

GSM6332

N & P Pair Enhancement Mode MOSFET

Product Description

The GSM6332 is the N and 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.

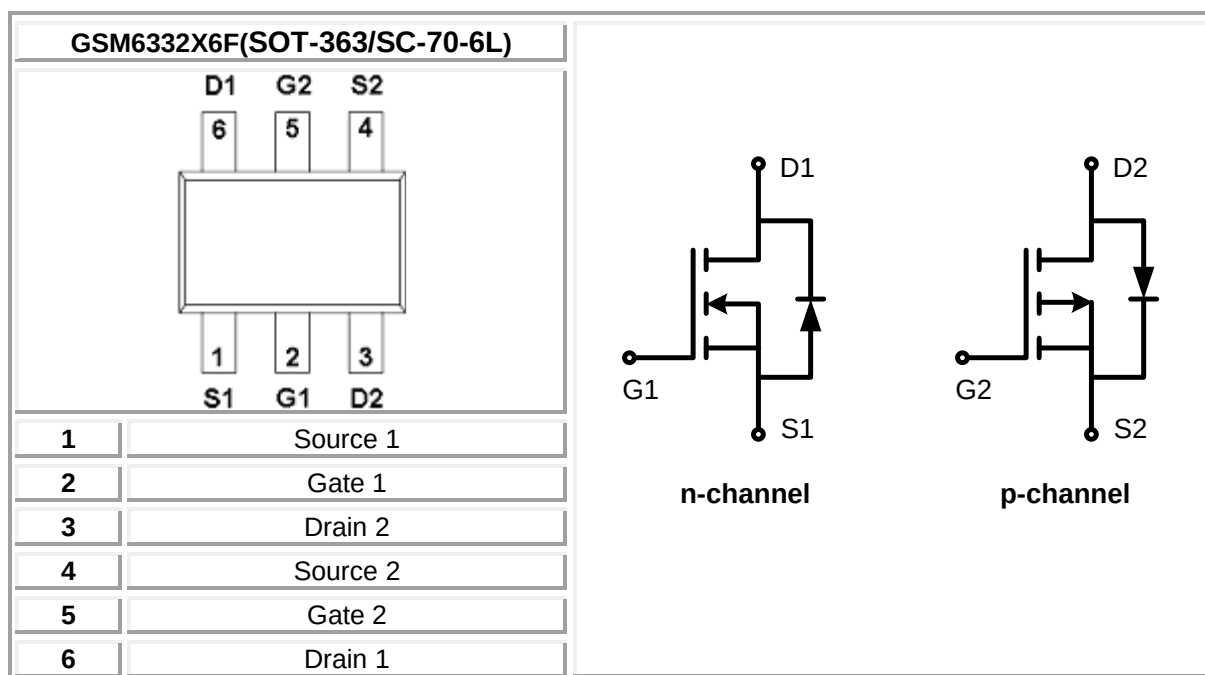
Features

- N-Channel
20V/0.5A, $R_{DS(ON)}=300m\Omega@V_{GS}=4.5V$
20V/0.4A, $R_{DS(ON)}=400m\Omega@V_{GS}=2.5V$
20V/0.2A, $R_{DS(ON)}=580m\Omega@V_{GS}=1.8V$
- P-Channel
-20V/-0.3A, $R_{DS(ON)}=600m\Omega@V_{GS}=-4.5V$
-20V/-0.2A, $R_{DS(ON)}=850m\Omega@V_{GS}=-2.5V$
-20V/-0.1A, $R_{DS(ON)}=1440m\Omega@V_{GS}=-1.8V$
- Low-Voltage Operation
- High-Speed Circuits
- Low Battery Voltage Operation
- SOT-363 package design

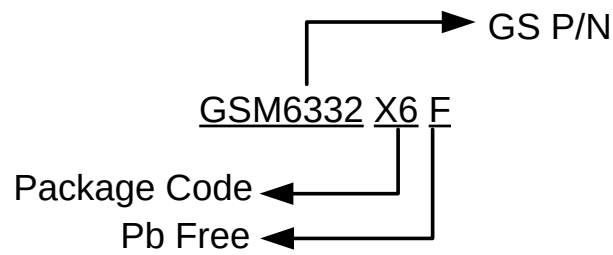
Applications

- Load Switch for Portable Devices, Smart Phones, Pagers.

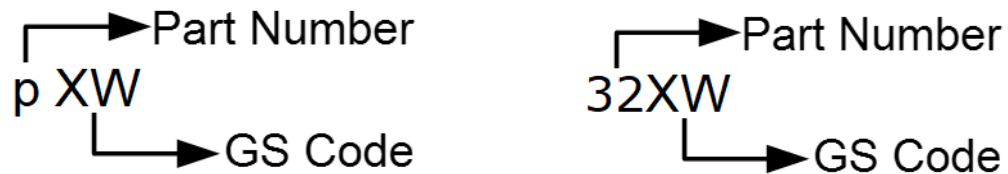
Packages & Pin Assignments



Ordering Information



Marking Information



Part Number	Package	Part Marking
GSM6332X6F	SOT-363	pXW/ 32XW

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		±8	±8	V
I _D	Continuous Drain Current(T _J =150°C)	T _A =25°C	0.87	-0.59	A
		T _A =70°C	0.69	-0.47	
I _{DM}	Pulsed Drain Current		3.2	-2.4	A
I _S	Continuous Source Current(Diode Conduction)		0.8	-0.6	A
P _D	Power Dissipation	T _A =25°C	0.3		W
		T _A =70°C	0.2		
T _J	Operating Junction Temperature		-55/150		°C
T _{STG}	Storage Temperature Range		-55/150		°C

Electrical Characteristics

TA=25°C unless otherwise noted

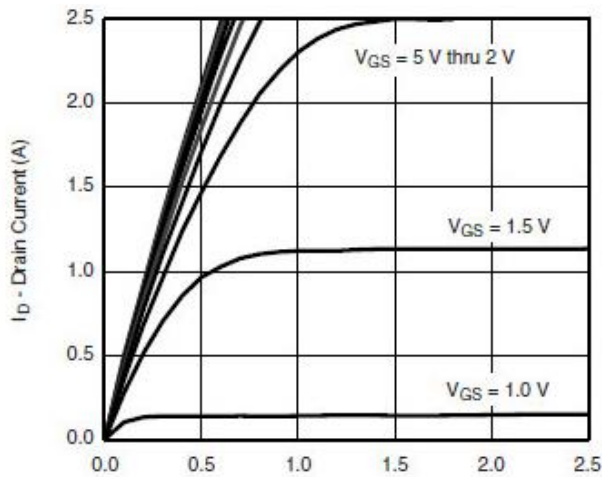
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	N-Ch	20		V
		V _{GS} =0V, I _D =-250uA	P-Ch	-20		
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	N-Ch	0.3		1.0
		V _{DS} =V _{GS} , I _D =-250uA	P-Ch	-0.2		-1.0
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±12V	N-Ch			±100
		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
		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
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =4.5V, I _D =0.5A	N-Ch			300
		V _{GS} =-4.5V, I _D =-0.3A	P-Ch			600
		V _{GS} =2.5V, I _D =0.4A	N-Ch			400
		V _{GS} =-2.5V, I _D =-0.2A	P-Ch			850
		V _{GS} =1.8V, I _D =0.2A	N-Ch			580
		V _{GS} =-1.8V, I _D =-0.1A	P-Ch			1440
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =1.0A	N-Ch		1	
		V _{DS} =-10V, I _D =-0.4A	P-Ch		1	
V _{SD}	Diode Forward Voltage	I _S =1.0A, V _{GS} =0V	N-Ch		0.65	1.2
		I _S =-0.15A, V _{GS} =0V	P-Ch		-0.65	-1.2
Dynamic						
C _{iss}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, f=1MHz	N-Ch		70	
		V _{DS} =-10V, V _{GS} =0V, f=1MHz	P-Ch		70	
C _{oss}	Output Capacitance	V _{DS} =10V, V _{GS} =0V, f=1MHz	N-Ch		20	
		V _{DS} =-10V, V _{GS} =0V, f=1MHz	P-Ch		20	
C _{rss}	Reverse Transfer Capacitance	V _{DS} =10V, V _{GS} =0V, f=1MHz	N-Ch		8	
		V _{DS} =-10V, V _{GS} =0V, f=1MHz	P-Ch		10	
Q _g	Total Gate Charge	N-Channel V _{DS} =10V,V _{GS} =4.5V,I _D =1.2A	N-Ch		1.06	1.38
			P-Ch		1.0	1.3
Q _{gs}	Gate-Source Charge	P-Channel V _{DS} =-10V,V _{GS} =-4.5V , I _D =-0.25A	N-Ch		0.18	
			P-Ch		0.1	
Q _{gd}	Gate-Drain Charge		N-Ch		0.32	
			P-Ch		0.3	

Electrical Characteristics (Continue)

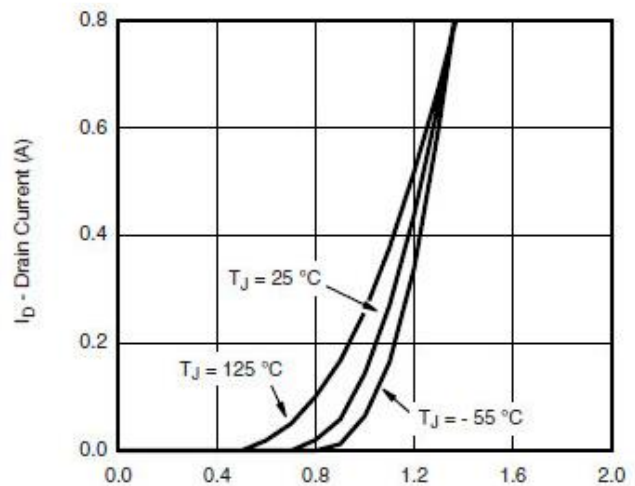
T_A=25°C unless otherwise noted

td(on)	Turn-On Time	N-Channel V _{DD} =10V,R _L =20Ω,I _D =1.2A V _{GEN} =4.5V,R _G =1Ω	N-Ch		18	26	ns
tr			P-Ch		10	15	
			N-Ch		20	28	
td(off)			P-Ch		10	15	
	Turn-Off Time	P-Channel V _{DD} =-10V,R _L =30Ω,I _D =-0.2A V _{GEN} =-4.5V,R _G =10Ω	N-Ch		70	110	
P-Ch				40	60		
N-Ch				25	40		
tf			P-Ch		30	50	

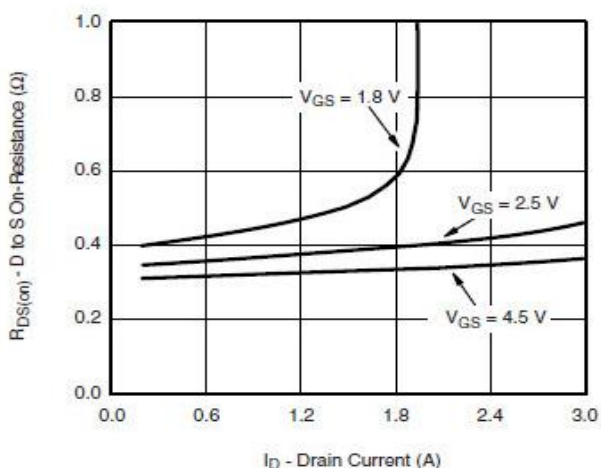
Typical Performance Characteristics (N-Channel)



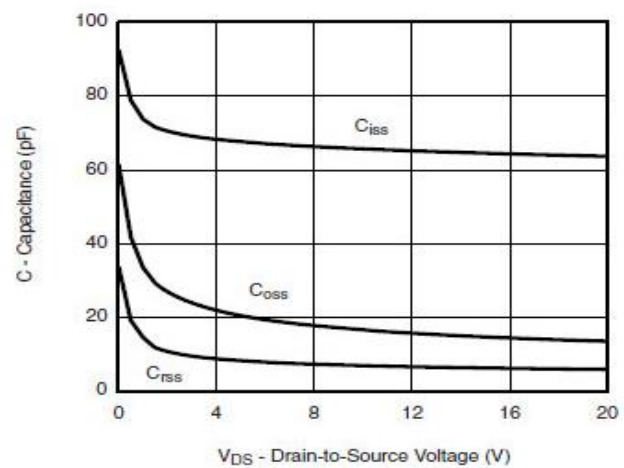
Output Characteristics



Transfer Characteristics

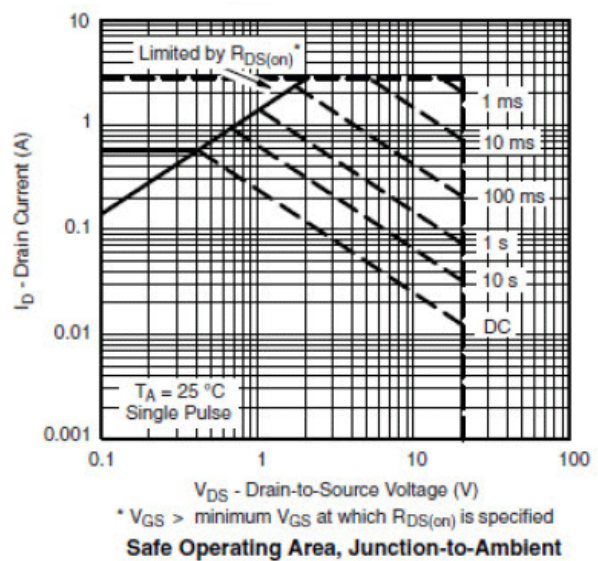
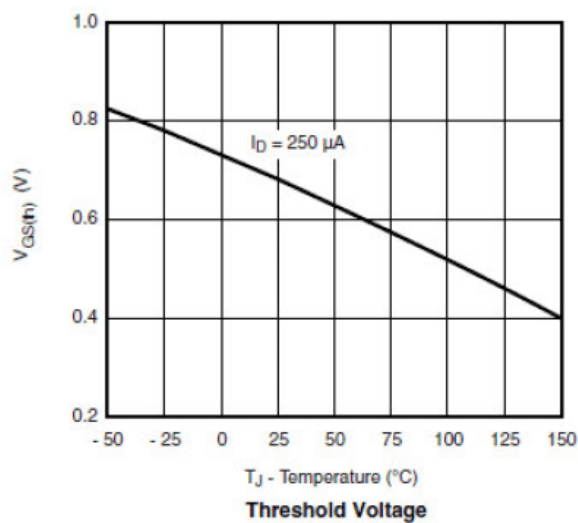
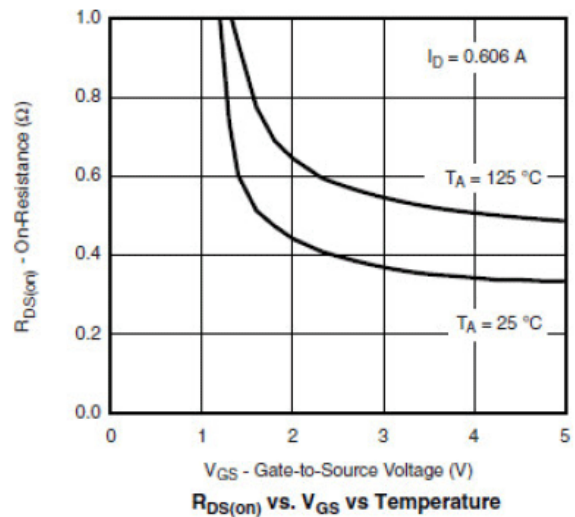
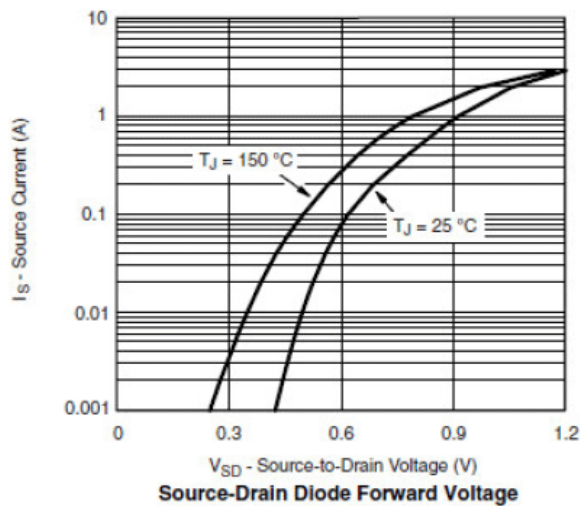
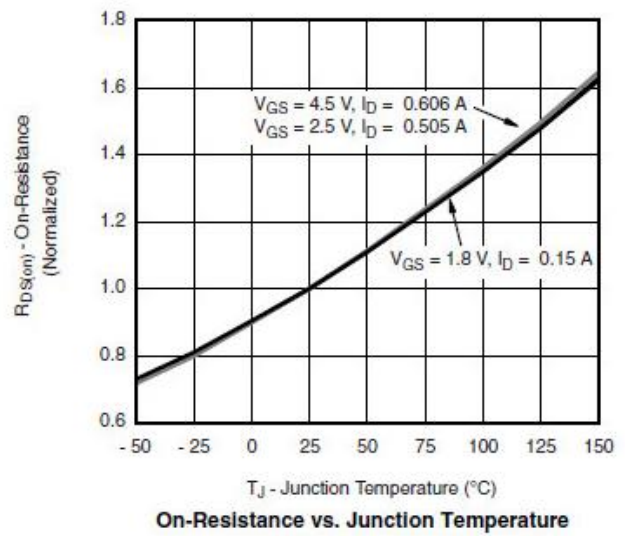
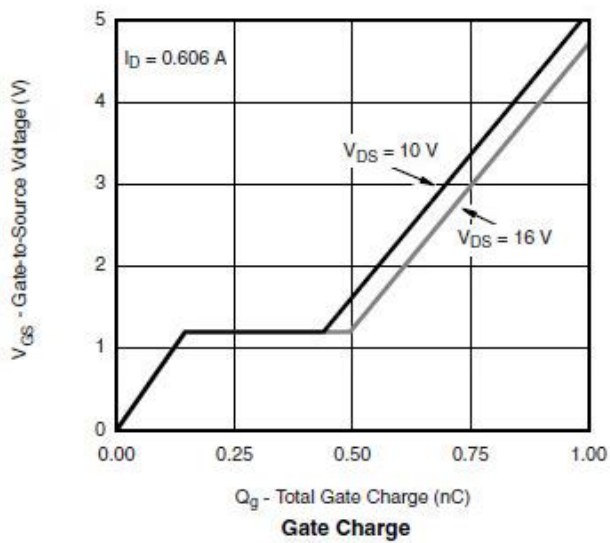


On-Resistance vs. Drain Current

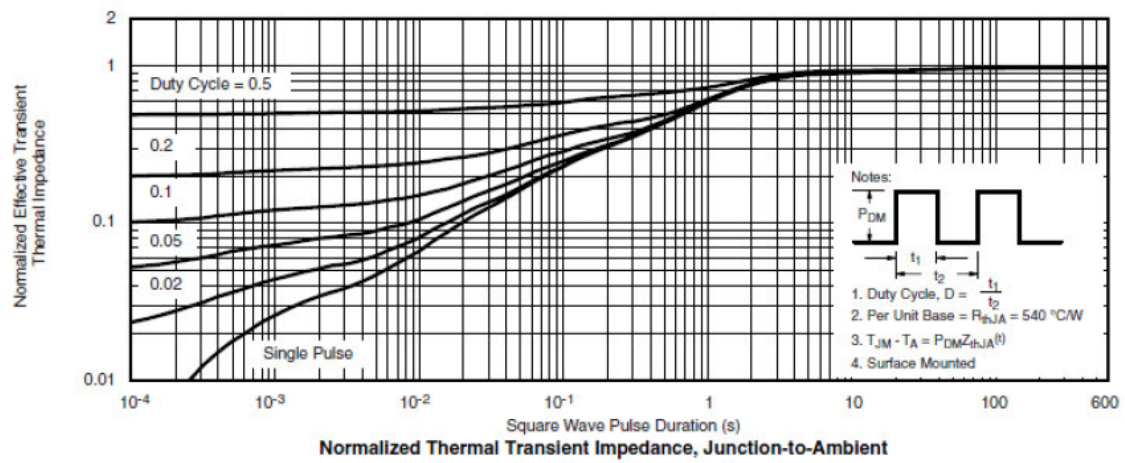


Capacitance

Typical Performance Characteristics (N-Channel)

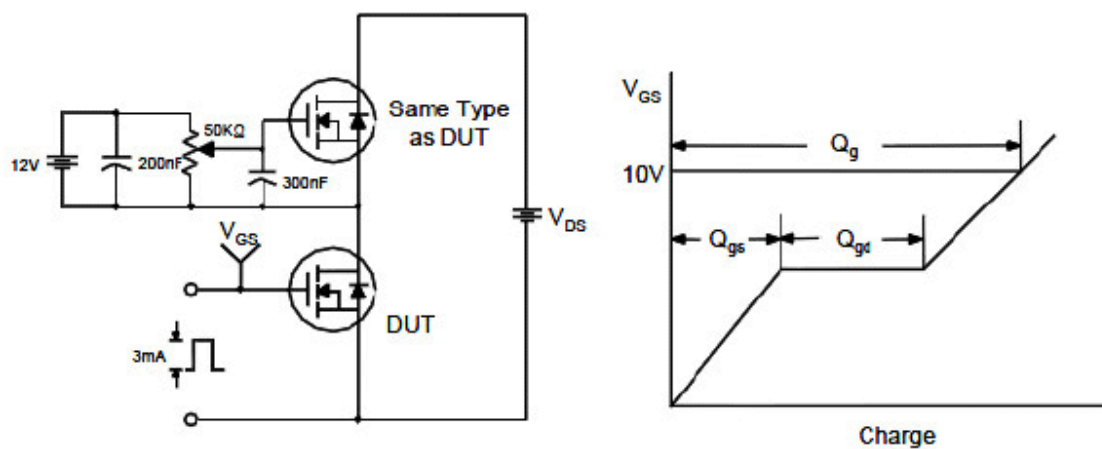


Typical Performance Characteristics (N-Channel)

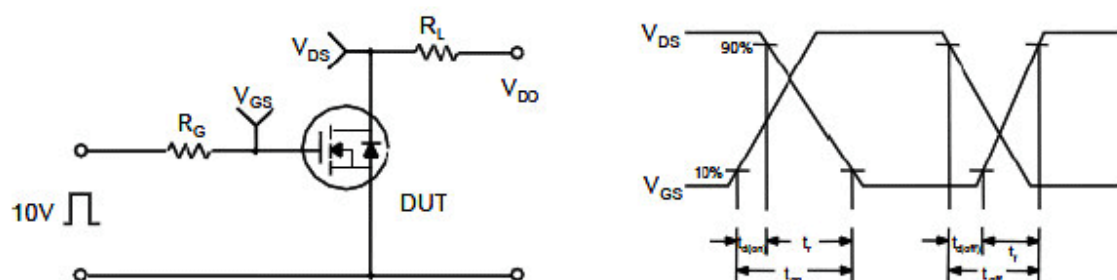


Typical Performance Characteristics (N-Channel)

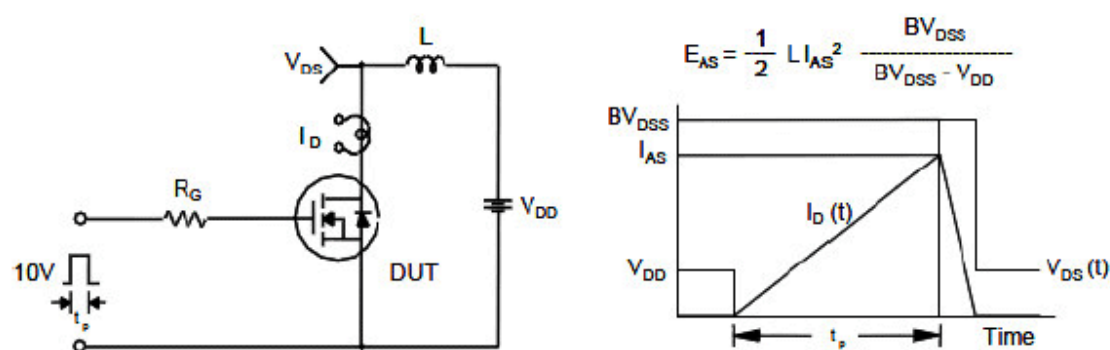
Gate Charge Test Circuit & Waveform



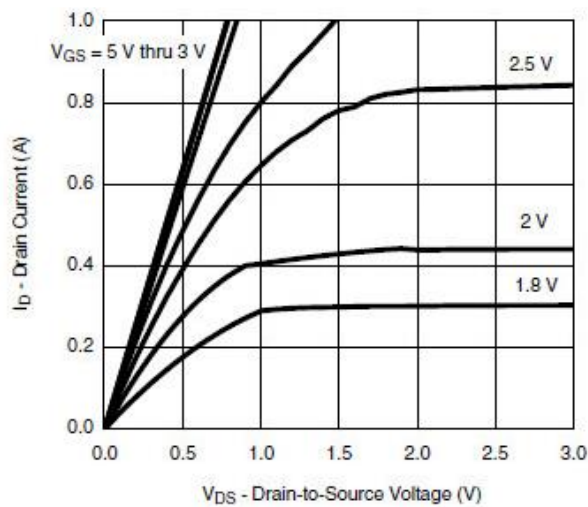
Resistive Switching Test Circuit & Waveforms



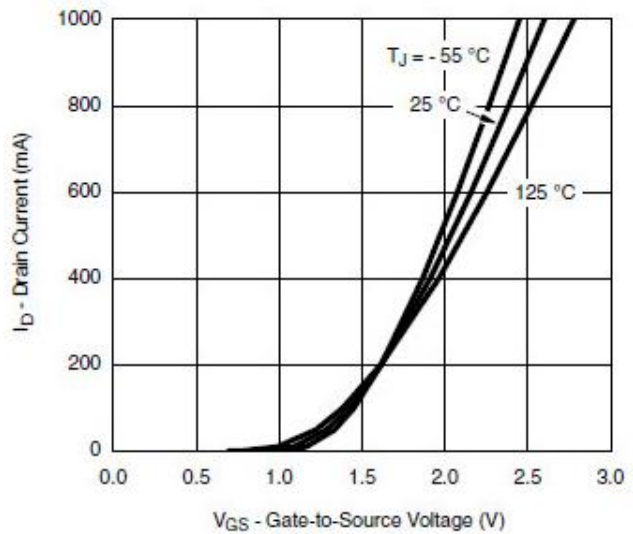
Unclamped Inductive Switching Test Circuit & Waveforms



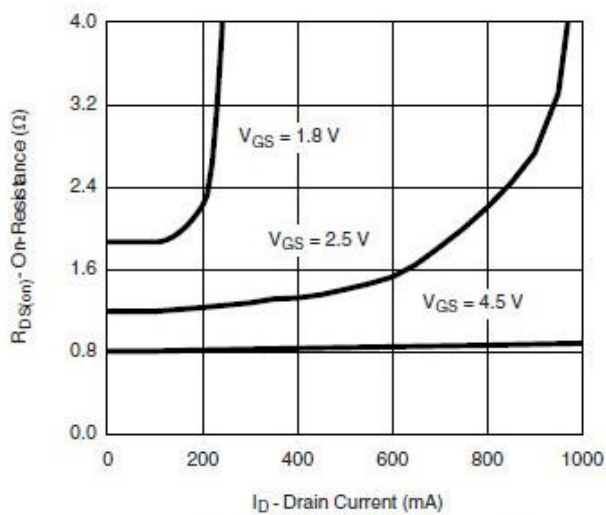
Typical Performance Characteristics (P-Channel)



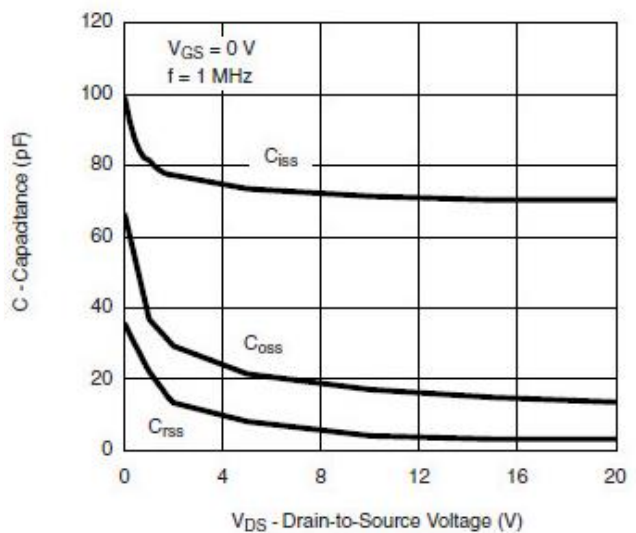
Output Characteristics



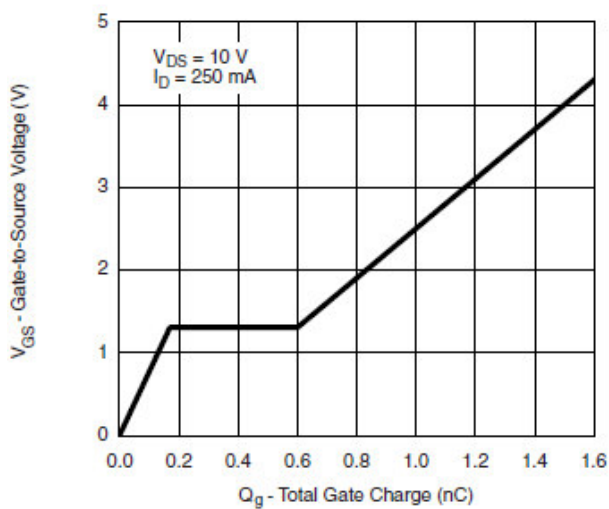
Transfer Characteristics



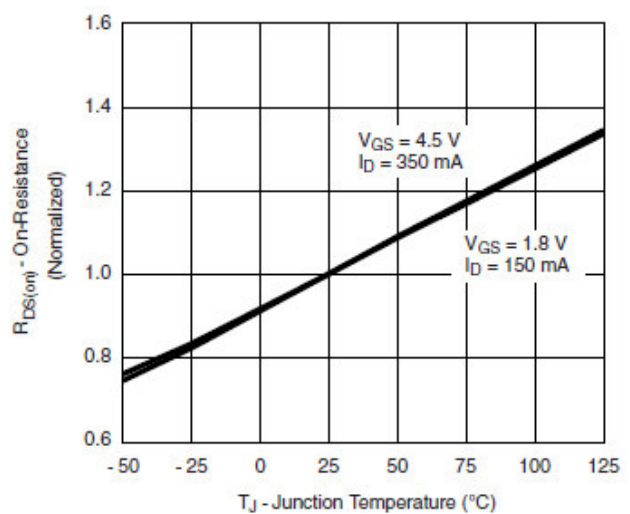
On-Resistance vs. Drain Current



Capacitance

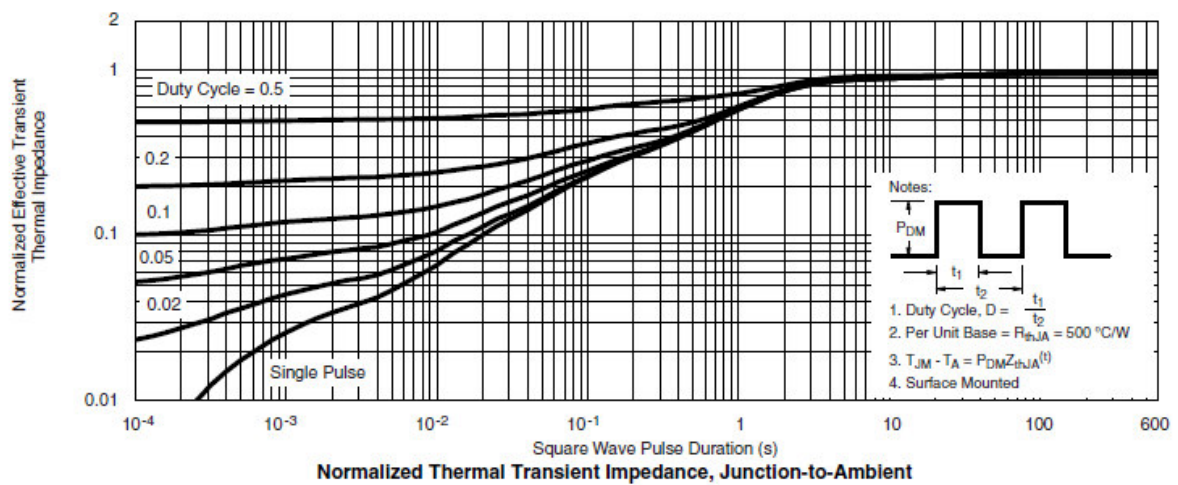
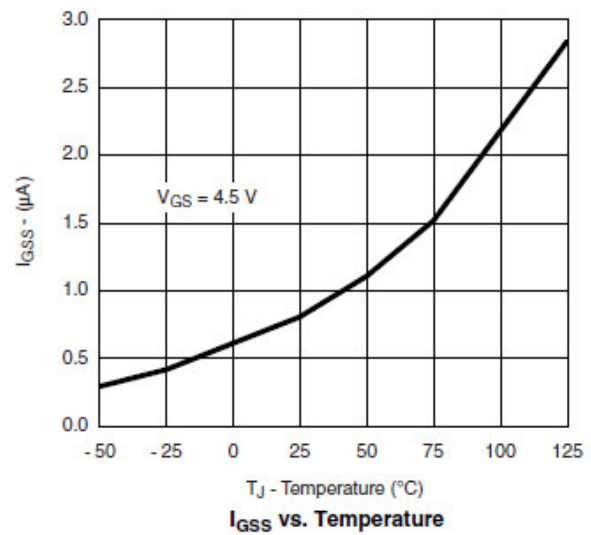
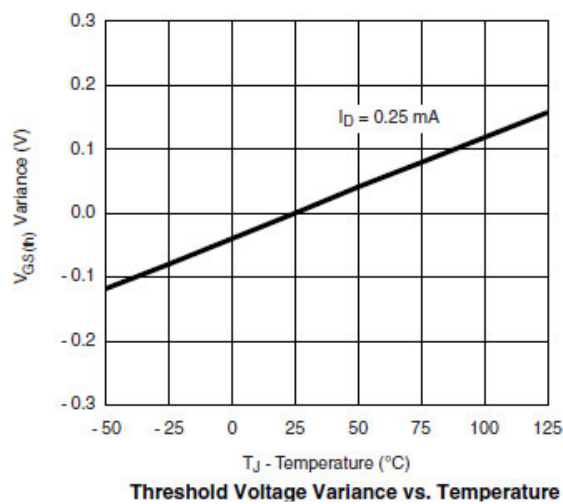
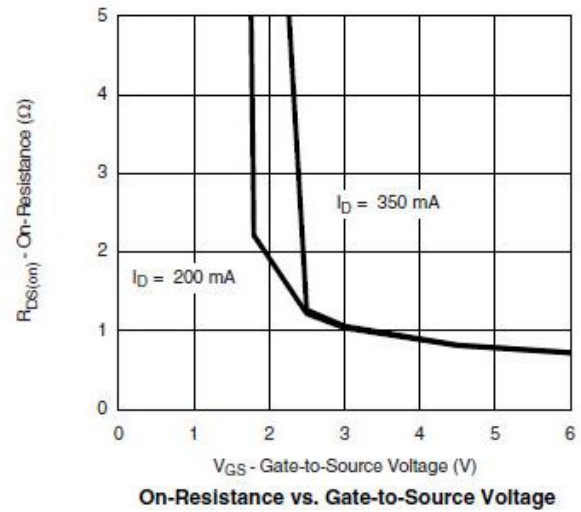
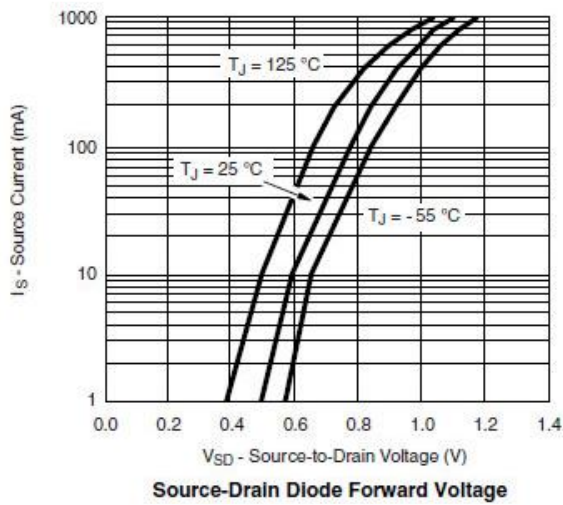


Gate Charge



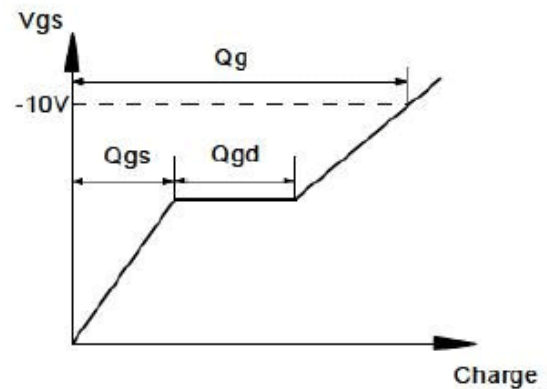
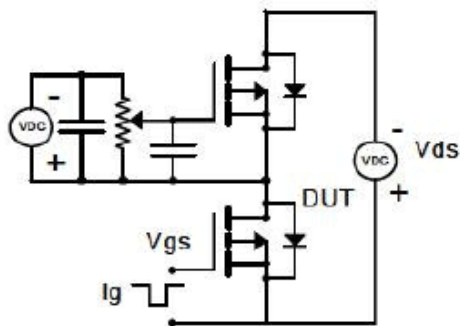
On-Resistance vs. Junction Temperature

Typical Performance Characteristics (P-Channel)

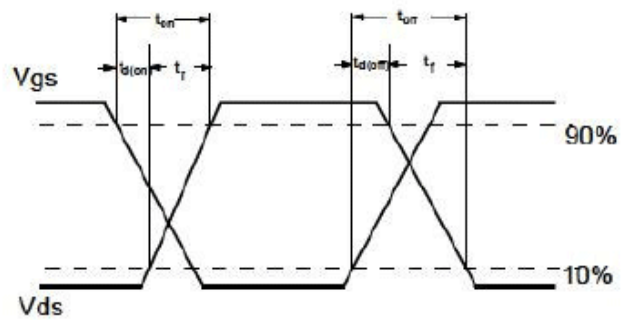
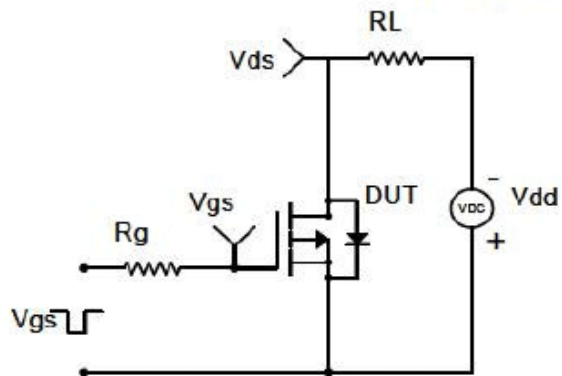


Typical Performance Characteristics (P-Channel)

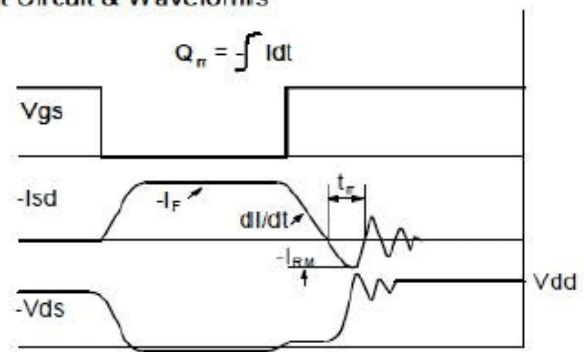
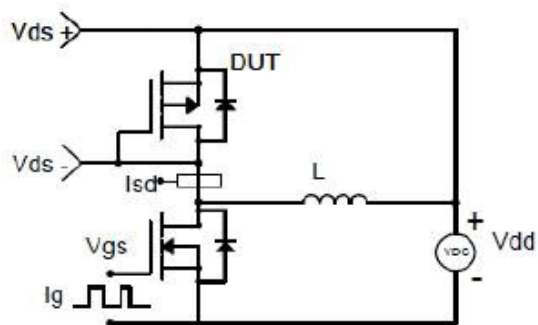
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

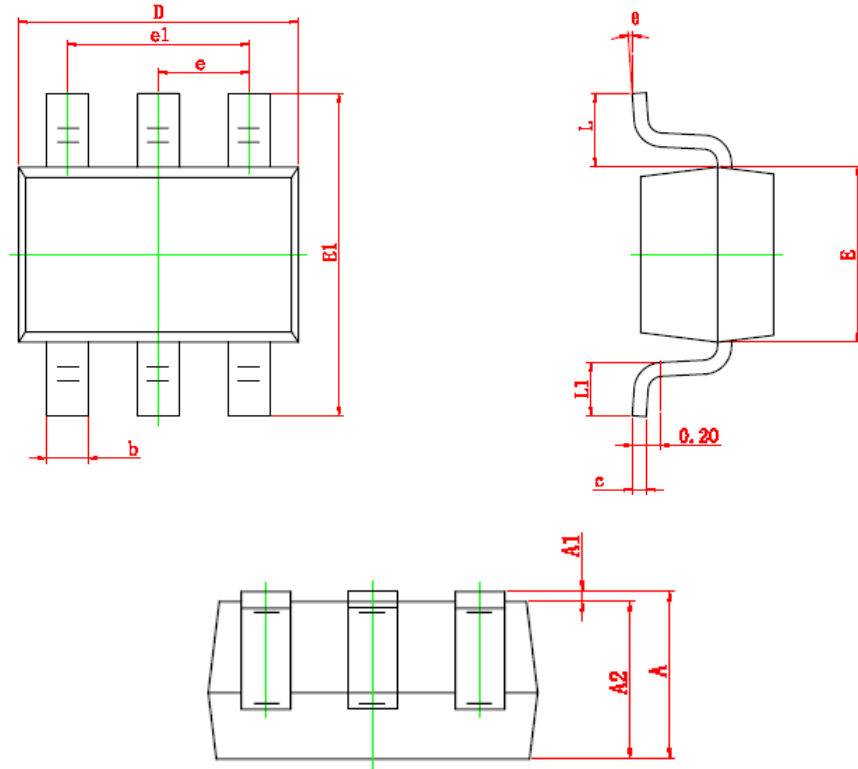


Diode Recovery Test Circuit & Waveforms



Package Dimension

SOT-363



Dimensions

Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 (TYP)		0.026 (TYP)	
e1	1.200	1.400	0.047	0.055
L	0.525 (REF)		0.021 (REF)	
L1	0.260	0.460	0.010	0.018
θ	0°	8 °	0°	8 °

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