AFC6606W
60V N & P Pair Enhancement Mode MOSFET

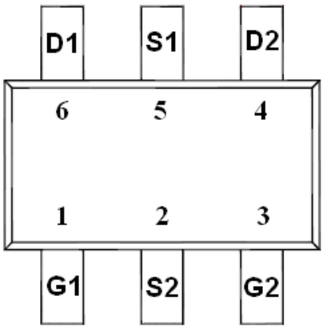
General Description

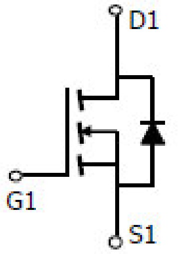
AFC6606W, N & P Pair enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge. These devices are particularly suited for low voltage power management, and low in-line power loss are needed in commercial industrial surface mount applications.

Features

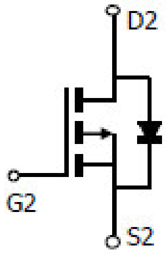
- N-Channel
  60V/2.8A,$R_{DS(ON)}$=135mΩ@V_{GS}=10V
  60V/2.0A,$R_{DS(ON)}$=145mΩ@V_{GS}=4.5V
- P-Channel
  -60V/-1.8A,$R_{DS(ON)}$=310mΩ@V_{GS}=-10V
  -60V/-1.4A,$R_{DS(ON)}$=340mΩ@V_{GS}=-4.5V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23-6L package design

Pin Description (SOT-23-6L)

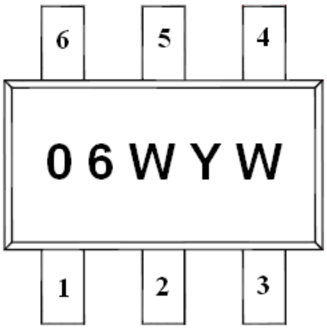




n-channel



p-channel



Application

- LED Backlight
- DC/DC Converter
- Load Switch for Portable Applications

Pin Define

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

Ordering Information

Part Ordering No.	Part Marking	Package	Unit	Quantity
AFC6606WS26RG	06WYW	SOT-23-6L	Tape & Reel	3000 EA

※ 06W parts code
※ Y year code (0 ~ 9)
※ W week code (A ~ Z = 1 ~ 26 / a ~ z = 27 ~ 52)
※ AFC6606WS26RG : 7” Tape & Reel ; Pb- Free ; Halogen- Free

Absolute Maximum Ratings

(T_A=25℃ Unless otherwise noted)

Parameter		Symbol	Typical		Unit
			N-Channel	P-Channel	
Drain-Source Voltage		V_{DSS}	60	-60	V
Gate –Source Voltage		V_{GSS}	±20	±20	V
Continuous Drain Current(T_J=150℃)	T_A=25℃	I_D	-2.8	-1.8	A
	T_A=70℃		-2.0	-1.4	
Pulsed Drain Current		I_{DM}	-8	-8	A
Continuous Source Current(Diode Conduction)		I_S	-1.5	-1.5	A
Power Dissipation	T_A=25℃	P_D	2.0		W
	T_A=70℃		1.3		
Operating Junction Temperature		T_J	150		℃
Storage Temperature Range		T_{STG}	-55/150		℃
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	120		℃/W

Electrical Characteristics (N-Channel)

(T_A=25℃ Unless otherwise noted)

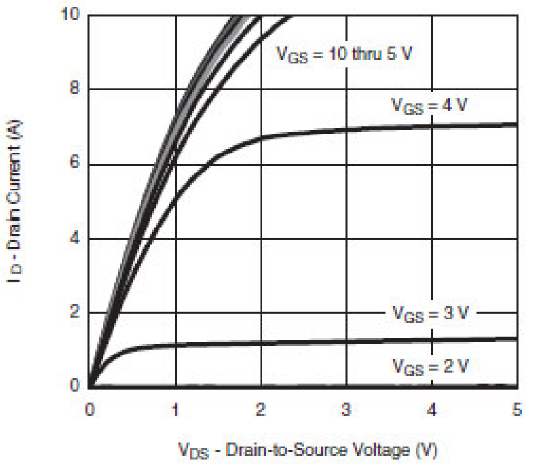
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250uA	60			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	0.7		2.5	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=48V,V_{GS}=0V			1	uA
		V_{DS}=48V,V_{GS}=0V T_J=85℃			10	
On-State Drain Current	$I_{D(on)}$	V_{DS}≧5V,V_{GS}=10V	5			A
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=2.8A		115	135	mΩ
		V_{GS}=4.5V,I_D=2.0A		125	145	
Forward Transconductance	g_{FS}	V_{DS}=15V,I_D=2.0A		5		S
Diode Forward Voltage	V_{SD}	I_S=2.5A,V_{GS}=0V		0.85	1.2	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=30V,V_{GS}=4.5V I_D≡2.0A		2.5	3.5	nC
Gate-Source Charge	Q_{gs}			0.8		
Gate-Drain Charge	Q_{gd}			1.0		
Input Capacitance	C_{iss}	V_{DS}=30V,V_{GS}=0V f=1MHz		200		pF
Output Capacitance	C_{oss}			20		
Reverse Transfer Capacitance	C_{rss}			10		
Turn-On Time	$t_{d(on)}$	V_{DD}=30V,R_L=20Ω I_D≡1.5A,V_{GEN}=10V R_G=1Ω		4	8	ns
	t_r			10	20	
Turn-Off Time	$t_{d(off)}$			10	40	
	t_f			6	10	

Electrical Characteristics (P-Channel)

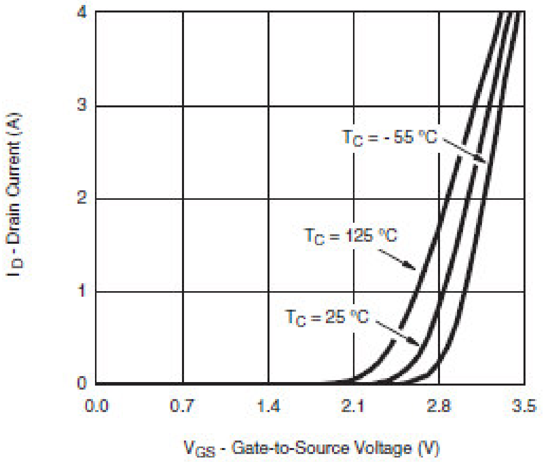
(T_A=25℃ Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=-250uA	-60			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250uA	-1.0		-2.0	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±12V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-48V,V_{GS}=0V			-1	uA
		V_{DS}=-48V,V_{GS}=0V T_J=85℃			-30	
On-State Drain Current	$I_{D(on)}$	V_{DS}≦-5V,V_{GS}=-10V	-6			A
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=-10V,I_D=-1.8A		280	310	mΩ
		V_{GS}=-4.5V,I_D=-1.4A		295	340	
Forward Transconductance	g_{FS}	V_{DS}=-10V,I_D=-1.0A		2.8		S
Diode Forward Voltage	V_{SD}	I_S=-1.0A,V_{GS}=0V		-0.75	-1.3	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=-30V,V_{GS}=-4.5V I_D≡-1.25A		2.7	4.5	nC
Gate-Source Charge	Q_{gs}			0.7		
Gate-Drain Charge	Q_{gd}			1.2		
Input Capacitance	C_{iss}	V_{DS}=-30V,V_{GS}=0V f=1MHz		210		pF
Output Capacitance	C_{oss}			25		
Reverse Transfer Capacitance	C_{rss}			18		
Turn-On Time	$t_{d(on)}$	V_{DD}=-30V,R_L=30Ω I_D≡-1.0A,V_{GEN}=-10V R_G=1.0Ω		5	10	ns
	t_r			10	20	
Turn-Off Time	$t_{d(off)}$			15	30	
	t_f			10	20	

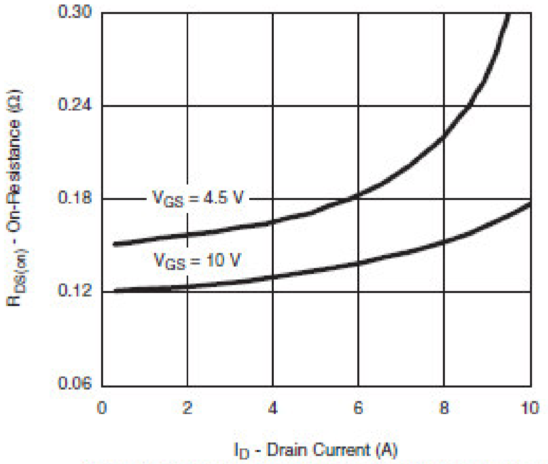
Typical Characteristics (N-Channel)



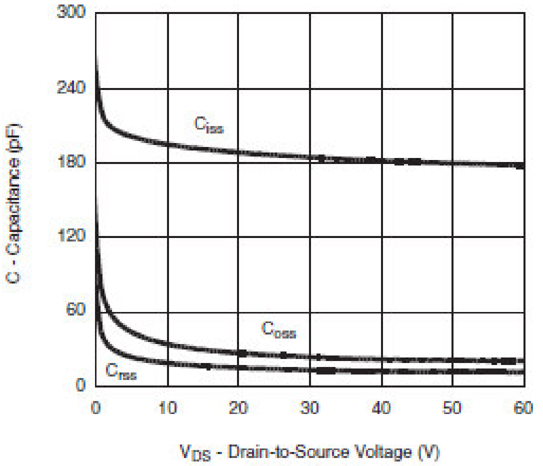
Output Characteristics



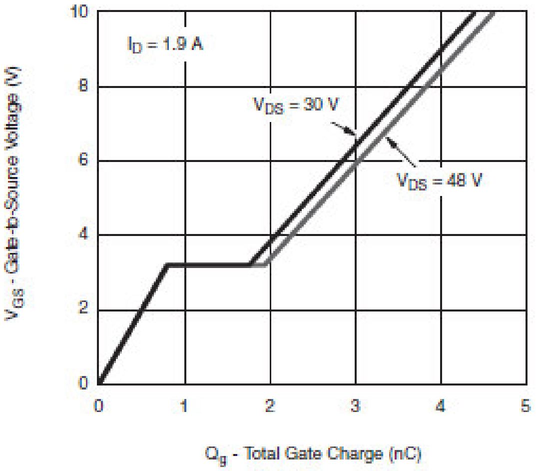
Transfer Characteristics



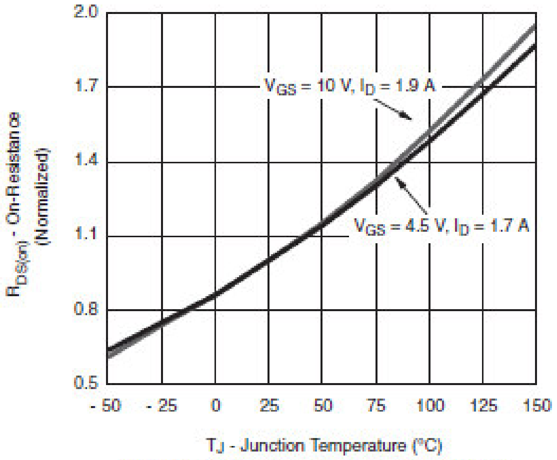
On-Resistance vs. Drain Current and Gate Voltage



Capacitance

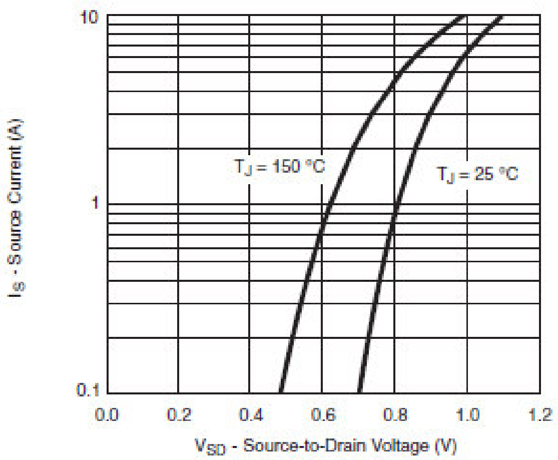


Gate Charge

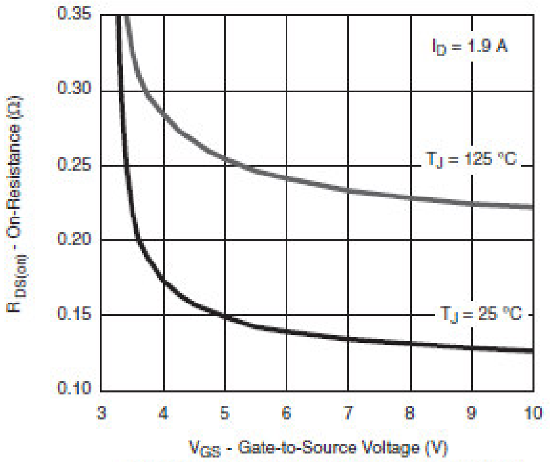


On-Resistance vs. Junction Temperature

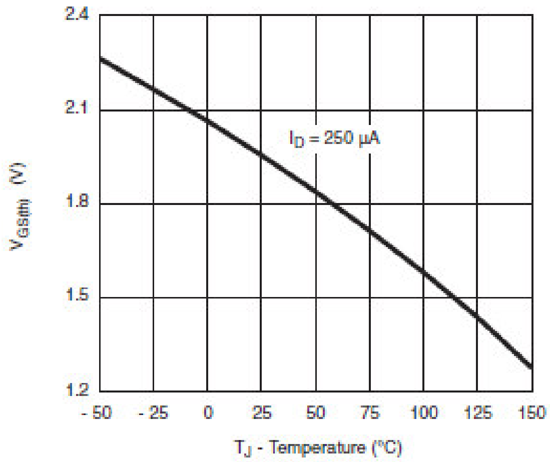
Typical Characteristics (N-Channel)



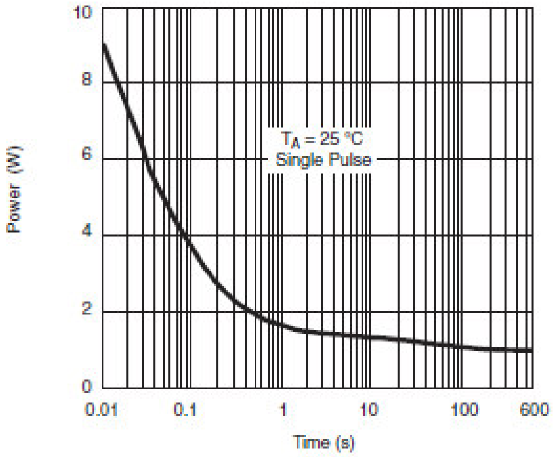
Source-Drain Diode Forward Voltage



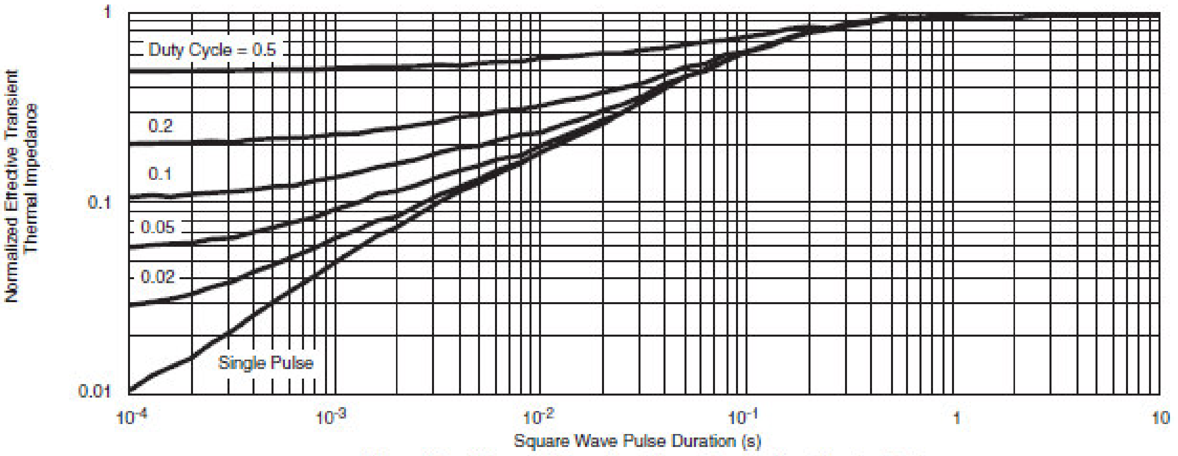
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



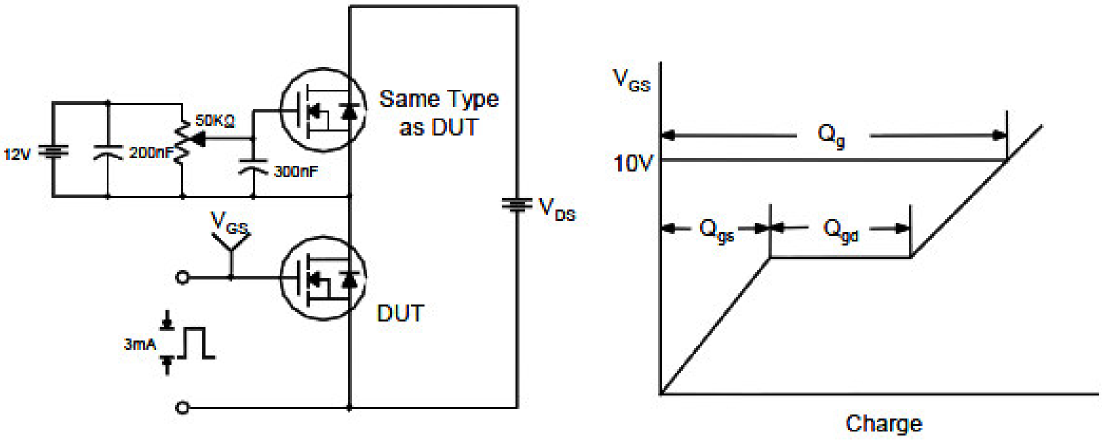
Single Pulse Power



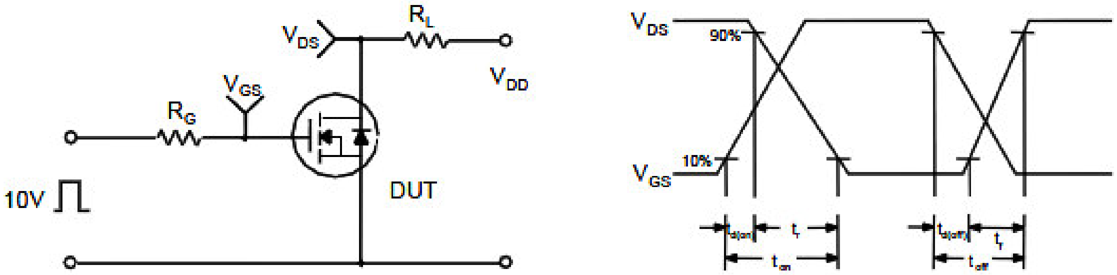
Normalized Thermal Transient Impedance, Junction-to-Foot

Typical Characteristics (N-Channel)

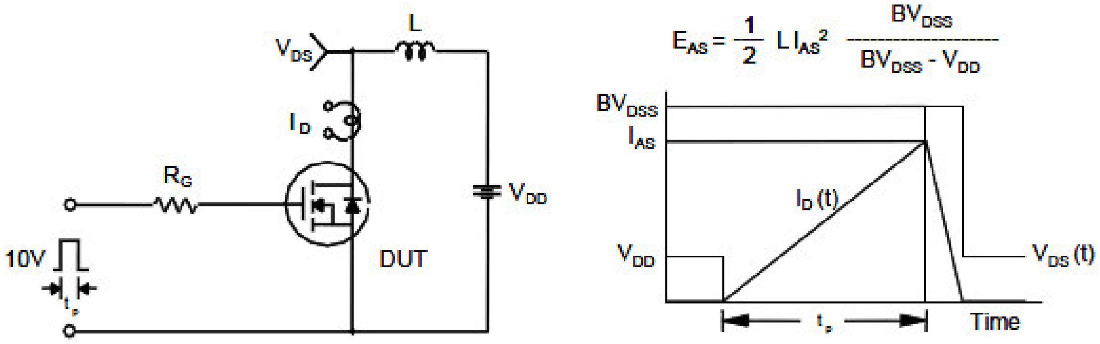
Gate Charge Test Circuit & Waveform



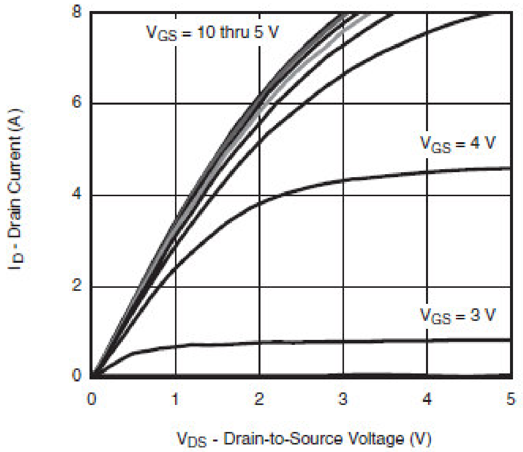
Resistive Switching Test Circuit & Waveforms



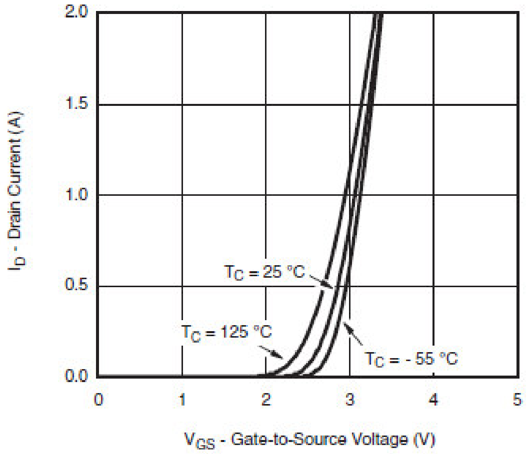
Unclamped Inductive Switching Test Circuit & Waveforms



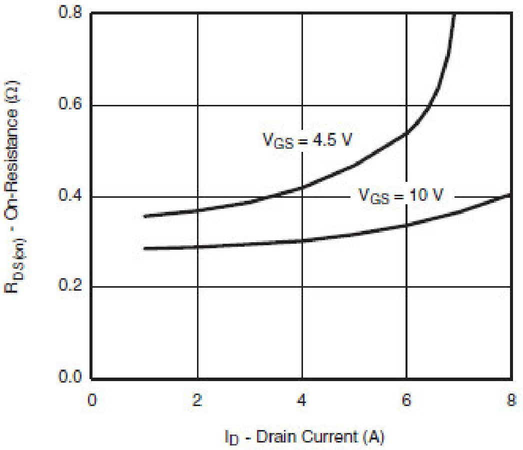
Typical Characteristics (P-Channel)



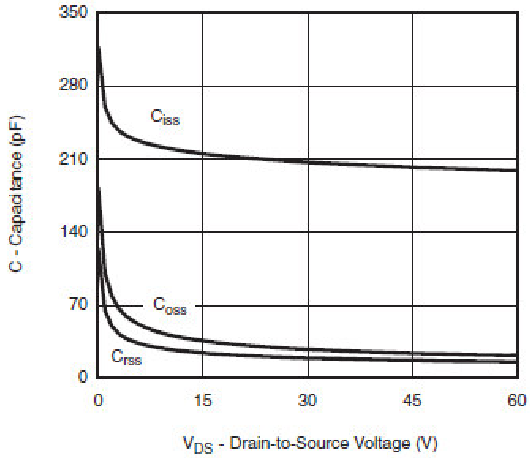
Output Characteristics



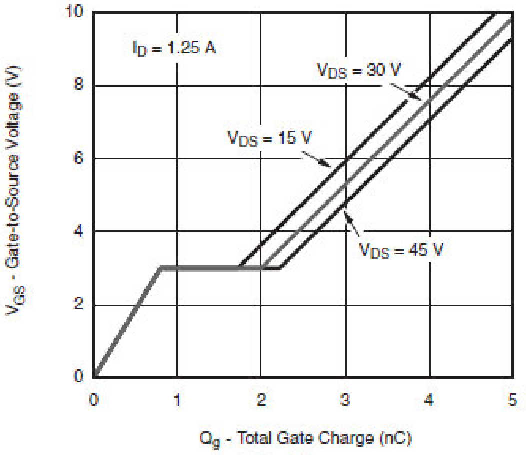
Transfer Characteristics



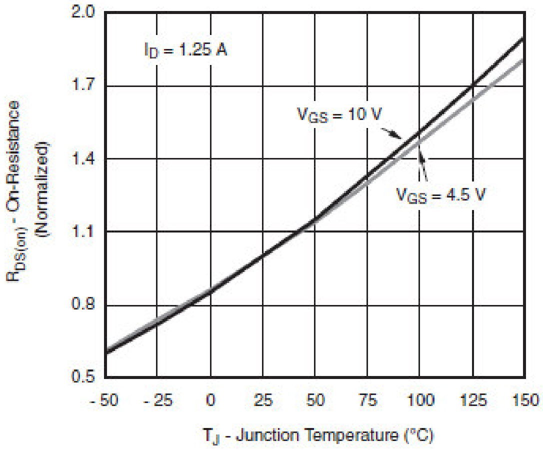
On-Resistance vs. Drain Current and Gate Voltage



Capacitance

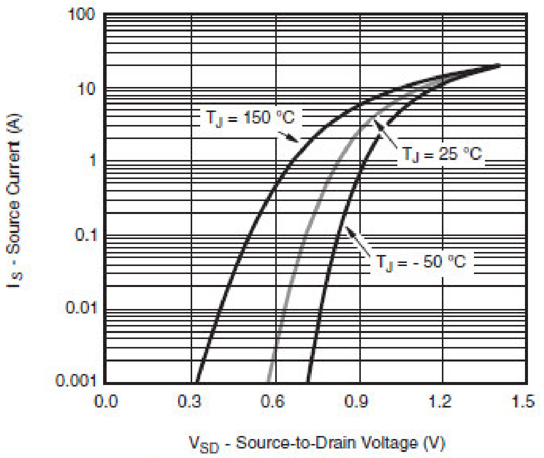


Gate Charge

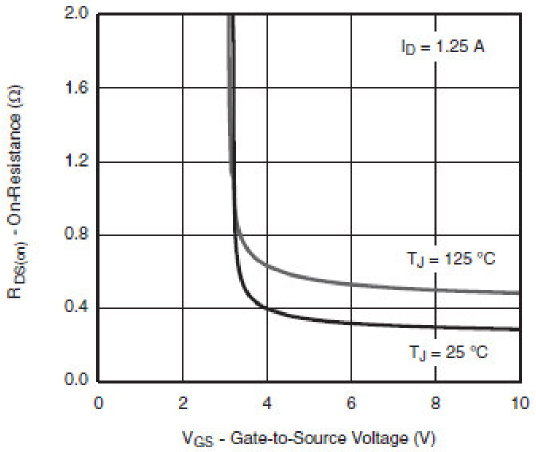


On-Resistance vs. Junction Temperature

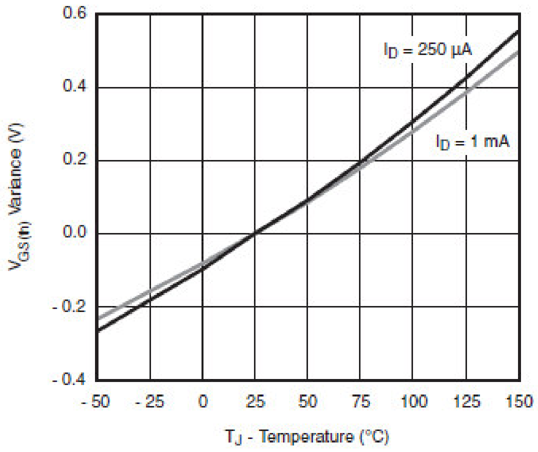
Typical Characteristics (P-Channel)



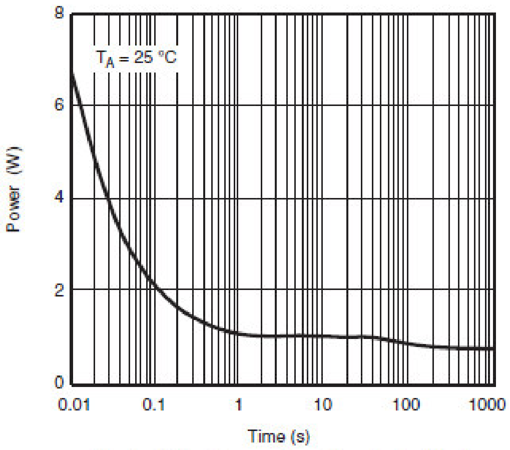
Source-Drain Diode Forward Voltage



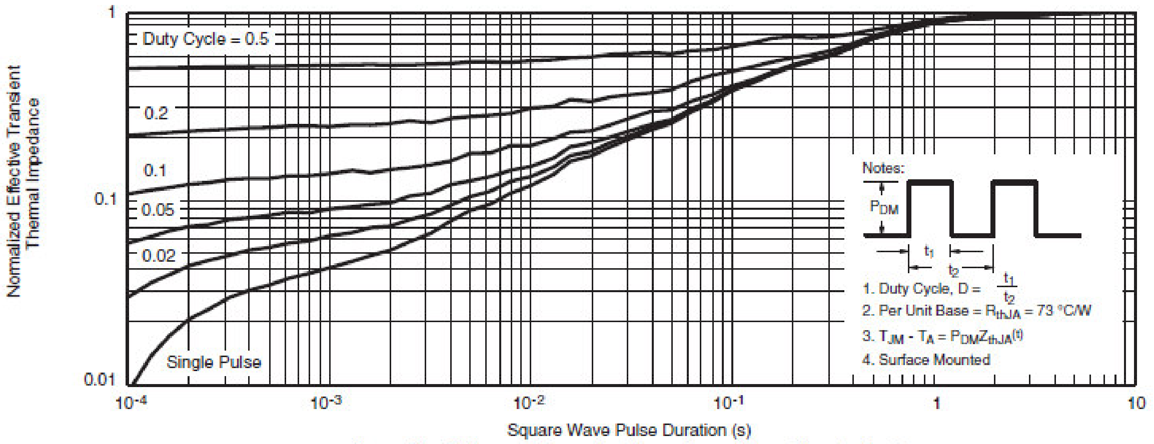
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



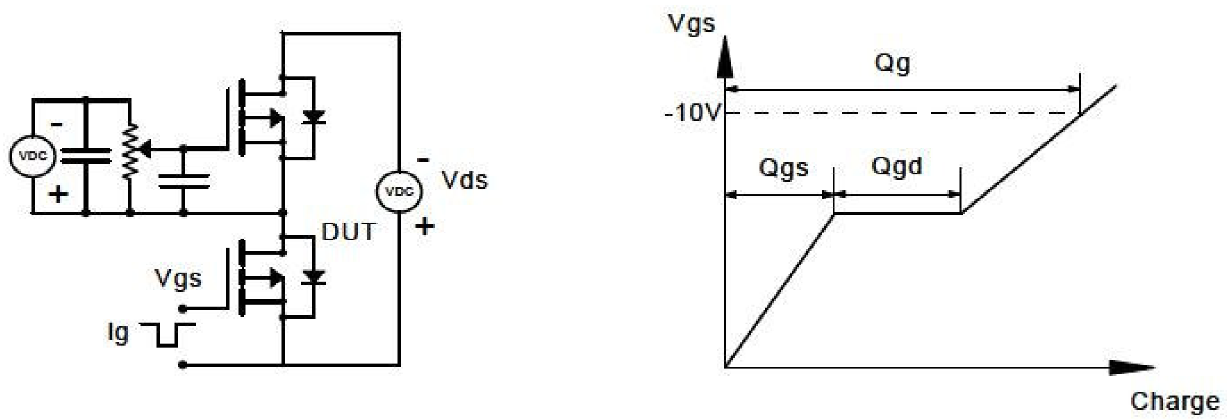
Single Pulse Power, Junction-to-Ambient



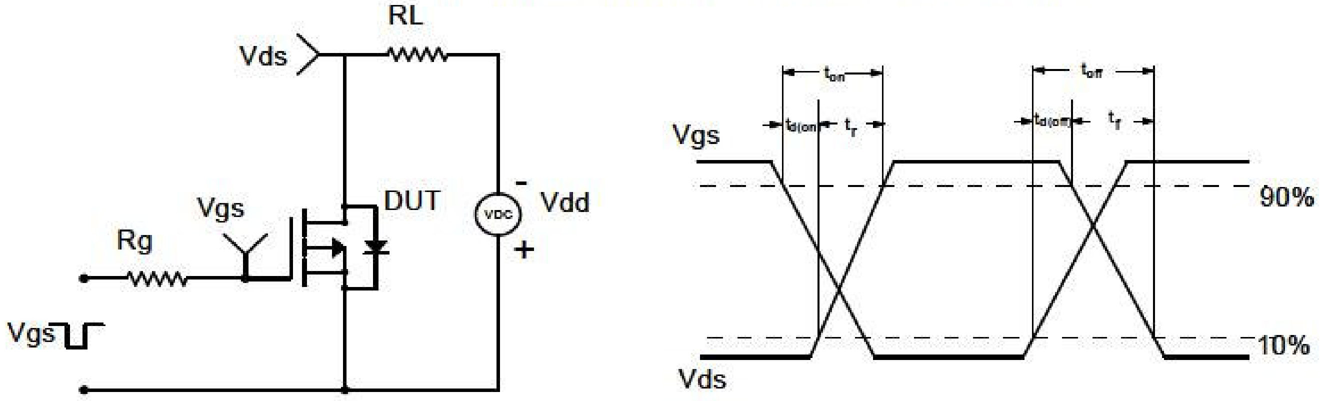
Normalized Thermal Transient Impedance, Junction-to-Foot

Typical Characteristics

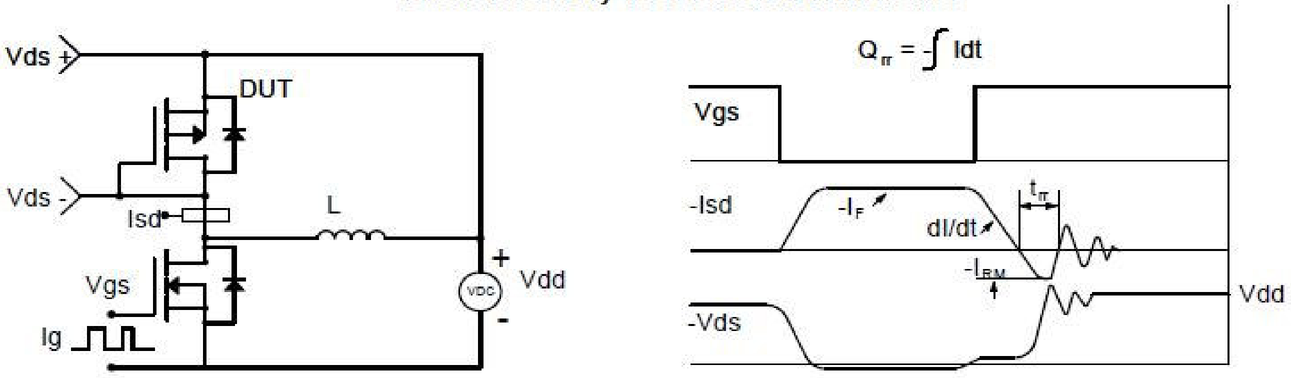
Gate Charge Test Circuit & Waveform



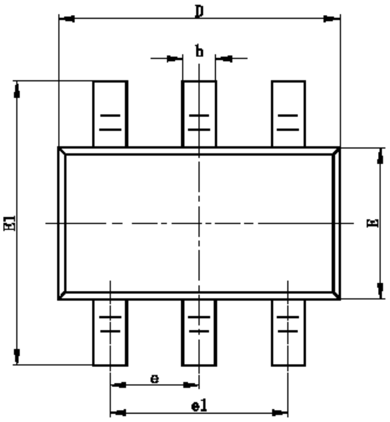
Resistive Switching Test Circuit & Waveforms

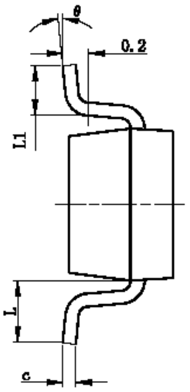


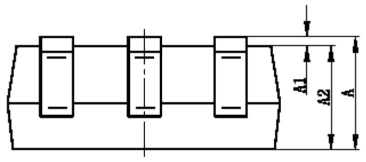
Diode Recovery Test Circuit & Waveforms



Package Information (SOT-23-6L)







Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.400	0.012	0.016
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.700REF		0.028REF	
L1	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

©2010 Alfa-MOS Technology Corp.
2F, No.80, Sec.1, Cheng Kung Rd., Nan Kang Dist., Taipei City 115, Taiwan (R.O.C.)
Tel : 886 2) 2651 3928
Fax : 886 2) 2786 8483
©http://www.alfa-mos.com