



General Description

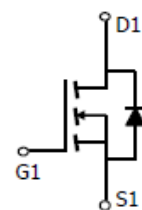
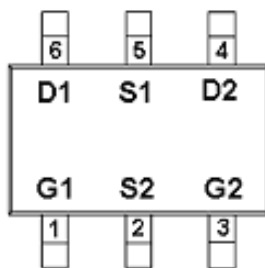
AFC6602, N & P Pair enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

These devices are particularly suited for low voltage power management, and low in-line power loss are needed in commercial industrial surface mount applications.

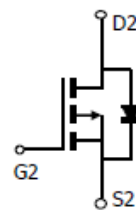
Features

- N-Channel
 $30V/3.5A, R_{DS(ON)}=75m\Omega@V_{GS}=10V$
 $30V/2.6A, R_{DS(ON)}=100m\Omega@V_{GS}=4.5V$
- P-Channel
 $-30V/-2.7A, R_{DS(ON)}=135m\Omega@V_{GS}=-10.0V$
 $-30V/-2.1A, R_{DS(ON)}=170m\Omega@V_{GS}=-4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- TSOP-6 package design

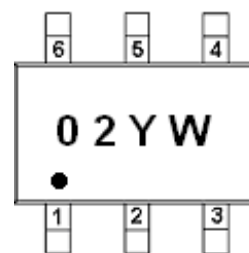
Pin Description (TSOP-6)



n-channel



p-channel



Application

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



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
AFC6602TS6RG	02YW	TSOP-6	Tape & Reel	3000 EA

- ※ 02 parts code
- ※ Y year code (0 ~ 9)
- ※ W week code (A ~ Z = 1 ~ 26 / a ~ z = 27 ~ 52)
- ※ AFC6602TS6RG : 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}	30	-30	V
Gate –Source Voltage		V _{GSS}	±20	±20	V
Continuous Drain Current(T _J =150°C)	T _A =25°C	I _D	3.5	-2.7	A
	T _A =70°C		2.6	-2.1	
Pulsed Drain Current		I _{DM}	-15	-15	A
Continuous Source Current(Diode Conduction)		I _S	-1.5	-1.5	A
Power Dissipation	T _A =25°C	P _D	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 =250μA	30			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} =±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1	μA
		V _{DS} =30V, V _{GS} =0V T _J =85°C			30	
On-State Drain Current	I _{D(on)}	V _{DS} ≥ 4.5V, V _{GS} =10V	6			A
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =3.6A		64	75	mΩ
		V _{GS} =4.5V, I _D =2.6A		88	100	
Forward Transconductance	g _{FS}	V _{DS} =15V, I _D =2.8A		11		S
Diode Forward Voltage	V _{SD}	I _S =2.6A, V _{GS} =0V		0.8	1.2	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =15V, V _{GS} =4.5V I _D ≅3.0A		2.0	3.6	nC
Gate-Source Charge	Q _{gs}			0.8		
Gate-Drain Charge	Q _{gd}			0.65		
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V f=1MHz		230		pF
Output Capacitance	C _{oss}			50		
Reverse Transfer Capacitance	C _{rss}			20		
Turn-On Time	t _{d(on)}	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	
Turn-Off Time	t _{d(off)}			12	18	
	t _f			20	30	



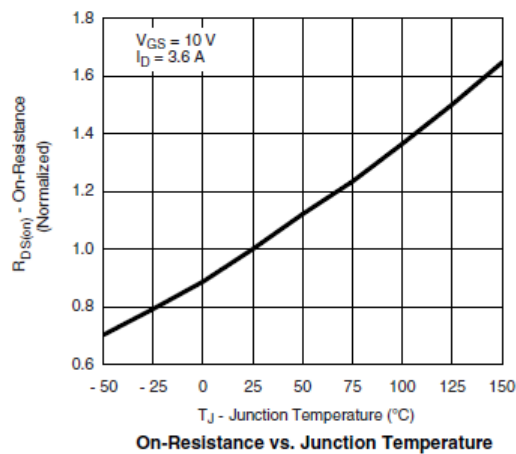
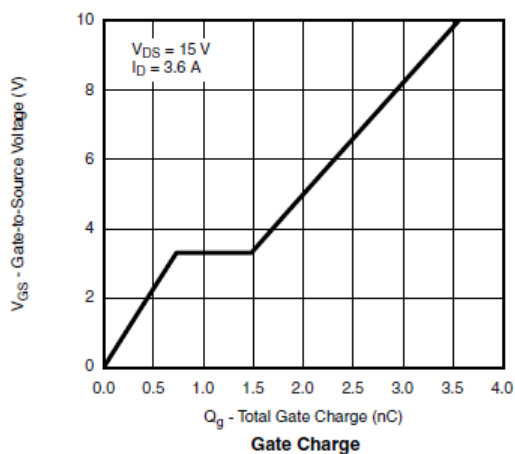
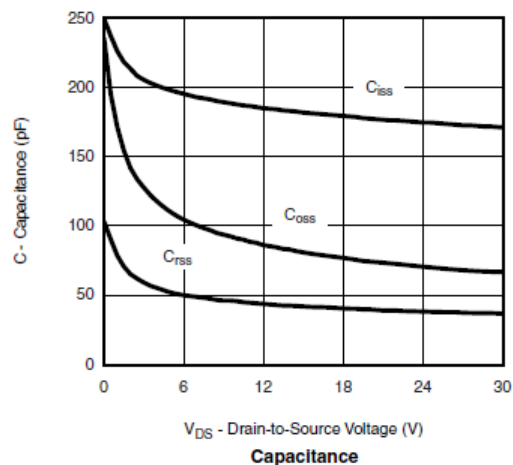
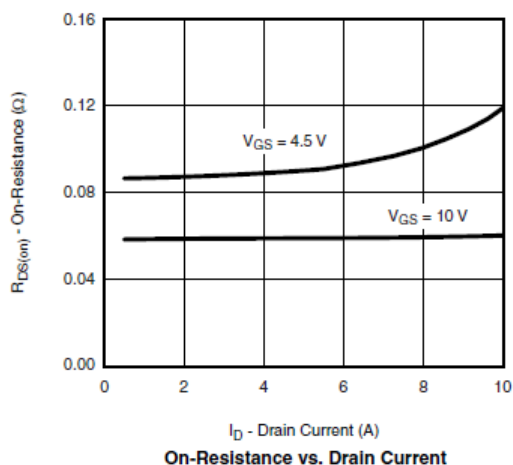
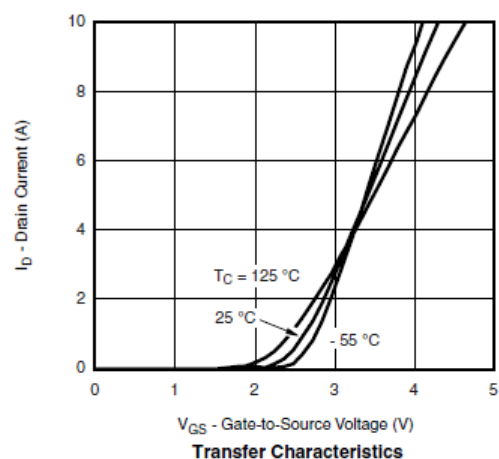
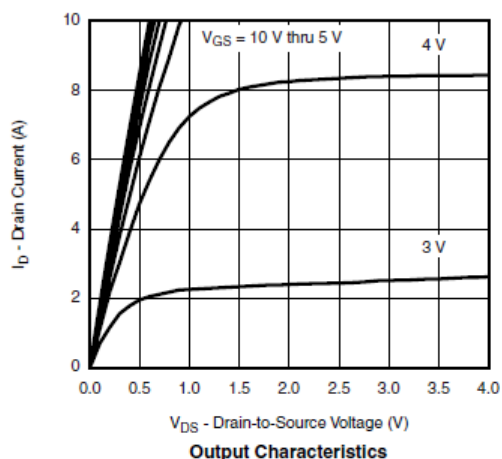
Electrical Characteristics (P-Channel)

(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 =-250uA	-30			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250uA	-1.0		-2.5	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-24V, V _{GS} =0V			-1	uA
		V _{DS} =-24V, V _{GS} =0V T _A =85°C			-30	
On-State Drain Current	I _{D(on)}	V _{DS} ≤ -5V, V _{GS} =-10V	-10			A
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-10.0V, I _D =-2.7A		115	135	mΩ
		V _{GS} =-4.5V, I _D =-2.1A		150	170	
Forward Transconductance	g _{FS}	V _{DS} =-5V, I _D =-1.6A		10		S
Diode Forward Voltage	V _{SD}	I _S =-1.7A, V _{GS} =0V		-0.7	-1.3	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =-15V, V _{GS} =-4.5V I _D ≡-1.6A		2.5		nC
Gate-Source Charge	Q _{gs}			0.8		
Gate-Drain Charge	Q _{gd}			1.0		
Input Capacitance	C _{iss}	V _{DS} =-15V, V _{GS} =0V f=1MHz		170		pF
Output Capacitance	C _{oss}			50		
Reverse Transfer Capacitance	C _{rss}			30		
Turn-On Time	t _{d(on)}	V _{DD} =-15V, R _L =7.5Ω I _D ≡-1.6A, V _{GEN} =-10V R _G =1Ω		5	10	ns
	t _r			10	16	
Turn-Off Time	t _{d(off)}			10	16	
	t _f			5	10	

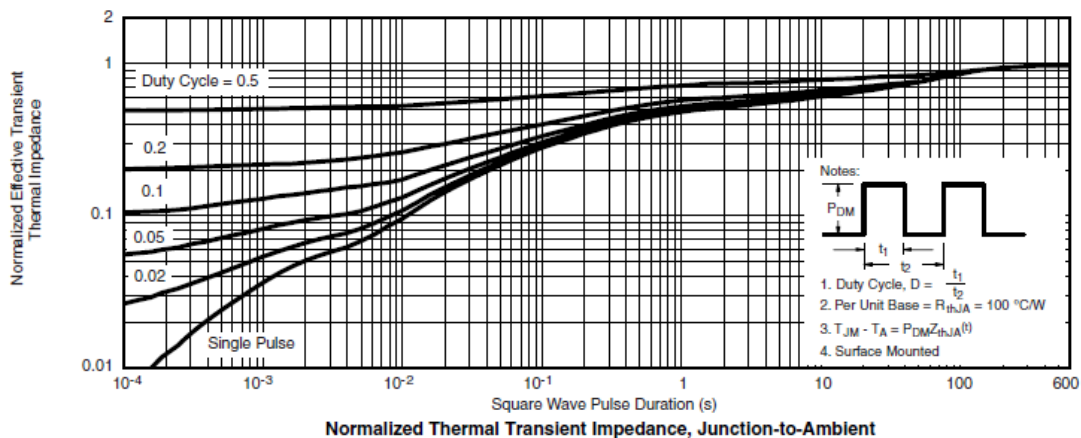
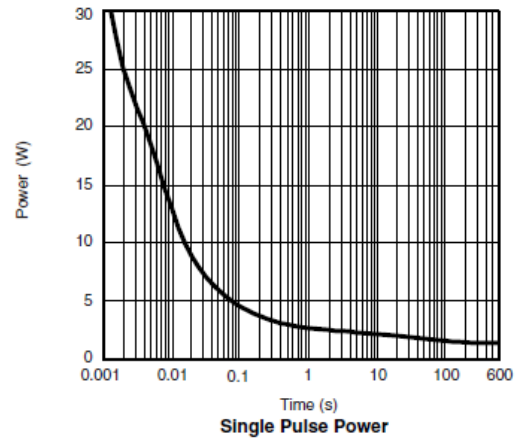
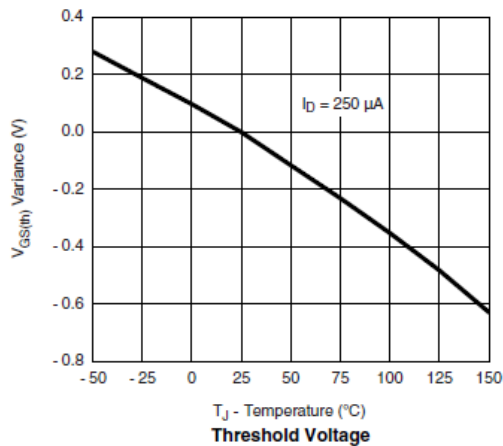
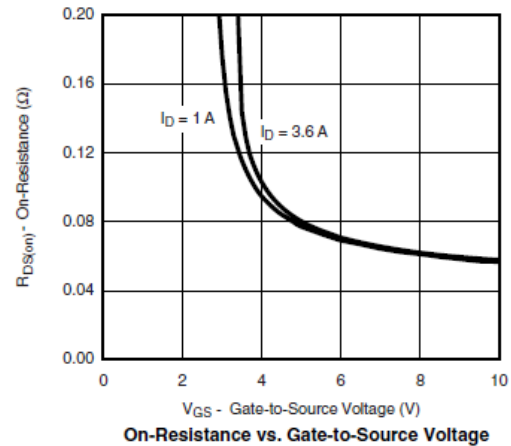
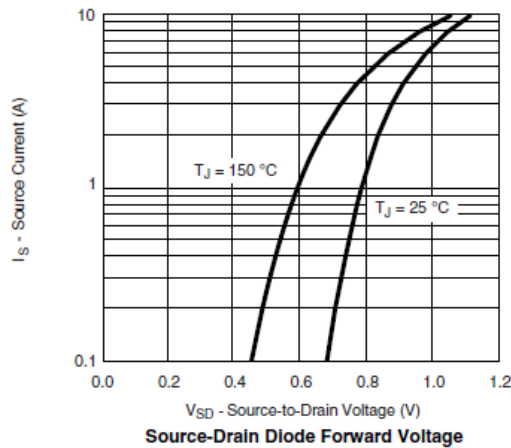


Typical Characteristics (N-Channel)





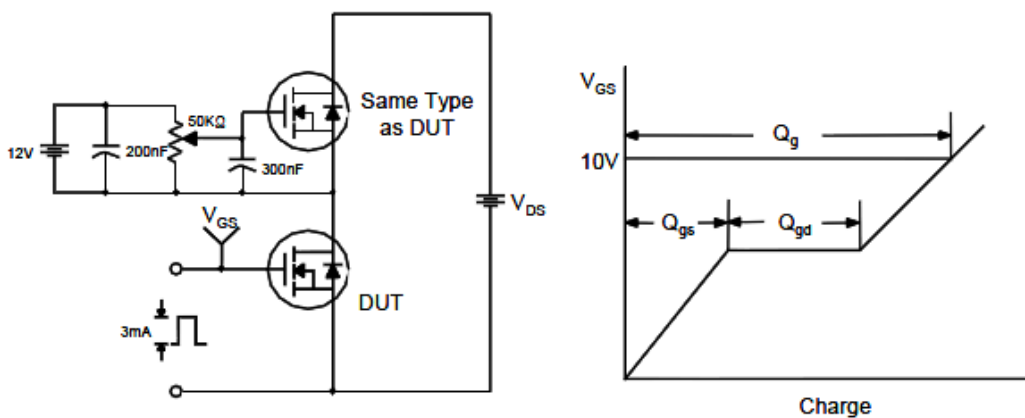
Typical Characteristics (N-Channel)



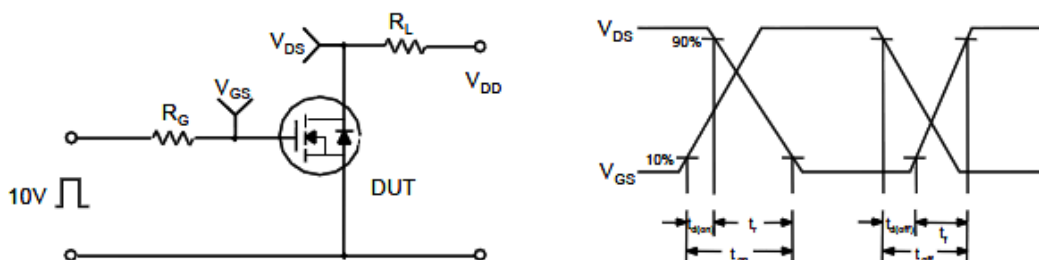


Typical Characteristics (N-Channel)

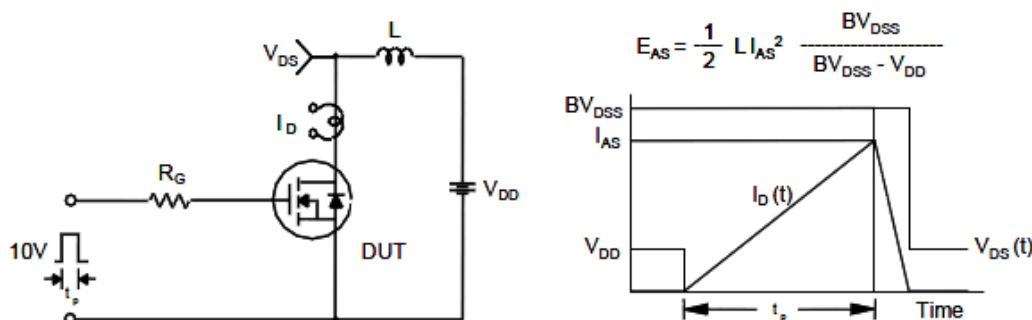
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

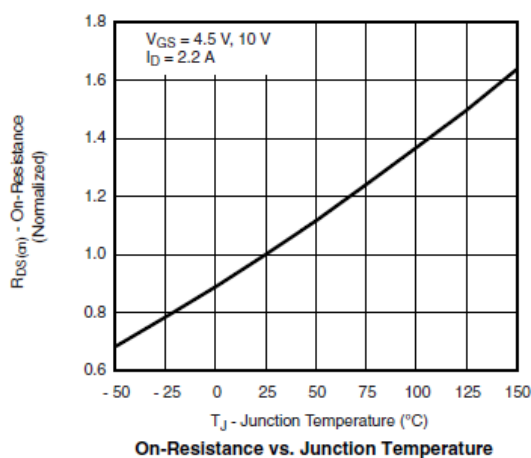
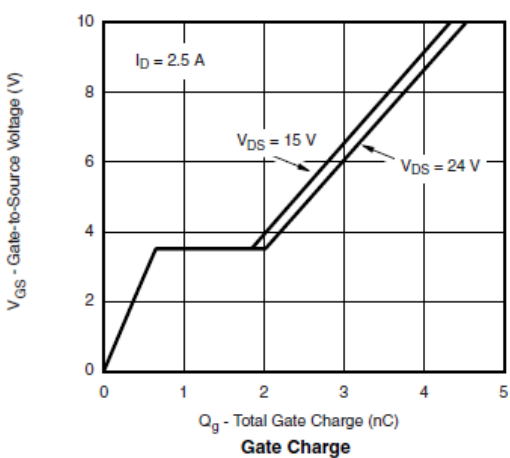
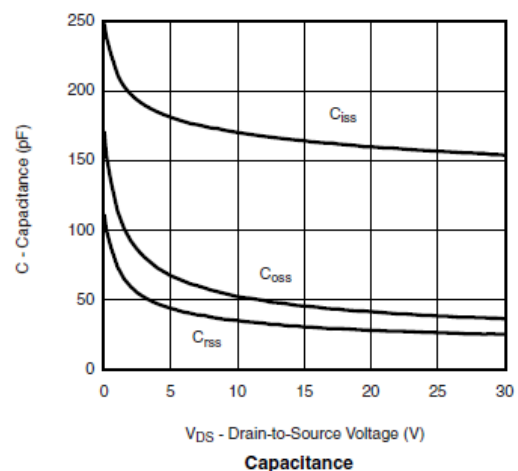
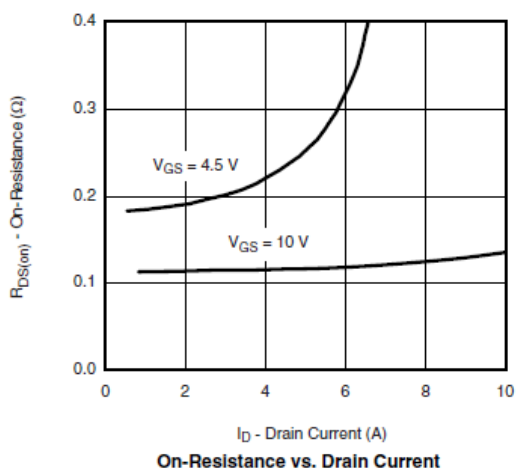
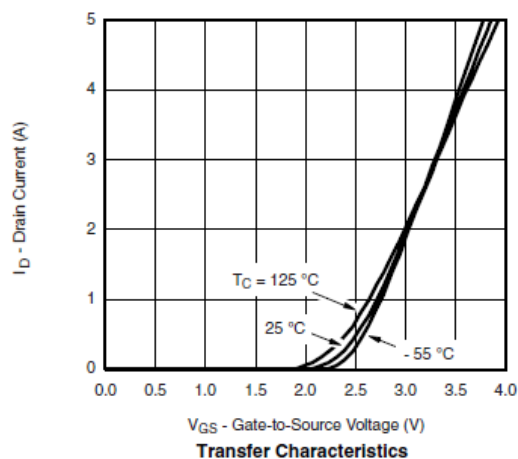
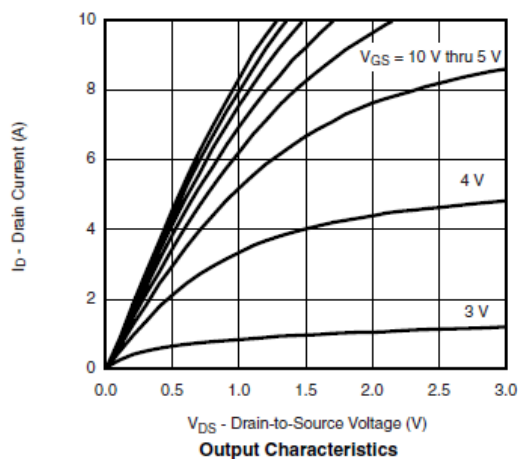


Unclamped Inductive Switching Test Circuit & Waveforms



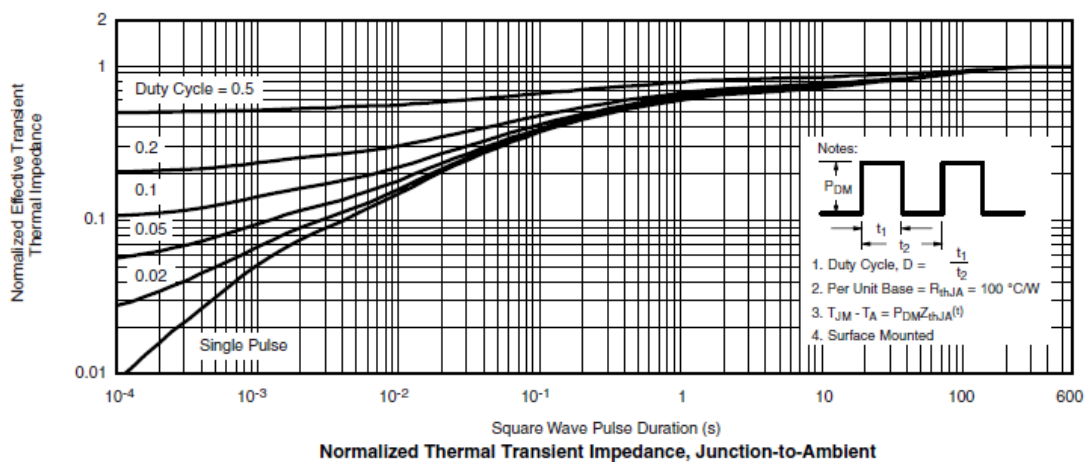
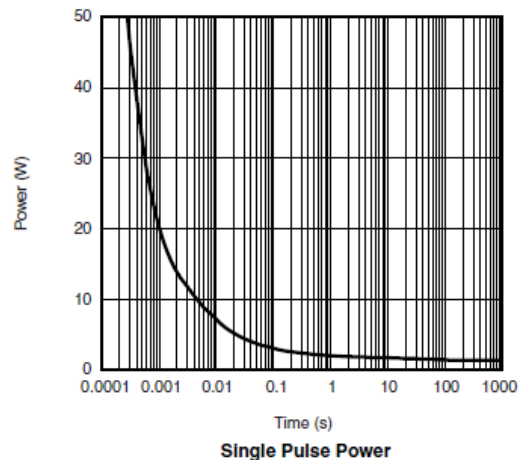
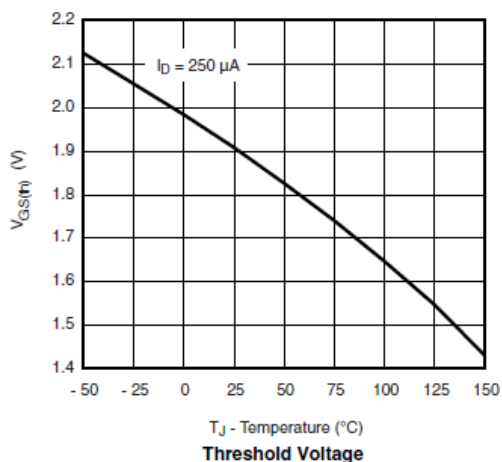
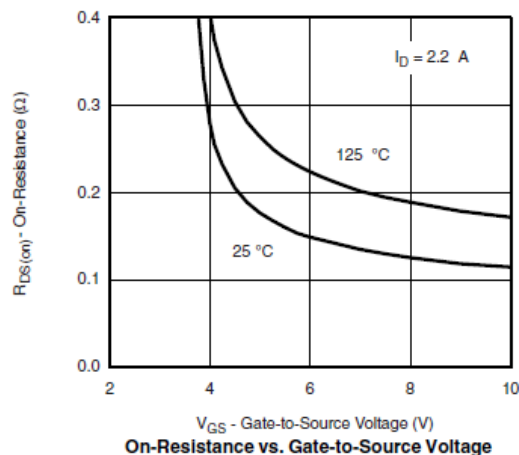
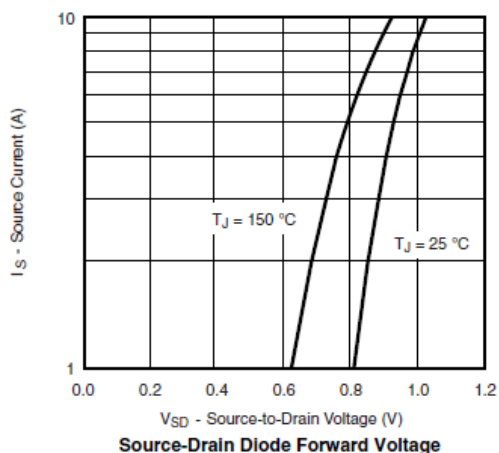


Typical Characteristics (P-Channel)





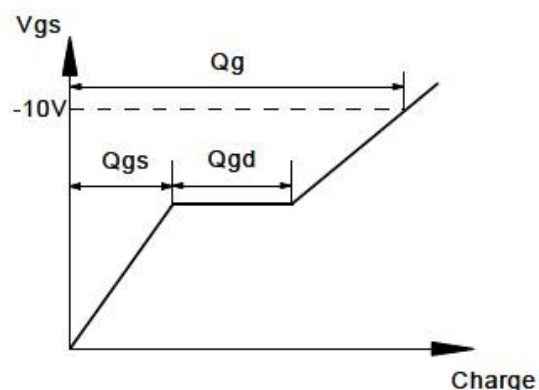
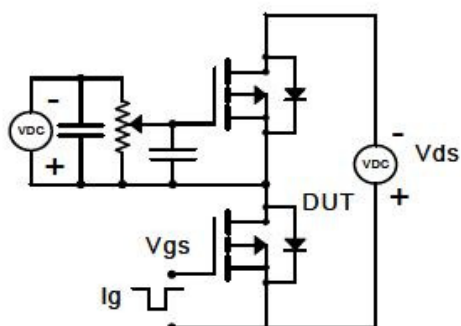
Typical Characteristics (P-Channel)



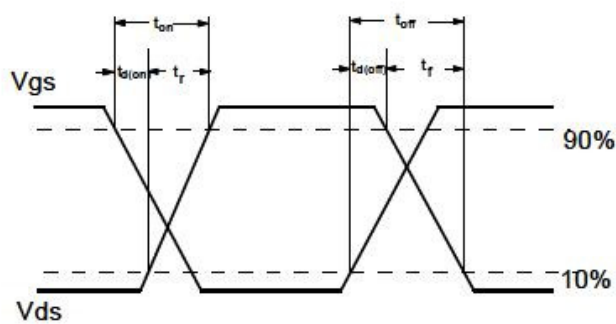
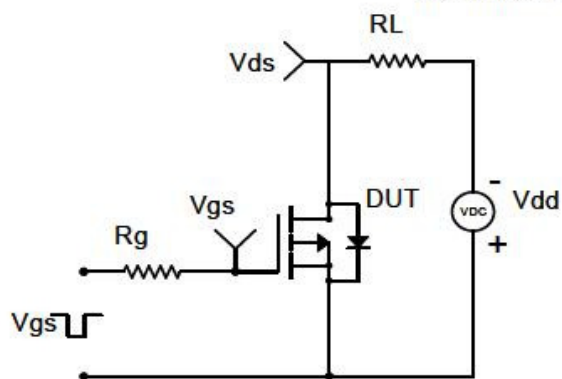


Typical Characteristics (P-Channel)

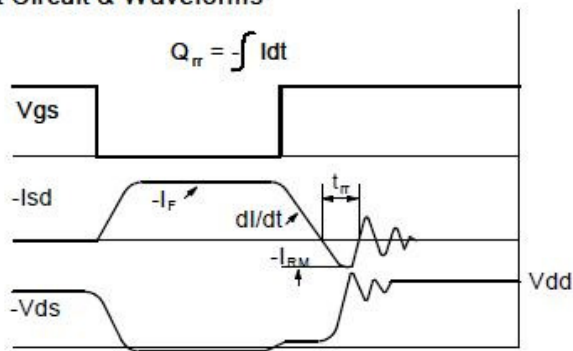
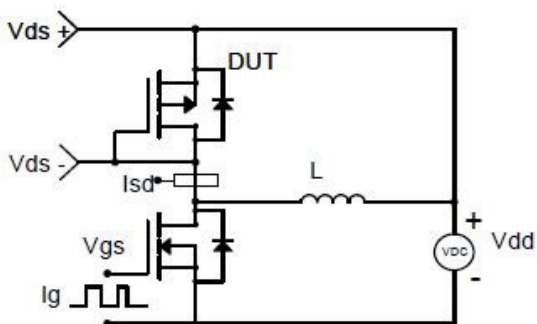
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

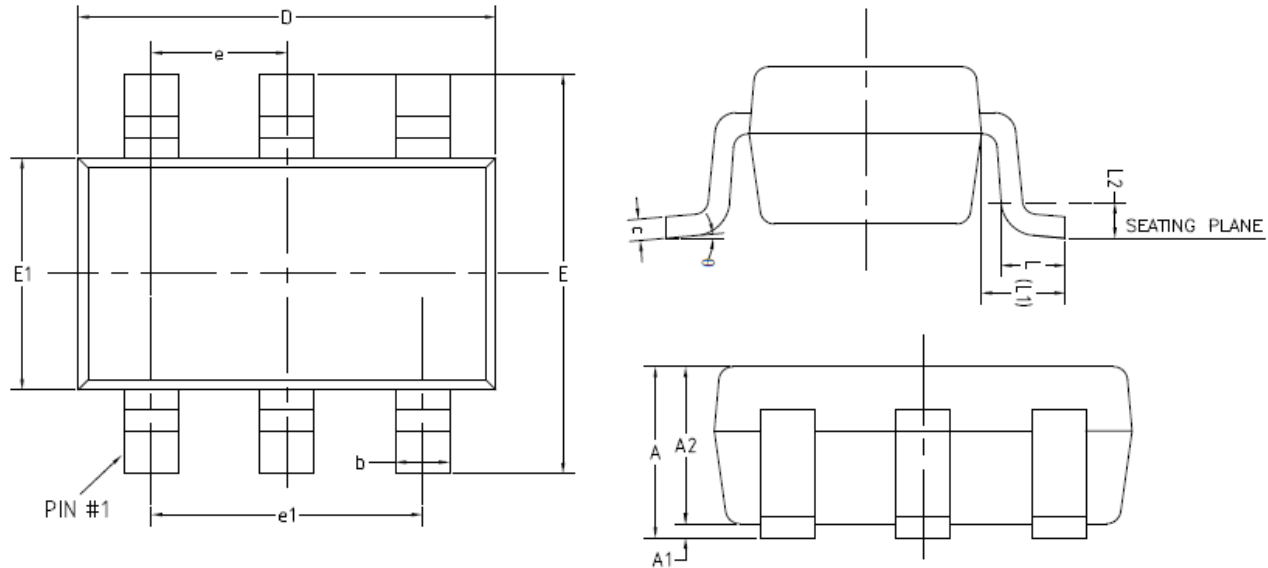


Diode Recovery Test Circuit & Waveforms





Package Information (TSOP-6)



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	0.70	—	0.90
A1	0	—	0.10
A2	0.70	0.75	0.80
b	0.35	—	0.50
c	0.08	—	0.20
D	2.82	2.92	3.02
E	2.65	2.80	2.95
E1	1.60	1.65	1.70
e	0.95(BSC)		
e1	1.90(BSC)		
L	0.30	0.45	0.60
L1	0.59REF		
L2	0.25BSC		
θ	0°	—	8°

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