60V COMPLEMENTARY ENHANCEMENT MODE MOSFET FULL-BRIDGE

Description

The GF4A2C06SK2 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It can be used in a wide variety of applications.

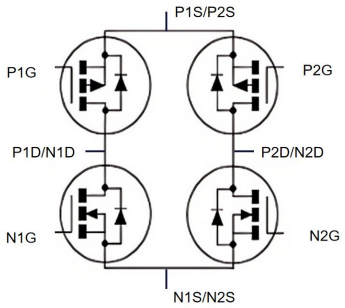
General Features

- AMOS
- V_{DS} 60V
- I_D (at V_{GS} = 10V) 3A
- $R_{DS(ON)}$ (at V_{GS} = 10V) < 80mΩ
- $R_{DS(ON)}$ (at V_{GS} = 4.5V) < 85mΩ
- 100% Avalanche Tested
- RoHS Compliant

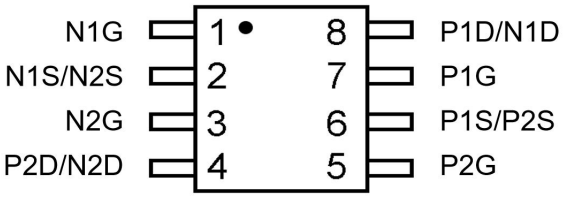
- BMOS
- V_{DS} -60V
- I_D (at V_{GS} = -10V) -6A
- $R_{DS(ON)}$ (at V_{GS} = -10V) < 80mΩ
- $R_{DS(ON)}$ (at V_{GS} = -4.5V) < 100mΩ
- 100% Avalanche Tested
- RoHS Compliant

Application

- Power switch
- DC/DC converters



Schematic diagram



pin assignment



SOP-8 Dual

Ordering Information

Device	Package	Marking	Packaging
GF4A2C06SK2	SOP-8 Dual	GF4A2C06D	4000pcs/Reel

Absolute Maximum Ratings T_C = 25ºC, unless otherwise noted

Parameter		Symbol	AMOS	BMOS	Unit
Drain-Source Voltage		V_{DS}	60	-60	V
Continuous Drain Current	T_C = 25ºC	I_D	3	-6	A
	T_C = 100ºC		1.9	-3.8	
Pulsed Drain Current (note1)		I_{DM}	12	-24	A
Gate-Source Voltage		V_{GS}	±20	±20	V
Power Dissipation		P_D	1.7	2	W
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 To 150	-55 To 150	ºC

Thermal Resistance

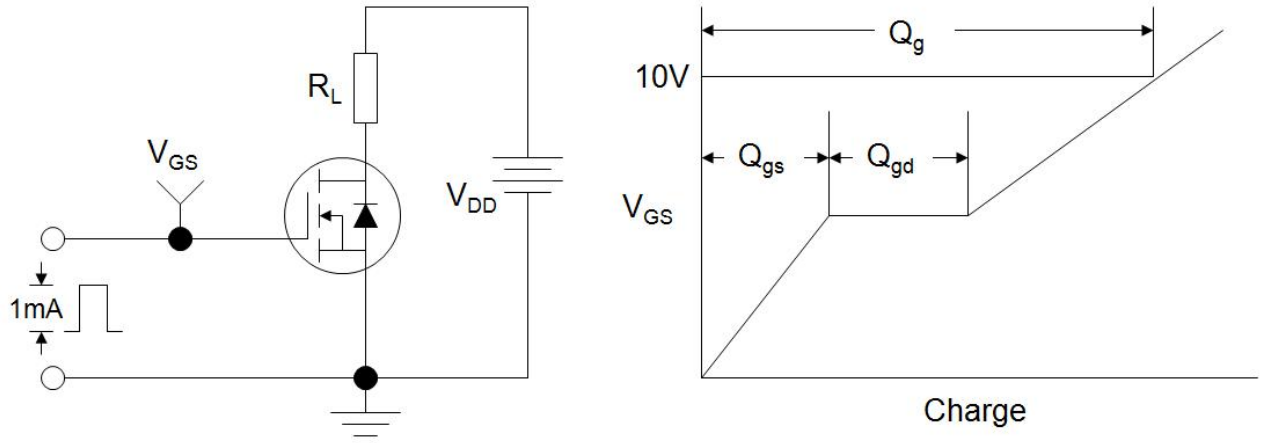
Parameter	Symbol	AMOS	BMOS	Unit
Thermal Resistance, Junction-to-Ambient	R_{thJA}	73.5	62.5	ºC/W

AMOS Specifications T_J = 25ºC, unless otherwise noted						
Parameter	**Symbol**	**Test Conditions**	**Value**			**Unit**
			Min.	**Typ.**	**Max.**	
Static Parameters						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	60	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 60V, V_{GS} = 0V	--	--	1	μA
Gate-Source Leakage	I_{GSS}	V_{GS} = ±20V	--	--	±100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	0.7	0.9	1.2	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} =10V, I_D = 2A	--	65	80	mΩ
		V_{GS} = 4.5V, I_D = 1A	--	70	85	
Forward Transconductance	g_{FS}	V_{GS} = 5V, I_D = 2A	--	12	--	S
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 30V, f = 1.0MHz	--	560	--	pF
Output Capacitance	C_{oss}		--	140	--	
Reverse Transfer Capacitance	C_{rss}		--	70	--	
Total Gate Charge	Q_g	V_{DD} = 30V, I_D = 2A, V_{GS} = 10V	--	13	--	nC
Gate-Source Charge	Q_{gs}		--	1	--	
Gate-Drain Charge	Q_{gd}		--	2	--	
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 10V, I_D = 2A, R_G = 10Ω	--	5	--	ns
Turn-on Rise Time	t_r		--	3	--	
Turn-off Delay Time	$t_{d(off)}$		--	15	--	
Turn-off Fall Time	t_f		--	4	--	
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I_S	T_C = 25ºC	--	--	3	A
Body Diode Voltage	V_{SD}	T_J = 25ºC, I_{SD} = 2A, V_{GS} = 0V	--	--	1.2	V
Reverse Recovery Charge	Qrr	I_F = 2A, V_{GS} = 0V di/dt= 100A/us	--	49	--	nC
Reverse Recovery Time	Trr		--	29	--	ns

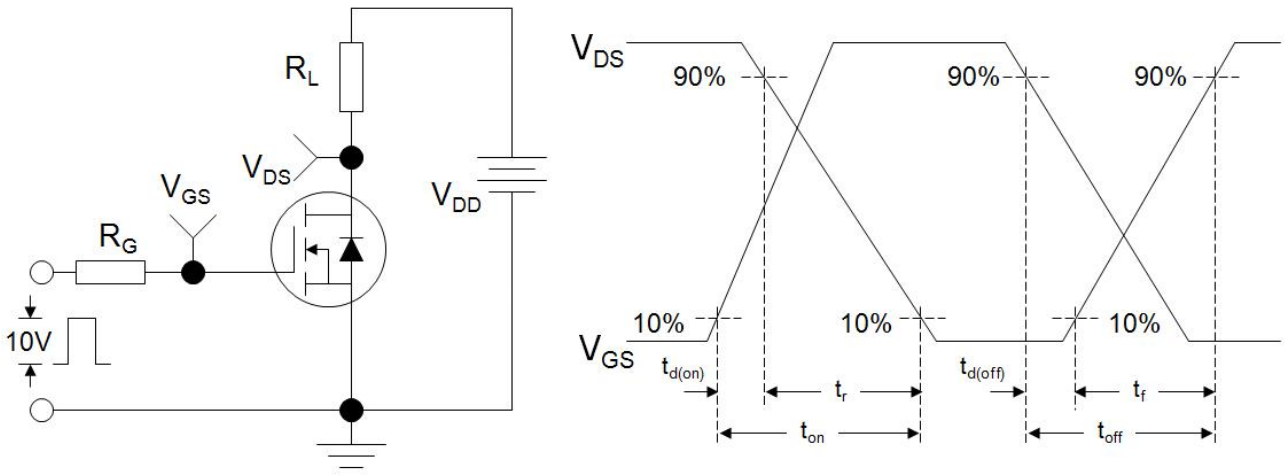
Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. Identical low side and high side switch with identical R_G

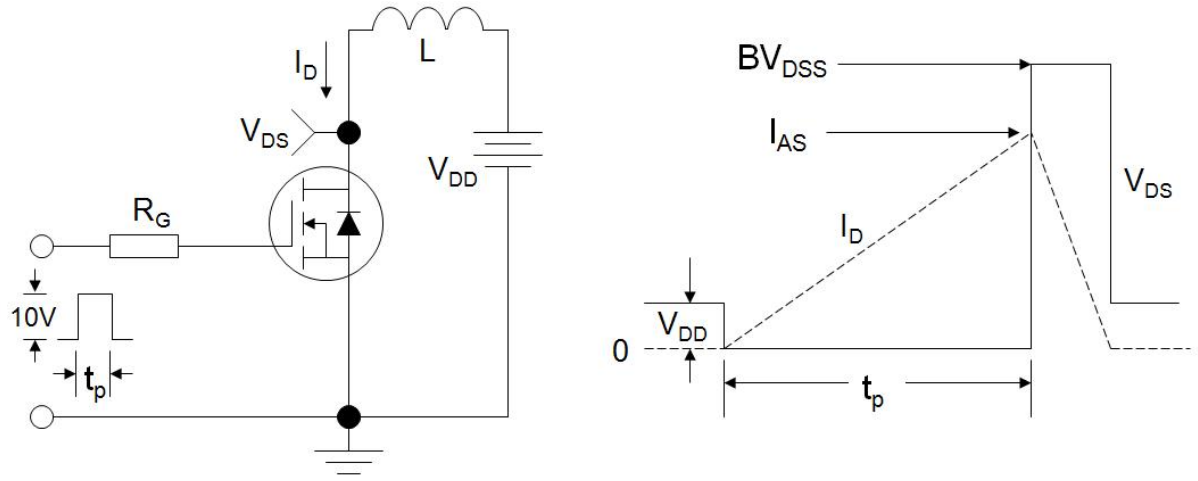
Gate Charge Test Circuit



Switch Time Test Circuit



EAS Test Circuit



AMOS Typical Characteristics T_J = 25ºC, unless otherwise noted

Figure 1. Output Characteristics

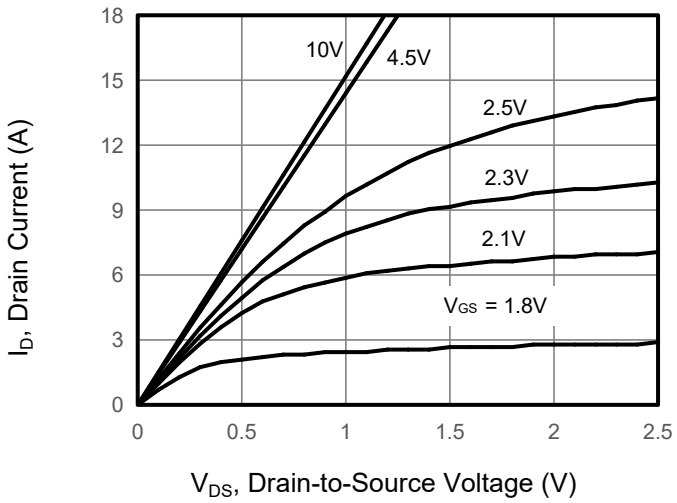


Figure 2. Transfer Characteristics

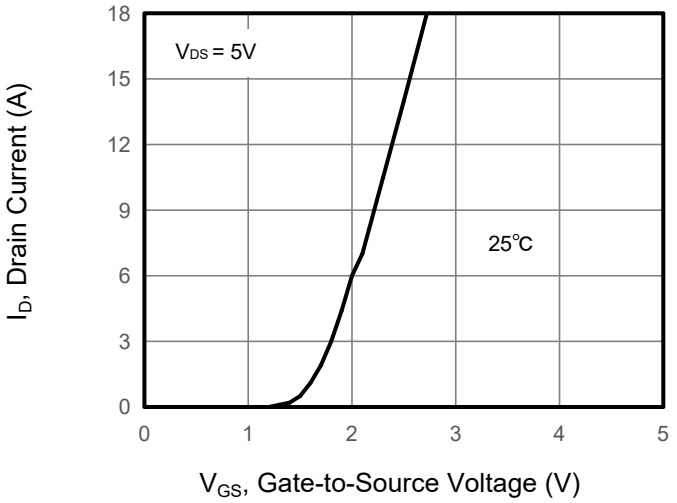


Figure 3. Drain Source On Resistance

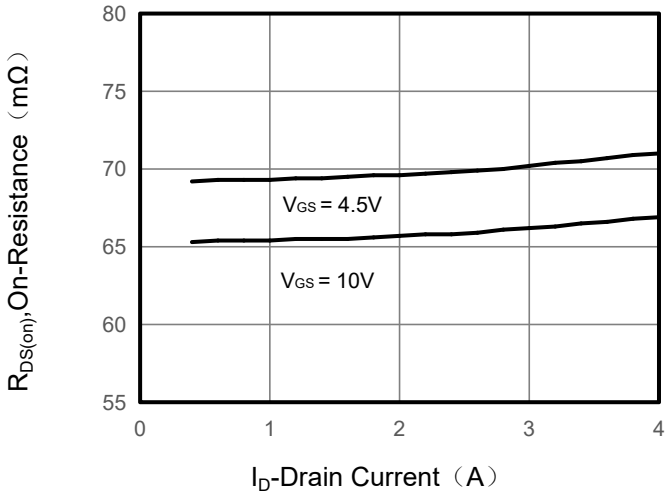


Figure 4. Gate Charge

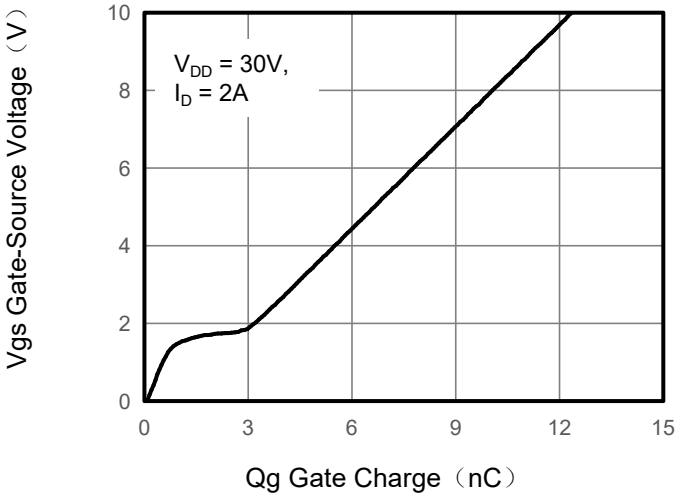


Figure 5. Capacitance

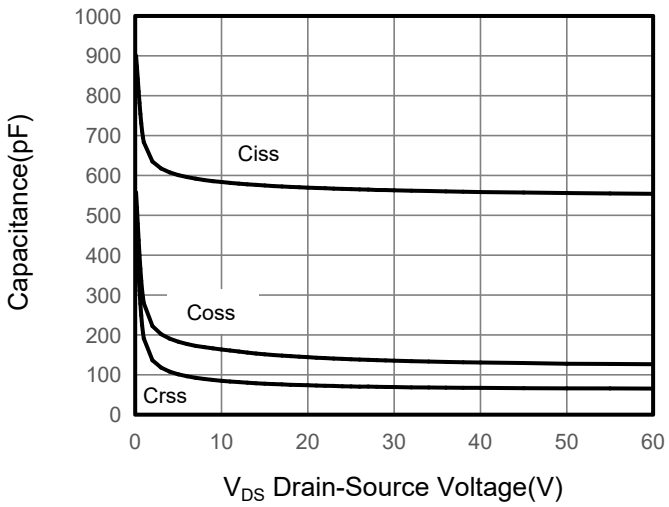
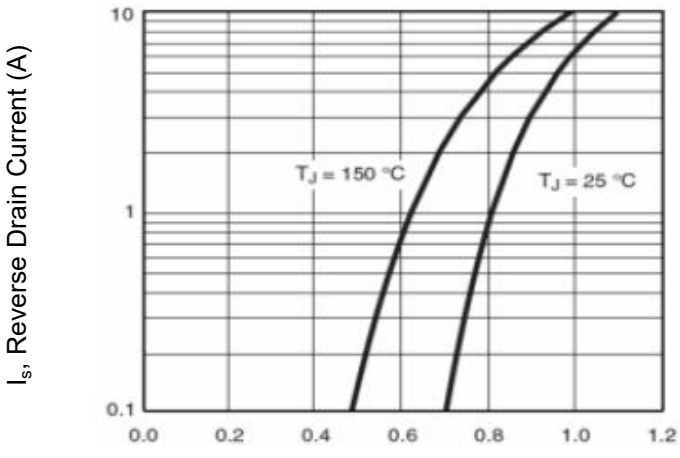


Figure 6. Source-Drain Diode Forward



AMOS Typical Characteristics T_J = 25ºC, unless otherwise noted

Figure 7. Drain-Source On-Resistance

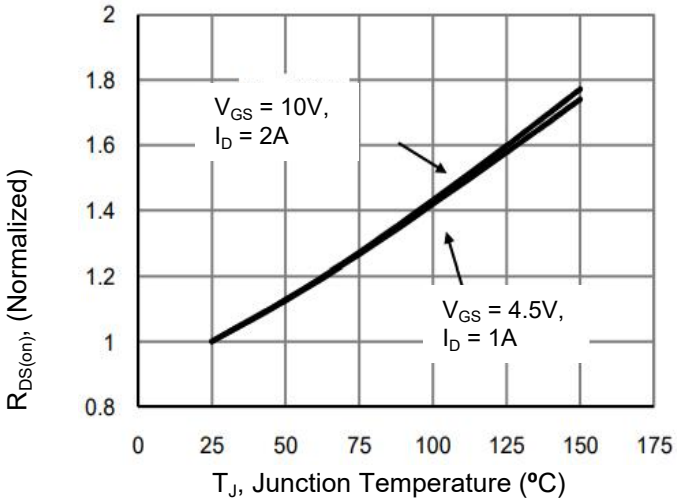


Figure 8. Safe Operation Area

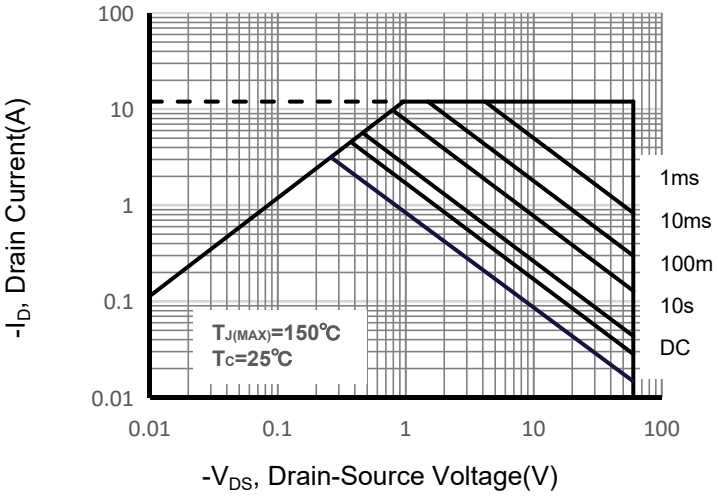


Figure 9. Maximum Continuous Drain Current vs Case Temperature

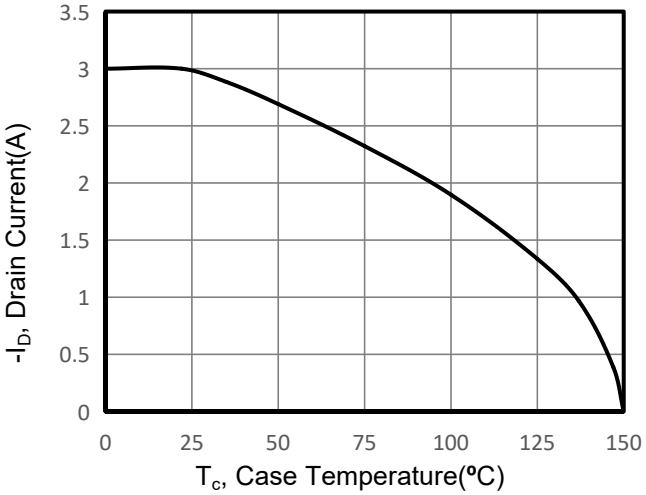
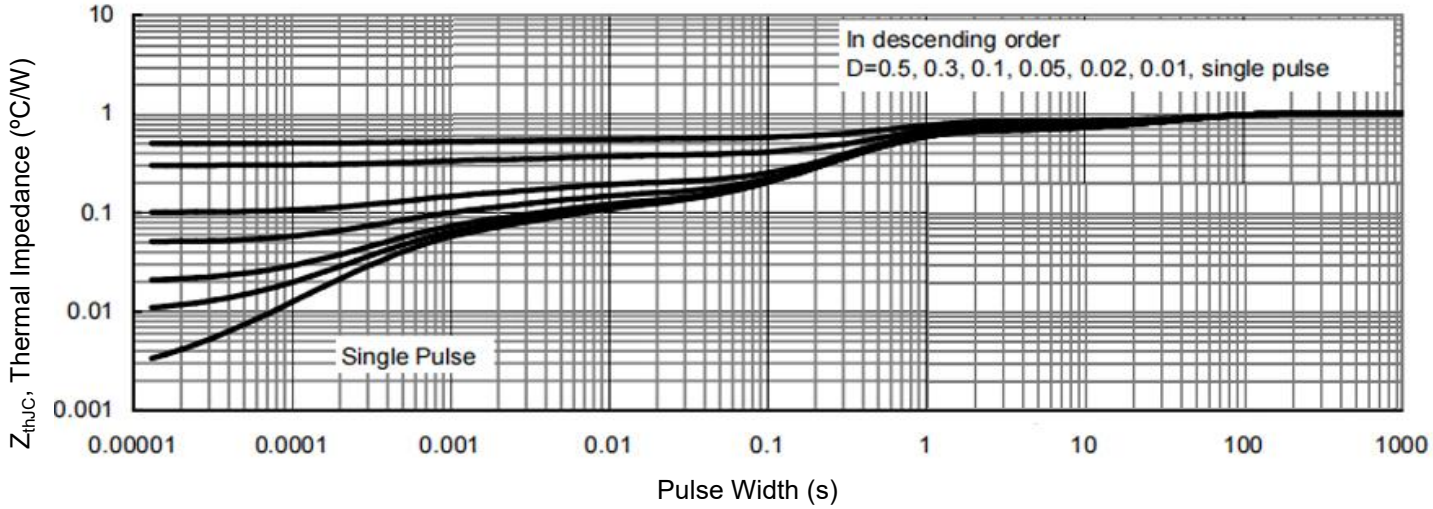


Figure 10. Normalized Maximum Transient Thermal Impedance

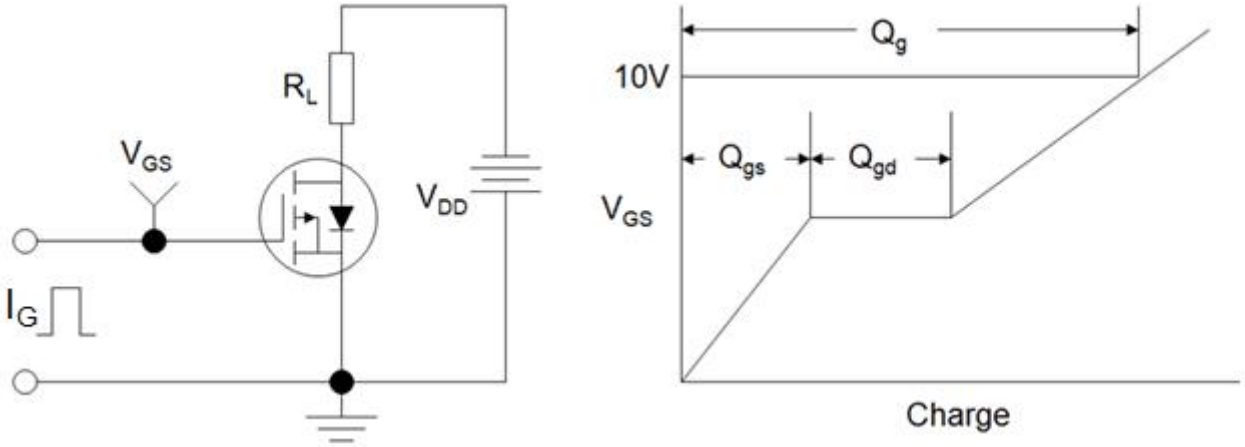


BMOS Specifications T_J = 25ºC, unless otherwise noted						
Parameter	**Symbol**	**Test Conditions**	**Value**			**Unit**
			Min.	**Typ.**	**Max.**	
Static Parameters						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-60	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -60V, V_{GS} = 0V	--	--	-1	μA
Gate-Source Leakage	I_{GSS}	V_{GS} = ±20V	--	--	±100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-1.0	-1.7	-2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = -10V, I_D = -3A	--	62	80	mΩ
		V_{GS} = -4.5V, I_D = -2A	--	75	100	
Forward Transconductance	g_{FS}	V_{DS} = -5V,I_D = -3A	--	6	--	S
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -30V, f = 1.0MHz	--	1600	--	pF
Output Capacitance	C_{oss}		--	200	--	
Reverse Transfer Capacitance	C_{rss}		--	110	--	
Total Gate Charge	Q_g	V_{DD} = -30V, I_D = -3A, V_{GS} = -10V	--	27	--	nC
Gate-Source Charge	Q_{gs}		--	4	--	
Gate-Drain Charge	Q_{gd}		--	5	--	
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = -30V, I_D = -3A, R_G = 3Ω	--	10	--	ns
Turn-on Rise Time	t_r		--	5	--	
Turn-off Delay Time	$t_{d(off)}$		--	40	--	
Turn-off Fall Time	t_f		--	9	--	
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I_S	T_C = 25ºC	--	--	-6	A
Body Diode Voltage	V_{SD}	T_J = 25ºC, I_{SD} = -3A, V_{GS} = 0V	--	--	-1.2	V
Reverse Recovery Charge	Q_{rr}	I_F = -3A, V_{GS} = 0V di/dt=-100A/us	--	39	--	nC
Reverse Recovery Time	T_{rr}		--	31	--	ns

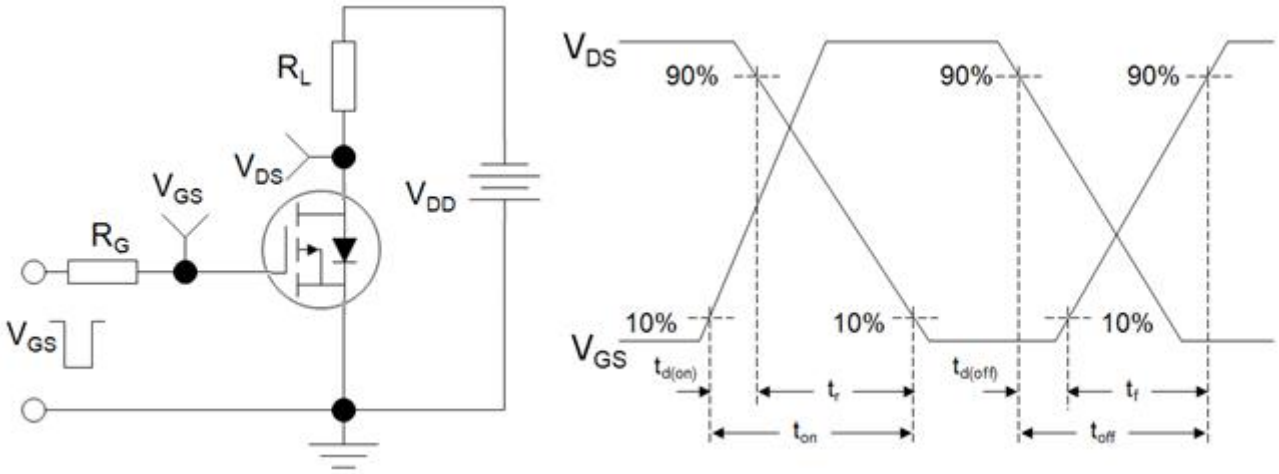
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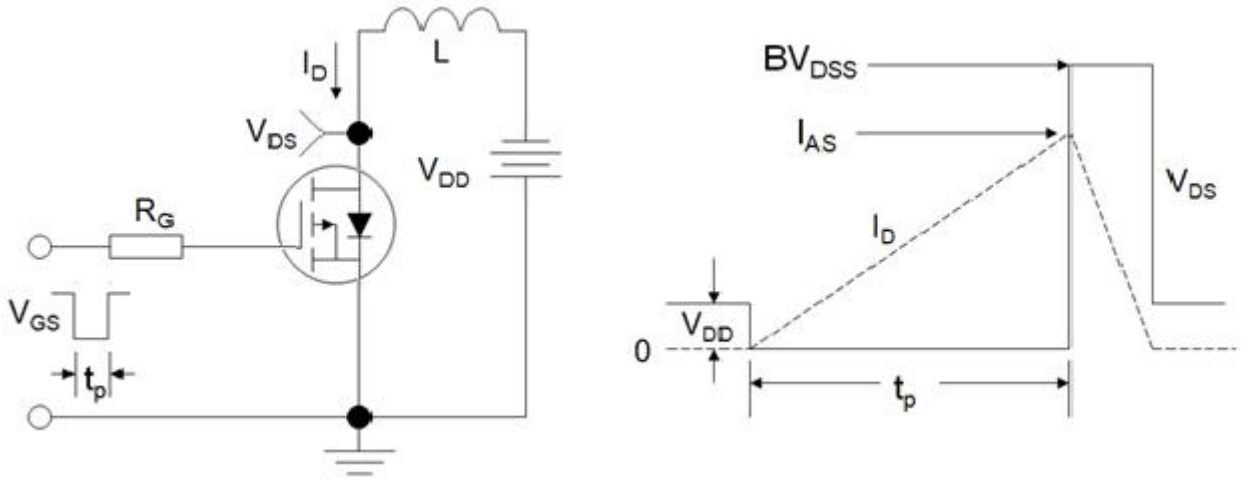
Gate Charge Test Circuit



Switch Time Test Circuit



EAS Test Circuit



BMOS Typical Characteristics T_J = 25ºC, unless otherwise noted

Figure 1. Output Characteristics

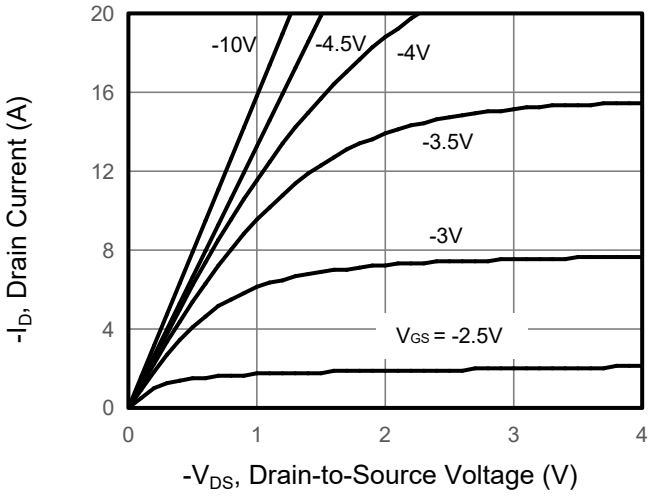


Figure 2. Transfer Characteristics

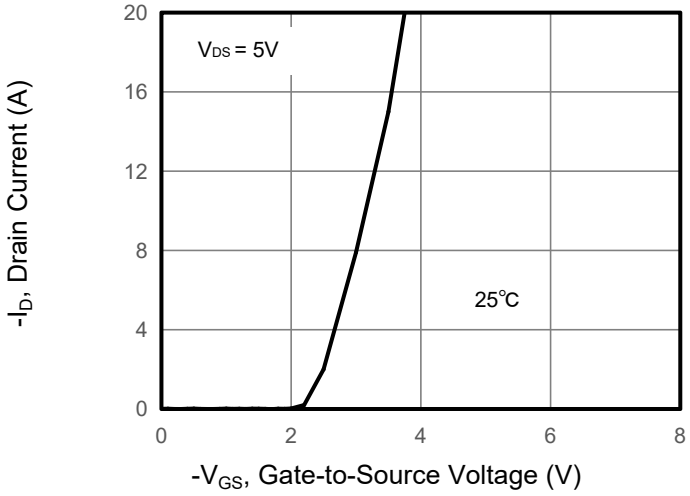


Figure 3.Drain Source On Resistance

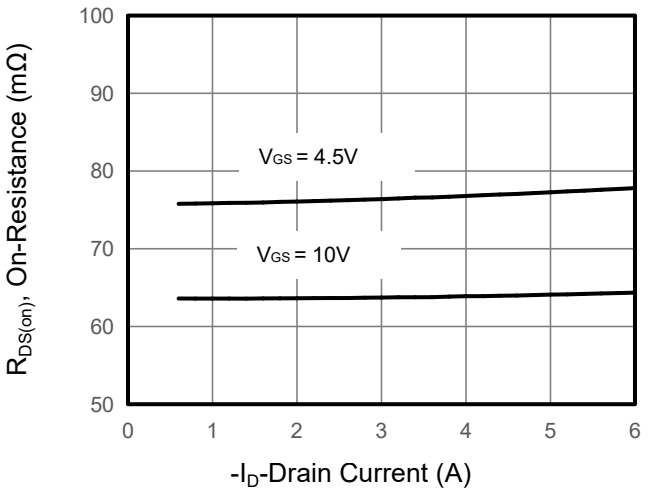


Figure 4. Gate Charge

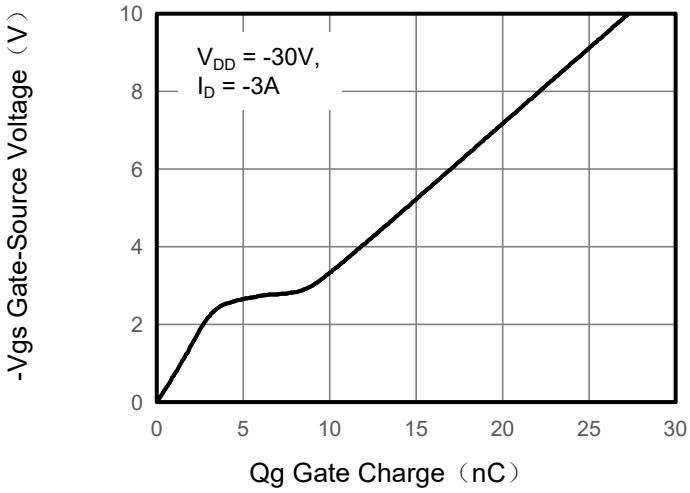


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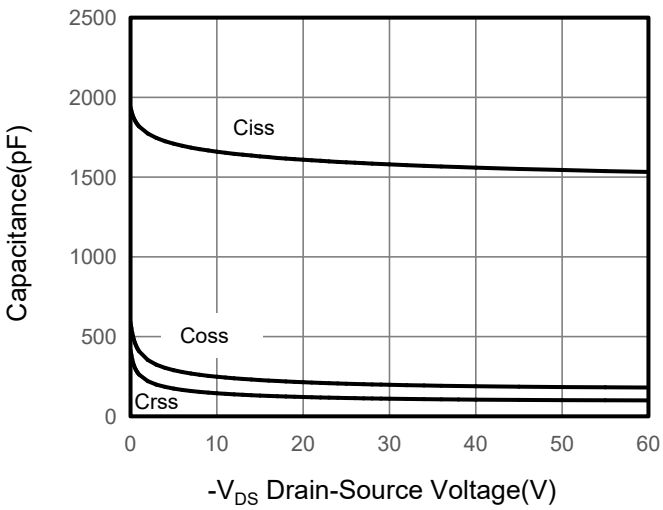
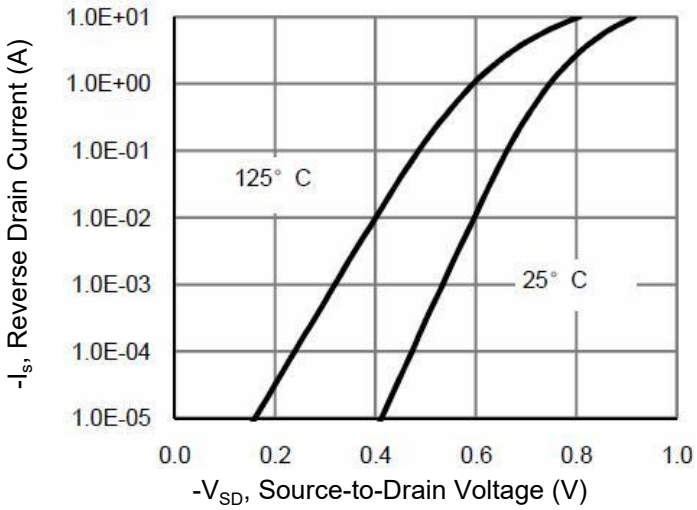


Figure 6. Source-Drain Diode Forward



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Figure 7. Drain-Source On-Resistance

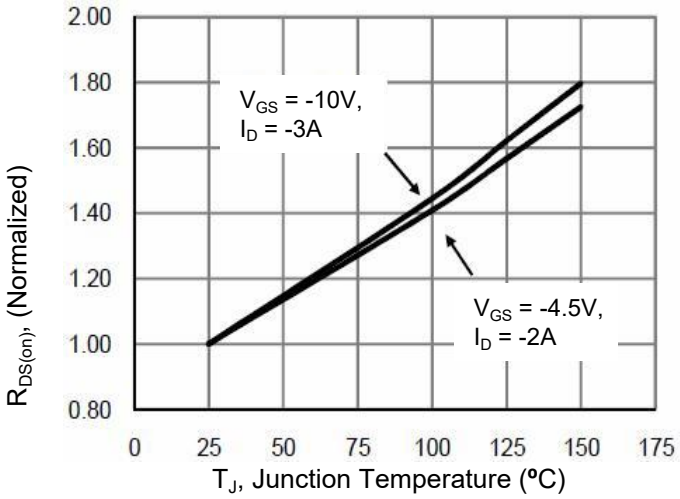


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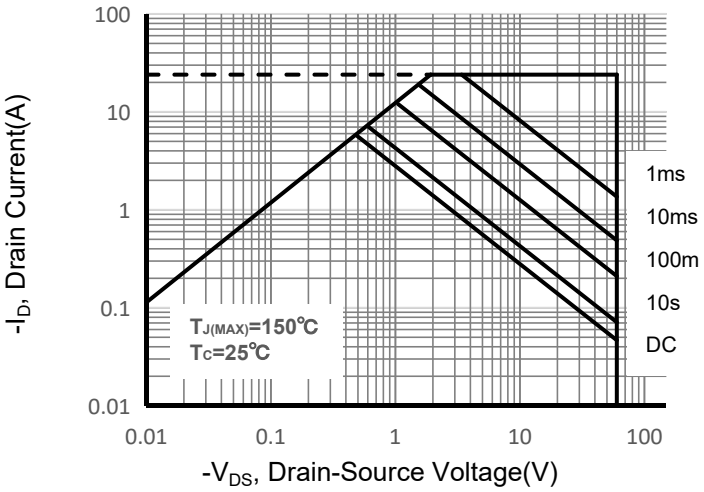


Figure 9. Maximum Continuous Drain Current vs Case Temperature

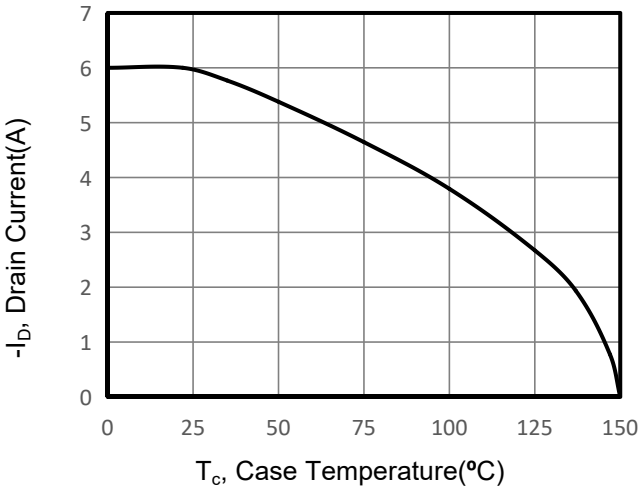
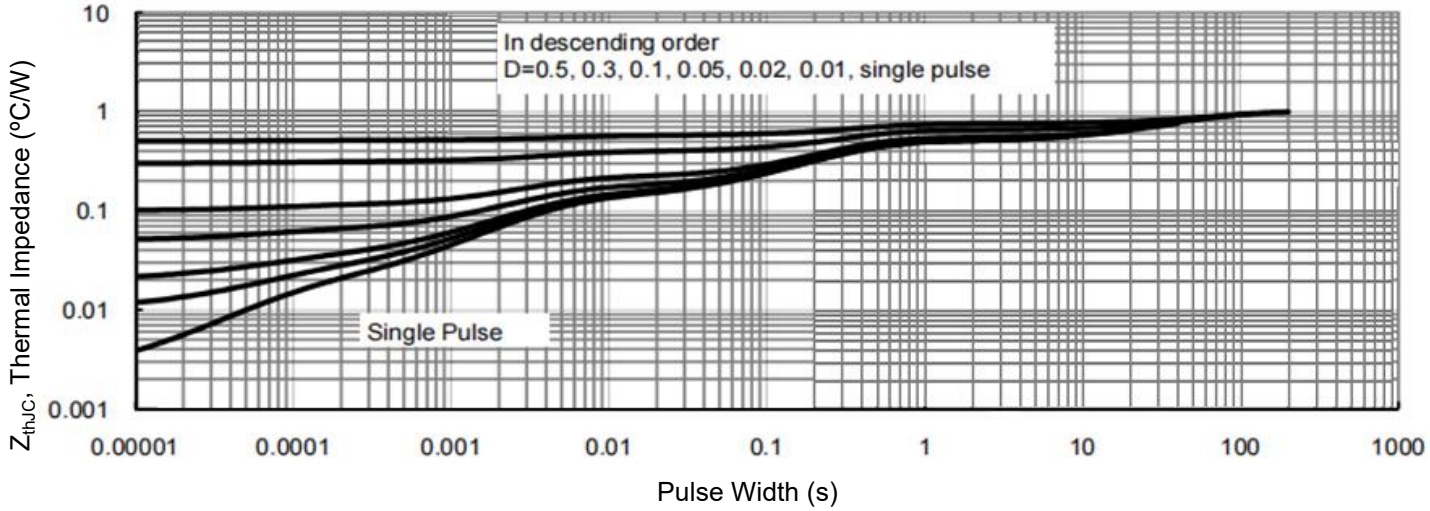
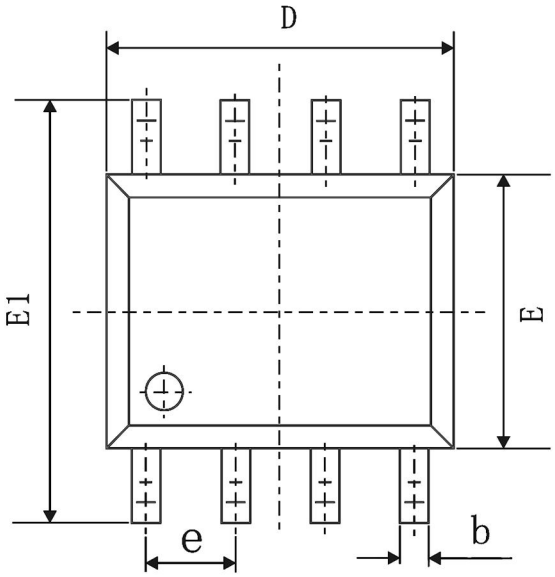


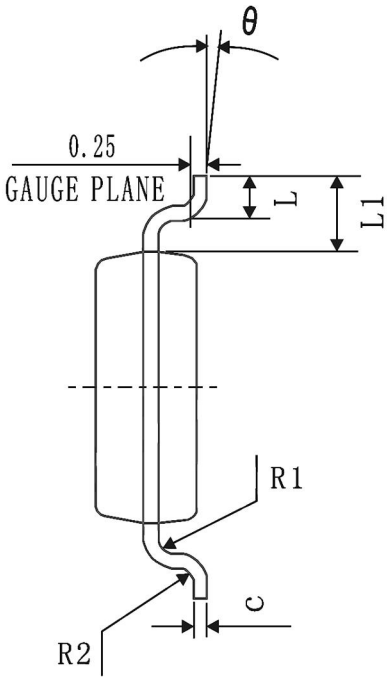
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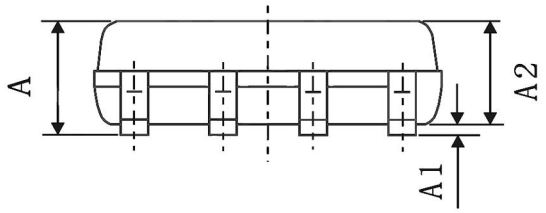
SOP-8 Dual Package Information



TOP VIEW



SIDE VIEW



SIDE VIEW

COMMON DIMENSIONS
(UNITS OF MEASURE=mm)

SYMBOL	MIN	NOM	MAX
A	1.40	1.60	1.80
A1	0.05	0.15	0.25
A2	1.35	1.45	1.55
b	0.30	0.40	0.50
c	0.153	0.203	0.253
D	4.80	4.90	5.00
E	3.80	3.90	4.00
E1	5.80	6.00	6.20
L	0.45	0.70	1.00
θ	2°	4°	6°
L1	1.04 REF		
e	1.27 BSC		
R1	0.07 TYP		
R2	0.07 TYP		