q_{gd}			5.0		
Input Capacitance	C_{iss}	V_{DS}=-50V,V_{GS}=0V f=1MHz		1100		pF
Output Capacitance	C_{oss}			70		
Reverse Transfer Capacitance	C_{rss}			45		
Turn-On Time	$t_{d(on)}$	V_{DD}=-50V,R_L=17Ω I_D≡-2.8A,V_{GEN}=-10V R_G=1Ω		8	15	ns
	t_r			15	20	
Turn-Off Time	$t_{d(off)}$			35	50	
	t_f			10	20	

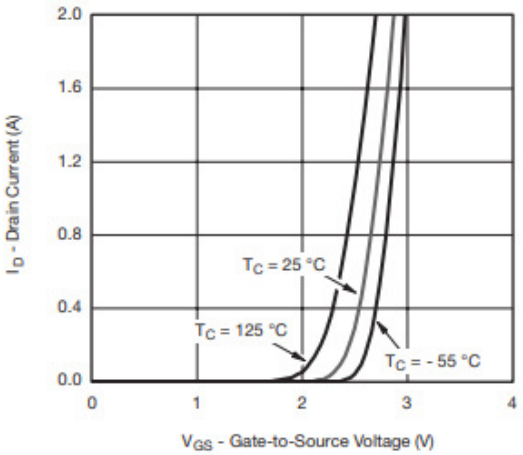
Typical Characteristics



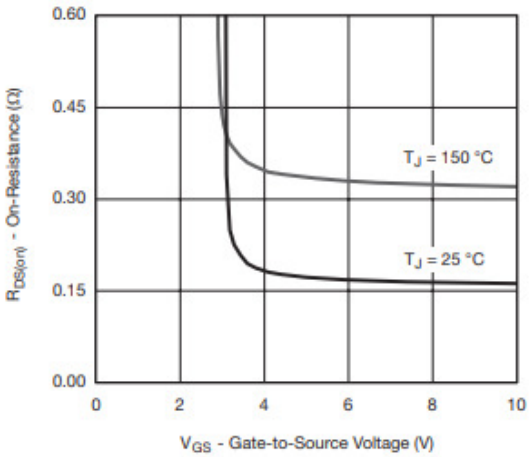
Output Characteristics



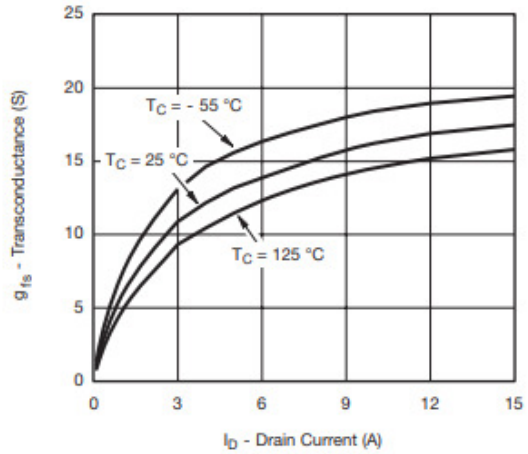
On-Resistance vs. Drain Current



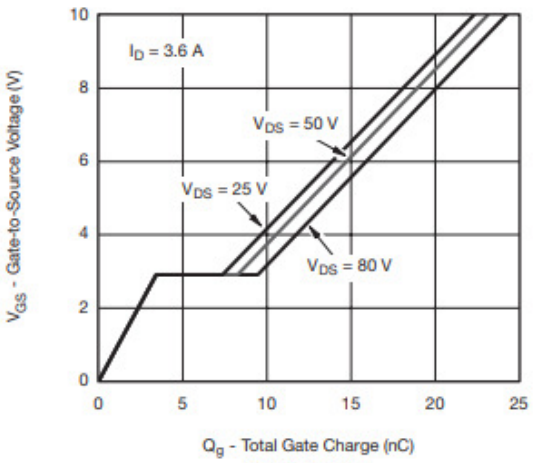
Transfer Characteristics



On-Resistance vs. Gate-to-Source Voltage

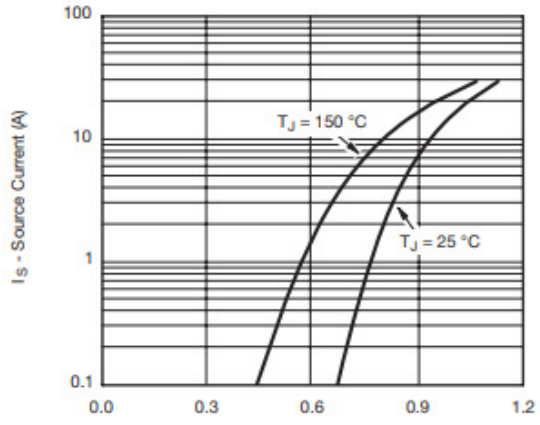


Transconductance

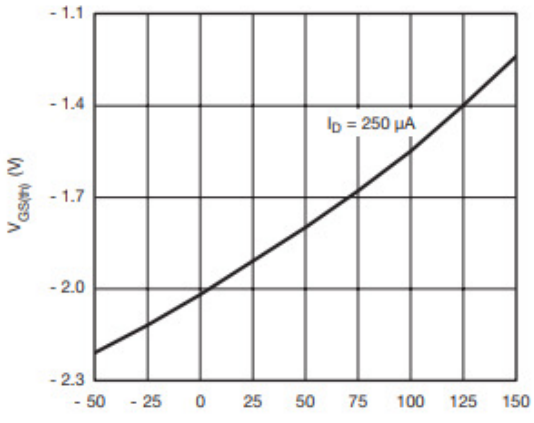


Gate Charge

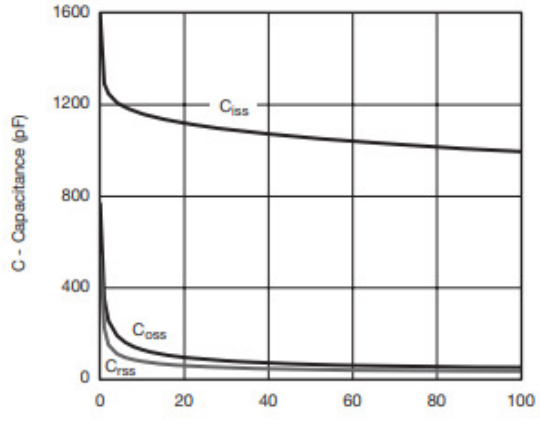
Typical Characteristics



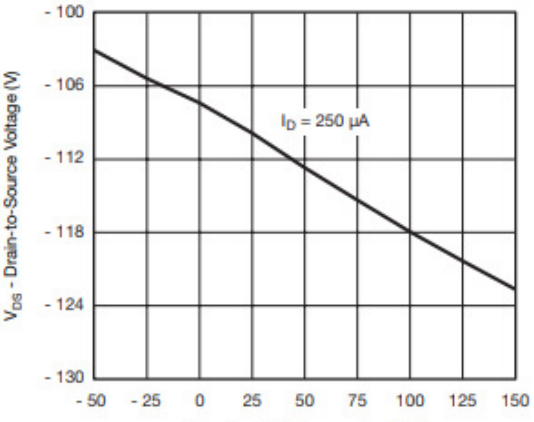
Source-Drain Diode Forward Voltage



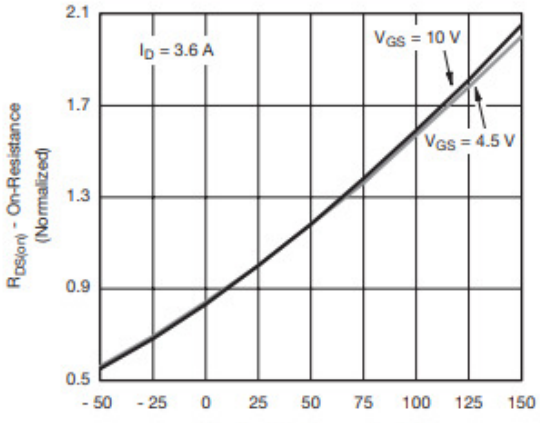
Threshold Voltage



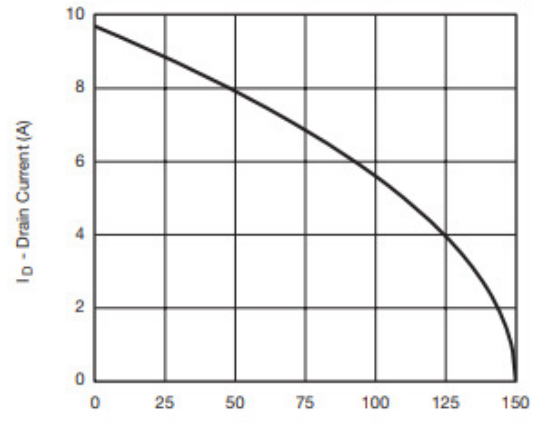
Capacitance



Drain Source Breakdown vs. Junction Temperature

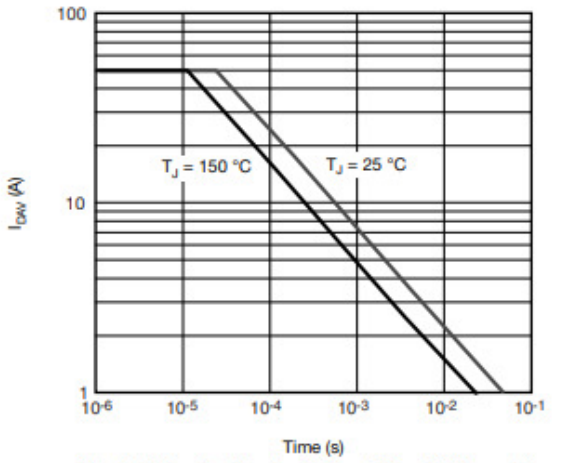


On-Resistance vs. Junction Temperature

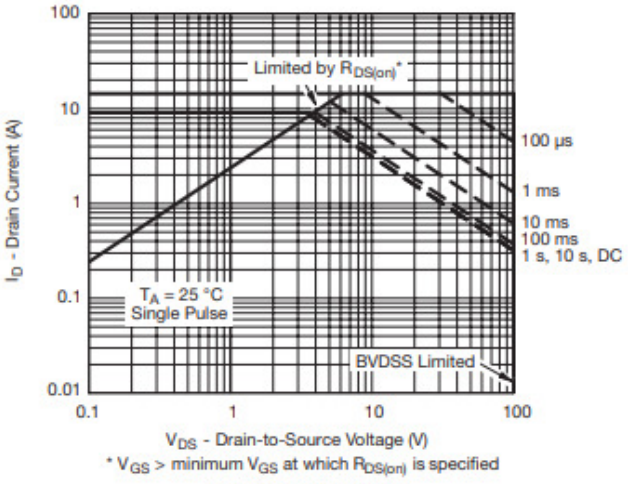


Current Derating

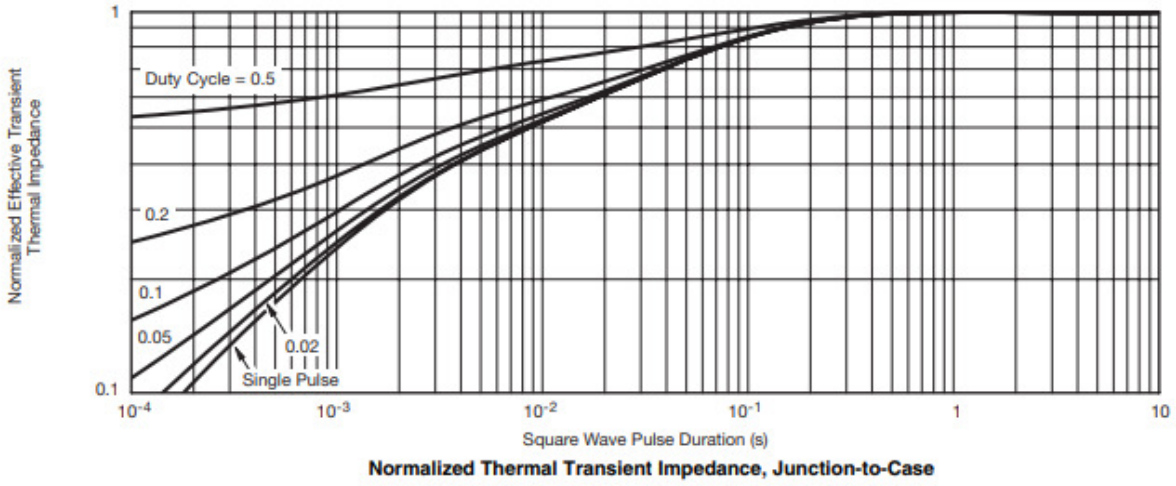
Typical Characteristics



Single Pulse Avalanche Current Capability vs. Time



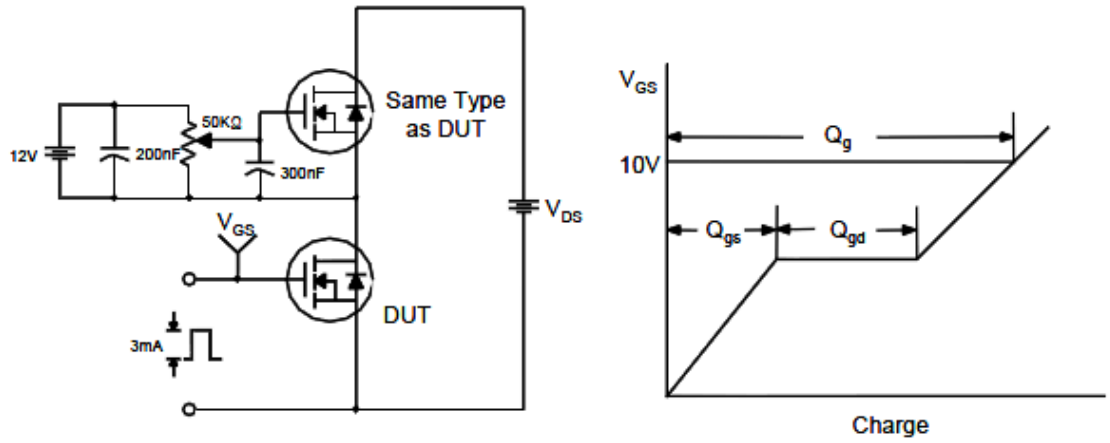
Safe Operating Area



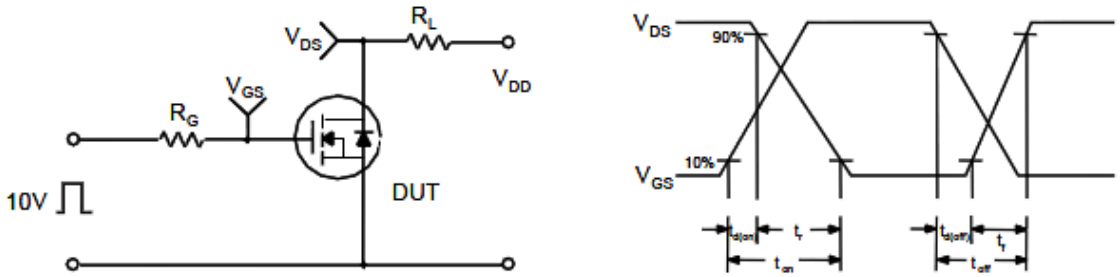
Normalized Thermal Transient Impedance, Junction-to-Case

Typical Characteristics

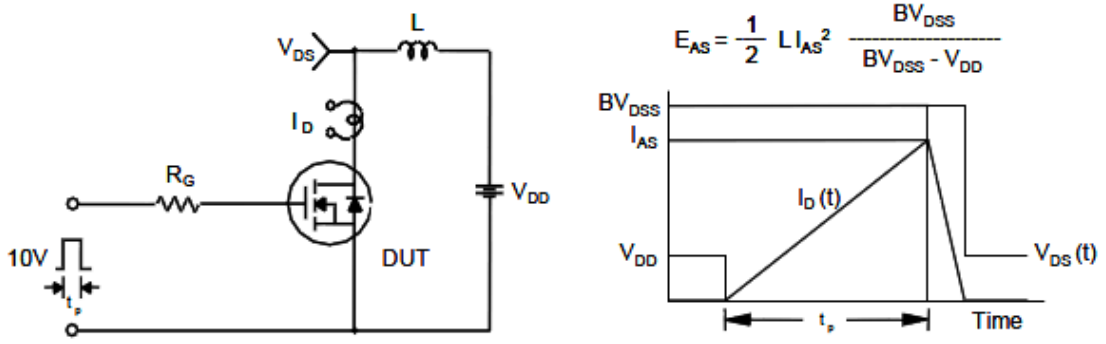
Gate Charge Test Circuit & Waveform



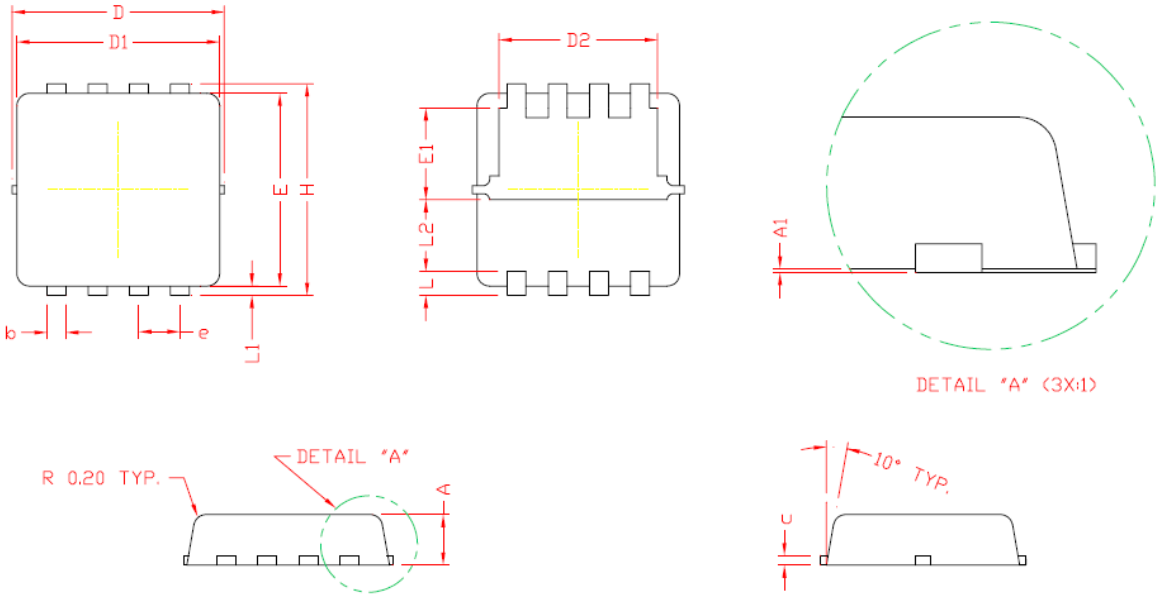
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms



Package Information (DFN3.3X3.3-8L)



DIMENSIONS

REF.	Millimeters		REF.	Millimeters	
	Min.	Max.		Min.	Max.
A	0.70	0.90	E	3.00	3.20
A1	0.00	0.05	E1	1.35	1.55
b	0.24	0.35	e	0.65 BSC.	
c	0.10	0.20	H	3.20	3.40
D	3.25	3.40	L	0.30	0.50
D1	3.05	3.25	L1	0.10	0.20
D2	2.40	2.60	L2	1.13 Ref.	

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