



General Description

AFC3366W, N & P Pair 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, and low in-line power loss are needed in commercial industrial surface mount applications.

Features

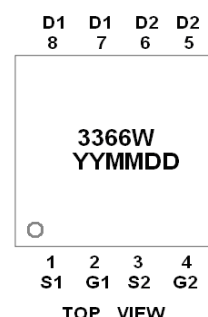
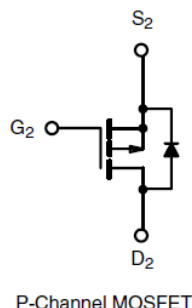
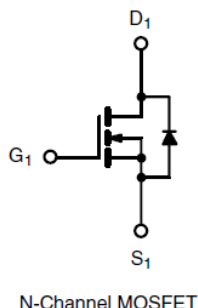
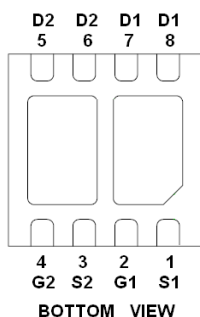
N-Channel

- 60V/12A, $R_{DS(ON)}=48m\Omega@V_{GS}=10V$
- 60V/10A, $R_{DS(ON)}=54m\Omega@V_{GS}=4.5V$

P-Channel

- -60V/-8A, $R_{DS(ON)}=105m\Omega@V_{GS}=-10V$
- -60V/-6A, $R_{DS(ON)}=115m\Omega@V_{GS}=-4.5V$

Pin Description (DFN3X3-8L)



Application

- DC/DC Conversion
- Load Switch
- DC FAN

Pin Define

Pin	Symbol	Description
1	S1	Source 1
2	G1	Gate 1
3	S2	Source 2
4	G2	Gate 2
5	D2	Drain 2
6	D2	Drain 2
7	D1	Drain 1
8	D1	Drain 1

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFC3366WFN338RG	3366W YYMMDD	DFN3X3-8L	Tape & Reel	5000 EA

- ※ YY year code
- ※ MM month code
- ※ DD date code
- ※ AFC3366WFN338RG : 13" Tape & Reel ; Pb- Free ; Halogen -Free



Absolute Maximum Ratings (N-Channel)

($T_A=25^{\circ}\text{C}$ Unless otherwise noted)

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate –Source Voltage	V_{GS}	± 20	V
Continuous Drain Current($T_J=150^{\circ}\text{C}$)	I_D	$T_A=25^{\circ}\text{C}$	12
		$T_A=70^{\circ}\text{C}$	10
Pulsed Drain Current	I_{DM}	30	A
Continuous Source Current(Diode Conduction)	I_S	10	A
Power Dissipation	P_D	$T_C=25^{\circ}\text{C}$	2
		$T_C=70^{\circ}\text{C}$	1.5
Operating Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55/150	$^{\circ}\text{C}$
Thermal Resistance Junction-to-Case (Drain)	$R_{\theta JC}$	5	$^{\circ}\text{C/W}$
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	40	

Electrical Characteristics (N-Channel)

($T_A=25^{\circ}\text{C}$ Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.8		2.5	
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=48V, V_{GS}=0V$			1	uA
		$V_{DS}=48V, V_{GS}=0V$ $T_J=85^{\circ}\text{C}$			5	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 5V, V_{GS}=4.5V$	30			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=12A$		40	48	m Ω
		$V_{GS}=4.5V, I_D=10A$		44	54	
Forward Transconductance	g_{FS}	$V_{DS}=15V, I_D=5.3A$		24		S
Diode Forward Voltage	V_{SD}	$I_S=2.0A, V_{GS}=0V$		0.8	1.2	V
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=30V, V_{GS}=5V$ $I_D=5.6A$		10	15	nC
Gate-Source Charge	Q_{gs}			3.5		
Gate-Drain Charge	Q_{gd}			3.6		
Input Capacitance	C_{iss}	$V_{DS}=30V, V_{GS}=0V$ $f=1\text{MHz}$		890		pF
Output Capacitance	C_{oss}			85		
Reverse Transfer Capacitance	C_{rss}			48		
Turn-On Time	$t_{d(on)}$	$V_{DD}=30V, R_L=6.8\Omega$ $I_D=5.0A, V_{GEN}=4.5V$ $R_G=6\Omega$		10	15	ns
	t_r			12	20	
Turn-Off Time	$t_{d(off)}$				25	
	t_f			10	15	



Absolute Maximum Ratings (P-Channel)

(T_A=25°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V _{DSS}	-60	V
Gate –Source Voltage	V _{GSS}	±20	V
Continuous Drain Current(T _J =150°C)	I _D	T _A =25°C	-8.0
		T _A =70°C	-6.0
Pulsed Drain Current	I _{DM}	-30	A
Continuous Source Current(Diode Conduction)	I _S	-10	A
Power Dissipation	P _D	T _C =25°C	1.8
		T _C =70°C	1.2
Operating Junction Temperature	T _J	150	°C
Storage Temperature Range	T _{STG}	-55/150	°C
Thermal Resistance Junction-to-Case (Drain)	R _{θJC}	5	°C/W
Thermal Resistance-Junction to Ambient	R _{θJA}	40	

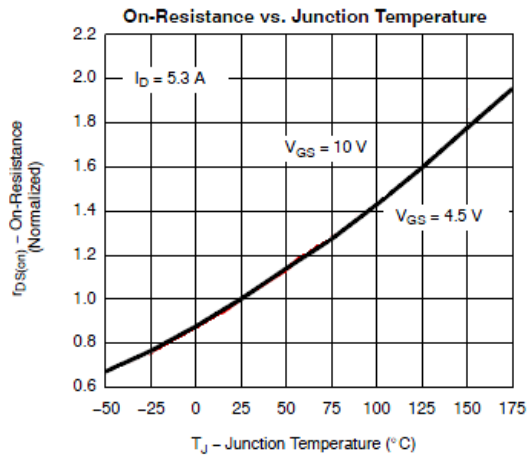
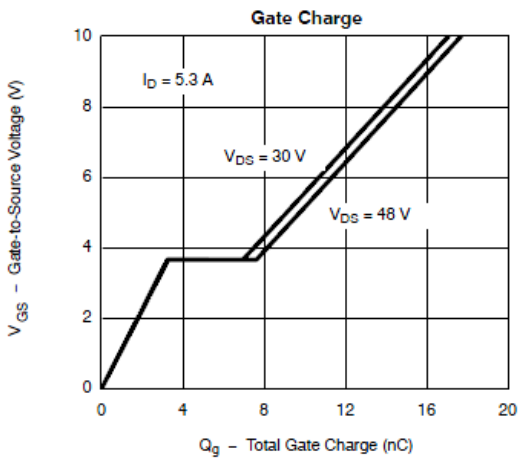
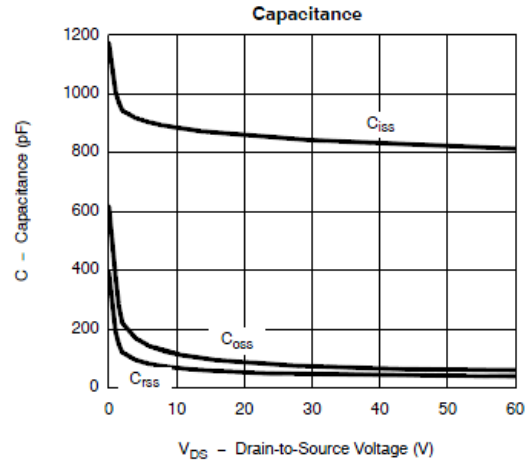
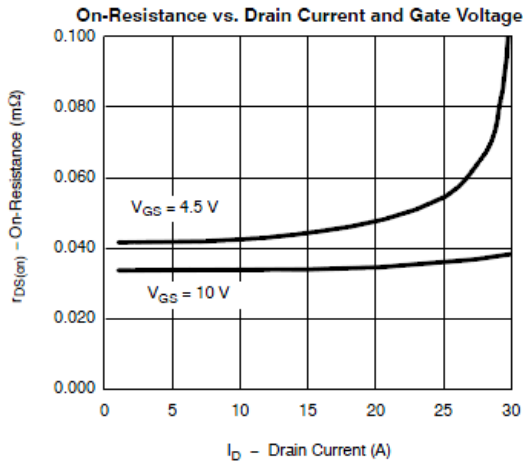
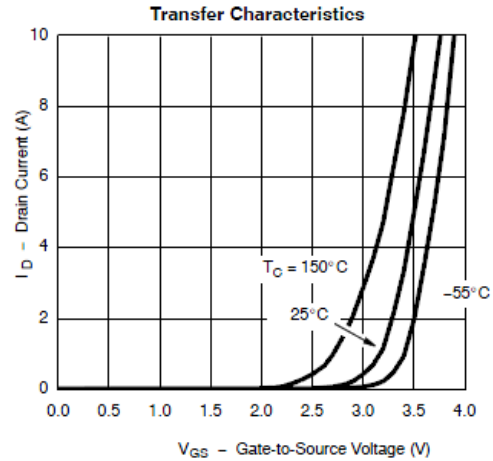
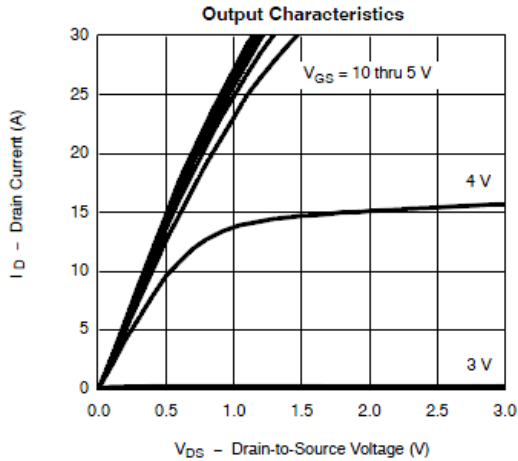
Electrical Characteristics (P-Channel)

(T_A=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D = -250uA	-60			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D = -250uA	-0.8		-2.5	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -48V, V _{GS} =0V			-1	uA
		V _{DS} = -48V, V _{GS} =0V T _J =85°C			-20	
On-State Drain Current	I _{D(on)}	V _{DS} ≥ -5V, V _{GS} = -10V	-20			A
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -10V, I _D =-8.0A		96	105	mΩ
		V _{GS} = -4.5V, I _D =-6.0A		104	115	
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	-1.2	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =-30V, V _{GS} =-10V I _D = -4.0A		12	20	nC
Gate-Source Charge	Q _{gs}			2.5		
Gate-Drain Charge	Q _{gd}			3.5		
Input Capacitance	C _{iss}	V _{DS} =-30V, V _{GS} =0V f=1MHz		900		pF
Output Capacitance	C _{oss}			90		
Reverse Transfer Capacitance	C _{rss}			40		
Turn-On Time	t _{d(on)}	V _{DD} =-30V, R _L =7.5Ω I _D ≡-3.0A, V _{GEN} =-10V R _G =3Ω		10	20	ns
	t _r			6	10	
Turn-Off Time	t _{d(off)}			30	45	
	t _f			12	25	

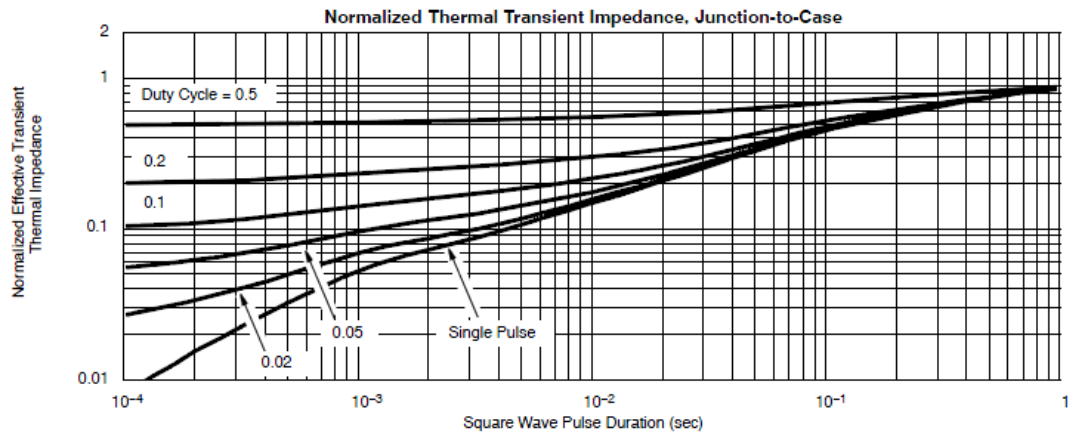
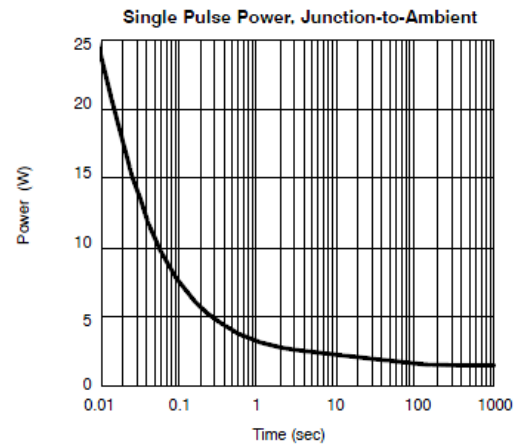
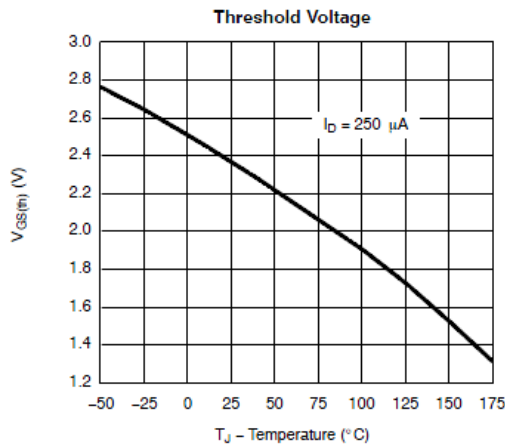
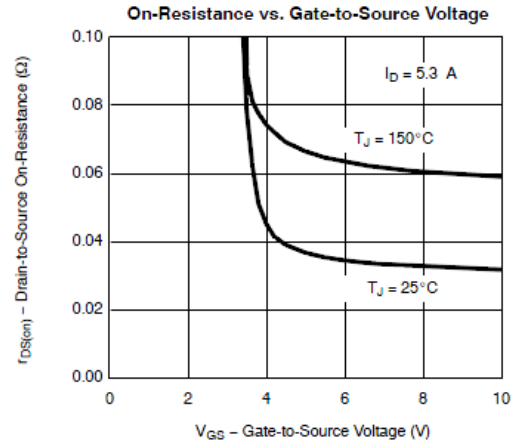
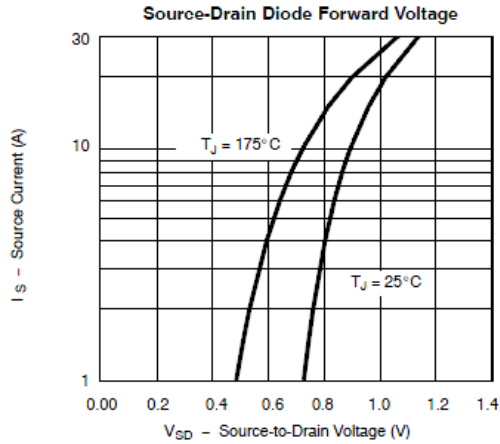


Typical Characteristics (N-Channel)



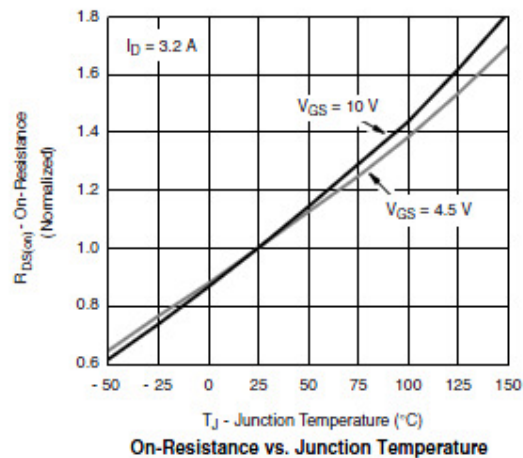
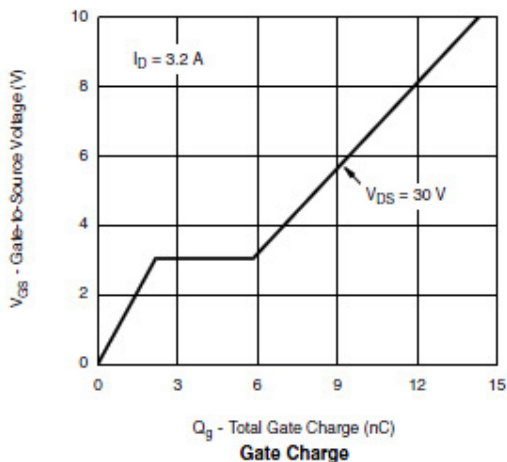
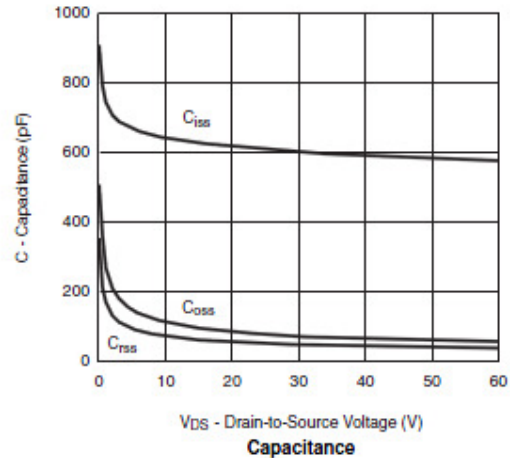
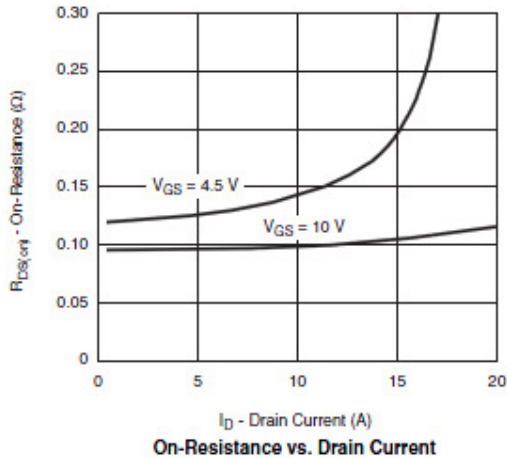
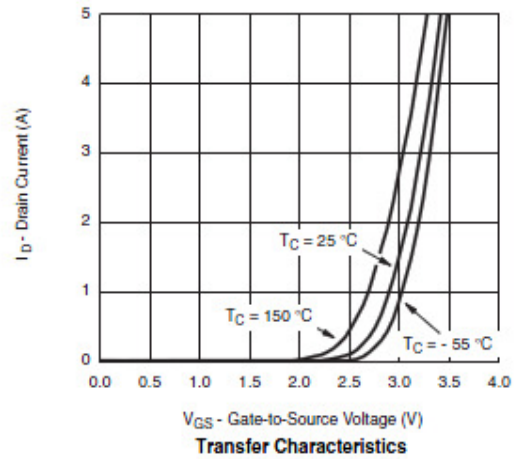
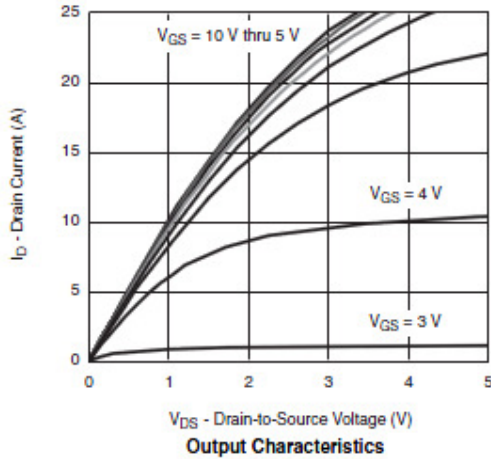


Typical Characteristics (N-Channel)



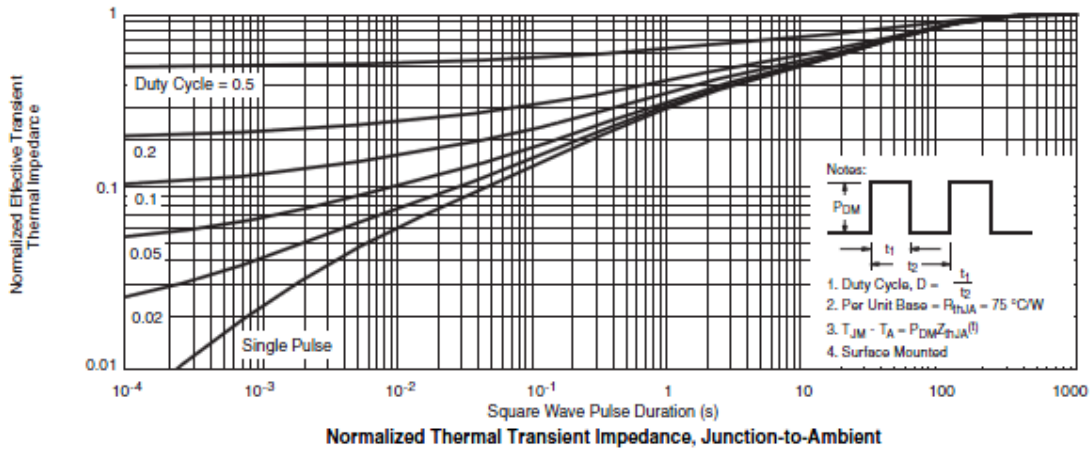
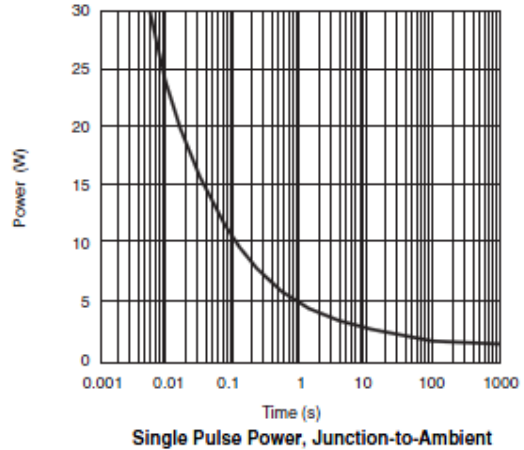
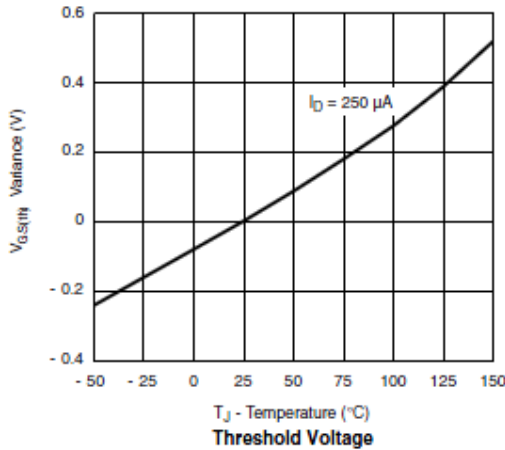
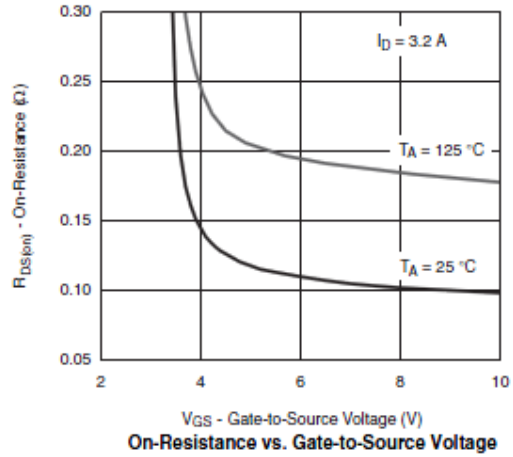
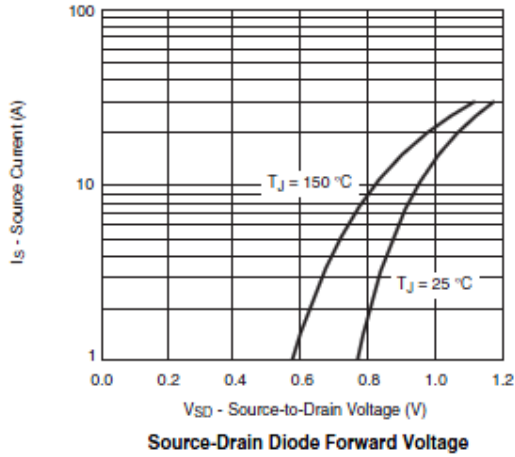


Typical Characteristics (P-Channel)





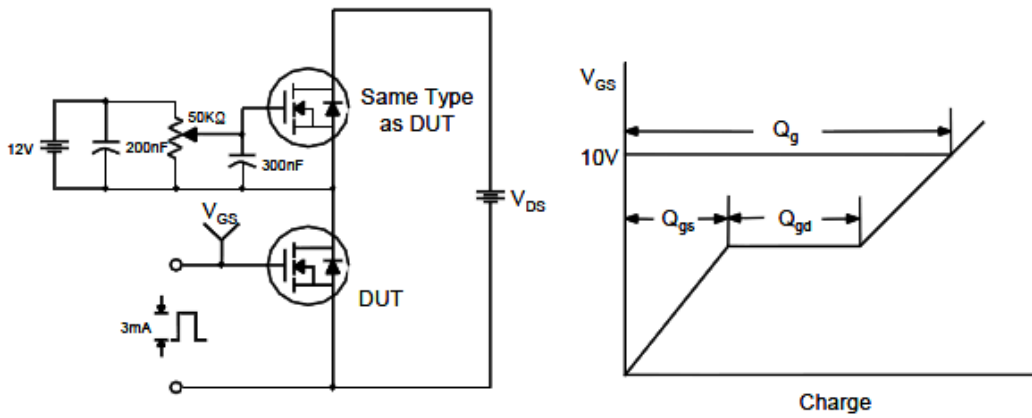
Typical Characteristics (P-Channel)



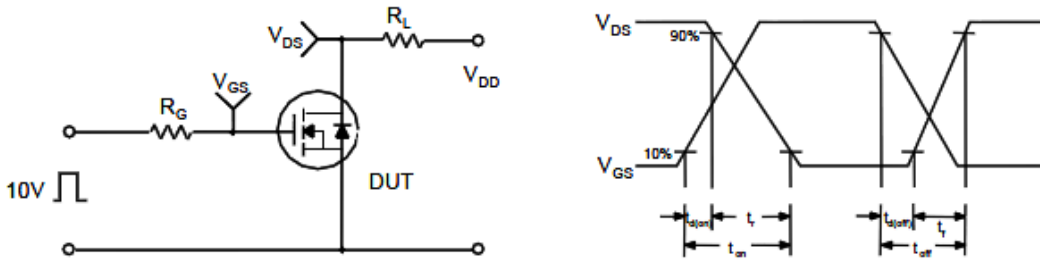


Typical Characteristics

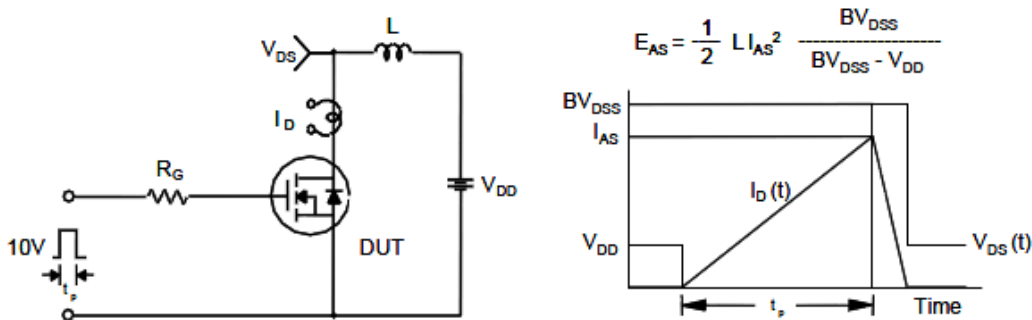
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

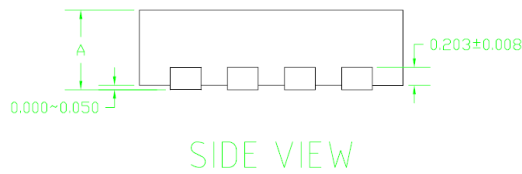
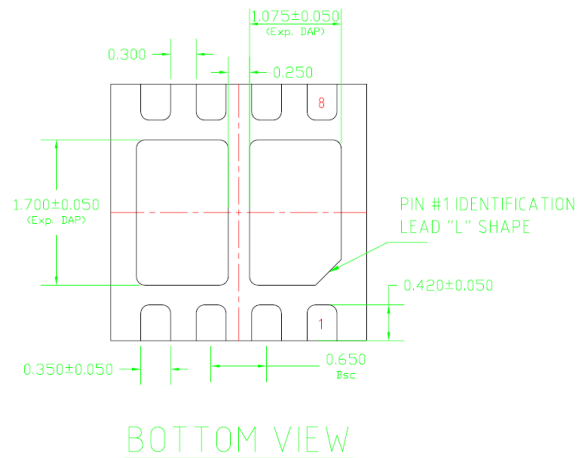
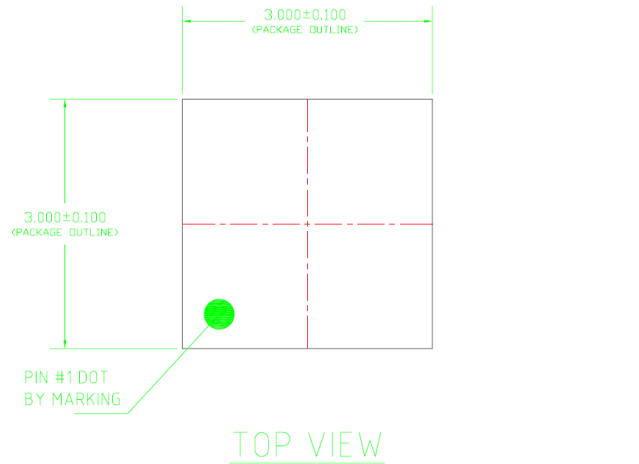


Unclamped Inductive Switching Test Circuit & Waveforms





Package Information (DFN3X3-8L)



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