



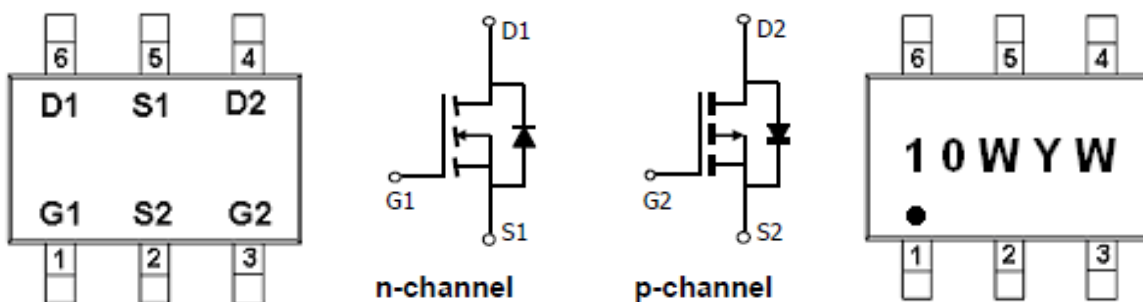
General Description

AFC6610W, 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/2.3A, $R_{DS(ON)}=310m\Omega@V_{GS}=10V$
100V/1.8A, $R_{DS(ON)}=320m\Omega@V_{GS}=4.5V$
- P-Channel
-100V/-1.0A, $R_{DS(ON)}=650m\Omega@V_{GS}=-10V$
-100V/-0.5A, $R_{DS(ON)}=700m\Omega@V_{GS}=-4.5V$
- 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)



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
AFC6610WS26RG	10WYW	SOT-23-6L	Tape & Reel	3000 EA

- ※ 10W parts code
- ※ Y year code (0 ~ 9)
- ※ W week code (A ~ Z = 1 ~ 26 / a ~ z = 27 ~ 52)
- ※ AFC6610WS26RG : 7" Tape & Reel ; Pb- Free ; Halogen -Free



Absolute Maximum Ratings

(T_A=25°C Unless otherwise noted)

Parameter	Symbol	Value		Unit	
		N-Channel	P-Channel		
Drain-Source Voltage	V _{DSS}	100	-100	V	
Gate-Source Voltage	V _{GSS}	±20	±20	V	
Continuous Drain Current(T _J =150°C)	I _D	T _A =25°C	-2.3	-1.0	A
		T _A =70°C	-1.8	-0.5	
Pulsed Drain Current	I _{DM}	-4	-4	A	
Continuous Source Current(Diode Conduction)	I _S	-1.5	-1.5	A	
Power Dissipation	P _D	T _A =25°C	2.0	W	
		T _A =70°C	1.3		
Operating Junction Temperature	T _J	150		°C	
Storage Temperature Range	T _{STG}	-55/150		°C	
Thermal Resistance-Junction to Ambient	R _{θJA}	120		°C/W	

Electrical Characteristics (N-Channel)

(T_A=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250uA	100			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} =±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =80V, V _{GS} =0V			1	uA
		V _{DS} =80V, V _{GS} =0V T _J =85°C			10	
On-State Drain Current	I _{D(on)}	V _{DS} ≥ 5V, V _{GS} =4.5V	5			A
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =2.3A			310	mΩ
		V _{GS} =4.5V, I _D =1.8A			320	
Forward Transconductance	g _{FS}	V _{DS} =20V, I _D =1.5A		2		S
Diode Forward Voltage	V _{SD}	I _S =1.3A, V _{GS} =0V		0.85	1.2	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =50V, V _{GS} =4.5V I _D ≅1.6A		2.8	5.8	nC
Gate-Source Charge	Q _{gs}			0.75		
Gate-Drain Charge	Q _{gd}			1.4		
Input Capacitance	C _{iSS}	V _{DS} =50V, V _{GS} =0V f=1MHz		200		pF
Output Capacitance	C _{oss}			22		
Reverse Transfer Capacitance	C _{rSS}			13		
Turn-On Time	t _{d(on)}	V _{DD} =50V, R _L =39Ω I _D ≅1.3A, V _{GEN} =4.5V R _G =1Ω		25	50	ns
	t _r			20	50	
Turn-Off Time	t _{d(off)}			15	30	
	t _f			10	25	



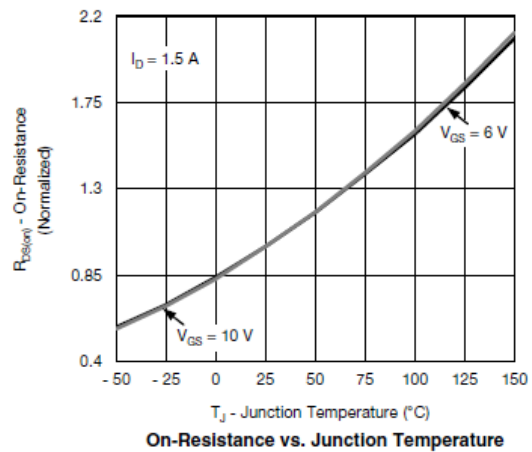
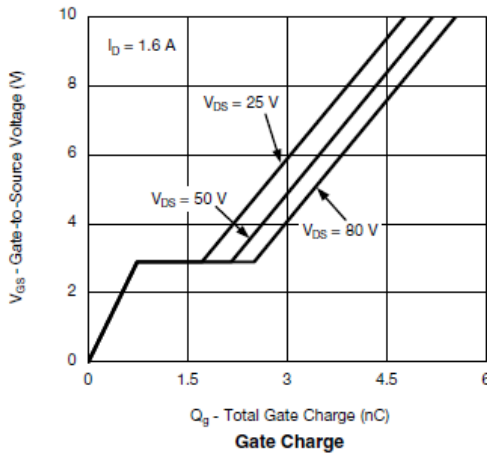
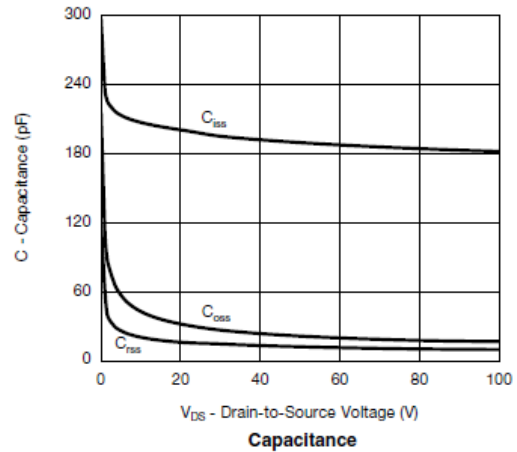
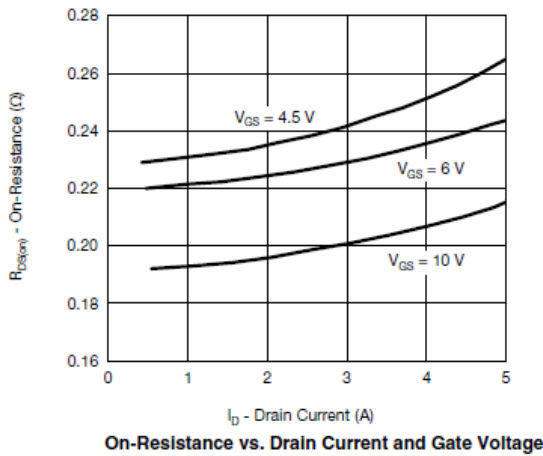
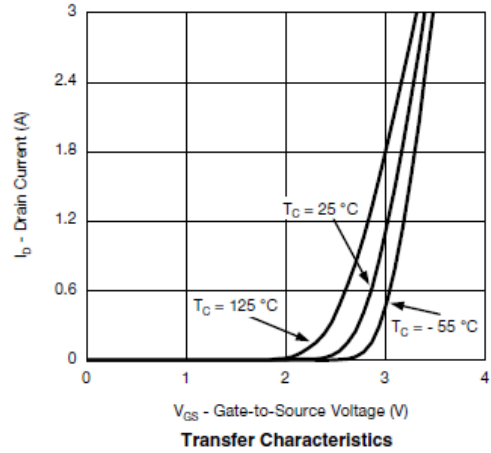
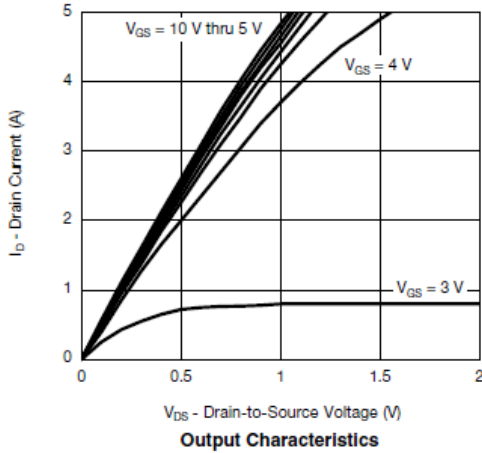
Electrical Characteristics (P-Channel)

(T_A=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =-250μA	-100			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1.0		-2.5	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±12V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-80V, V _{GS} =0V			-1	μA
		V _{DS} =-80V, V _{GS} =0V T _J =85°C			-30	
On-State Drain Current	I _{D(on)}	V _{DS} ≤ -15V, V _{GS} =-10V	-1.6			A
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-1.0A		600	650	mΩ
		V _{GS} =-4.5V, I _D =-0.5A		620	700	
Forward Transconductance	g _{FS}	V _{DS} =-15V, I _D =-0.5A		2.8		S
Diode Forward Voltage	V _{SD}	I _S =-0.5A, V _{GS} =0V		-0.75	-1.3	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =-75V, V _{GS} =-10V I _D =-0.5A		9	20	nC
Gate-Source Charge	Q _{gs}			2.5		
Gate-Drain Charge	Q _{gd}			3.5		
Input Capacitance	C _{iss}	V _{DS} =-25V, V _{GS} =0V f=1MHz		450	650	pF
Output Capacitance	C _{oss}			50		
Reverse Transfer Capacitance	C _{rss}			30		
Turn-On Time	t _{d(on)}	V _{DD} =-75V, R _L =75Ω I _D =-1.0A, V _{GEN} =-10V R _G =6.0Ω		10	20	ns
	t _r			15	30	
Turn-Off Time	t _{d(off)}			20	40	
	t _f			15	30	

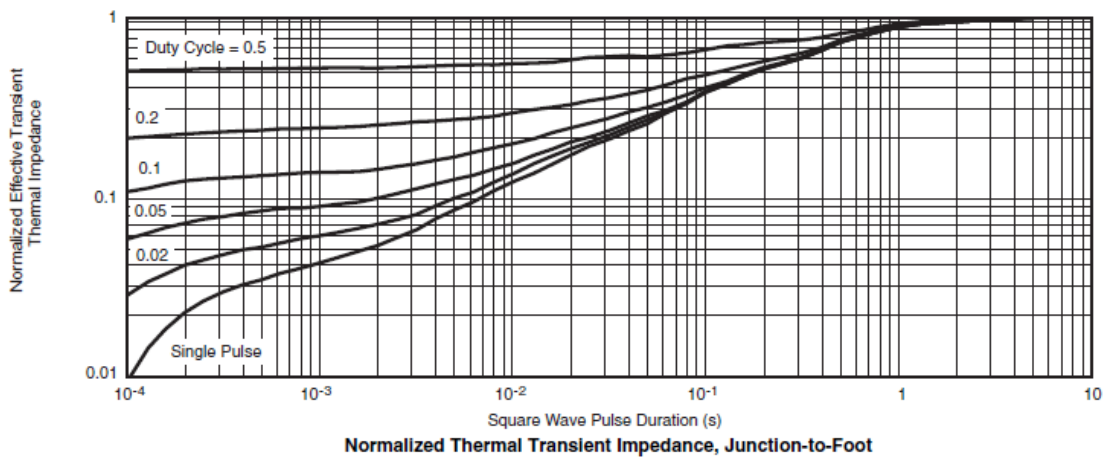
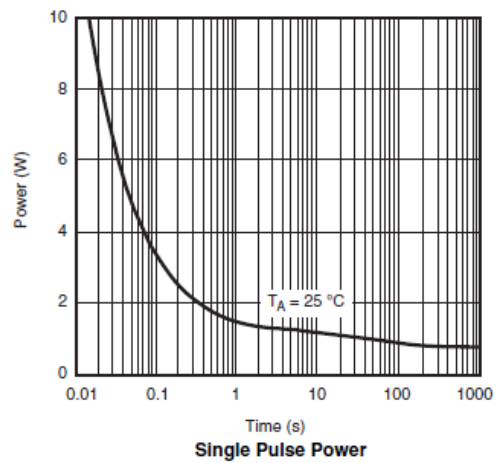
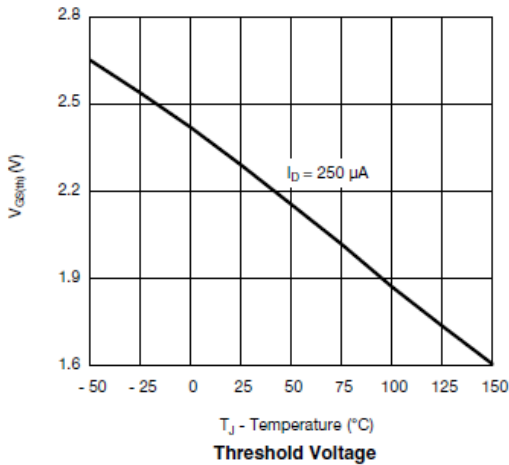
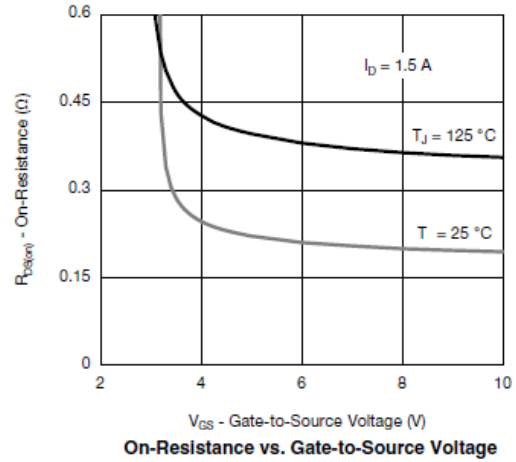
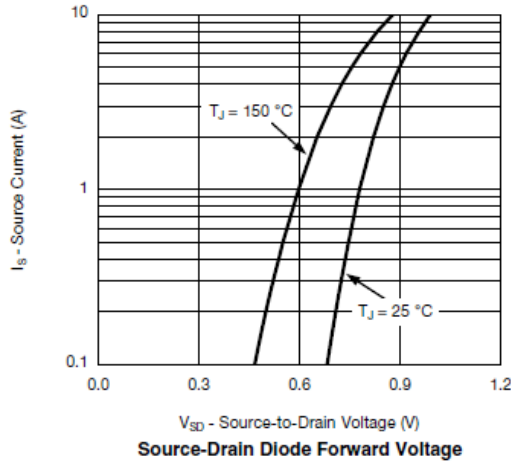


Typical Characteristics (N-Channel)





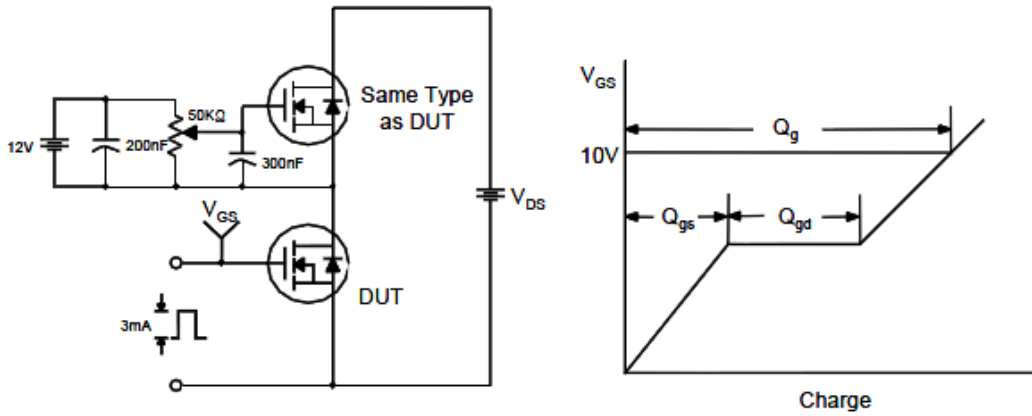
Typical Characteristics (N-Channel)



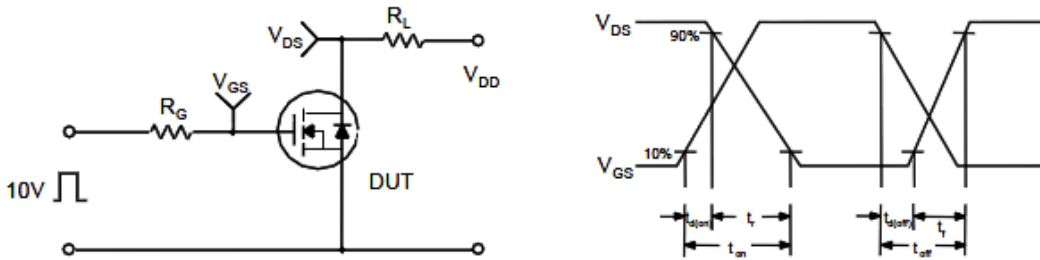


Typical Characteristics (N-Channel)

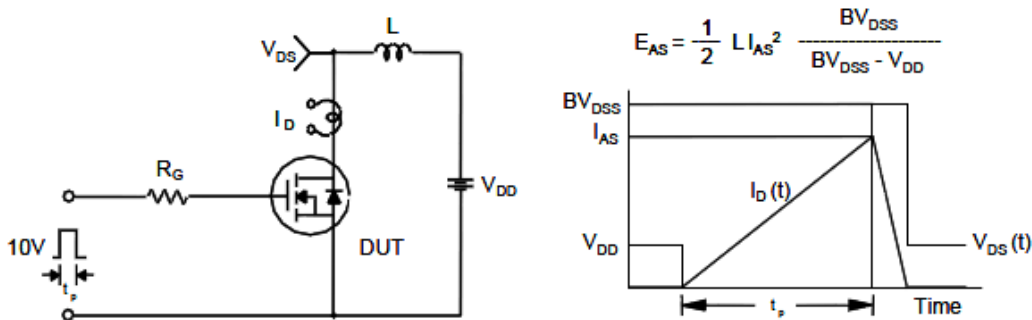
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

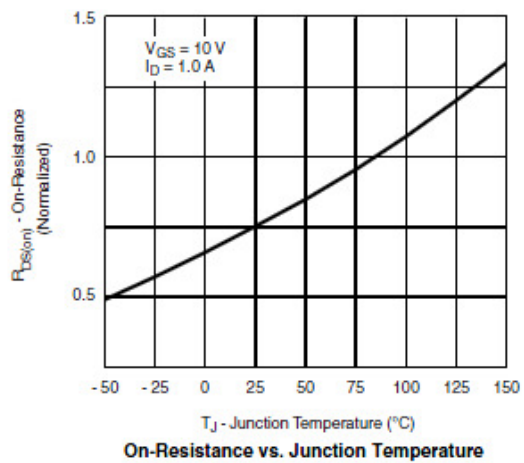
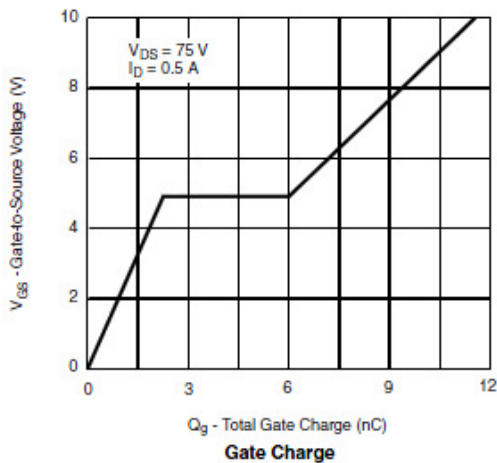
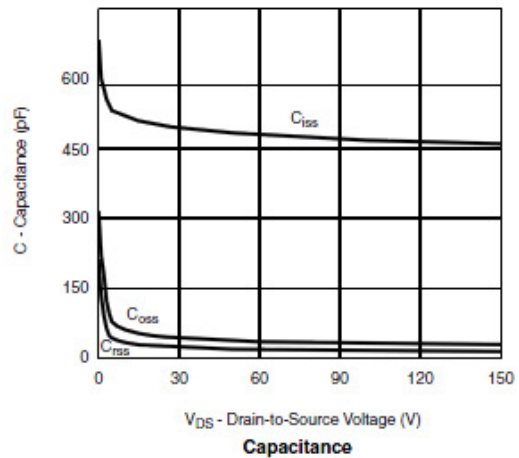
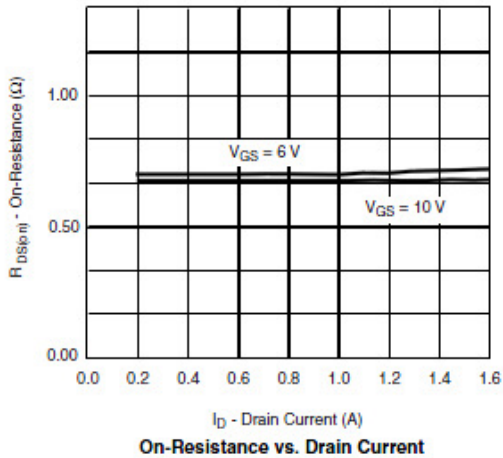
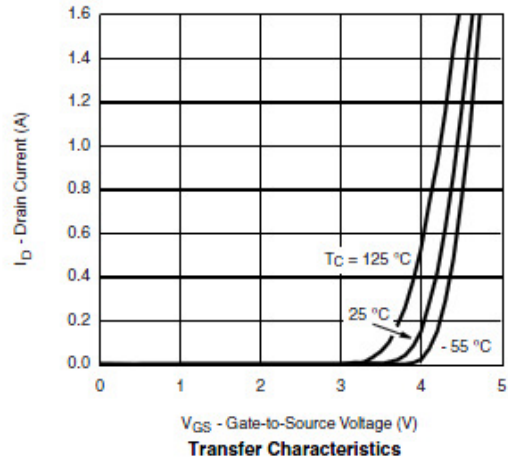
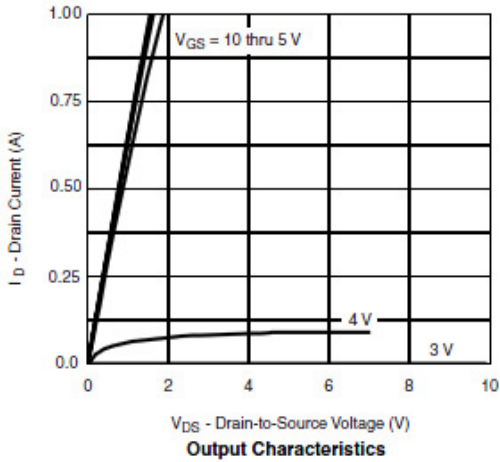


Unclamped Inductive Switching Test Circuit & Waveforms



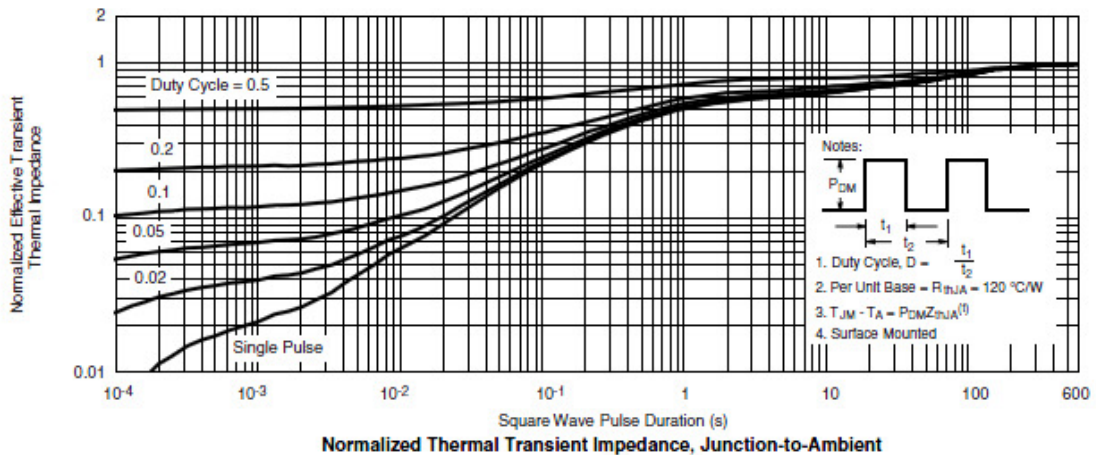
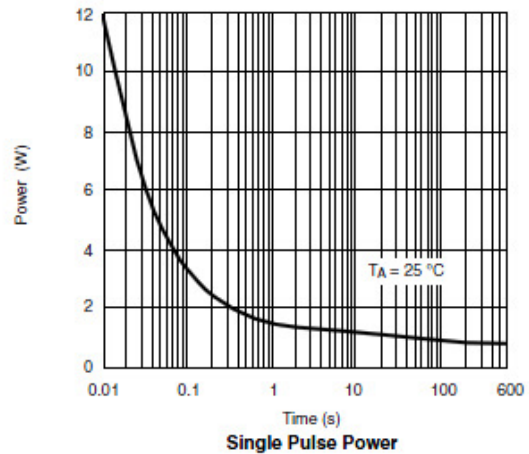
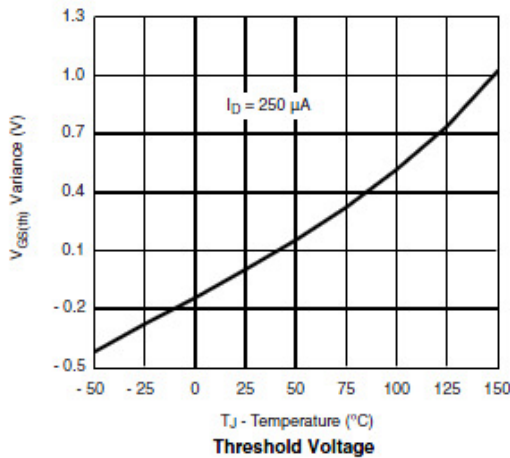
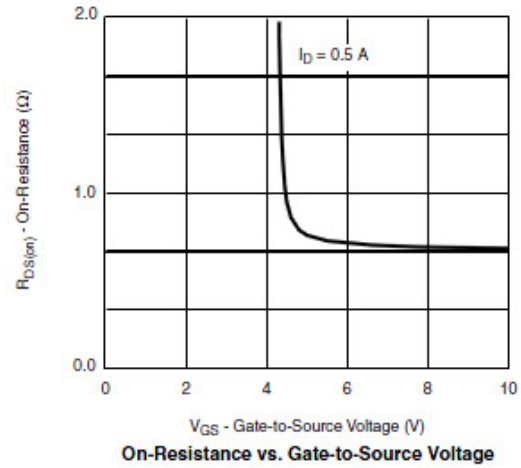
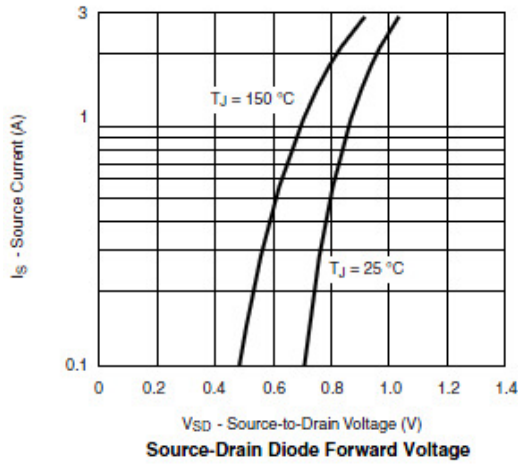


Typical Characteristics (P-Channel)





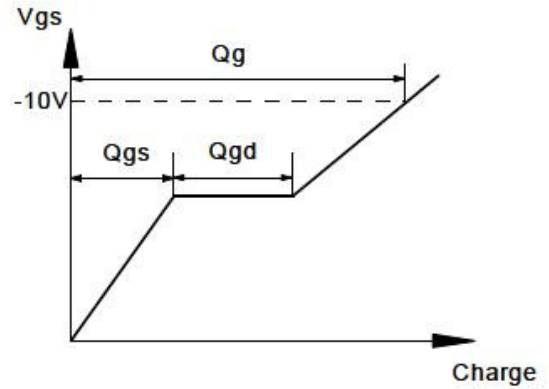
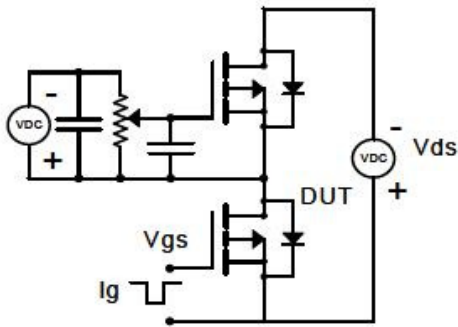
Typical Characteristics (P-Channel)



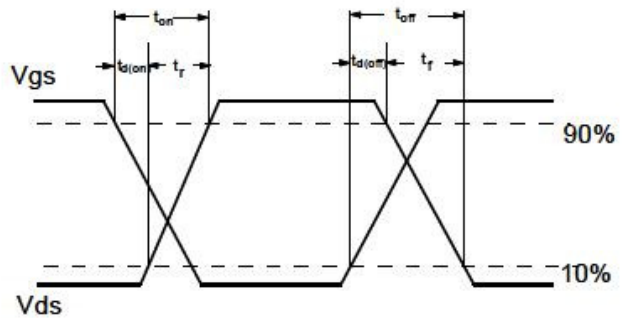
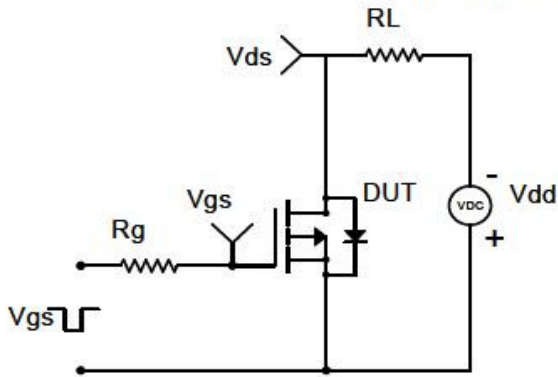


Typical Characteristics

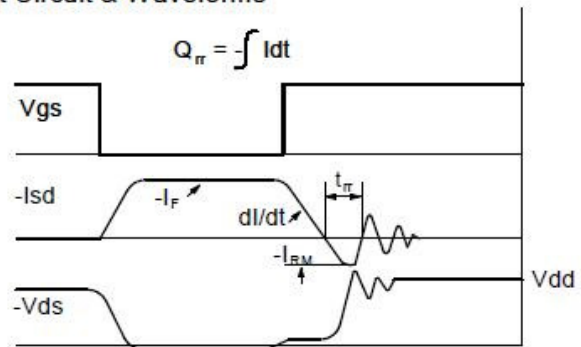
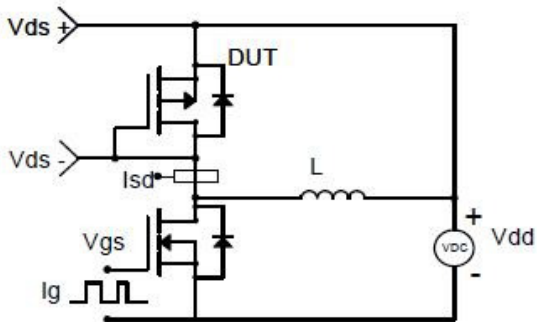
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

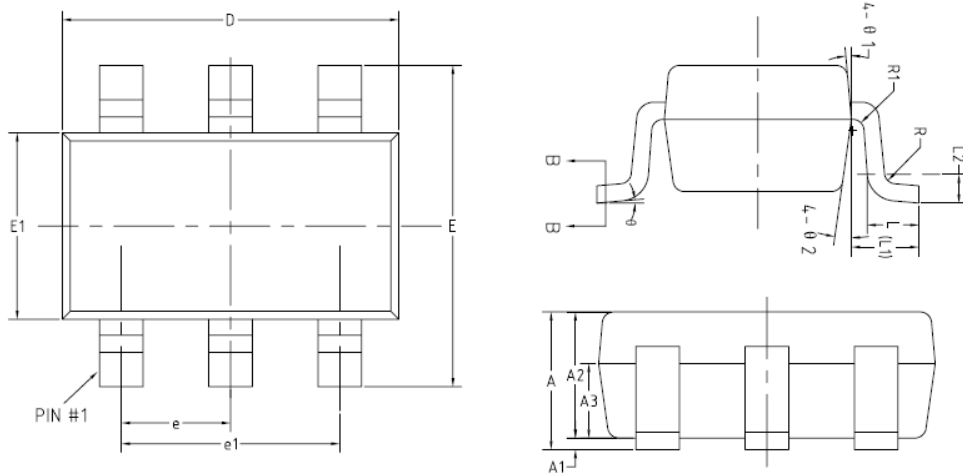


Diode Recovery Test Circuit & Waveforms





Package Information (SOT-23-6L)



(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	—	—	1.45
A1	0	—	0.15
A2	0.90	1.10	1.30
A3	0.60	0.65	0.70
b	0.39	—	0.49
b1	0.38	0.40	0.45
c	0.12	—	0.19
c1	0.11	0.13	0.15
D	2.85	2.95	3.05
E	2.60	2.80	3.00
E1	1.55	1.65	1.75
e	0.85	0.95	1.05
e1	1.80	1.90	2.00
L	0.35	0.45	0.60
L1	0.59REF		
L2	0.25BSC		
R	0.05	—	—
R1	0.05	—	0.20
θ	0°	—	8°
θ 1	8°	10°	12°
θ 2	8°	10°	12°

©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