

GSM6601

30V N & P Pair Enhancement Mode MOSFET

Product Description

GSM6601, 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.

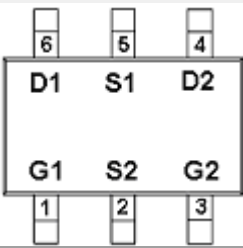
Features

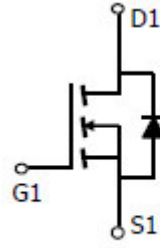
- N-Channel
30V/3.4A, $R_{DS(ON)}=68m\Omega@V_{GS}=10V$
30V/3.0A, $R_{DS(ON)}=74m\Omega@V_{GS}=4.5V$
30V/2.0A, $R_{DS(ON)}=90m\Omega@V_{GS}=2.5V$
- P-Channel
-30V/-2.6A, $R_{DS(ON)}=115m\Omega@V_{GS}=-10V$
-30V/-2.0A, $R_{DS(ON)}=150m\Omega@V_{GS}=-4.5V$
-30V/-1.2A, $R_{DS(ON)}=235m\Omega@V_{GS}=-2.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- TSOP-6 package design

Applications

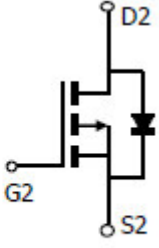
- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

Packages & Pin Assignments

GSM6601TSF (TSOP-6)		
		
Pin	Symbol	Description
1	G1	Gate 1
2	S2	Source 2
3	G2	Gate 2
4	D2	Drain 2
5	S1	Source 1
6	D1	Drain 1

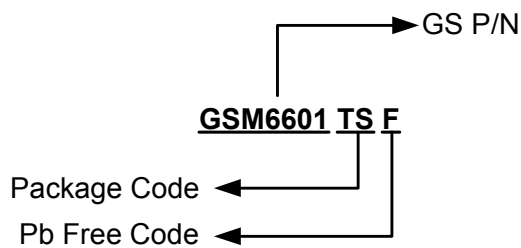


n-channel



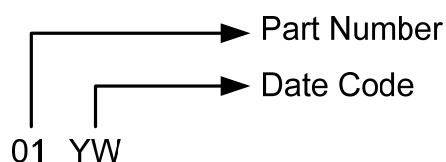
p-channel

Ordering Information



Part Number	Package	Quantity Reel
GSM6601TSF	TSOP-6	3000 PCS

Marking Information



Absolute Maximum Ratings

T_A=25°C Unless otherwise noted

Symbol	Parameter		Typical		Unit
			N-Channel	P-Channel	
V _{DSS}	Drain-Source Voltage		30	-30	V
V _{GSS}	Gate –Source Voltage		±20	±12	V
I _D	Continuous Drain Current(T _J =150℃)	T _A =25℃	3.4	-2.6	A
		T _A =70℃	1.2	-1.2	
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℃	1.25		W
		T _A =70℃	0.75		
T _J	Operating Junction Temperature		150		℃
T _{STG}	Storage Temperature Range		-55/150		℃
R _{θJA}	Thermal Resistance-Junction to Ambient		120		℃/W

Electrical Characteristics (N-Channel)

(T_A=25°C unless otherwise noted)

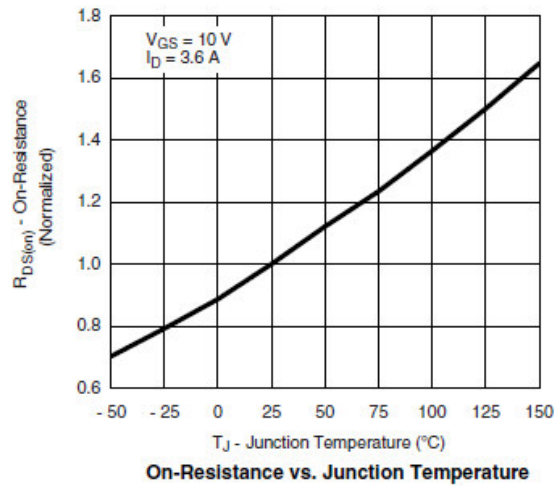
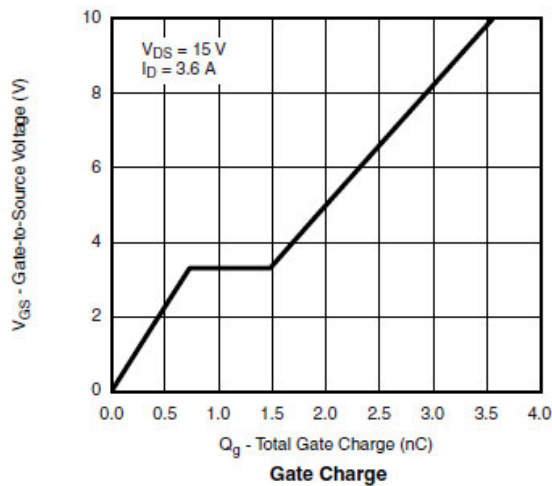
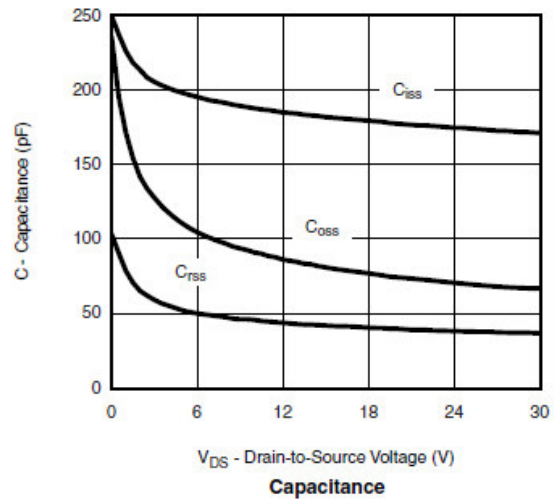
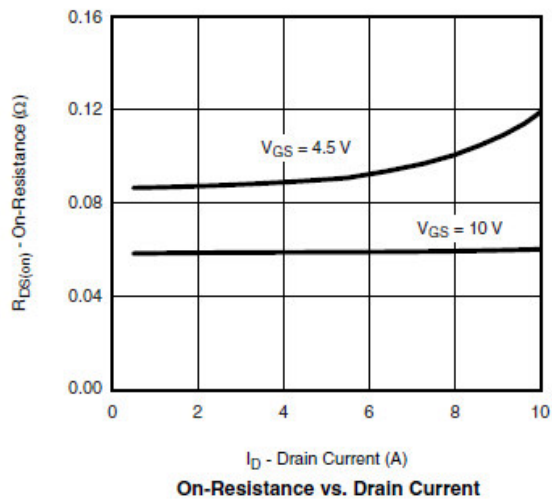
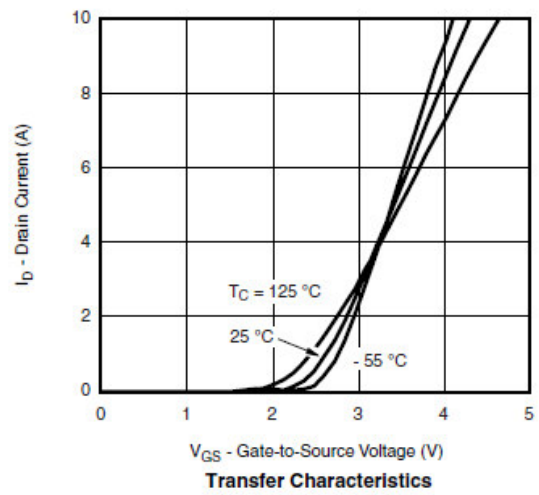
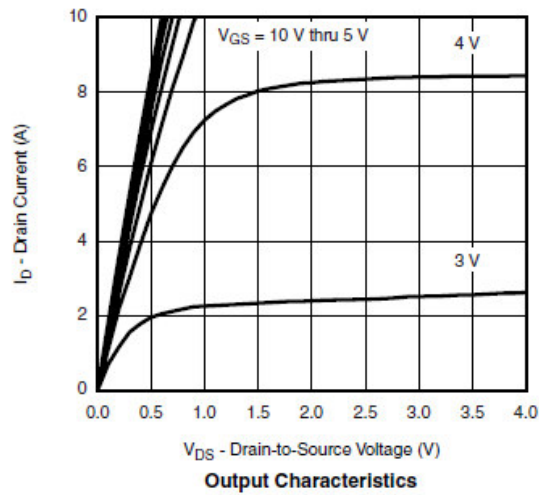
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V,I _D =250uA	30			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} ,I _D =250uA	0.3		1.0	
I _{GSS}	Gate Leakage Current	V _{DS} =0V,V _{GS} =±12V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =24V,V _{GS} =0V			1	uA
		V _{DS} =24V,V _{GS} =0V, T _J =85°C			30	
I _{D(on)}	On-State Drain Current	V _{DS} ≥5V,V _{GS} =4.5V	30			A
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =10V,I _D =3.4A		58	68	mΩ
		V _{GS} =4.5V,I _D =3.0A		62	74	
		V _{GS} =2.5V,I _D =2.0A		76	90	
g _{FS}	Forward Transconductance	V _{DS} =10V,I _D =1.6A		20		S
V _{SD}	Diode Forward Voltage	I _S =1.7A,V _{GS} =0V		0.8	1.2	V
Dynamic						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V,f=1MHz		280		pF
C _{Oss}	Output Capacitance			40		
C _{rss}	Reverse Transfer Capacitance			20		
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =4.5V,I _D =3.6A		2.3	3	nC
Q _{gs}	Gate-Source Charge			1.0		
Q _{gd}	Gate-Drain Charge			0.6		
t _{d(on)}	Turn-On Time	V _{DD} =15V, R _L =15Ω ,I _D =1.0A, V _{GEN} =10V,R _G =6Ω		10	15	ns
T _r				12	20	
t _{d(off)}	Turn-Off Time			15	25	
T _f				10	15	

Electrical Characteristics (P-Channel)

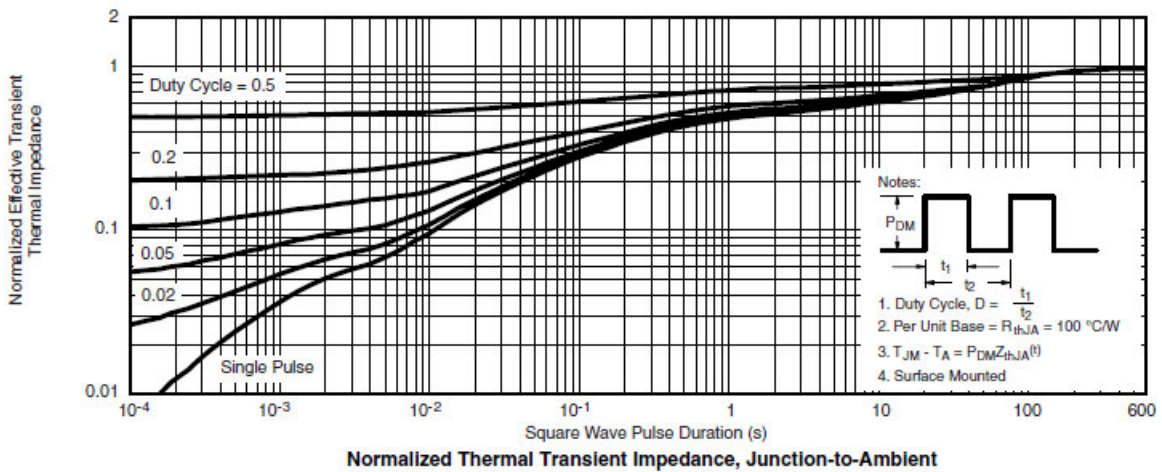
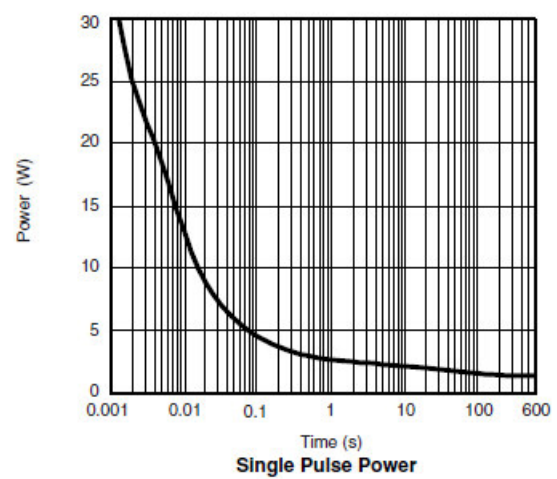
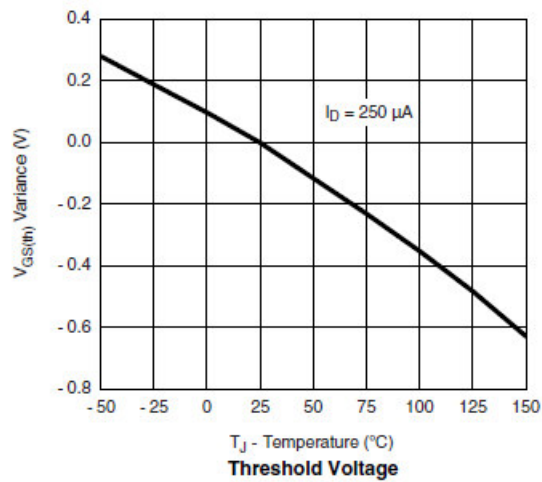
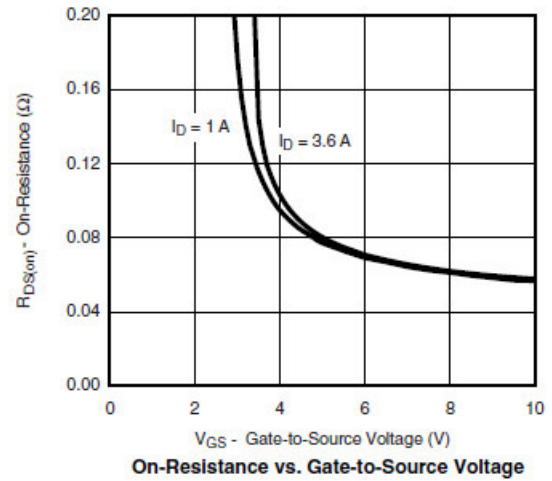
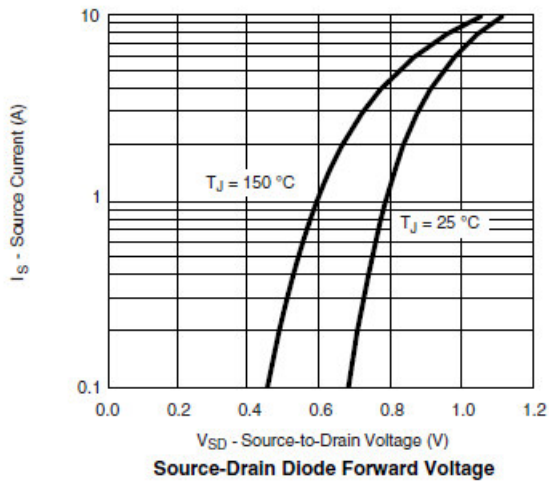
(T_A=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V,I _D =-250uA	-30			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} ,I _D =-250uA	-0.6		-1.4	
I _{GSS}	Gate Leakage Current	V _{DS} =0V,V _{GS} =±12V			±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-24V,V _{GS} =0V			-1	uA
		V _{DS} =-24V,V _{GS} =0V, T _J =85°C			-30	
I _{D(on)}	On-State Drain Current	V _{DS} ≤-5V,V _{GS} =-10V	-10			A
R _{DS(on)}	Drain-Source On-Resistance	V _{GS} =-10.0V,I _D =-2.6A		102	115	mΩ
		V _{GS} =-4.5V,I _D =-2.0A		132	150	
		V _{GS} =-2.5V,I _D =-1.2A		218	235	
g _{FS}	Forward Transconductance	V _{DS} =-5V,I _D =-4.0A		10		S
V _{SD}	Diode Forward Voltage	I _S =-1.7A,V _{GS} =0V		-0.7	-1.3	V
Dynamic						
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V,f=1MHz		230		pF
C _{Oss}	Output Capacitance			40		
C _{rss}	Reverse Transfer Capacitance			25		
Q _g	Total Gate Charge	V _{DS} =-15V, V _{GS} =-4.5V,I _D =-2.0A		4	6	nC
Q _{gs}	Gate-Source Charge			0.6		
Q _{gd}	Gate-Drain Charge			1.5		
t _{d(on)}	Turn-On Time	V _{DD} =-15V, R _L =15Ω ,I _D =-1.0A, V _{GEN} =-10V,R _G =6Ω		5	10	ns
T _r				8	15	
t _{d(off)}	Turn-Off Time			15	30	
T _f				15	30	

Typical Performance Characteristics (N-Channel)



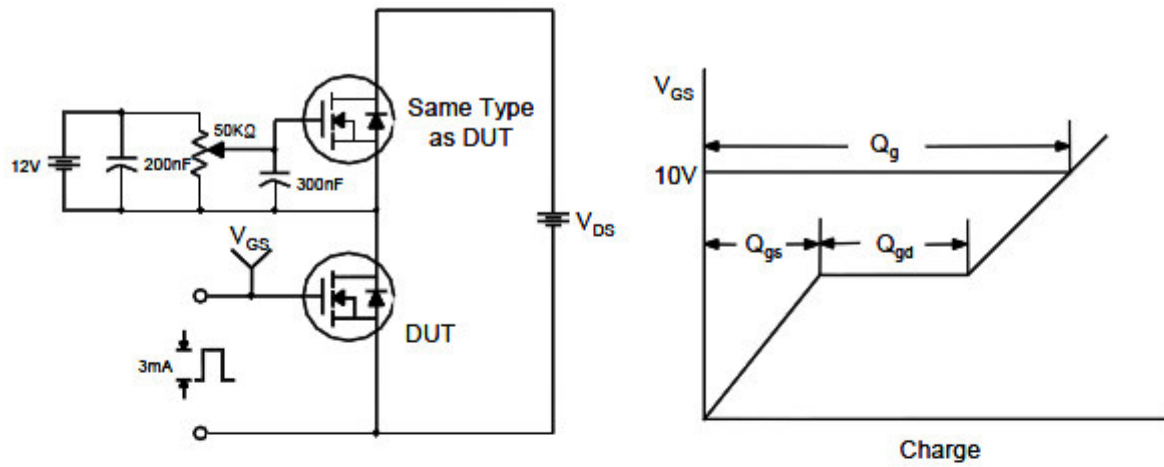
Typical Performance Characteristics (N-Channel Continue)



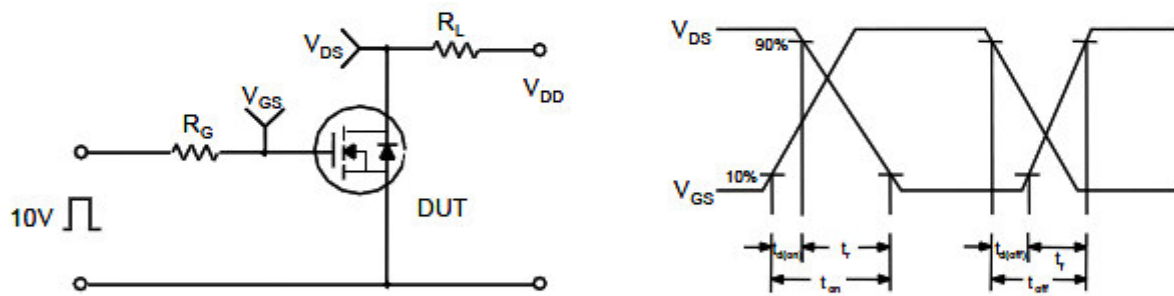
Normalized Thermal Transient Impedance, Junction-to-Ambient

Typical Performance Characteristics (N-Channel Continue)

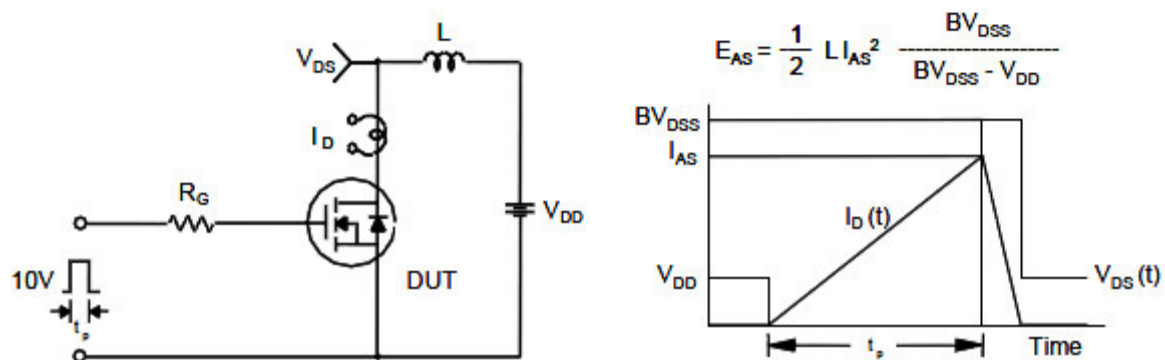
Gate Charge Test Circuit & Waveform



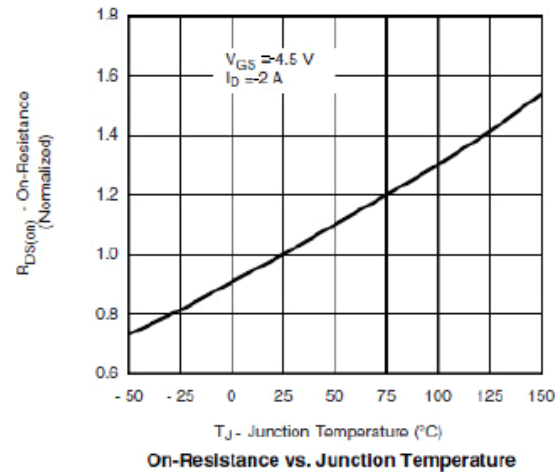
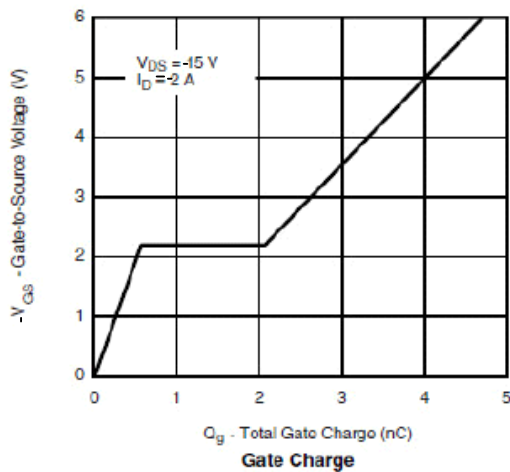
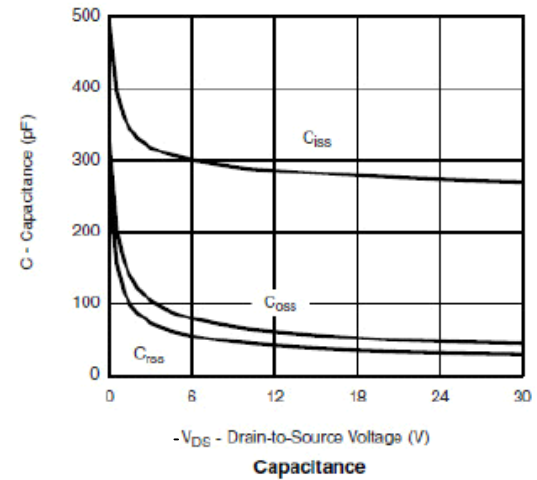
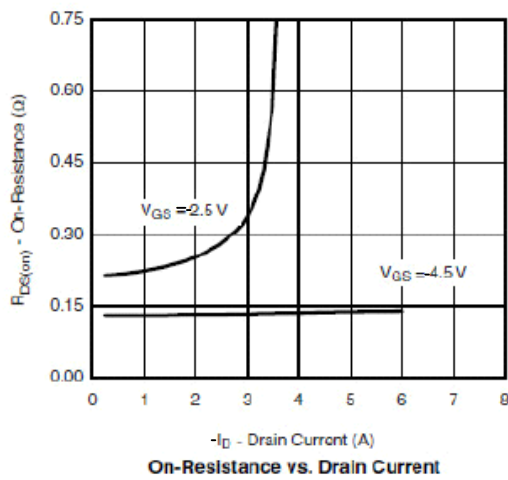
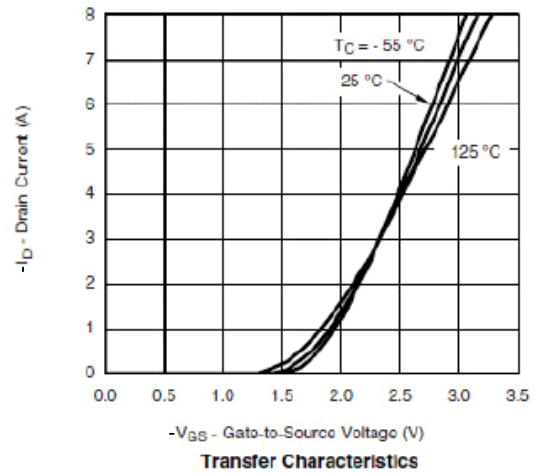
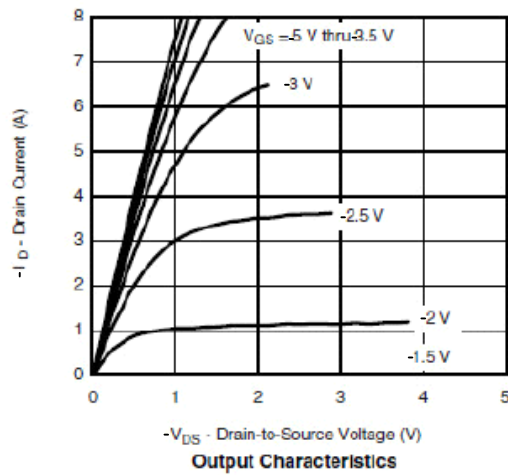
Resistive Switching Test Circuit & Waveforms



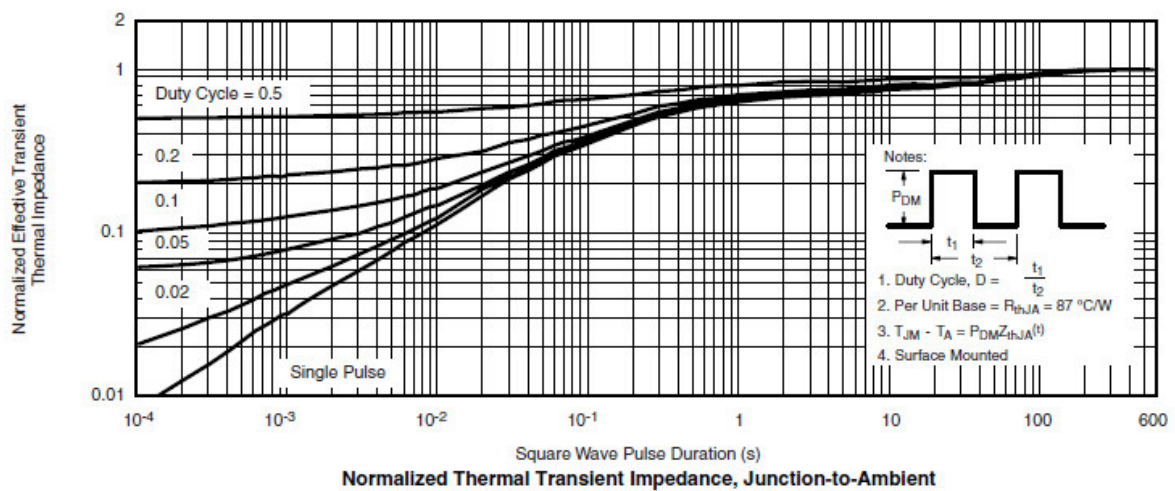
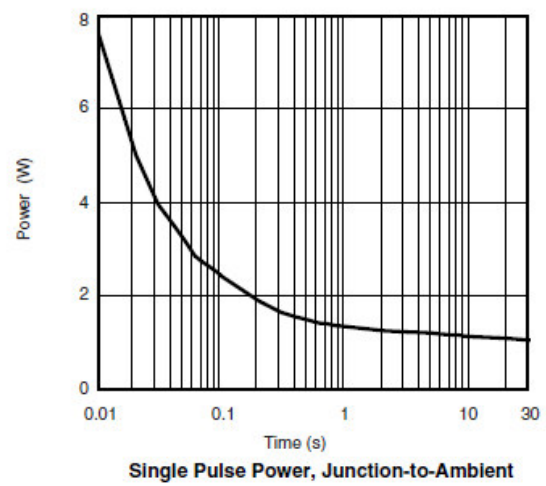
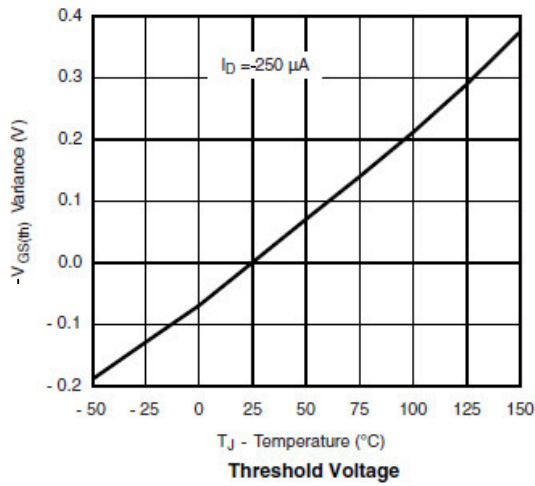
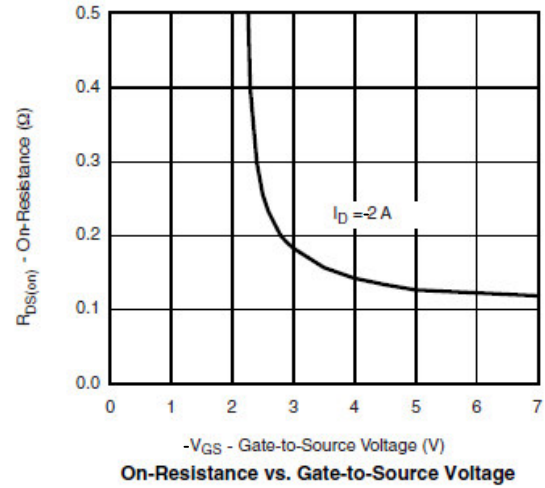
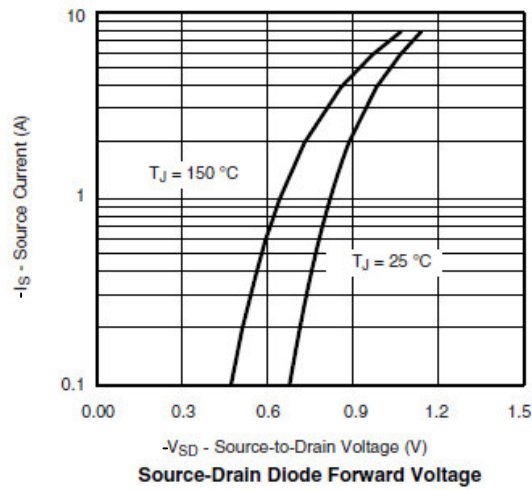
Unclamped Inductive Switching Test Circuit & Waveforms



Typical Performance Characteristics (P-Channel)

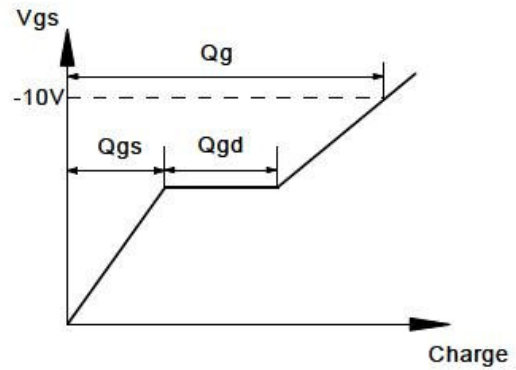
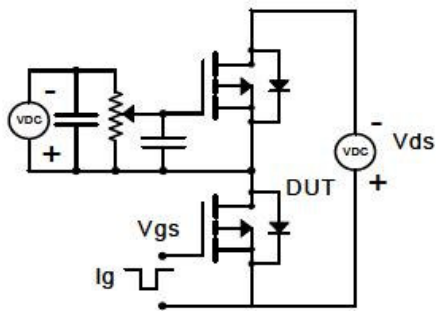


Typical Performance Characteristics (P-Channel Continue)

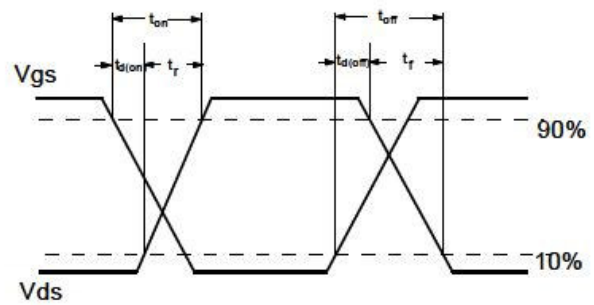
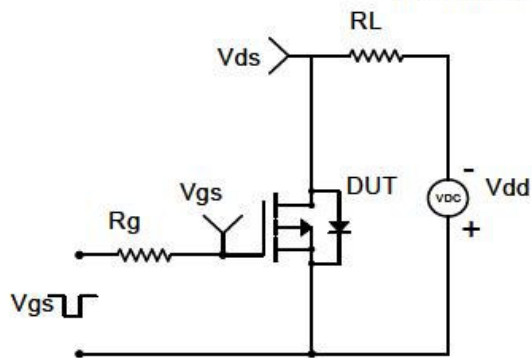


Typical Performance Characteristics (P-Channel Continue)

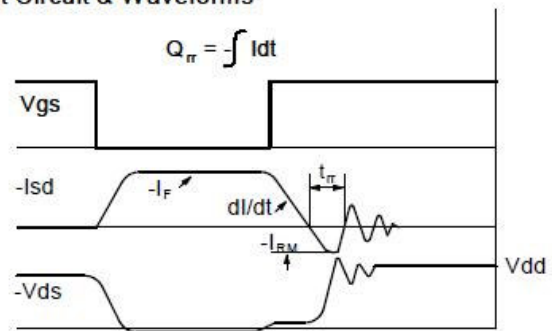
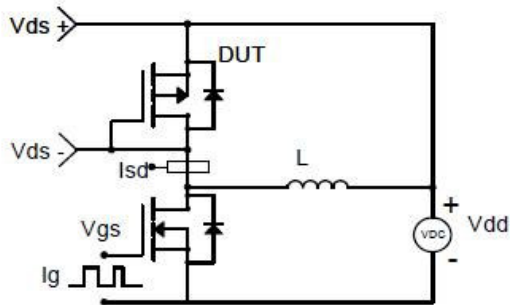
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

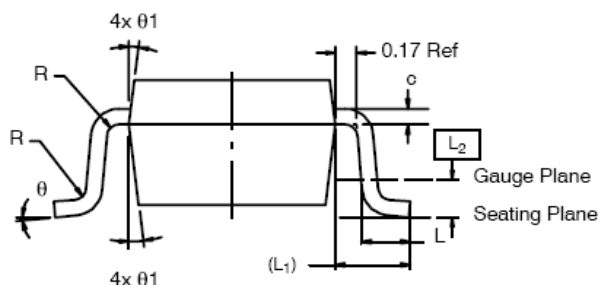
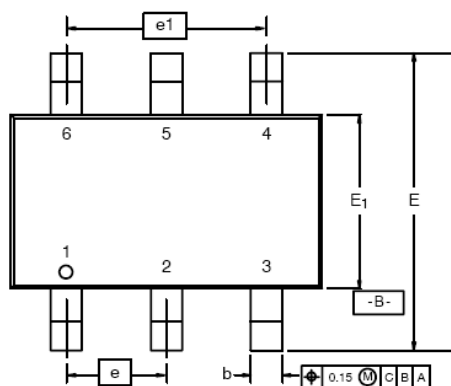


Diode Recovery Test Circuit & Waveforms



Package Dimension

TSOP-6 PLASTIC PACKAGE



Dimensions

SYMBOL	Millimeters			Inches		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.91	-	1.10	0.036	-	0.043
A ₁	0.01	-	0.10	0.0004	-	0.004
A ₂	0.90	-	1.00	0.035	0.038	0.039
b	0.30	0.32	0.45	0.012	0.013	0.018
c	0.10	0.15	0.20	0.004	0.006	0.008
D	2.95	3.05	3.10	0.116	0.120	0.122
E	2.70	2.85	2.98	0.106	0.112	0.117
E1	1.55	1.65	1.70	0.061	0.065	0.067
e	1.00 BSC			0.0394 BSC		
e ₁	1.90	2.00	2.10	0.075	0.080	0.085
L	0.35	-	0.50	0.014	-	0.020
L ₁	0.60 Ref			0.024 Ref		
L ₂	0.25 BSC			0.010 BSC		
R	0.10	-	-	0.004	-	-
θ	0°	4°	8°	0°	4°	8°
θ ₁	7° Nom			7° Nom		

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