GSM6602

30V N & P Pair Enhancement Mode MOSFET

Product Description

GSM6602, 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

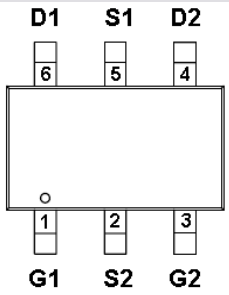
- N-Channel
  30V/3.5A,$R_{DS(ON)}$=75mΩ@V_{GS}=10V
  30V/2.6A,$R_{DS(ON)}$=100mΩ@V_{GS}=4.5V
- P-Channel
  -30V/-2.7A,$R_{DS(ON)}$=130mΩ@V_{GS}=-10V
  -30V/-2.1A,$R_{DS(ON)}$=165mΩ@V_{GS}=-4.5V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- TSOP– 6P package design

Applications

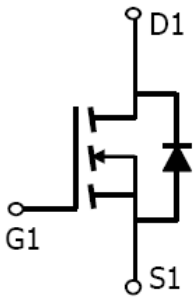
- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

Packages & Pin Assignments

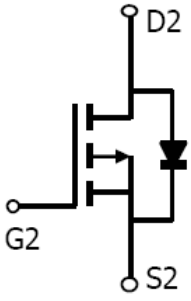
GSM6602TSF (TSOP– 6P)



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	Drain1

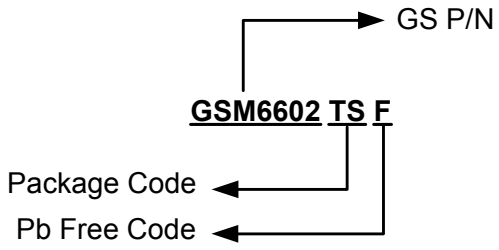


n-channel

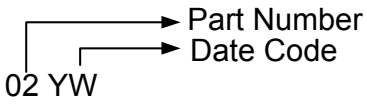


p-channel

Ordering Information



Marking Information



Part Number	Package	Quantity Reel
GSM6602TSF	TSOP- 6P	3000 PCS

Absolute Maximum Ratings

T_A=25ºC 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	±20	V
I_D	Continuous Drain Current(T_J=150℃)	T_A=25℃	3.5	-2.7	A
		T_A=70℃	2.6	-2.1	
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℃	2.0		W
		T_A=70℃	1.3		
T_J	Operating Junction Temperature		150		℃
T_{STG}	Storage Temperature Range		-55/150		℃
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		120		℃/W

Electrical Characteristics (N-Channel)

(T_A=25°C unless otherwise noted)

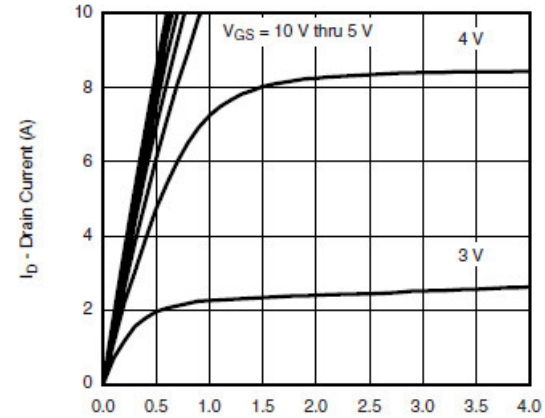
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250uA	30			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	1.0		2.5	
I_{GSS}	Gate Leakage Current	V_{DS}=0V,V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V,V_{GS}=0V			1	uA
		V_{DS}=30V,V_{GS}=0V, T_J=85°C			30	
$I_{D(on)}$	On-State Drain Current	V_{DS}≧4.5V,V_{GS}=10V	6			A
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=10V,I_D=3.6A		64	75	mΩ
		V_{GS}=4.5V,I_D=2.6A		88	100	
g_{FS}	Forward Transconductance	V_{DS}=15V,I_D=2.8A		11		S
V_{SD}	Diode Forward Voltage	I_S=2.6A,V_{GS}=0V		0.8	1.2	V
Dynamic						
C_{iss}	Input Capacitance	V_{DS}=15V, V_{GS}=0V,f=1MHz		230		pF
C_{oss}	Output Capacitance			50		
C_{rss}	Reverse Transfer Capacitance			20		
Q_g	Total Gate Charge	V_{DS}=15V, V_{GS}=4.5V,I_D=3.0A		2.0	3.6	nC
Q_{gs}	Gate-Source Charge			0.8		
Q_{gd}	Gate-Drain Charge			0.65		
$t_{d(on)}$	Turn-On Time	V_{DD}=15V, R_L=5.6Ω ,I_D=2.0A, V_{GEN}=4.5V,R_G=1Ω		10	12	ns
T_r				45	60	
$t_{d(off)}$	Turn-Off Time			12	18	
T_f				20	30	

Electrical Characteristics (P-Channel)

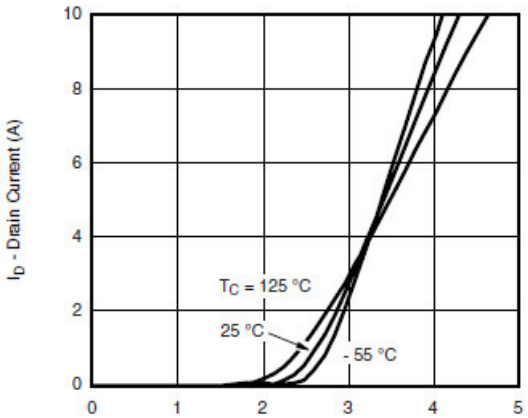
(T_A=25°C unless otherwise noted)

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	-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}=-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=-2.7A		115	130	mΩ
		V_{GS}=-4.5V,I_D=-2.1A		150	165	
g_{FS}	Forward Transconductance	V_{DS}=-5V,I_D=-1.6A		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		170		pF
C_{oss}	Output Capacitance			50		
C_{rss}	Reverse Transfer Capacitance			30		
Q_g	Total Gate Charge	V_{DS}=-15V, V_{GS}=-4.5V,I_D=-1.6A		2.5		nC
Q_{gs}	Gate-Source Charge			0.8		
Q_{gd}	Gate-Drain Charge			1.0		
$t_{d(on)}$	Turn-On Time	V_{DD}=-15V, R_L=7.5Ω ,I_D=-1.6A, V_{GEN}=-10V,R_G=1Ω		5	10	ns
T_r				10	16	
$t_{d(off)}$	Turn-Off Time			10	16	
T_f				5	10	

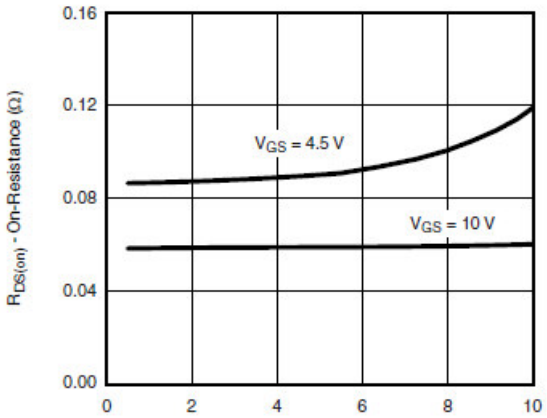
Typical Performance Characteristics (N-Channel)



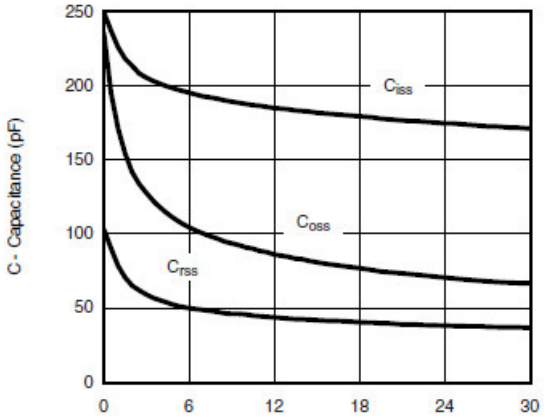
Output Characteristics



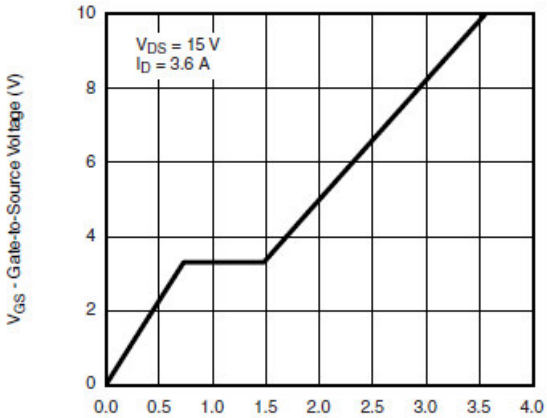
Transfer Characteristics



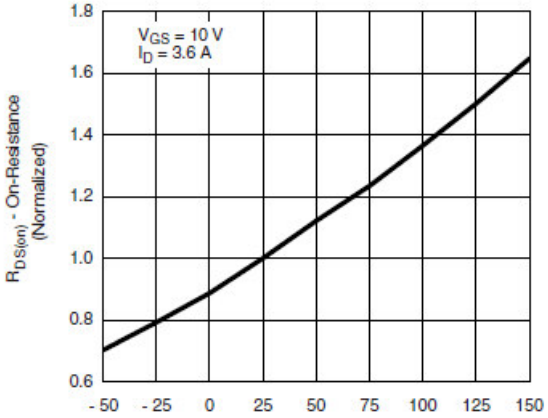
On-Resistance vs. Drain Current



Capacitance

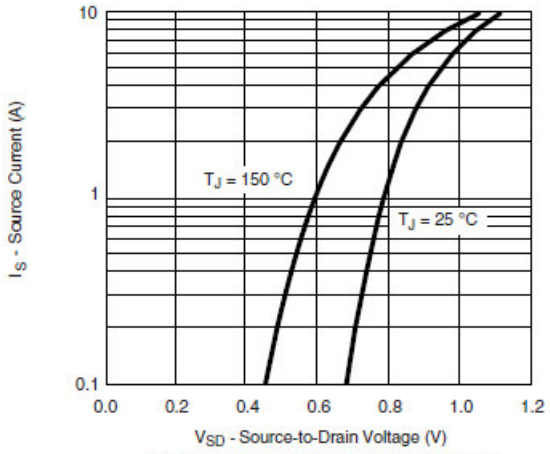


Gate Charge

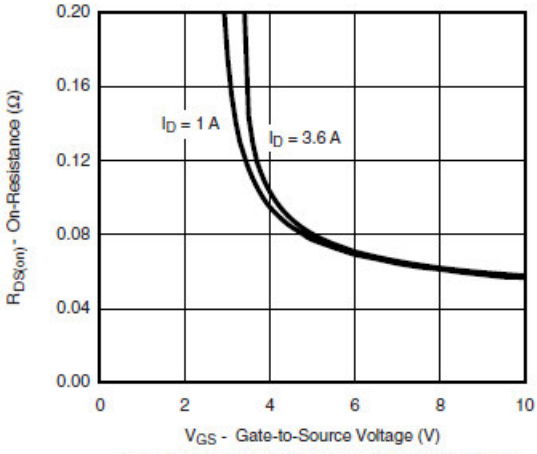


On-Resistance vs. Junction Temperature

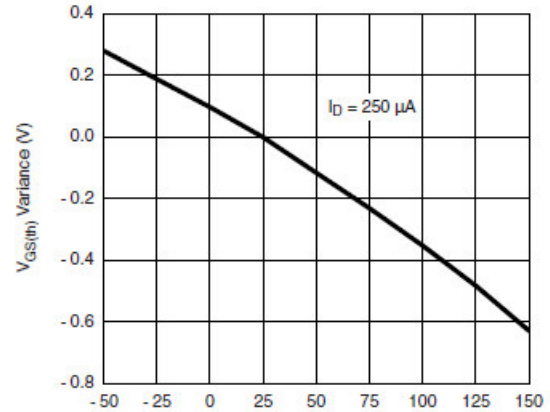
Typical Performance Characteristics (N-Channel Continue)



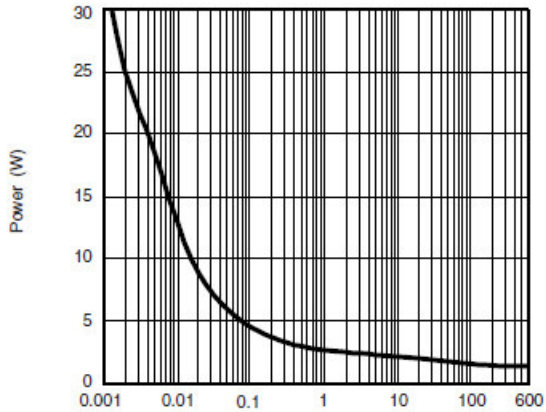
Source-Drain Diode Forward Voltage



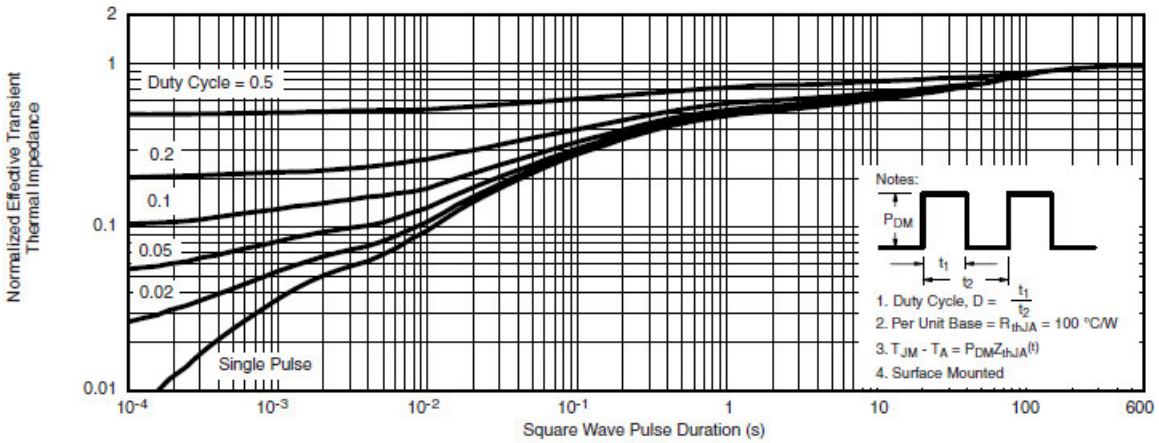
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



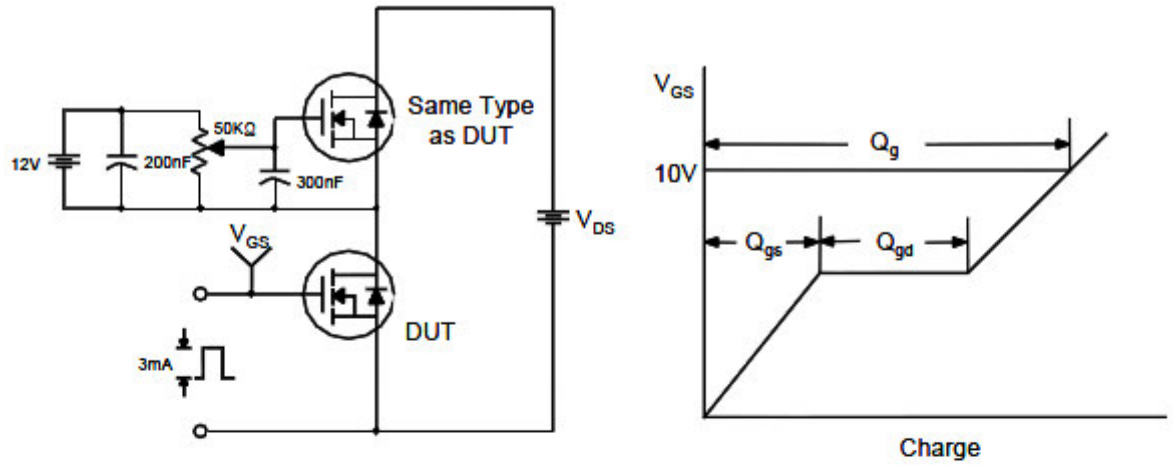
Single Pulse Power



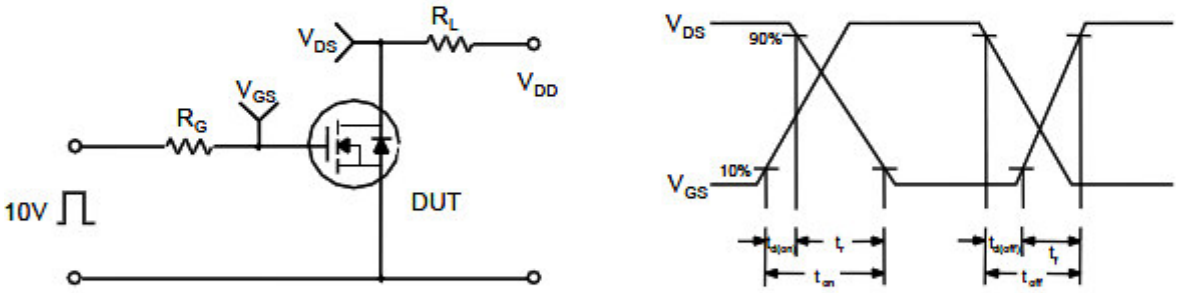
Normalized Thermal Transient Impedance, Junction-to-Ambient

Typical Performance Characteristics (N-Channel Continue)

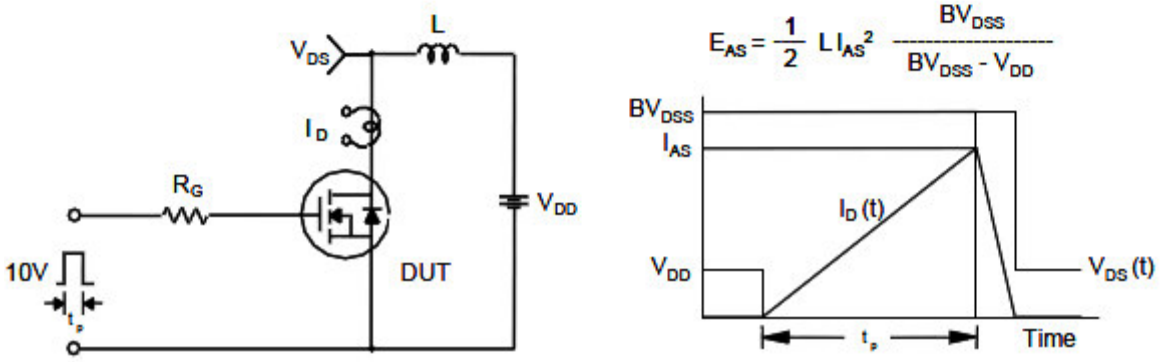
Gate Charge Test Circuit & Waveform



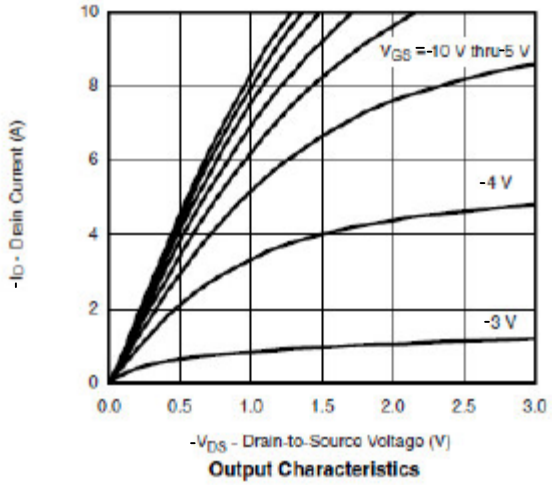
Resistive Switching Test Circuit & Waveforms



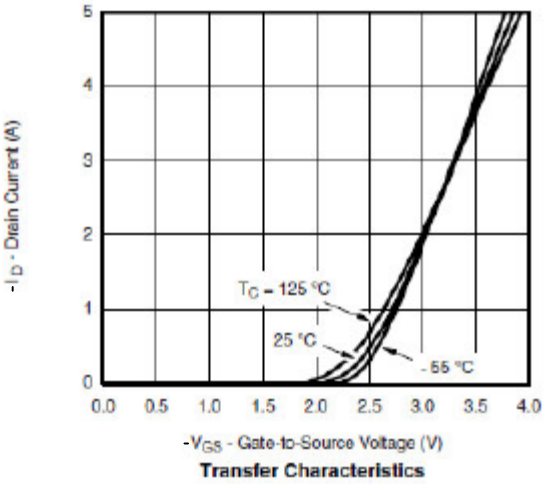
Unclamped Inductive Switching Test Circuit & Waveforms



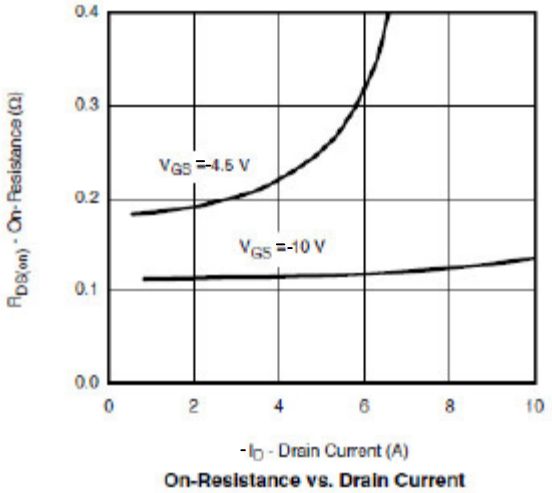
Typical Performance Characteristics (P-Channel)



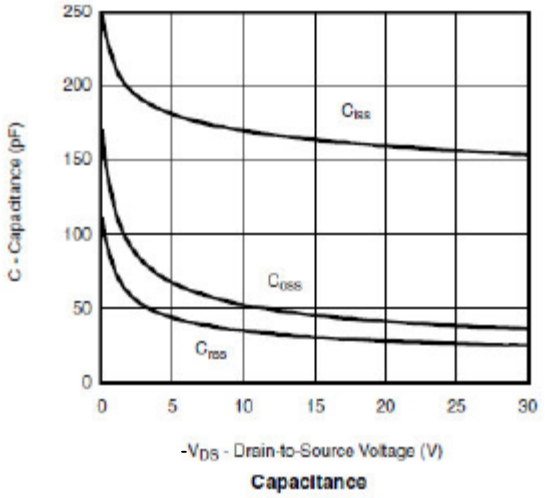
Output Characteristics



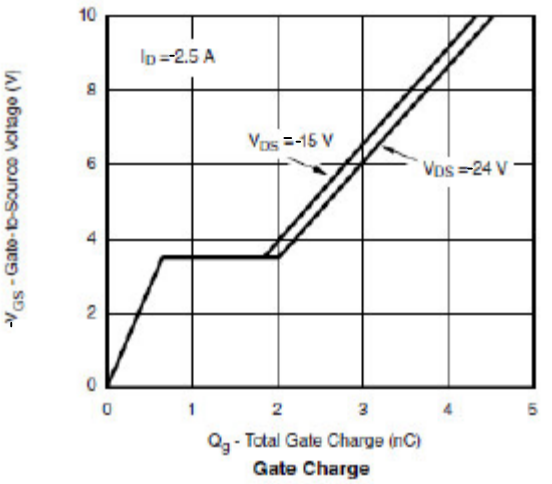
Transfer Characteristics



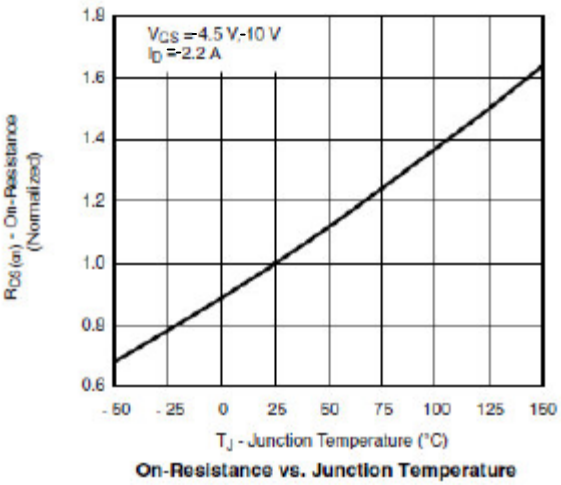
On-Resistance vs. Drain Current



Capacitance

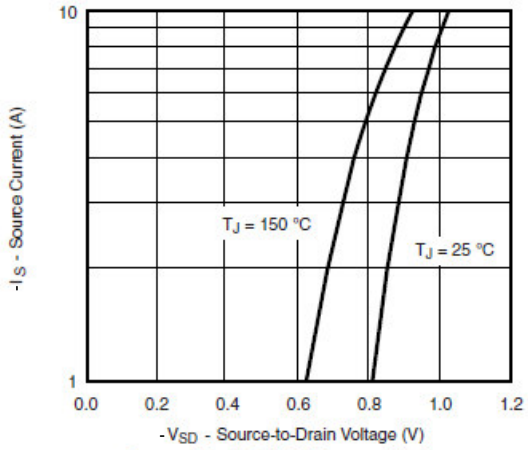


Gate Charge

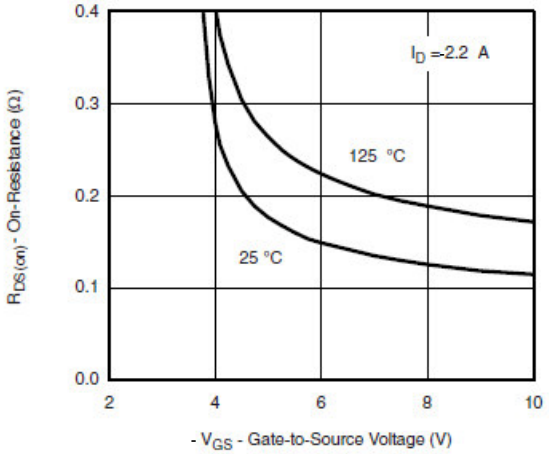


On-Resistance vs. Junction Temperature

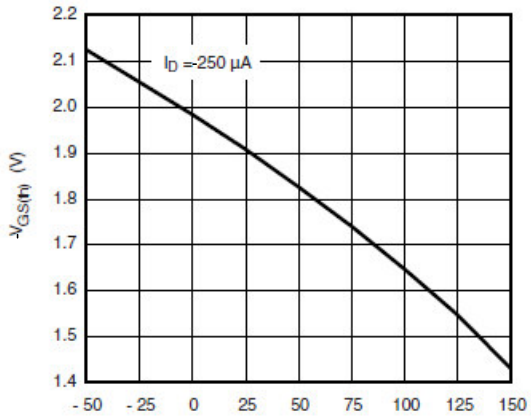
Typical Performance Characteristics (P-Channel Continue)



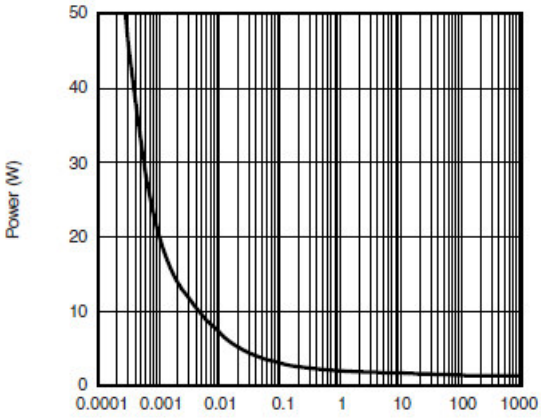
Source-Drain Diode Forward Voltage



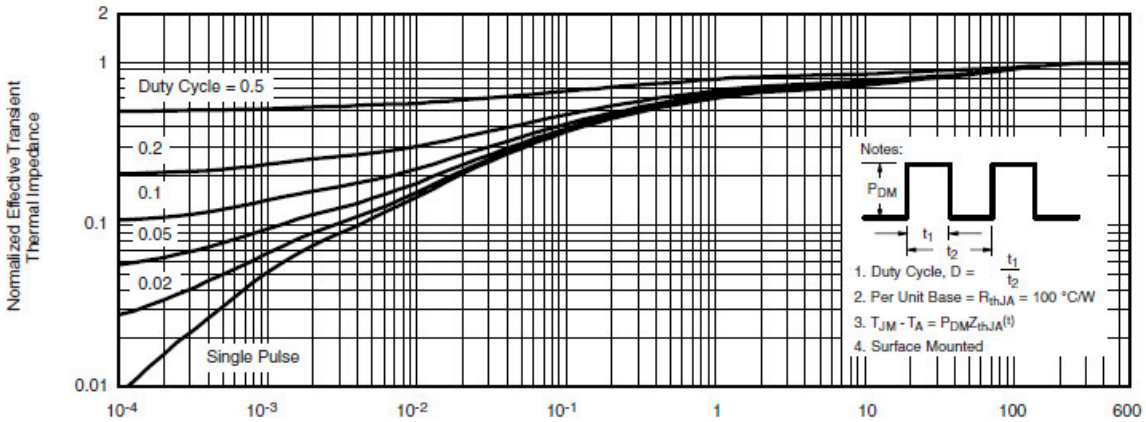
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



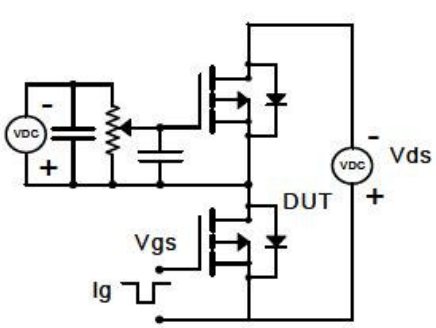
Single Pulse Power

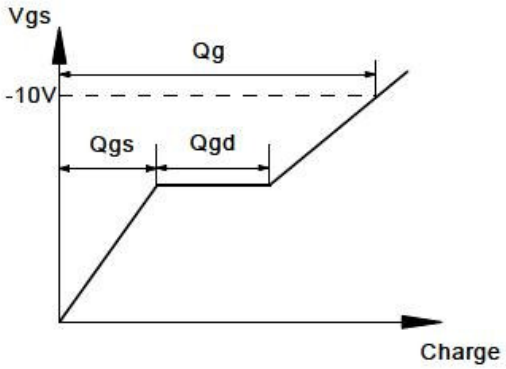


Normalized Thermal Transient Impedance, Junction-to-Ambient

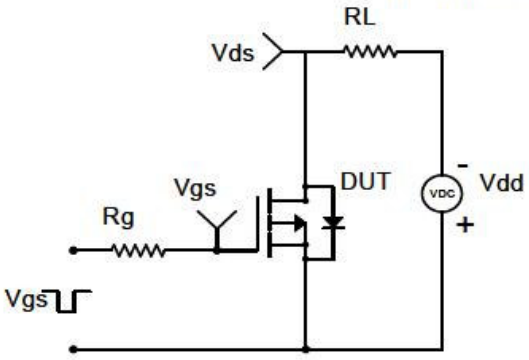
Typical Performance Characteristics (P-Channel Continue)

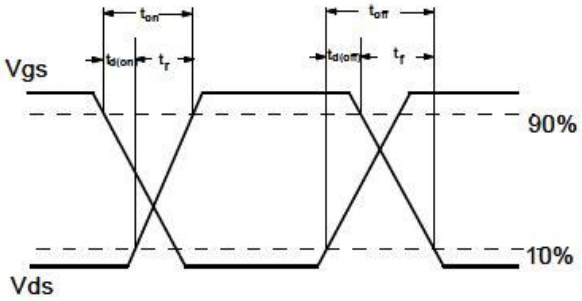
Gate Charge Test Circuit & Waveform



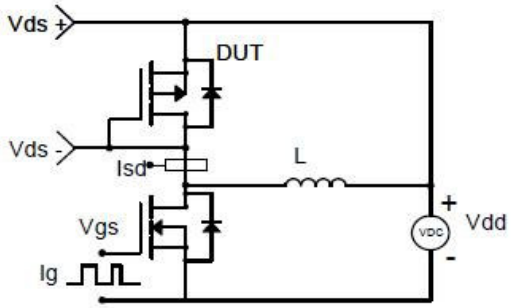


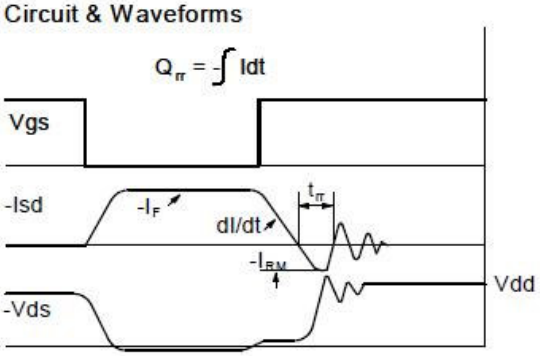
Resistive Switching Test Circuit & Waveforms





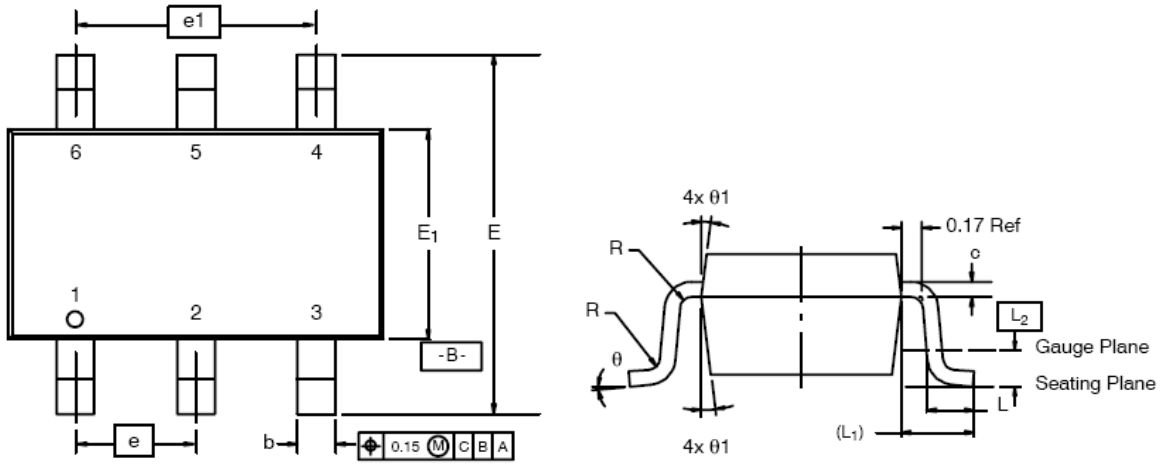
Diode Recovery Test Circuit & Waveforms





Package Dimension

TSOP-6P



Dimensions						
Symbol	Millimeters			Inches		
	Min	Nom	Max	Min	Nom	Max
A	0.91	-	1.10	0.036	-	0.043
A1	0.01	-	0.10	0.0004	-	0.004
A2	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		
e1	1.90	2.00	2.10	0.075	0.080	0.085
L	0.35	-	0.50	0.014	-	0.020
L1	0.60 Ref			0.024 Ref		
L2	0.25 BSC			0.010 BSC		
R	0.10	-	-	0.004	-	-
θ	0°	4°	8°	0°	4°	8°
θ1	7° Nom			7° Nom		

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