

GSM2519

20V N&P Pair Enhancement Mode MOSFET

Product Description

GSM2519, 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.

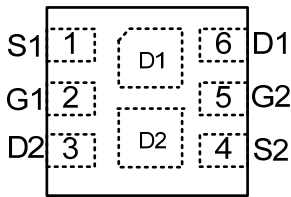
Features

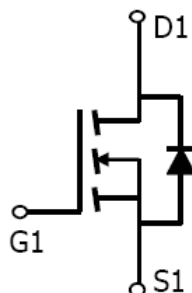
- N-Channel
20V/4.5A, $R_{DS(ON)}=50m\Omega@V_{GS}=4.5V$
20V/3.6A, $R_{DS(ON)}=60m\Omega@V_{GS}=2.5V$
20V/2.4A, $R_{DS(ON)}=80m\Omega@V_{GS}=1.8V$
- P-Channel
-20V/-4.5A, $R_{DS(ON)}=90m\Omega@V_{GS}=-4.5V$
-20V/-3.8A, $R_{DS(ON)}=130m\Omega@V_{GS}=-2.5V$
-20V/-2.5A, $R_{DS(ON)}=190m\Omega@V_{GS}=-1.8V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- DFN2X2-6L package design

Applications

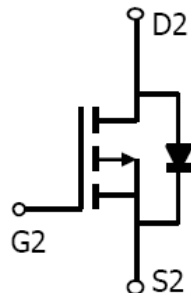
- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

Packages & Pin Assignments

GSM2519FF (DFN2X2-6L)		
 Top View		
Pin	Symbol	Description
1	S1	Source 1
2	G1	Gate 1
3	D2	Drain 2
4	S2	Source 2
5	G2	Gate 2
6	D1	Drain1

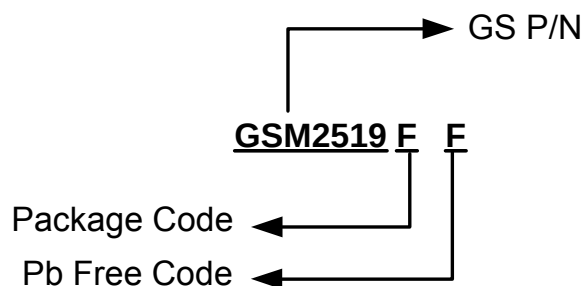


n-channel

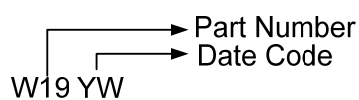


p-channel

Ordering Information



Marking Information



Part Number	Package	Part Marking	Quantity Reel
GSM2519FF	DFN2X2-6L	W19YW	3000 PCS

Absolute Maximum Ratings

T_A=25°C Unless otherwise noted

Symbol	Parameter		Typical		Unit
			N-Channel	P-Channel	
V _{DSS}	Drain-Source Voltage		20	-20	V
V _{GSS}	Gate –Source Voltage		±12	±12	V
I _D	Continuous Drain Current(T _J =150°C)	T _A =25°C	4.5	-4.5	A
		T _A =70°C	2.4	-2.4	
I _{DM}	Pulsed Drain Current		15	-15	A
I _S	Continuous Source Current (Diode Conduction)		1.5	-1.5	A
P _D	Power Dissipation	T _A =25°C	1.9		W
		T _A =70°C	1.2		
T _J	Operating Junction Temperature Range		-55/150		°C
T _{STG}	Storage Temperature Range		-55/150		°C
R _{θJA}	Thermal Resistance-Junction to Ambient		65		°C/W

Electrical Characteristics

(T_A=25°C Unless otherwise noted)

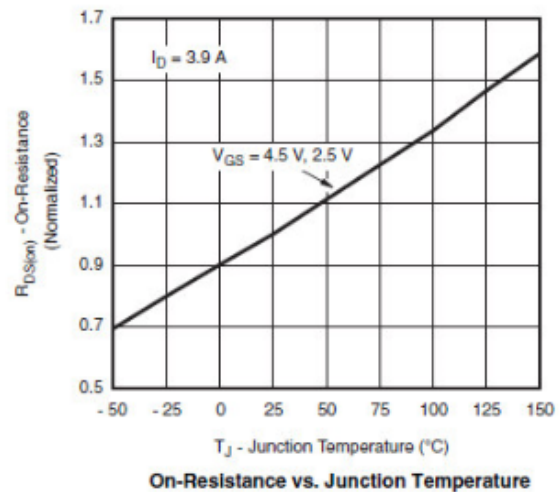
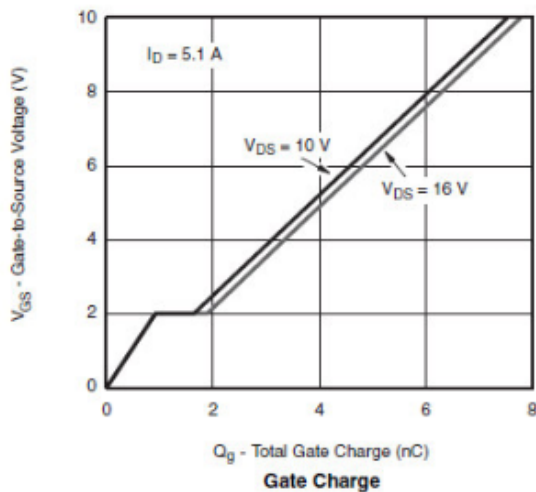
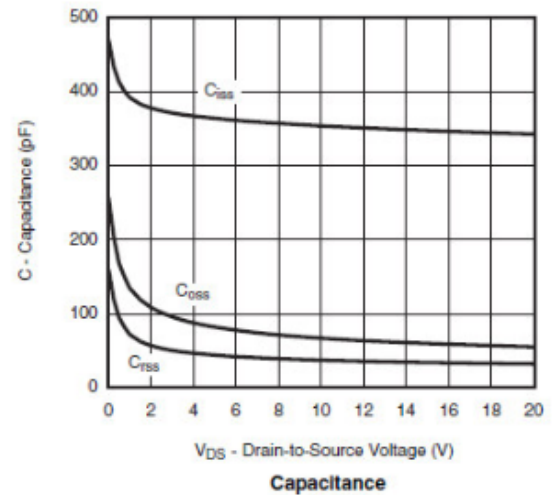
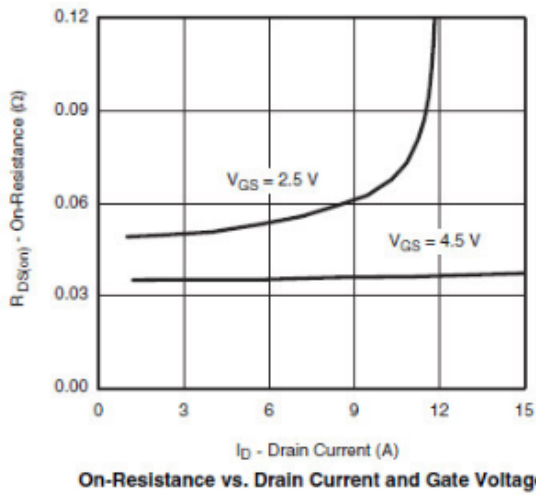
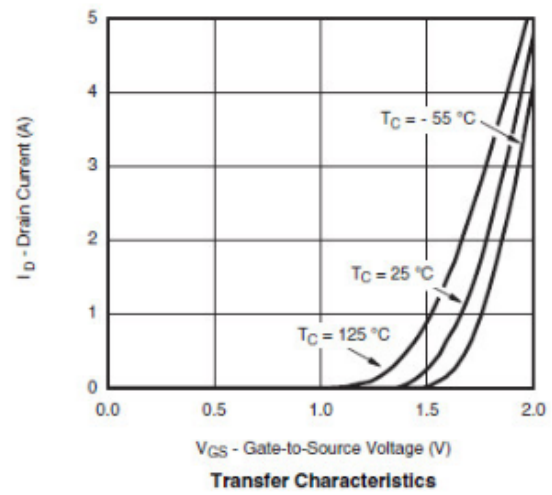
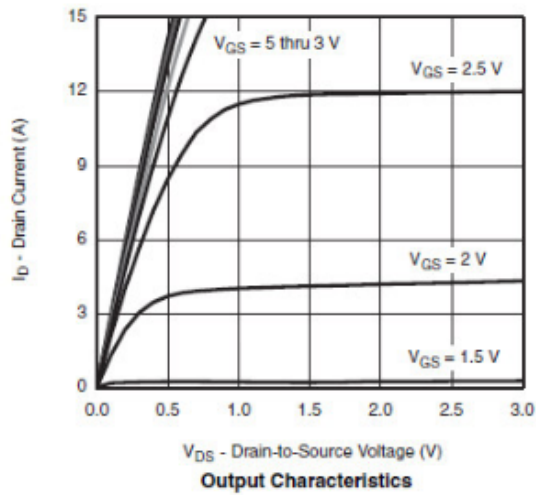
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D = 250uA	N-Ch	20		V
		V _{GS} =0V, I _D = -250uA	P-Ch	-20		
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	N-Ch	0.3	0.8	
		V _{DS} =V _{GS} , I _D = -250uA	P-Ch	-0.3	-0.8	
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±12V	N-Ch		±100	nA
		V _{DS} =0V, V _{GS} =±12V	P-Ch		±100	
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =16V, V _{GS} =0V	N-Ch		1	uA
		V _{DS} =-16V, V _{GS} =0V	P-Ch		-1	
		V _{DS} =16V, V _{GS} =0V, T _J =85°C	N-Ch		10	
		V _{DS} =-16V, V _{GS} =0V, T _J =85°C	P-Ch		-30	
I _{D(on)}	On-State Drain Current	V _{DS} ≥5V, V _{GS} =4.5V	N-Ch	6		A
		V _{DS} ≤-5V, V _{GS} =-4.5V	P-Ch	-8		
		V _{DS} ≥5V, V _{GS} =2.5V	N-Ch	4		
		V _{DS} ≤-5V, V _{GS} =-2.5V	P-Ch	-3		
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =4.5V, I _D =4.5A	N-Ch		41	mΩ
		V _{GS} =-4.5V, I _D =-4.5A	P-Ch		77	
		V _{GS} =2.5V, I _D =3.6A	N-Ch		50	
		V _{GS} =-2.5V, I _D =-3.8A	P-Ch		110	
		V _{GS} =1.8V, I _D =2.4A	N-Ch		70	
		V _{GS} =-1.8V, I _D =-2.5A	P-Ch		166	
g _{fs}	Forward Transconductance	V _{DS} =5V, I _D =3.6A	N-Ch		10	S
		V _{DS} =-5V, I _D =-2.8A	P-Ch		6.5	
V _{SD}	Diode Forward Voltage	I _S =1.6A, V _{GS} =0V	N-Ch		0.85	V
		I _S =-1.25A, V _{GS} =0V	P-Ch		-0.75	

Electrical Characteristics (continue)

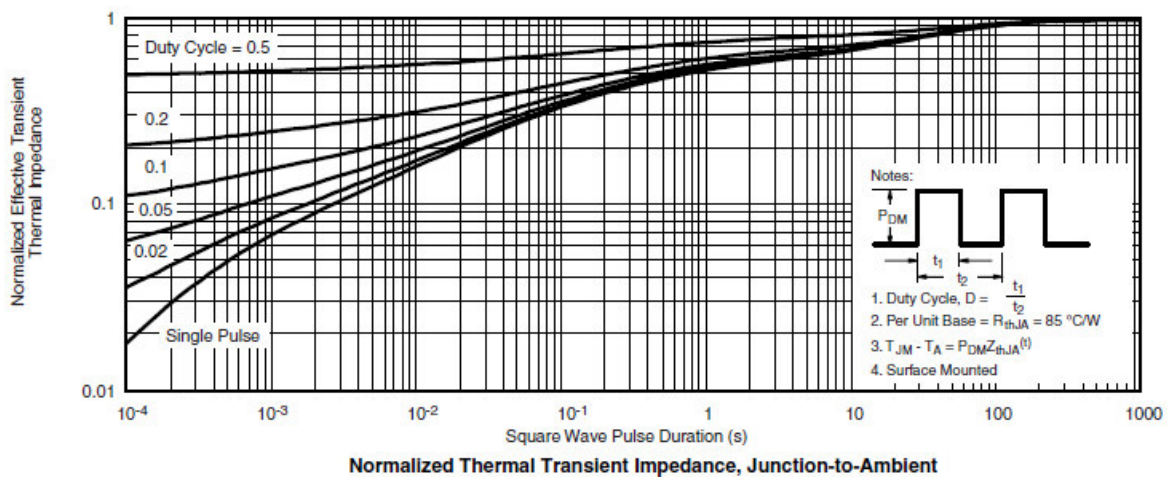
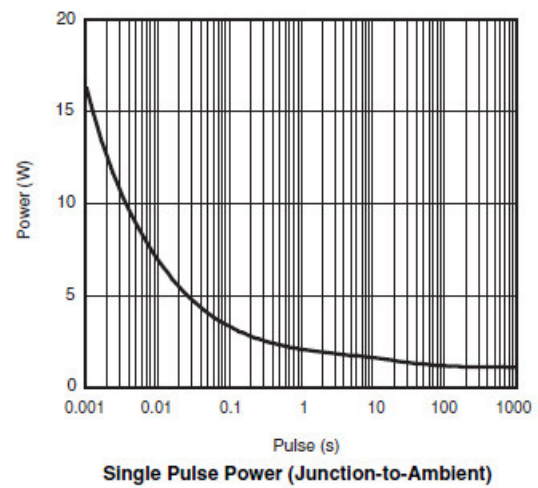
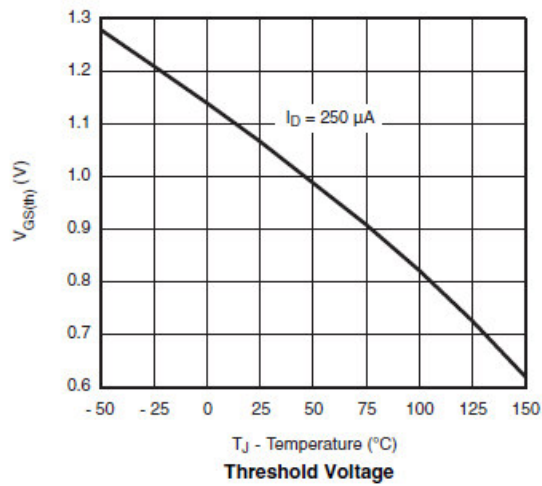
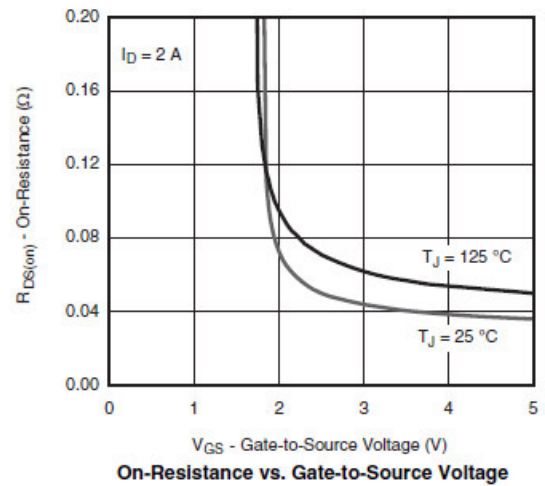
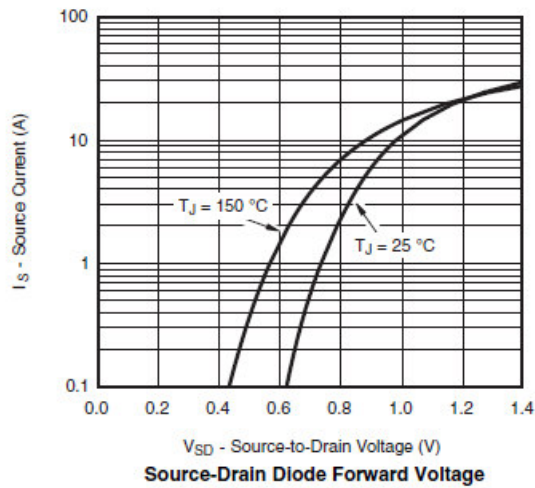
(T_A=25°C Unless otherwise noted)

Symbol	Parameter	Conditions Min	Min	Typ	Max	Unit		
Dynamic								
Q _g	Total Gate Charge	N-Channel V _{DS} =10V,V _{GS} =4.5V, I _D =3.6A P-Channel V _{DS} =-10V,V _{GS} =-4.5V ,I _D =-3.5A	N-Ch		4.2	5.0	nc	
			P-Ch		5	10		
Q _{gs}	Gate-Source Charge		N-Ch		0.6			
			P-Ch		0.85			
Q _{gd}	Gate-Drain Charge		N-Ch		0.4			
			P-Ch		1.5			
C _{ISS}	Input Capacitance	N-Channel V _{DS} =10V,V _{GS} =0V, f=1MHz P-Channel V _{DS} =-10V,V _{GS} =0V ,f=1MHz	N-Ch		340		pF	
			P-Ch		375			
C _{OSS}	Output Capacitance		N-Ch		115			
			P-Ch		80			
C _{RSS}	Reverse Transfer Capacitance		N-Ch		33			
			P-Ch		60			
t _{d(on)}	Turn-On Time	N-Channel V _{DD} =10V,R _L =2.8Ω,I _D =3.6A, V _{GEN} =4.5V,R _G =1Ω P-Channel V _{DD} =-10V,R _L =2.85Ω,I _D =-3.5A, V _{GEN} =-4.5V,R _G =1Ω	N-Ch		8	15	ns	
			P-Ch		15	25		
t _r			N-Ch		8	15		
			P-Ch		36	60		
t _{d(off)}	Turn-Off Time		N-Ch		25	40		
			P-Ch		25	50		
			N-Ch		8	15		
t _f			P-Ch		15	25		

Typical Performance Characteristics (N-Channel)

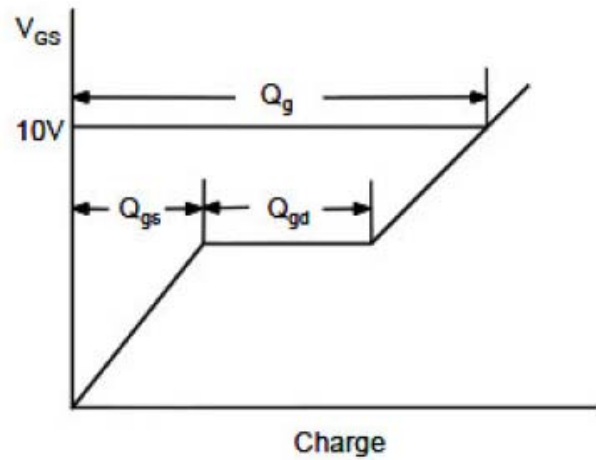
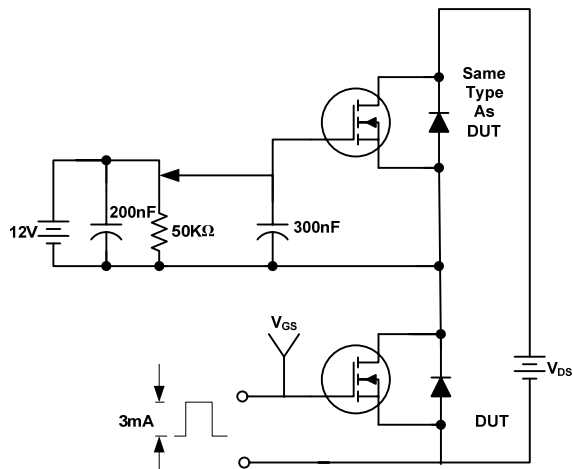


Typical Performance Characteristics (N-Channel)

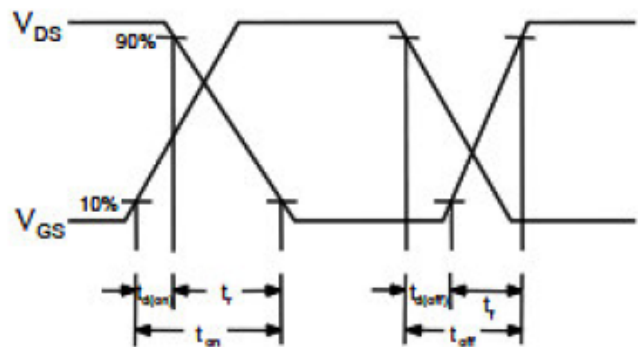
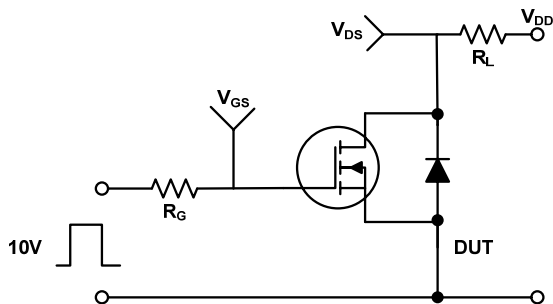


Typical Performance Characteristics (N-Channel)

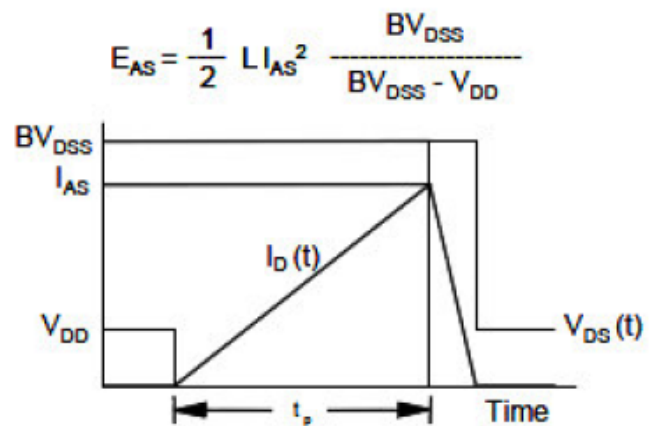
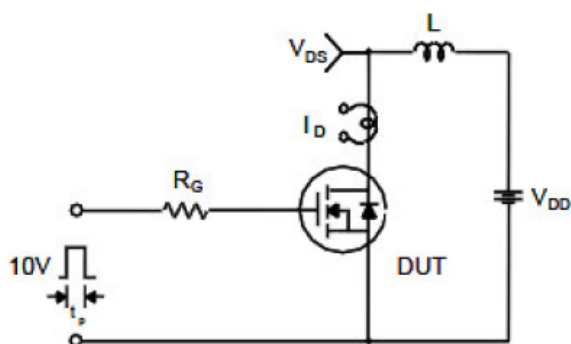
Gate Charge Test Circuit & Waveform



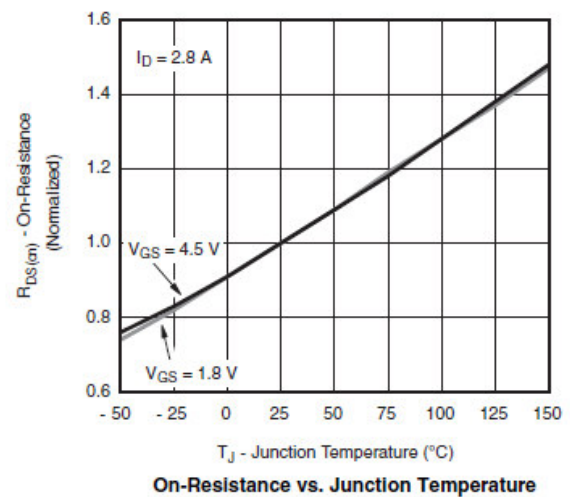
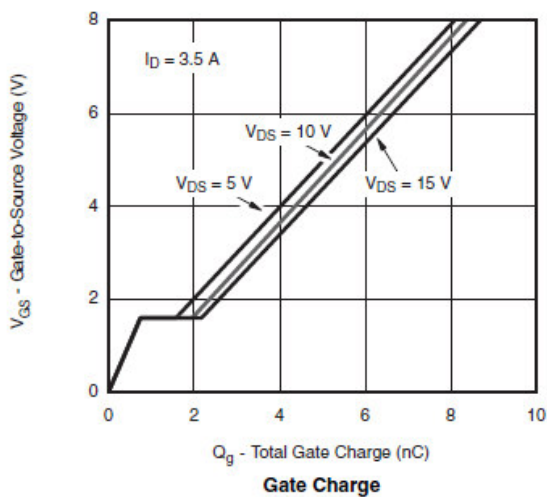
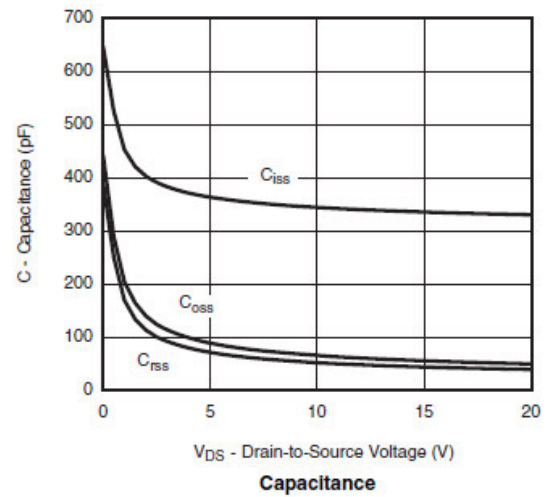
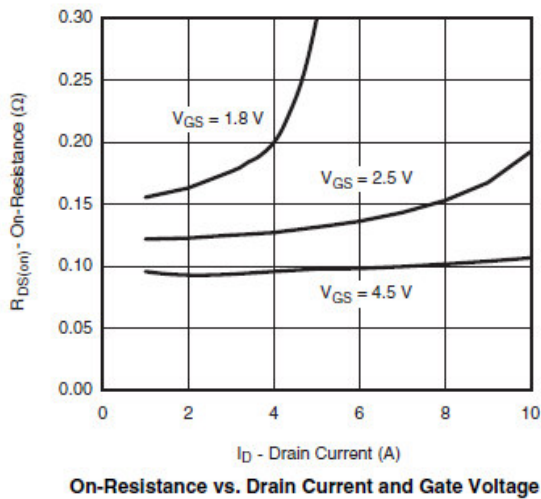
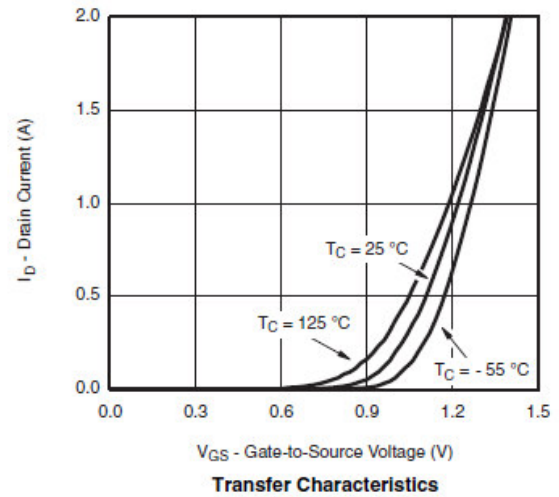
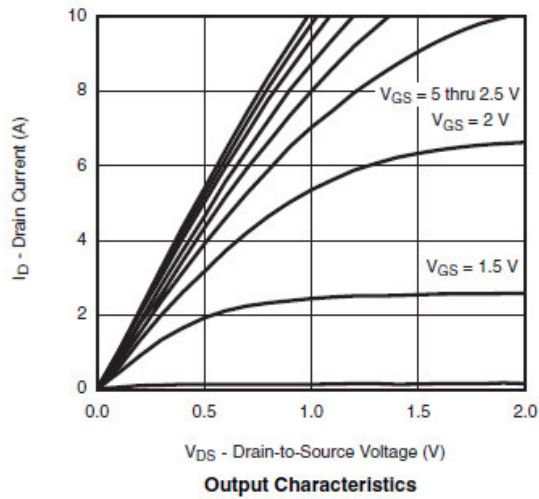
Resistive Switching Test Circuit & Waveforms



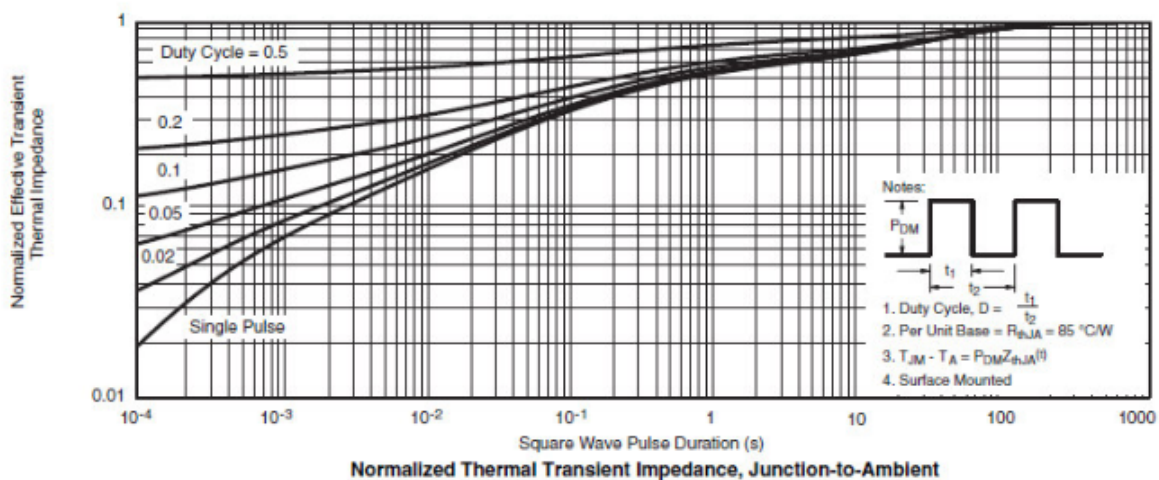
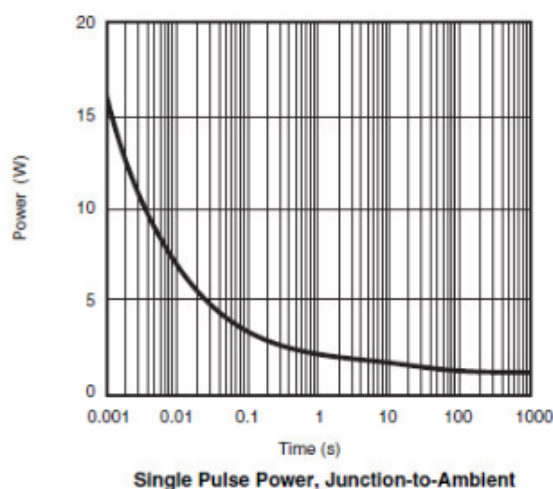
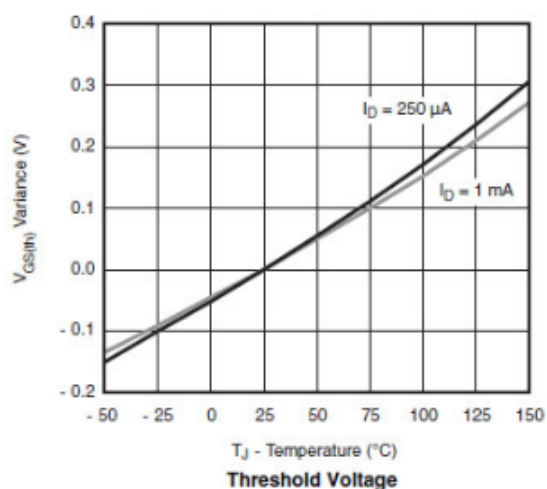
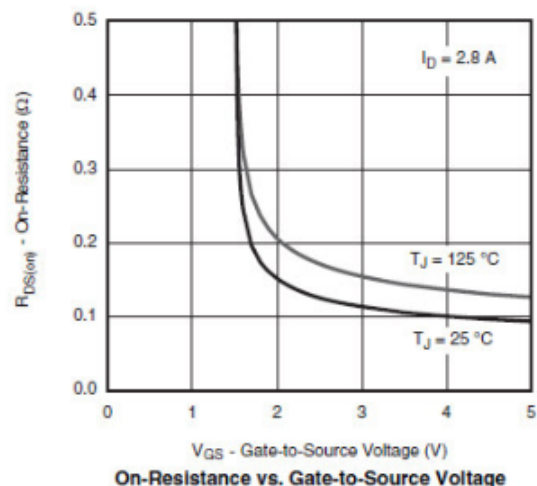
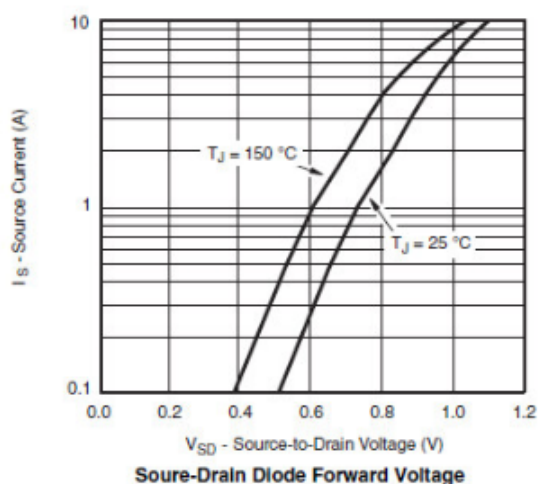
Unclamped Inductive Switching Test Circuit & Waveforms



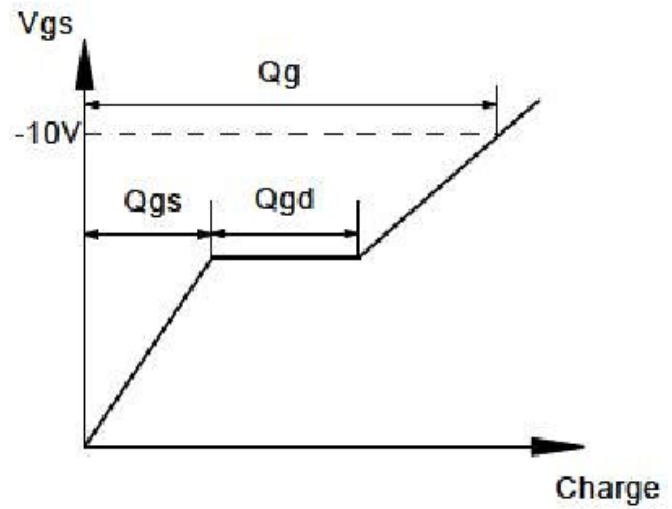
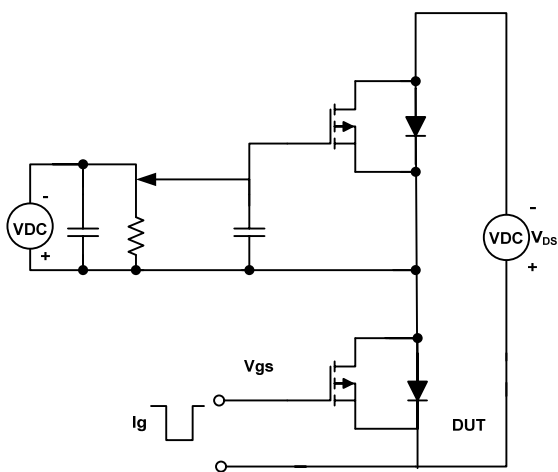
Typical Performance Characteristics (P-Channel)



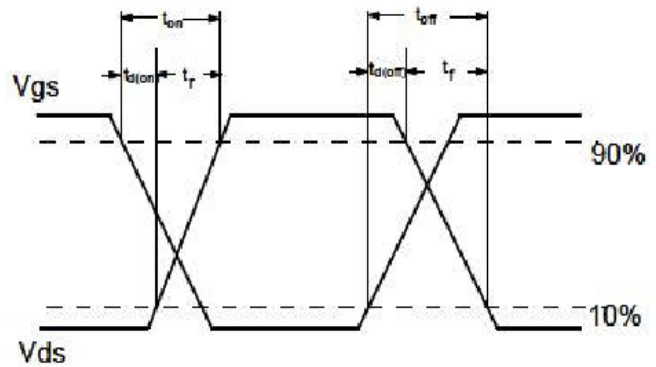
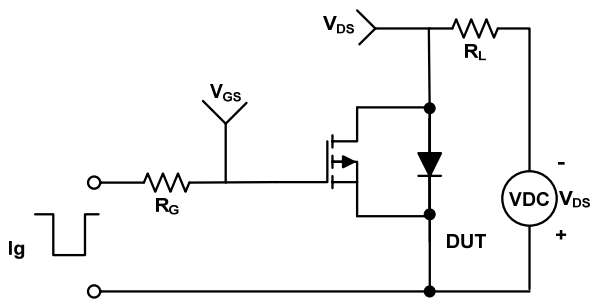
Typical Performance Characteristics (P-Channel)



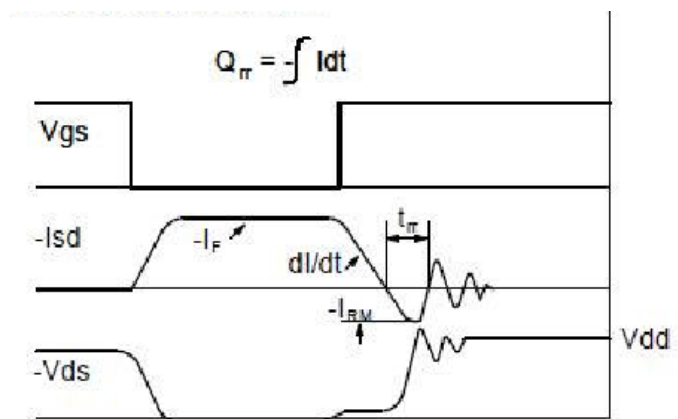
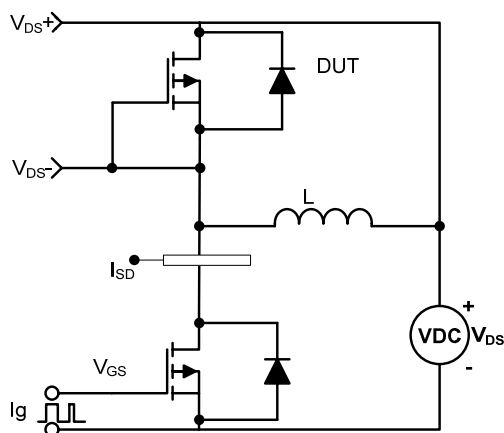
Typical Performance Characteristics (P-Channel)



Resistive Switching Test Circuit & Waveforms

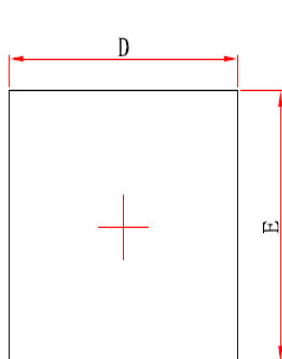


Unclamped Inductive Switching Test Circuit & Waveforms

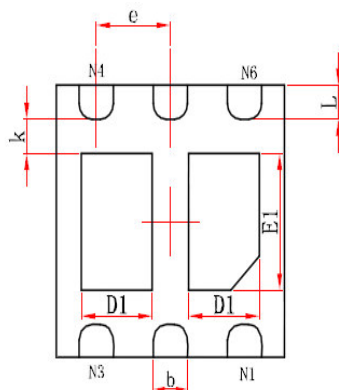


Package Dimension

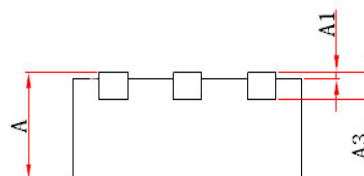
DFN2x2-6L



Top View



Bottom View



Side View

Dimensions

SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.700/0.800	0.800/0.900	0.028/0.031	0.031/0.035
A1	0.000	0.050	0.000	0.002
A3	0.203 (REF)		0.008 (REF)	
D	1.924	2.076	0.076	0.082
E	1.924	2.076	0.076	0.082
D1	0.520	0.720	0.020	0.028
E1	0.900	1.100	0.035	0.043
k	0.200 (MIN)		0.008 (MIN)	
b	0.250	0.350	0.010	0.014
e	0.650 (TYP)		0.026 (TYP)	
L	0.174	0.326	0.007	0.013

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