

GSM1016

N & P Pair Enhancement Mode MOSFET

Product Description

GSM1016, 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, 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

- N-Channel
 $20V/0.6A, R_{DS(ON)}=360m\Omega@V_{GS}=4.5V$
 $20V/0.5A, R_{DS(ON)}=420m\Omega@V_{GS}=2.5V$
 $20V/0.4A, R_{DS(ON)}=560m\Omega@V_{GS}=1.8V$
- P-Channel
 $-20V/-0.4A, R_{DS(ON)}=620m\Omega@V_{GS}=-4.5V$
 $-20V/-0.3A, R_{DS(ON)}=860m\Omega@V_{GS}=-2.5V$
 $-20V/-0.2A, R_{DS(ON)}=1450m\Omega@V_{GS}=-1.8V$

Applications

- Battery Operated Systems
- Load/Power Switching Smart Phones, Pagers

Packages & Pin Assignments

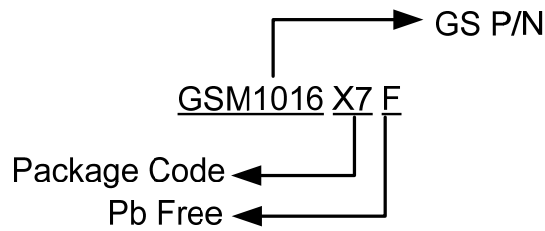
GSM1016X7F(SOT-563)

1	Source 1
2	Gate 1
3	Drain 2
4	Source 2
5	Gate 2
6	Drain 1

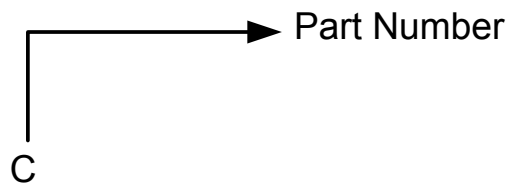
N-Channel

P-Channel

Ordering Information



Marking Information



Part Number	Package	Part Marking
GSM1016X7F	SOT-563	C

Absolute Maximum Ratings

TA=25°C Unless otherwise noted

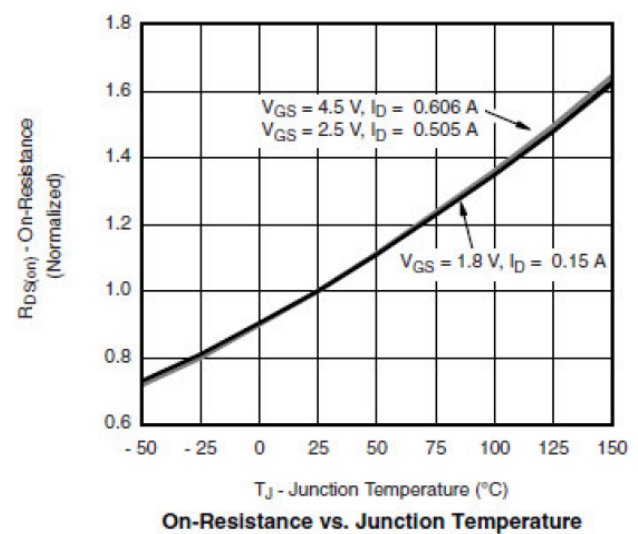
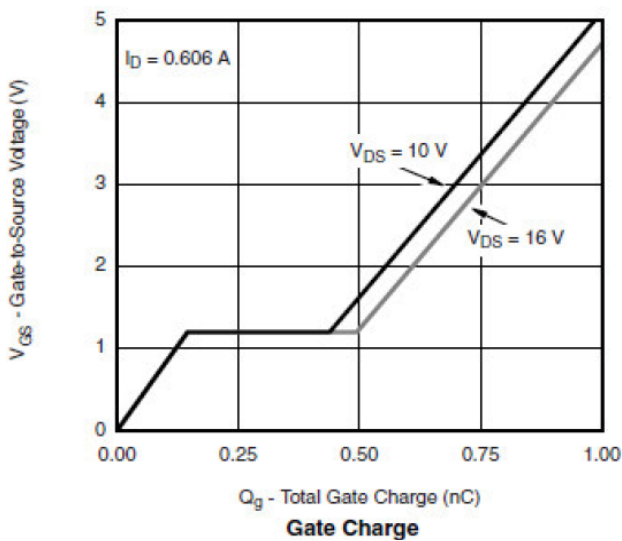
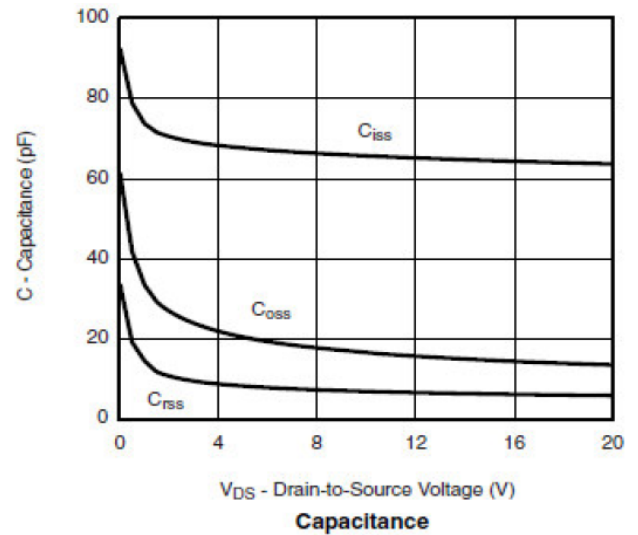
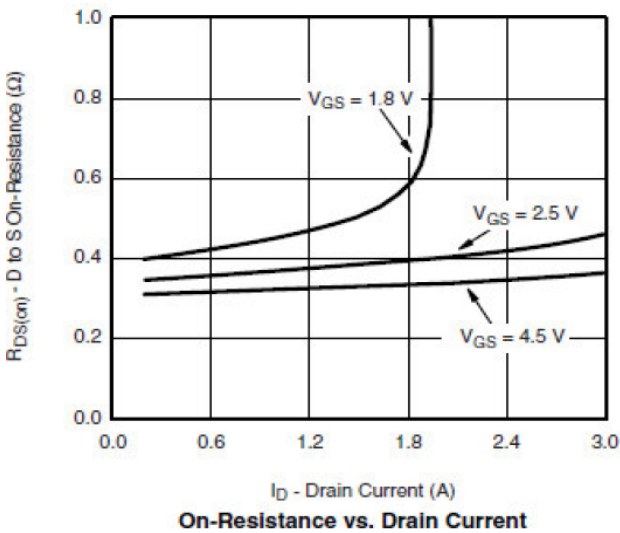
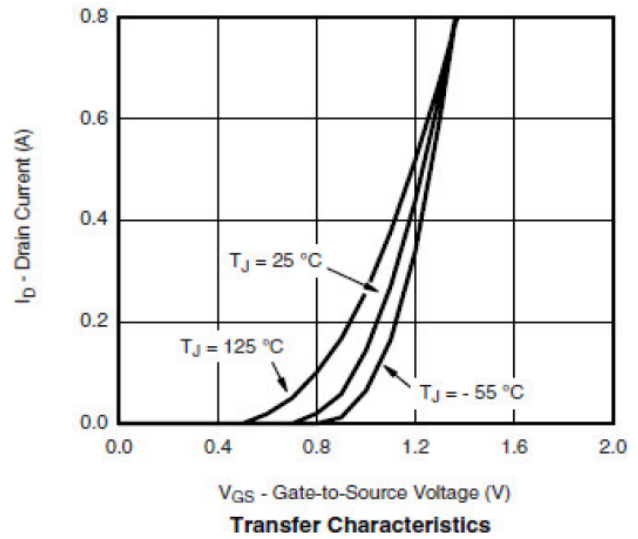
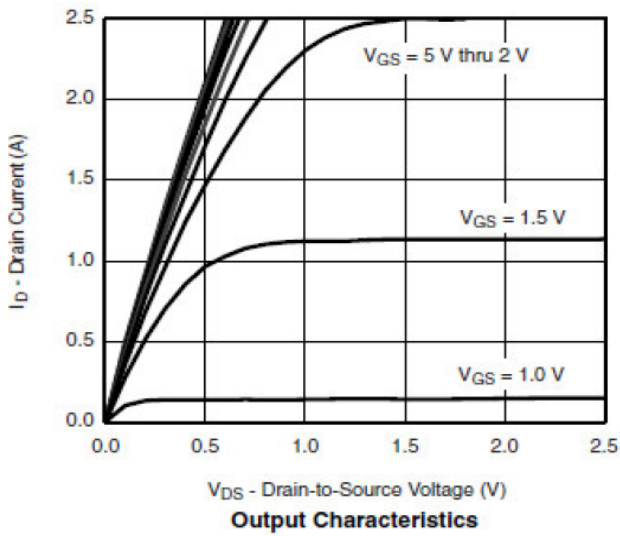
Symbol	Parameter	Typical		Unit	
		N-Channel	P-Channel		
V _{DSS}	Drain-Source Voltage	20	-20	V	
V _{GSS}	Gate –Source Voltage	±12	±12	V	
I _D	Continuous Drain Current(T _J =150°C)	TA =25°C	0.6	-0.4	A
		TA =70°C	0.4	-0.2	
I _{DM}	Pulsed Drain Current	1.0	-1.0	A	
I _S	Continuous Source Current(Diode Conduction)	0.3	-0.3	A	
PD	Power Dissipation	TA =25°C	0.27	W	
		TA =70°C	0.16		
T _J	Junction Temperature Range	-55/150		°C	
T _{STG}	Storage Temperature Range	-55/150		°C	

Electrical Characteristics

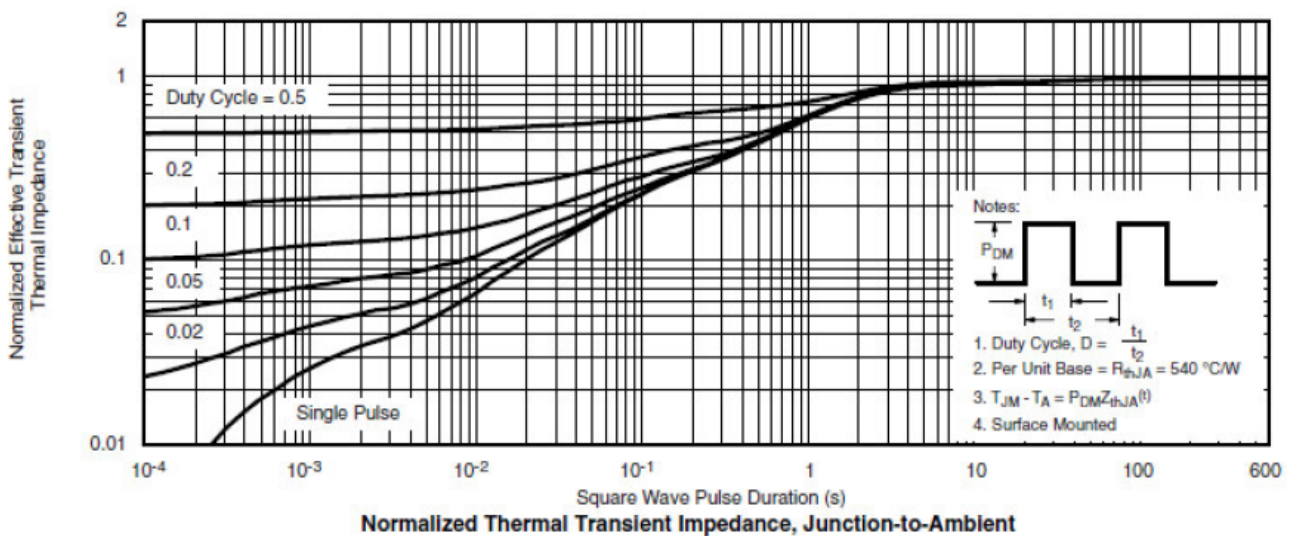
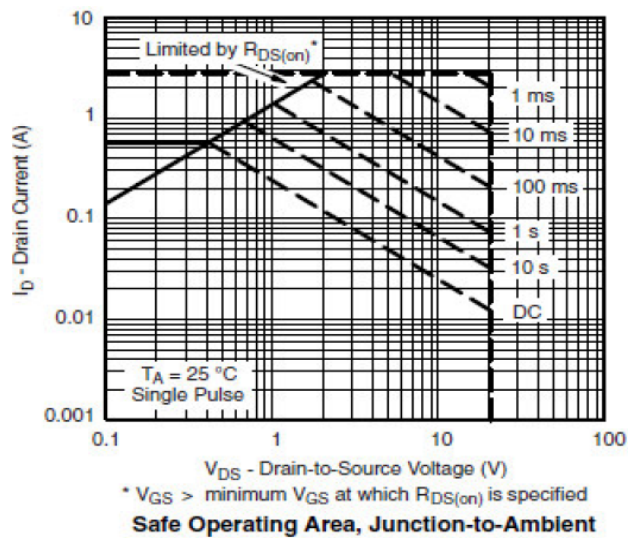
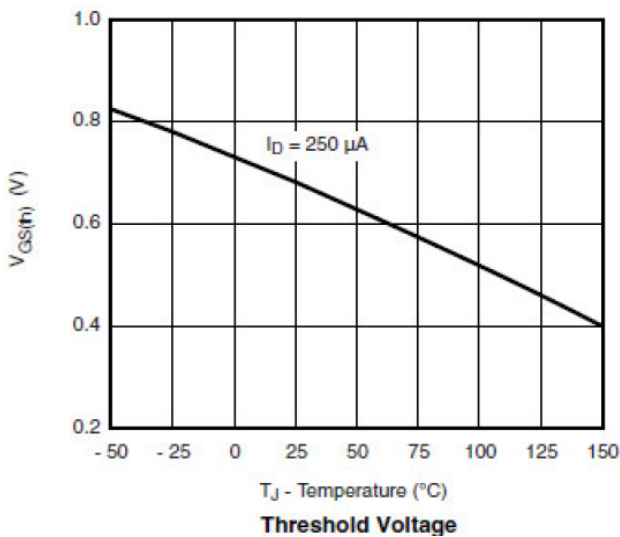
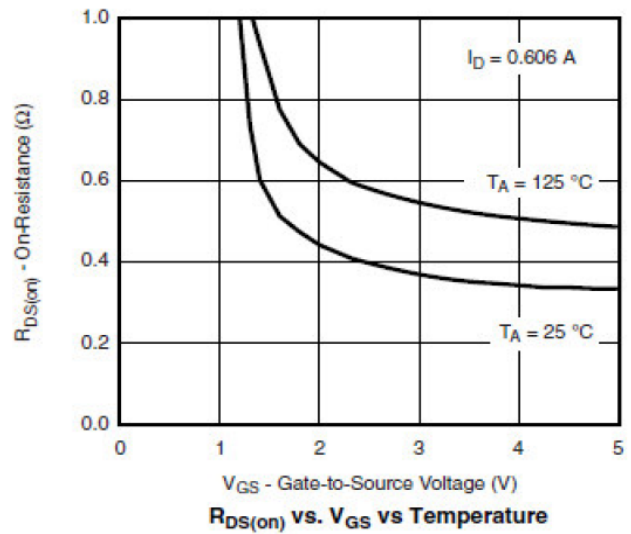
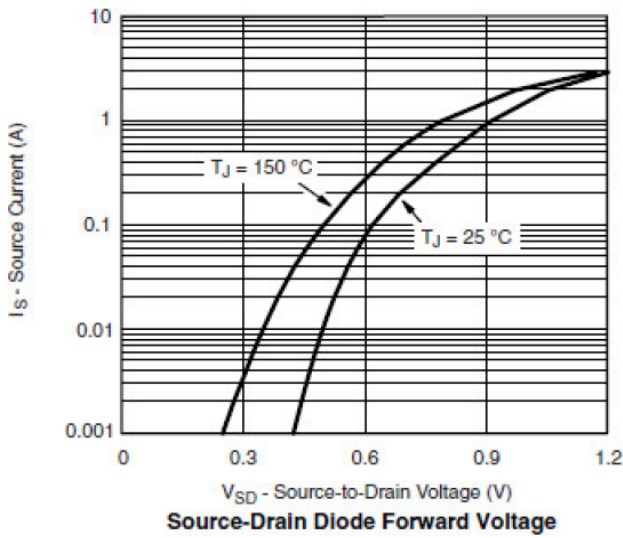
(T_A=25°C Unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit			
Static									
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	N-Ch	20		V			
		V _{GS} =0V, I _D =-250μA	P-Ch	-20					
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	N-Ch	0.4	1.0				
		V _{DS} =V _{GS} , I _D =-250μA	P-Ch	-0.4	-1.0				
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} =20V, V _{GS} =0V	N-Ch		1	μA			
		V _{DS} =-20V, V _{GS} =0V	P-Ch		-1				
		V _{DS} =20V, V _{GS} =0V, T _J =85°C	N-Ch		5				
		V _{DS} =-20V, V _{GS} =0V, T _J =85°C	P-Ch		-5				
I _{D(on)}	On-State Drain Current	V _{DS} ≥5V, V _{GS} =4.5V	N-Ch	0.7		A			
		V _{DS} ≤-5V, V _{GS} =-4.5V	P-Ch	-0.7					
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =4.5V, I _D =0.6A	N-Ch		0.24	0.36	Ω		
		V _{GS} =-4.5V, I _D =-0.4A	P-Ch		0.50	0.62			
		V _{GS} =2.5V, I _D =0.5A	N-Ch		0.30	0.42			
		V _{GS} =-2.5V, I _D =-0.3A	P-Ch		0.70	0.86			
		V _{GS} =1.8V, I _D =0.4A	N-Ch		0.42	0.56			
		V _{GS} =-1.8V, I _D =-0.2A	P-Ch		1.00	1.45			
g _{FS}	Forward Transconductance	V _{DS} =10V, I _D =0.4A	N-Ch		1.0	S			
		V _{DS} =-10V, I _D =-0.4A	P-Ch		1.0				
V _{SD}	Diode Forward Voltage	I _S =0.15A, V _{GS} =0V	N-Ch		0.8	1.2	V		
		I _S =-0.15A, V _{GS} =0V	P-Ch		-0.65	-1.2			
Dynamic									
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		70		pF		
			P-Ch		70	100			
C _{oss}	Output Capacitance		N-Ch		20				
			P-Ch		20				
C _{rss}	Reverse Transfer Capacitance		N-Ch		8				
			P-Ch		10				
Q _g	Total Gate Charge	N-Channel V _{DS} =10V, V _{GS} =4.5V, I _D =0.6A P-Channel V _{DS} =-10V, V _{GS} =-4.5V, I _D =-0.25A	N-Ch		1.06	1.38	nC		
			P-Ch		1.0	1.3			
Q _{gs}	Gate-Source Charge		N-Ch		0.18				
			P-Ch		0.1				
t _{d(on)}	Turn-On Time		N-Channel V _{DD} =10V, R _L =20Ω, I _D =0.5A V _{GEN} =4.5V, R _G =1Ω P-Channel V _{DD} =-10V, R _L =30Ω, I _D =-0.2A V _{GEN} =-4.5V, R _G =10Ω	N-Ch		18		26	ns
				P-Ch		10		15	
t _r		N-Ch			20	28			
		P-Ch			10	15			
t _{d(off)}	Turn-Off Time	N-Ch			70	110			
		P-Ch			40	60			
t _f		N-Ch		25	40				
		P-Ch		30	50				

Typical Performance Characteristics(N-Channel)

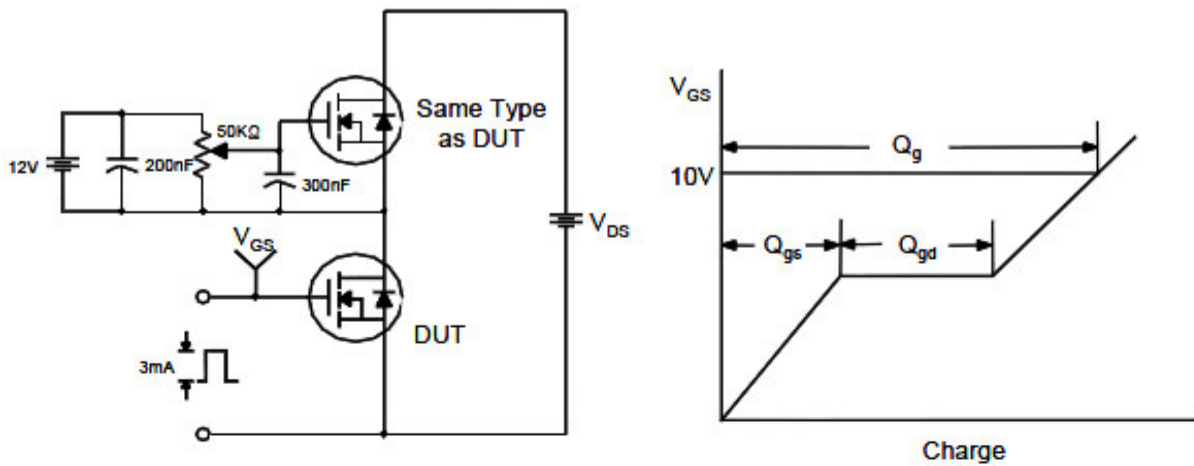


Typical Performance Characteristics(N-Channel)

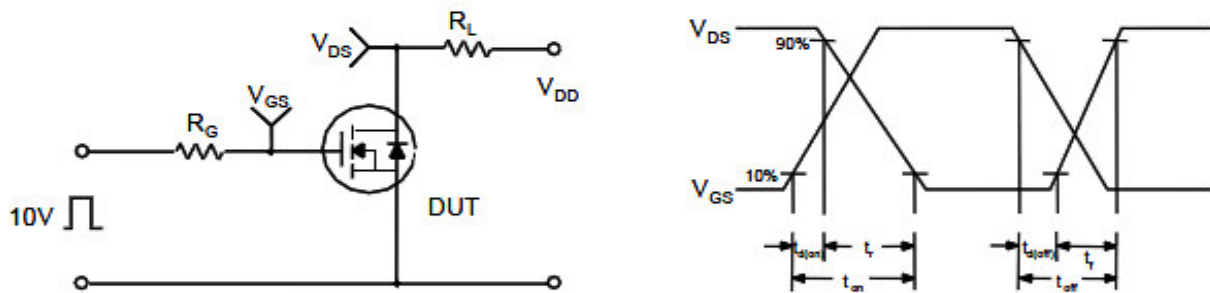


Typical Characteristics(N-Channel)

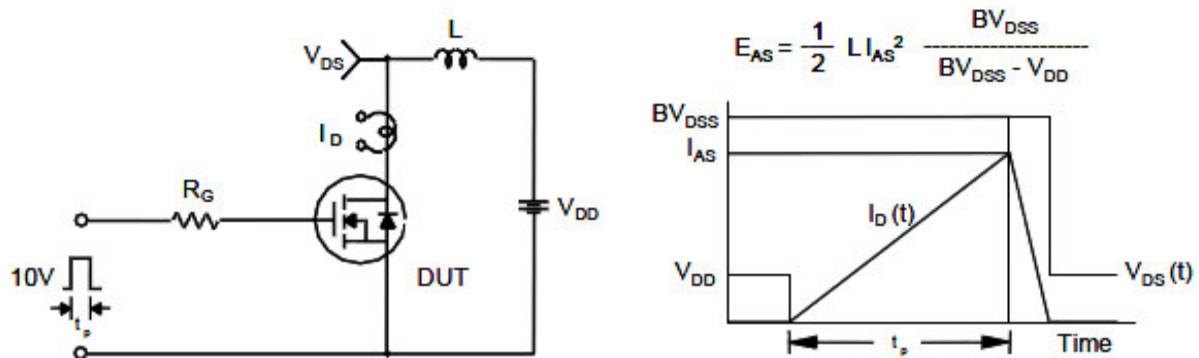
Gate Charge Test Circuit & Waveform



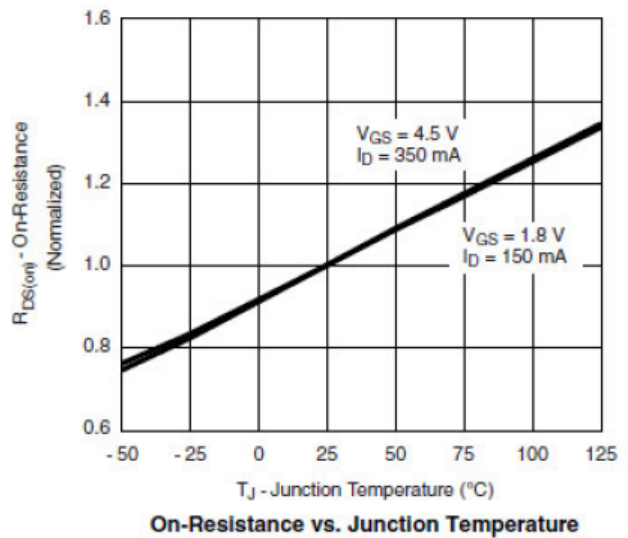
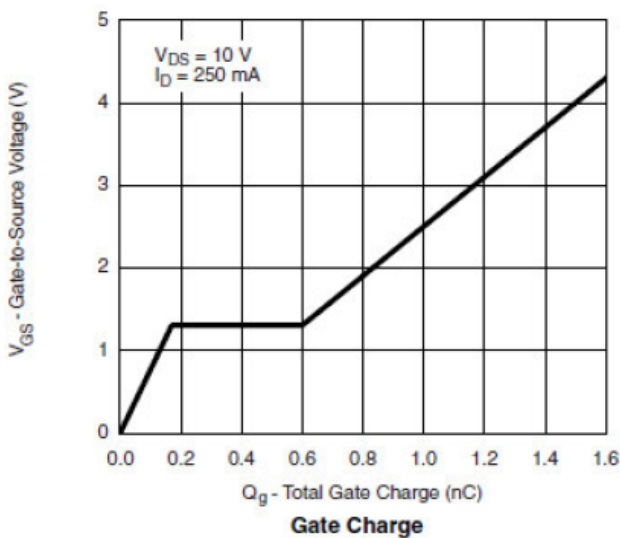
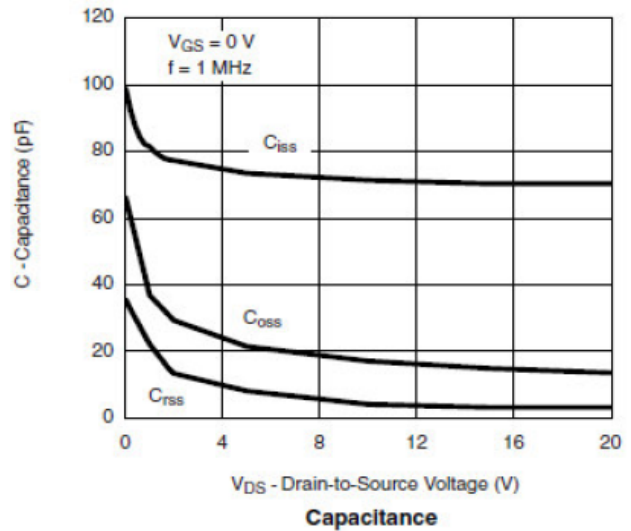
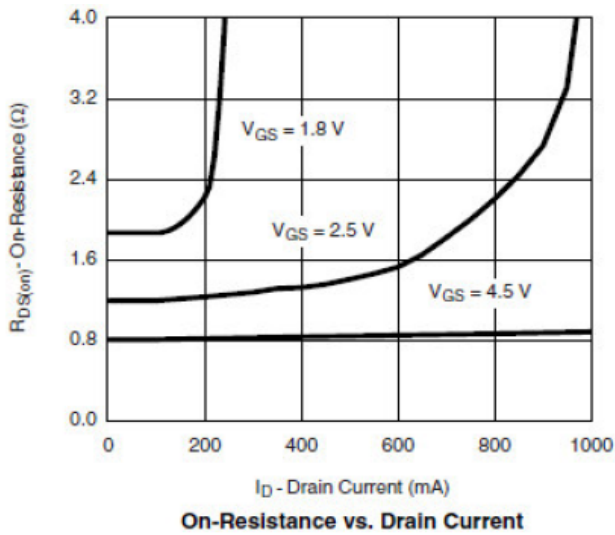
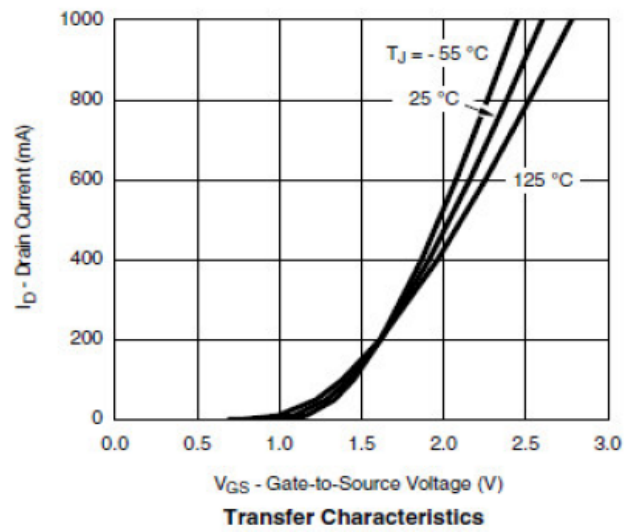
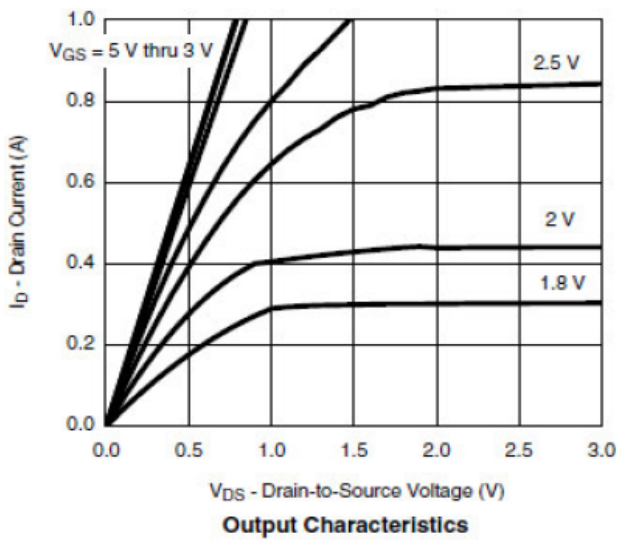
Resistive Switching Test Circuit & Waveforms



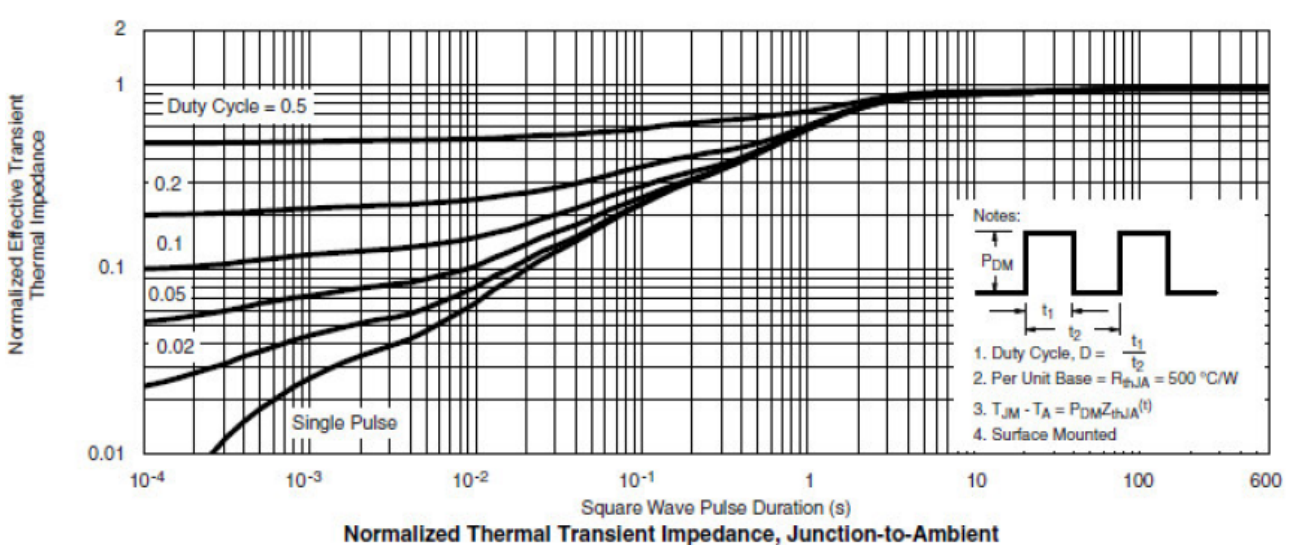
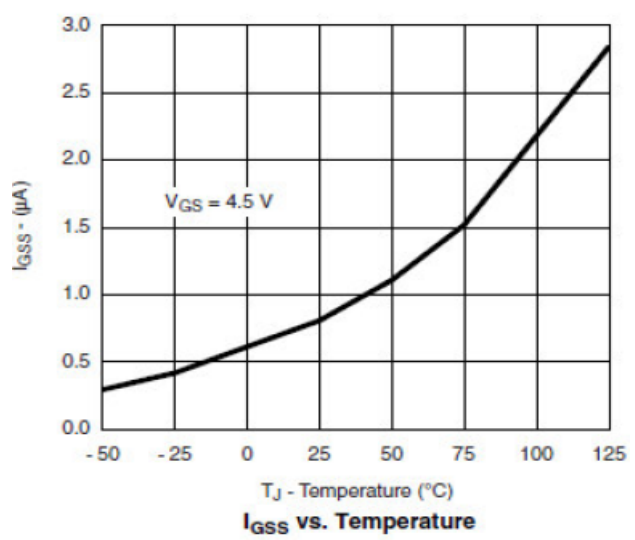
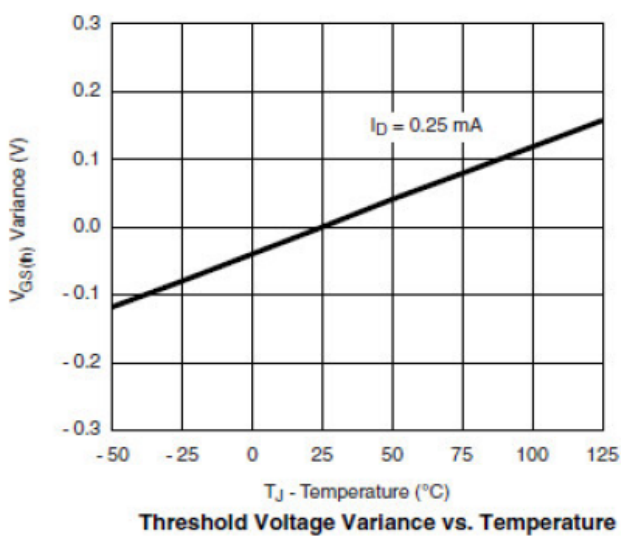
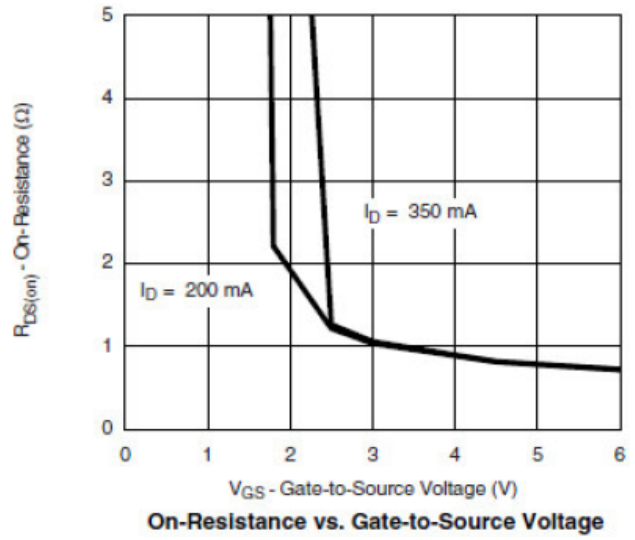
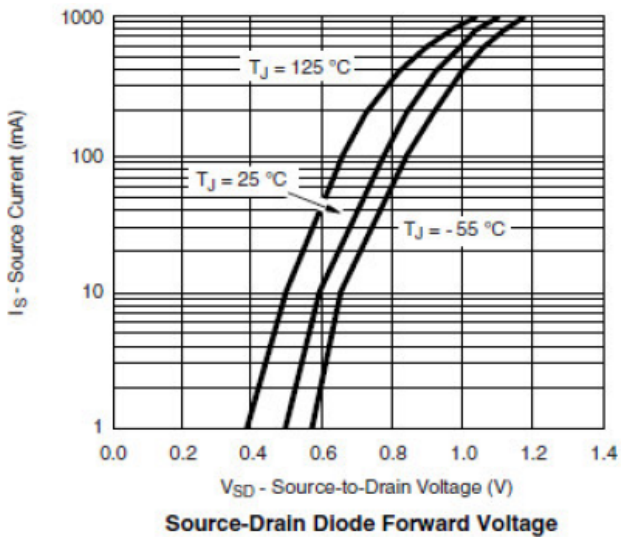
Unclamped Inductive Switching Test Circuit & Waveforms



Typical Performance Characteristics(P-Channel)

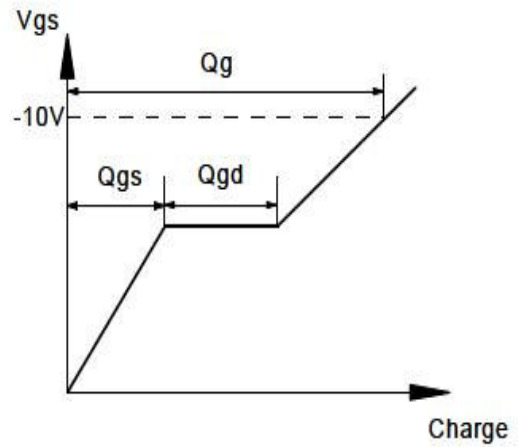
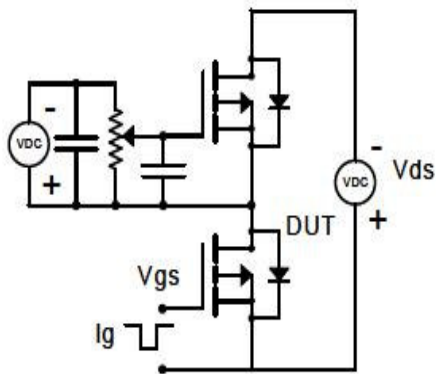


Typical Performance Characteristics(P-Channel)

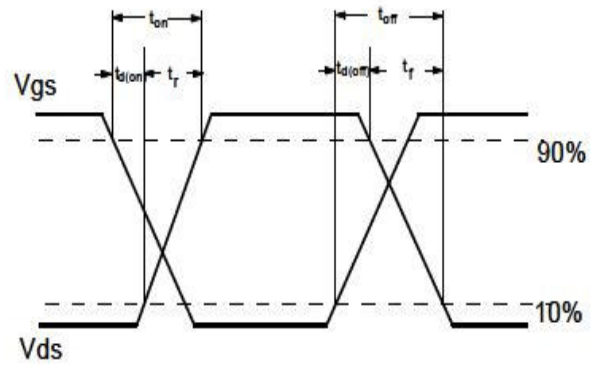
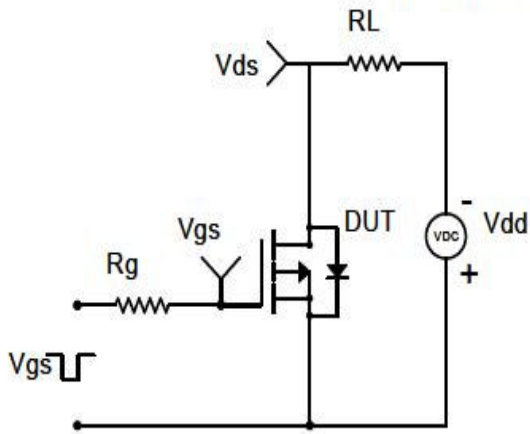


Typical Characteristics(P-Channel)

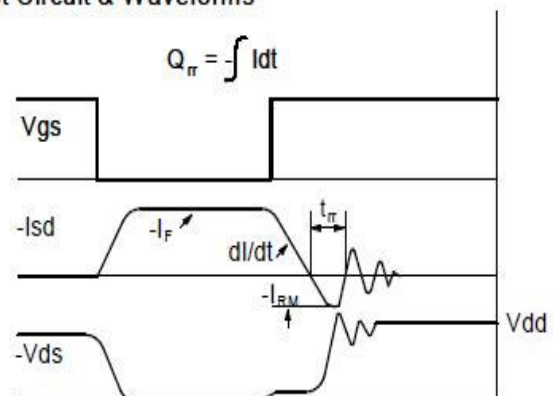
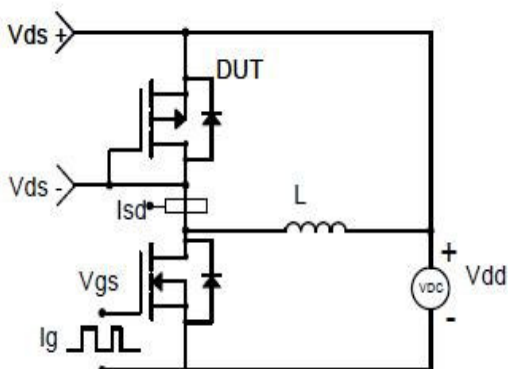
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

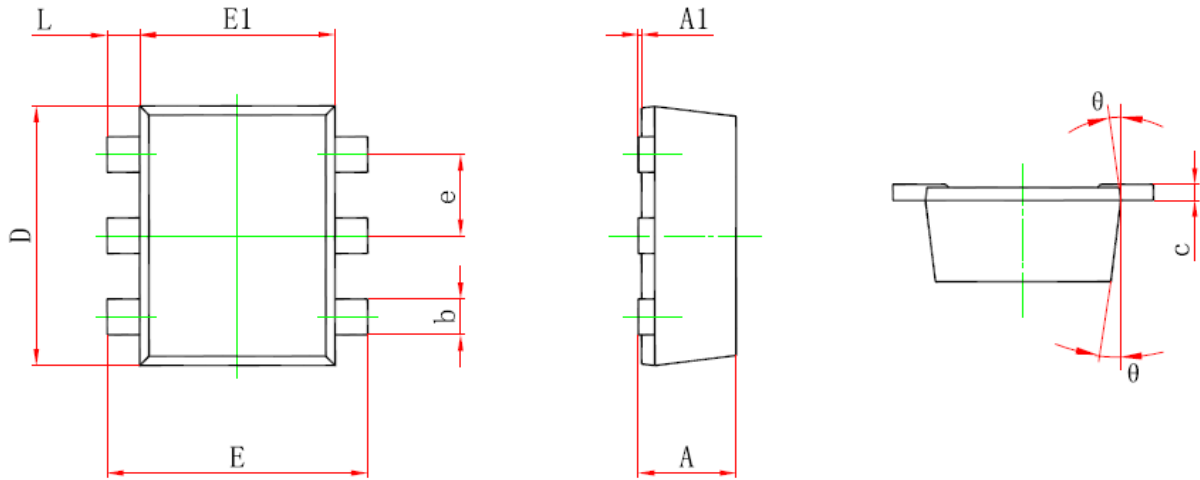


Diode Recovery Test Circuit & Waveforms



Package Dimension

SOT-563







Dimensions

Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.525	0.600	0.021	0.024
A1	0.000	0.050	0.000	0.002
e	0.450	0.550	0.018	0.022
c	0.090	0.160	0.004	0.006
D	1.500	1.700	0.059	0.067
b	0.170	0.270	0.007	0.011
E1	1.100	1.300	0.043	0.051
E	1.500	1.700	0.059	0.067
L	0.100	0.300	0.004	0.012
θ	7° REF		7° REF	



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