GSM4510S

100V N & P Pair Enhancement Mode MOSFET

Product Description

GSM4510S, 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

- 100V/6.8A,$R_{DS(ON)}$=150mΩ@V_{GS}=10V
- 100V/5.6A,$R_{DS(ON)}$=165mΩ@V_{GS}=4.5V

P-Channel

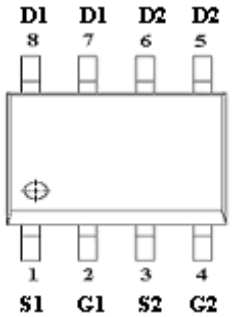
- -100V/-6.2A,$R_{DS(ON)}$=198mΩ@V_{GS}=-10V
- -100V/-5.2A,$R_{DS(ON)}$=215mΩ@V_{GS}=-4.5V

Applications

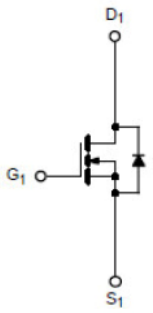
- Low Current DC/DC Conversion
- Load Switch
- CCFL Inverter
- Power Management in Notebook Computer

Packages & Pin Assignments

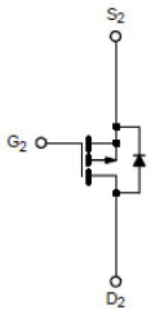
GSM4510SSF(SOP-8P)



Pin	Description	Pin	Description
1	N-Source1	5	P-Drain2
2	N-Gate1	6	P-Drain2
3	P-Source2	7	N-Drain1
4	P-Gate2	8	N-Drain1

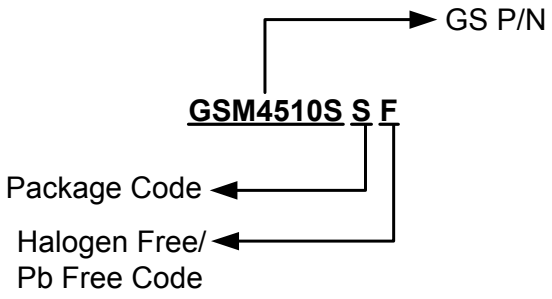


N-Channel MOSFET



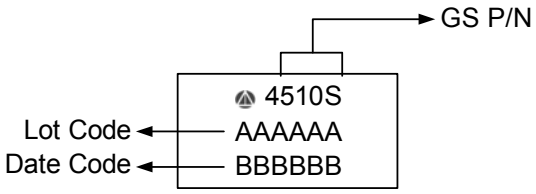
P-Channel MOSFET

Ordering Information



Part Number	Package	Quantity Reel
GSM4510SSF	SOP-8P	3000 PCS

Marking Information



Absolute Maximum Ratings (N-Channel)

(T_A=25ºC unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		100	V
V_{GSS}	Gate –Source Voltage		±20	V
I_D	Continuous Drain Current(T_J=150ºC)	T_A=25ºC	6.8	A
		T_A=70ºC	5.6	
I_{DM}	Pulsed Drain Current		20	A
I_S	Continuous Source Current(Diode Conduction)		1.5	A
P_D	Power Dissipation	T_A=25ºC	2.8	W
		T_A=70ºC	1.8	
T_J	Operating Junction Temperature		150	ºC
T_{STG}	Storage Temperature Range		-55/150	ºC
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		62.5	ºC/ W

Electrical Characteristics (N-Channel)

(T_A=25ºC unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250uA	100			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	1.0		2.5	
I_{GSS}	Gate Leakage Current	V_{DS}=0V,V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=80V,V_{GS}=0V			1	uA
		V_{DS}=80V,V_{GS}=0V, T_J=85ºC			5	
$I_{D(on)}$	On-State Drain Current	V_{DS}≧5V,V_{GS}=4.5V	8			A
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=10V,I_D=6.8A		135	150	mΩ
		V_{GS}=4.5V,I_D=5.6A		140	165	
g_{FS}	Forward Transconductance	V_{DS}=15V,I_D=3.0A		85		S
V_{SD}	Diode Forward Voltage	I_S=2.0A,V_{GS}=0V		0.8	1.3	V
Dynamic						
C_{iss}	Input Capacitance	V_{DS}=25V, V_{GS}=0V,f=1MHz		250		pF
C_{oss}	Output Capacitance			45		
C_{rss}	Reverse Transfer Capacitance			20		
Q_g	Total Gate Charge	V_{DS}=50V, V_{GS}=5V,I_D=6.5A		2.8	5	nC
Q_{gs}	Gate-Source Charge			0.6		
Q_{gd}	Gate-Drain Charge			0.7		
$t_{d(on)}$	Turn-On Time	V_{DD}=50V, R_L=7.5Ω ,I_D=6.5A, V_{GEN}=10V,R_G=2.5Ω		8	15	ns
T_r				10	20	
$t_{d(off)}$	Turn-Off Time			10	20	
T_f				12	25	

Absolute Maximum Ratings (P-Channel)

(T_A=25ºC unless otherwise noted)

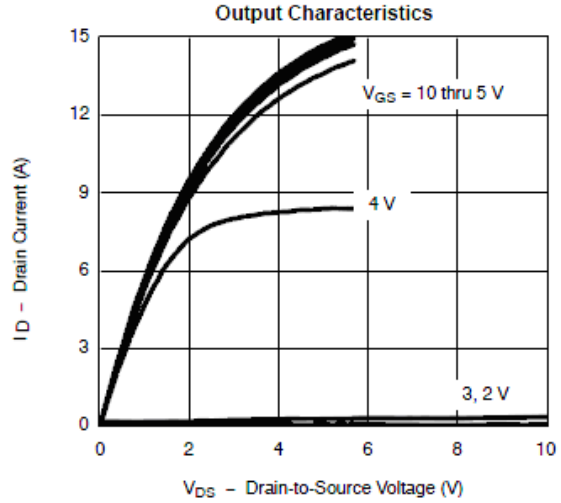
Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		-100	V
V_{GSS}	Gate –Source Voltage		±20	V
I_D	Continuous Drain Current(T_J=150ºC)	T_A=25ºC	-6.2	A
		T_A=70ºC	-5.2	
I_{DM}	Pulsed Drain Current		-20	A
I_S	Continuous Source Current(Diode Conduction)		-1.7	A
P_D	Power Dissipation	T_A=25ºC	2.8	W
		T_A=70ºC	1.8	
T_J	Operating Junction Temperature		150	ºC
T_{STG}	Storage Temperature Range		-55/150	ºC
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		62.5	ºC/ W

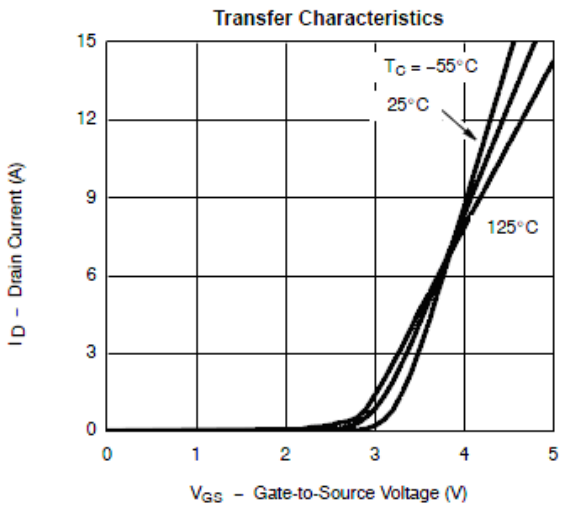
Electrical Characteristics (P-Channel)

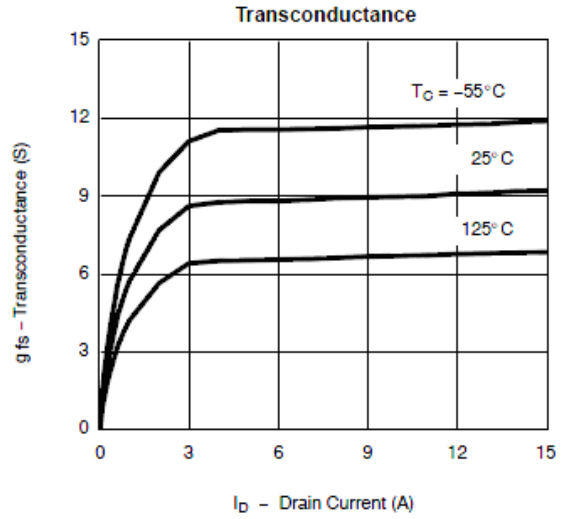
(T_A=25°C unless otherwise noted)

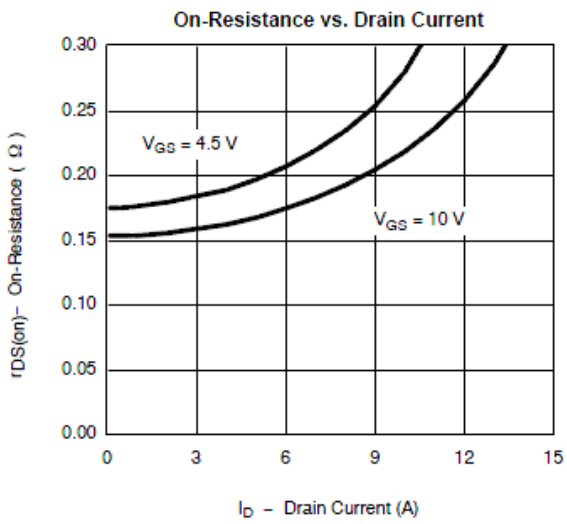
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=-250uA	-100			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=-250uA	-1.0		-2.5	
I_{GSS}	Gate Leakage Current	V_{DS}=0V,V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-80V,V_{GS}=0V			-1	uA
		V_{DS}=-80V,V_{GS}=0V, T_J=85°C			-20	
$I_{D(on)}$	On-State Drain Current	V_{DS}≦-5V,V_{GS}=-10V	-8			A
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=-10V,I_D=-6.2A		185	198	mΩ
		V_{GS}=-4.5V,I_D=-5.2A		200	215	
g_{FS}	Forward Transconductance	V_{DS}=-15V,I_D=-3.6A		12		S
V_{SD}	Diode Forward Voltage	I_S=-2.9A,V_{GS}=0V		-0.8	-1.5	V
Dynamic						
C_{iss}	Input Capacitance	V_{DS}=-50V, V_{GS}=0V,f=1MHz		980		pF
C_{oss}	Output Capacitance			100		
C_{rss}	Reverse Transfer Capacitance			80		
Q_g	Total Gate Charge	V_{DS}=-50V, V_{GS}=-4.5V,I_D=-3.6A		12	20	nC
Q_{gs}	Gate-Source Charge			4		
Q_{gd}	Gate-Drain Charge			6		
$t_{d(on)}$	Turn-On Time	V_{DD}=-50V, R_L=17.2Ω ,I_D=-2.9A, V_{GEN}=-10V,R_G=1Ω		8	15	ns
T_r				15	20	
$t_{d(off)}$	Turn-Off Time			35	50	
T_f				10	20	

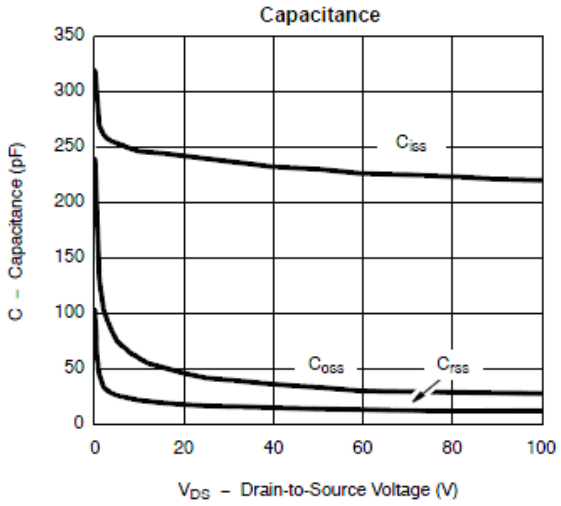
Typical Performance Characteristics (N-Channel)

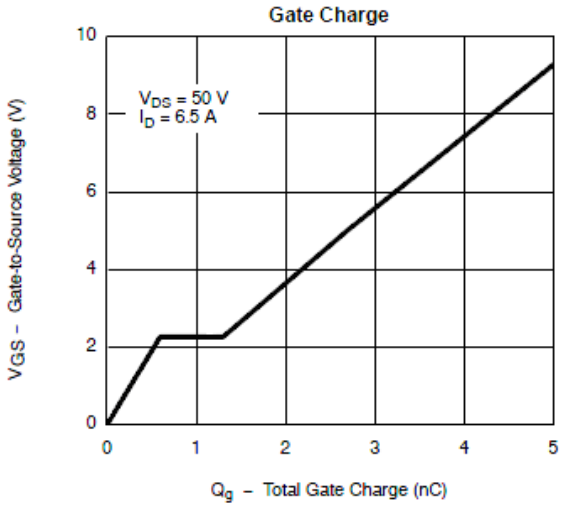




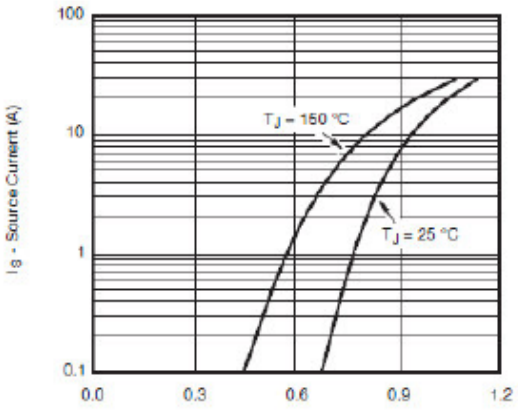




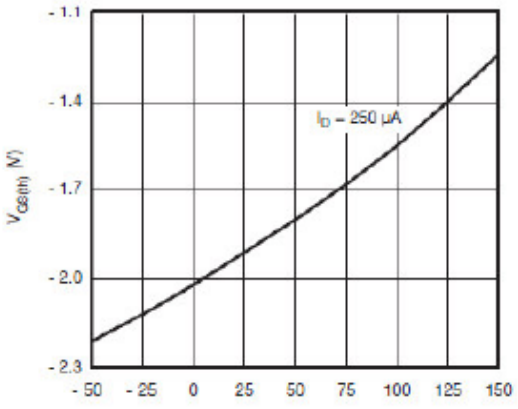




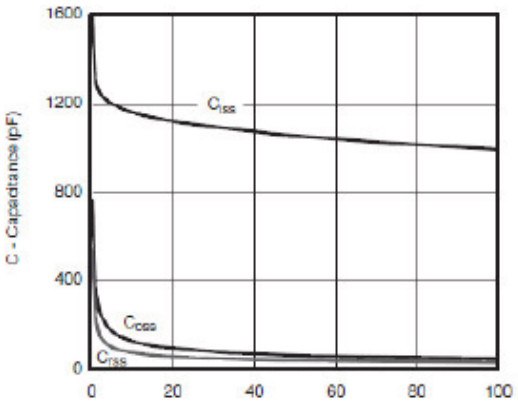
Typical Performance Characteristics (N-Channel)



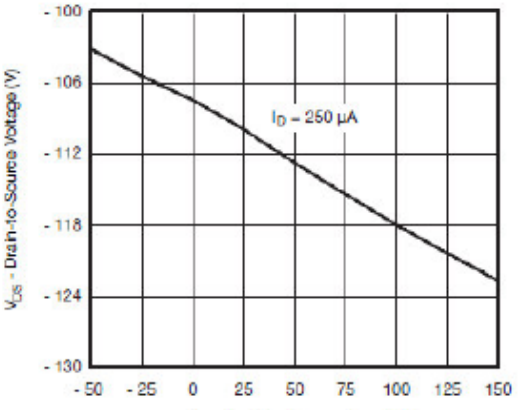
Source-Drain Diode Forward Voltage



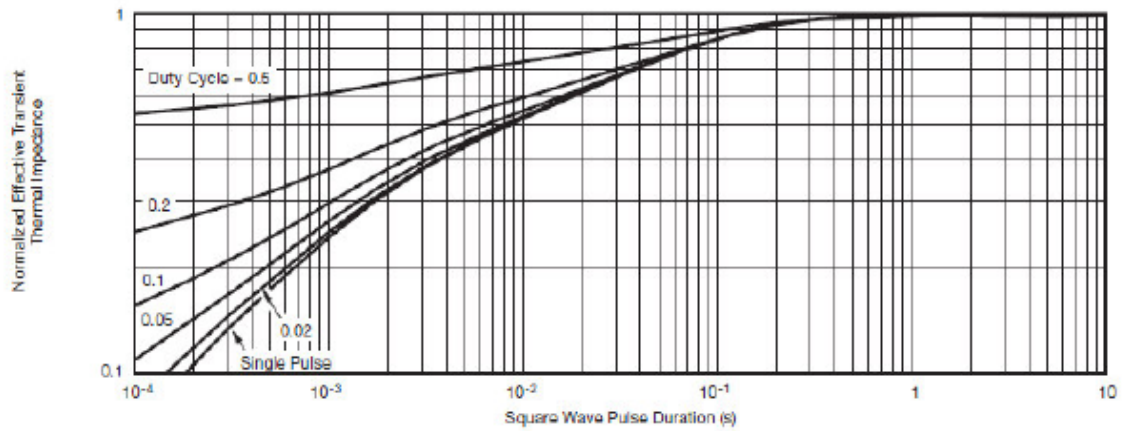
Threshold Voltage



Capacitance

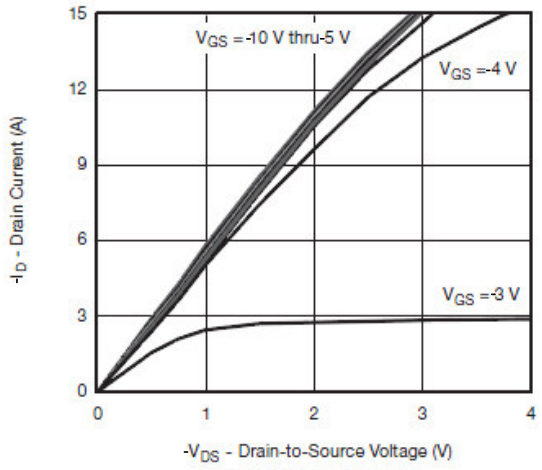


Drain Source Breakdown vs. Junction Temperature

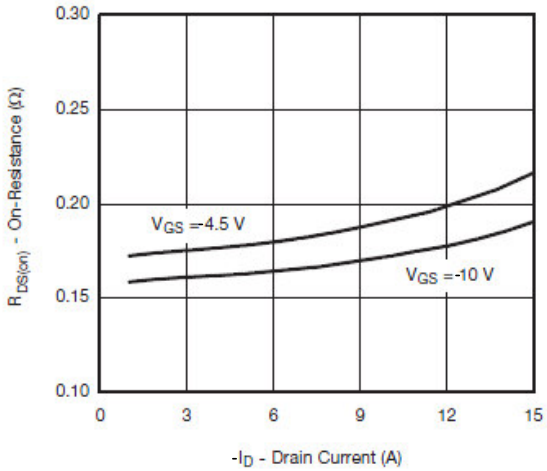


Normalized Thermal Transient Impedance, Junction-to-Case

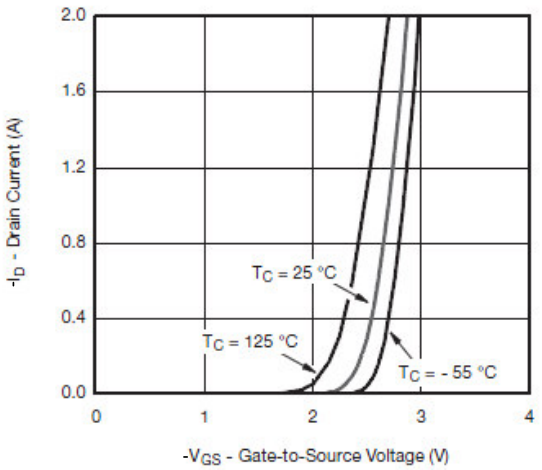
Typical Performance Characteristics (P-Channel)



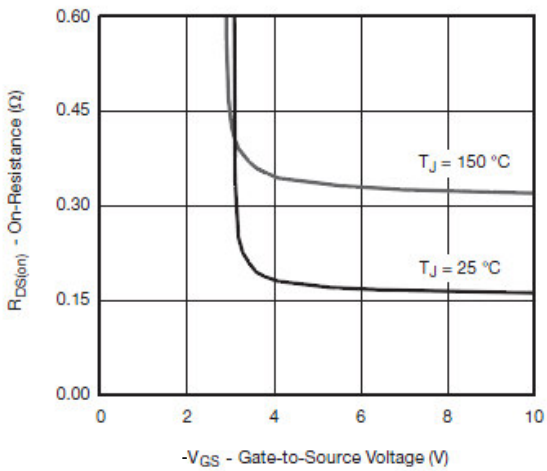
Output Characteristics



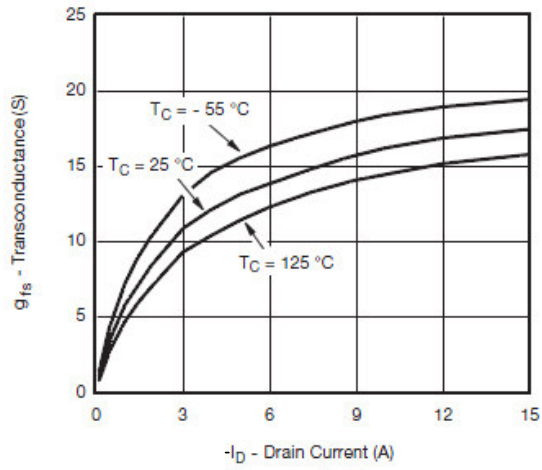
On-Resistance vs. Drain Current



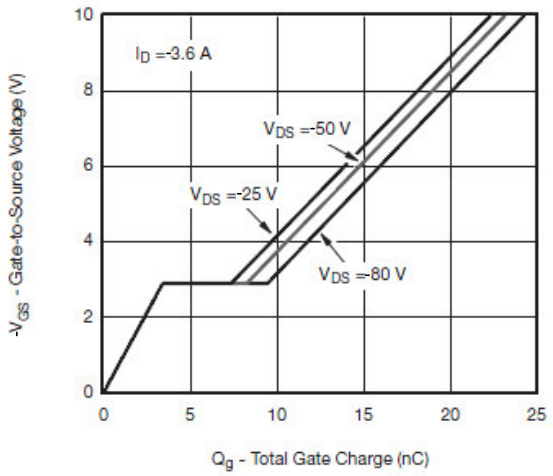
Transfer Characteristics



On-Resistance vs. Gate-to-Source Voltage

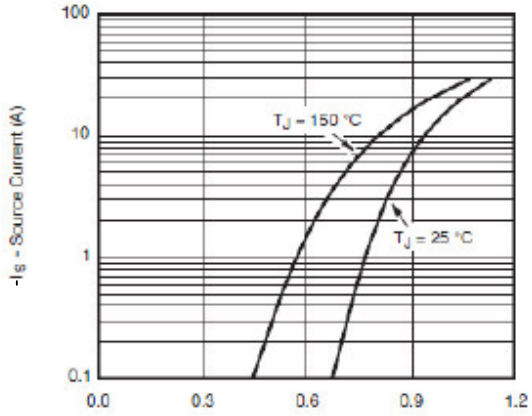


Transconductance

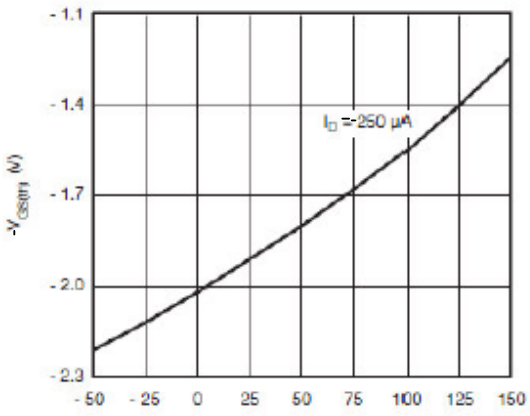


Gate Charge

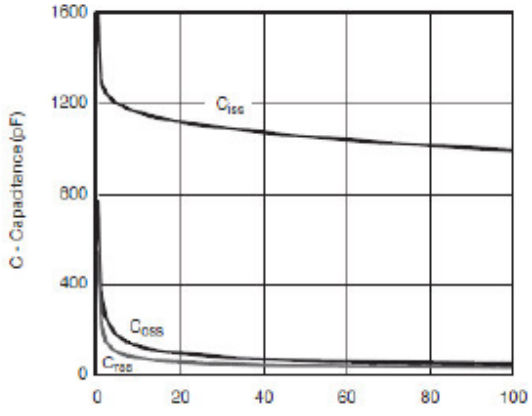
Typical Performance Characteristics (P-Channel)



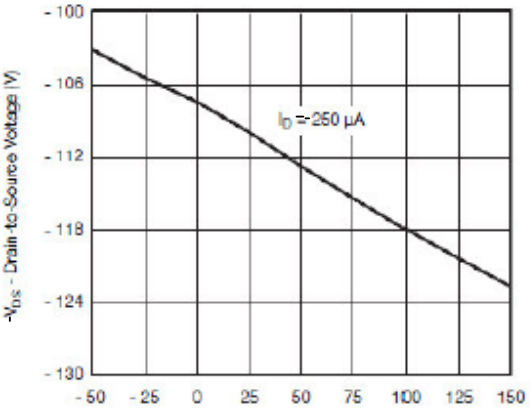
Source-Drain Diode Forward Voltage



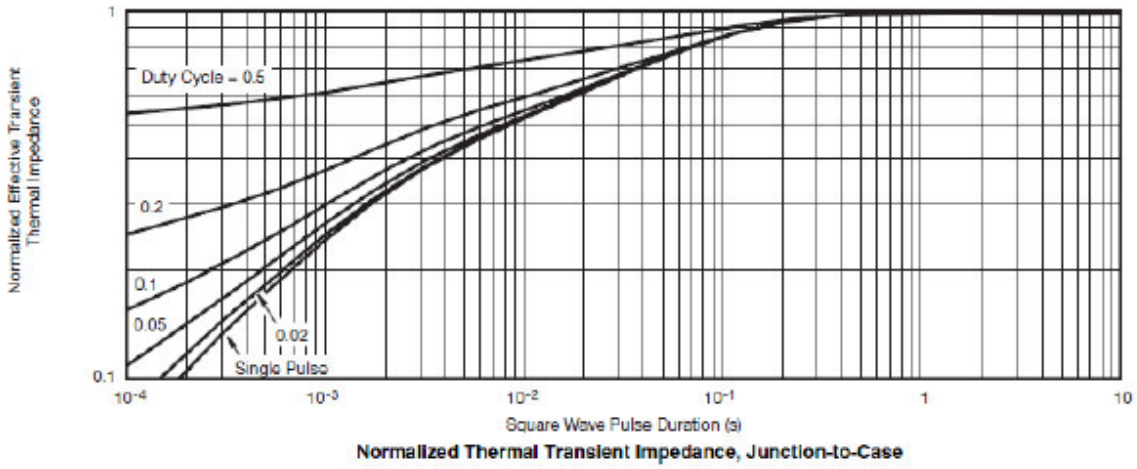
Threshold Voltage



Capacitance



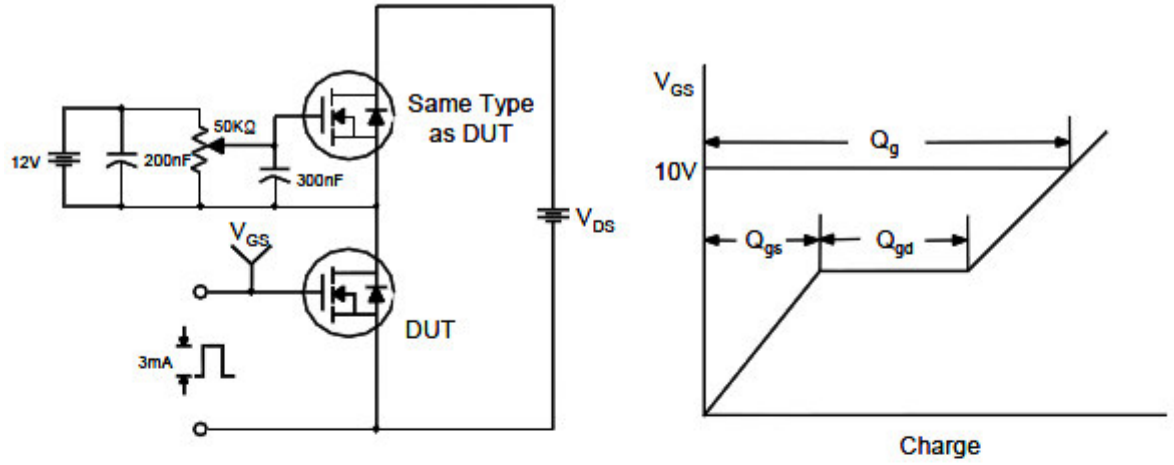
Drain Source Breakdown vs. Junction Temperature



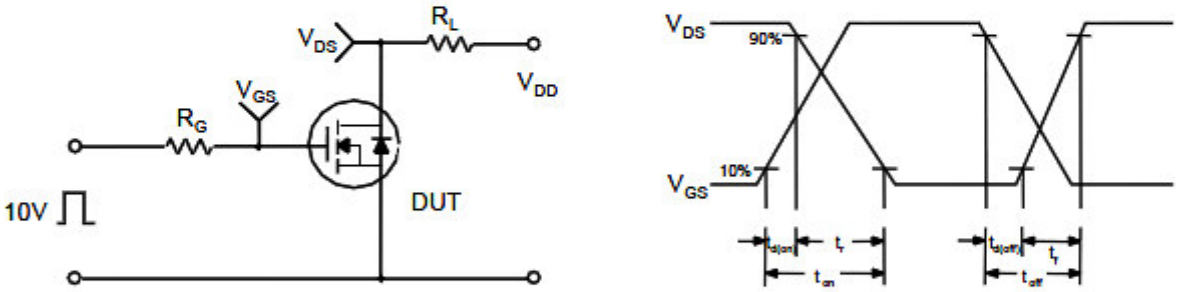
Normalized Thermal Transient Impedance, Junction-to-Case

Typical Performance Characteristics

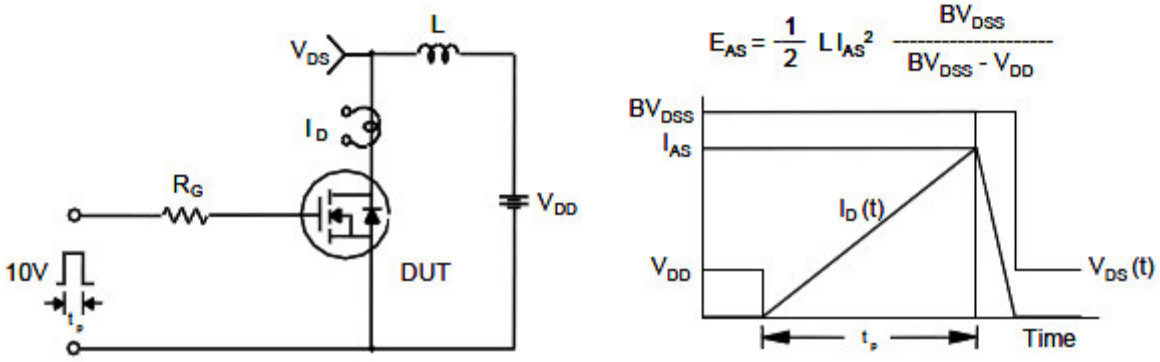
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

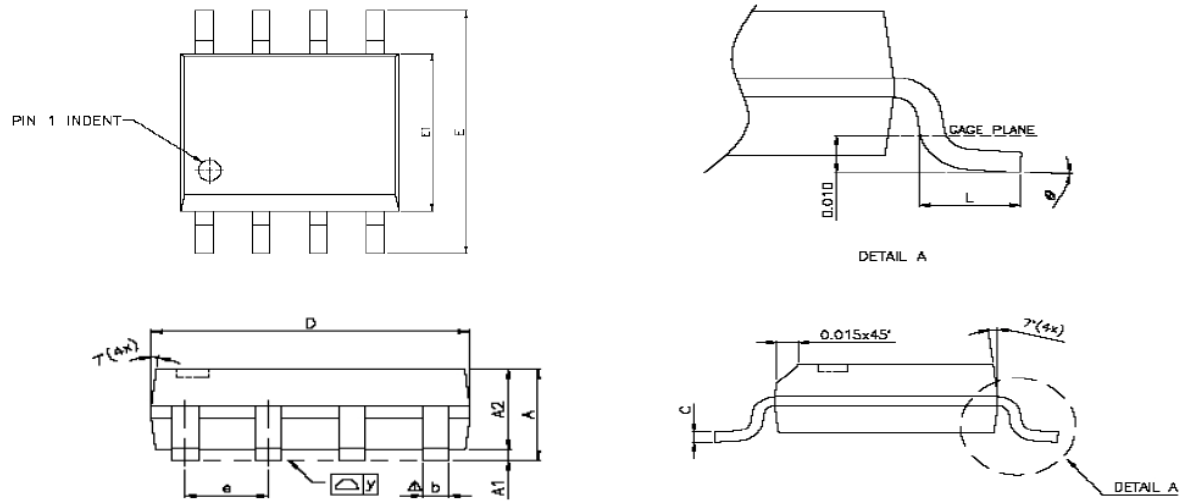


Unclamped Inductive Switching Test Circuit & Waveforms



Package Dimension

SOP-8P PLASTIC PACKAGE



Dimensions						
SYMBOL	Millimeters			Inches		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.47	1.60	1.73	0.058	0.063	0.068
A1	0.10	-	0.25	0.004	-	0.010
A2	-	1.45	-	-	0.057	-
b	0.33	0.41	0.51	0.013	0.016	0.020
C	0.19	0.20	0.25	0.0075	0.008	0.0098
D	4.80	4.85	4.95	0.189	0.191	0.195
E	5.80	6.00	6.20	0.228	0.236	0.244
E1	3.80	3.90	4.00	0.150	0.154	0.157
e	-	1.27	-	-	0.050	-
L	0.38	0.71	1.27	0.015	0.028	0.050
⚠2 y	-	-	0.076	-	-	0.003
θ	0°	-	8°	0°	-	8°

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