

RoHS Compliant Product
 A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

These miniature surface mount MOSFETs utilize a high cell density trench process to provide low $R_{DS(on)}$ and to ensure minimal power loss and heat dissipation.

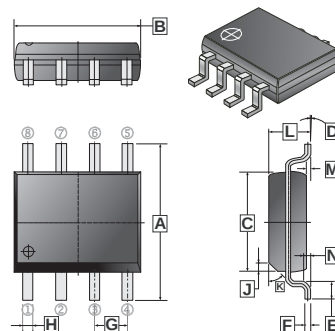
FEATURES

- Low $R_{DS(on)}$ provides higher efficiency and extends battery life.
- Low thermal impedance copper leadframe SOP-8 saves board space
- Fast switching speed
- High performance trench technology

APPLICATION

DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones

SOP-8

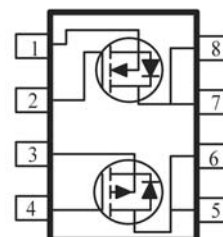


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	5.8	6.20	H	0.35	0.51
B	4.80	5.00	J	0.375 REF.	
C	3.80	4.00	K	45°	
D	0°	8°	L	1.35	1.75
E	0.50	0.93	M	0.10	0.25
F	0.19	0.25	N	0.25 REF.	
G	1.27 TYP.				

PACKAGE INFORMATION

Package	MPQ	Leader Size
SOP-8	2.5K	13 inch

Top View



ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter		Symbol	Rating		Unit
			N-CH	P-CH	
Drain-Source Voltage		V _{DS}	20	-20	V
Gate-Source Voltage		V _{GS}	±8	±8	V
Continuous Drain Current ¹	T _A = 25°C	I _D	6.6	-5.2	A
	T _A = 70°C		5	-3.8	A
Pulsed Drain Current ²		I _{DM}	20	-20	A
Continuous Source Current (Diode Conduction) ¹		I _S	2.2	-2.2	A
Total Power Dissipation ¹	T _A = 25°C	P _D	2.1		W
	T _A = 70°C		1.3		W
Operating Junction & Storage Temperature Range		T _J , T _{STG}	-55 ~ 150		°C
Thermal Resistance Ratings					
Maximum Junction-to-Ambient ¹	t≤ 10 sec	R _{θJA}	62.5		°C / W
	Steady State		110		°C / W

Notes:

1. Surface Mounted on 1" x 1" FR4 Board.
2. Pulse width limited by maximum junction temperature.

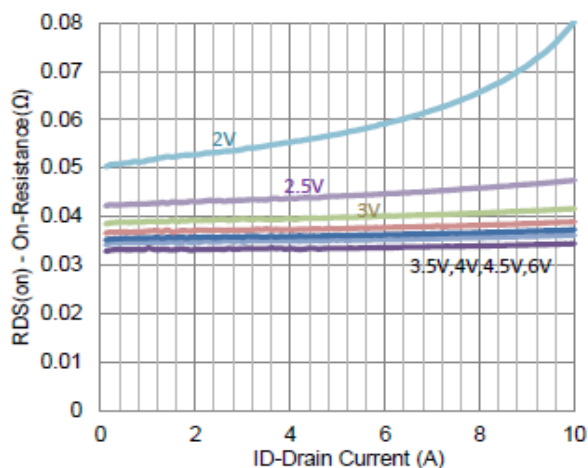
ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Ch	Min.	Typ.	Max.	Unit	Teat Conditions		
Static									
Gate Threshold Voltage	V _{GS(th)}	N	1	-	-	V	V _{DS} =V _{GS} , I _D =250μA		
		P	-1	-	-		V _{DS} =V _{GS} , I _D = -250μA		
Gate-Body Leakage	I _{GSS}	N	-	-	±100	nA	V _{DS} =0, V _{GS} =8V		
		P	-	-	±100		V _{DS} =0, V _{GS} = -8V		
Zero Gate Voltage Drain Current	I _{DSS}	N	-	-	1	μA	V _{DS} =8V, V _{GS} =0		
		P	-	-	-1		V _{DS} = -8V, V _{GS} =0		
On-State Drain Current ¹	I _{D(on)}	N	10	-	-	A	V _{DS} =5V, V _{GS} =4.5V		
		P	-10	-	-		V _{DS} = -5V, V _{GS} = -4.5V		
Drain-Source On-Resistance ¹	R _{DS(ON)}	N	-	-	47	mΩ	V _{GS} =4.5V, I _D =5.3A		
			-	-	55		V _{GS} =2.5V, I _D =5A		
		P	-	-	79		V _{GS} = -4.5V, I _D = -4.2A		
			-	-	110		V _{GS} = -2.5V, I _D = -3.8A		
Diode Forward Voltage	V _{SD}	N		0.7		V	V _{GS} =0, I _S =1.1A		
		P		-0.73			V _{GS} =0, I _S = -1.1A		
Forward Transconductance ¹	g _{fs}	N	-	10	-	S	V _{DS} =10V, I _D =5.3A		
		P	-	10	-		V _{DS} = -10V, I _D = -4.2A		
Dynamic ²									
Input Capacitance	C _{iSS}	N		439		pF	N-Channel V _{DS} =15V, V _{GS} =0, f=1MHz P-Channel V _{DS} = -15V, V _{GS} =0, f=1MHz		
		P		683					
Output Capacitance	C _{oss}	N		78				nC	N-Channel I _D =5.3A, V _{DS} =10V, V _{GS} =4.5V P-Channel I _D = -4.2A, V _{DS} = -10V, V _{GS} = -4.5V
		P		90					
Reverse Transfer Capacitance	C _{rSS}	N		68		nS	N-Channel V _{DD} =10V, V _{GEN} =4.5V I _D =5.3A, R _{GEN} =6Ω, R _L =1.8Ω P-Channel V _{DD} = -10V, V _{GEN} = -4.5V I _D = -4.2A, R _{GEN} =6Ω, R _L =2.3Ω		
		P		75					
Total Gate Charge	Q _g	N	-	6	-			nS	N-Channel V _{DD} =10V, V _{GEN} =4.5V I _D =5.3A, R _{GEN} =6Ω, R _L =1.8Ω P-Channel V _{DD} = -10V, V _{GEN} = -4.5V I _D = -4.2A, R _{GEN} =6Ω, R _L =2.3Ω
		P	-	11	-				
Gate-Source Charge	Q _{gs}	N	-	0.9	-	nS	N-Channel V _{DD} =10V, V _{GEN} =4.5V I _D =5.3A, R _{GEN} =6Ω, R _L =1.8Ω P-Channel V _{DD} = -10V, V _{GEN} = -4.5V I _D = -4.2A, R _{GEN} =6Ω, R _L =2.3Ω		
		P	-	2.8	-				
Gate-Drain Charge	Q _{gd}	N	-	2.1	-			nS	N-Channel V _{DD} =10V, V _{GEN} =4.5V I _D =5.3A, R _{GEN} =6Ω, R _L =1.8Ω P-Channel V _{DD} = -10V, V _{GEN} = -4.5V I _D = -4.2A, R _{GEN} =6Ω, R _L =2.3Ω
		P	-	2.7	-				
Turn-On Delay Time	T _{d(on)}	N	-	7	-	nS	N-Channel V _{DD} =10V, V _{GEN} =4.5V I _D =5.3A, R _{GEN} =6Ω, R _L =1.8Ω P-Channel V _{DD} = -10V, V _{GEN} = -4.5V I _D = -4.2A, R _{GEN} =6Ω, R _L =2.3Ω		
		P	-	10	-				
Rise Time	T _r	N	-	24	-			nS	N-Channel V _{DD} =10V, V _{GEN} =4.5V I _D =5.3A, R _{GEN} =6Ω, R _L =1.8Ω P-Channel V _{DD} = -10V, V _{GEN} = -4.5V I _D = -4.2A, R _{GEN} =6Ω, R _L =2.3Ω
		P	-	20	-				
Turn-Off Delay Time	T _{d(off)}	N	-	35	-	nS	N-Channel V _{DD} =10V, V _{GEN} =4.5V I _D =5.3A, R _{GEN} =6Ω, R _L =1.8Ω P-Channel V _{DD} = -10V, V _{GEN} = -4.5V I _D = -4.2A, R _{GEN} =6Ω, R _L =2.3Ω		
		P	-	49	-				
Fall Time	T _f	N	-	19	-			nS	N-Channel V _{DD} =10V, V _{GEN} =4.5V I _D =5.3A, R _{GEN} =6Ω, R _L =1.8Ω P-Channel V _{DD} = -10V, V _{GEN} = -4.5V I _D = -4.2A, R _{GEN} =6Ω, R _L =2.3Ω
		P	-	21	-				

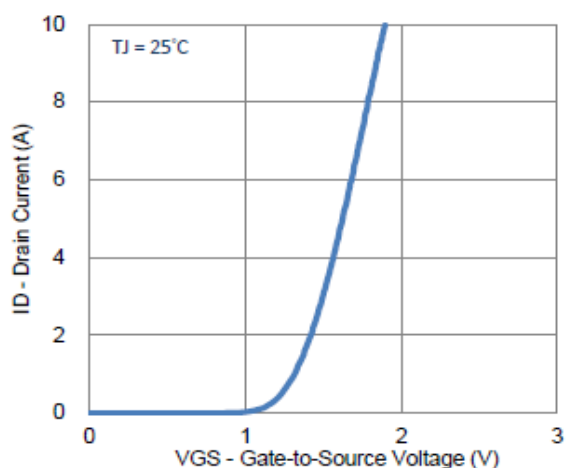
Notes:

1. Pulse test : $PW \leq 300\mu\text{s}$ duty cycle $\leq 2\%$.
2. Guaranteed by design, not subject to production testing.

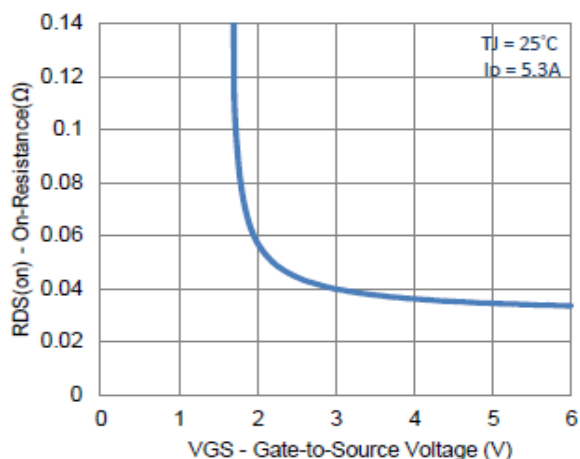
CHARACTERISTIC CURVES (N-Channel)



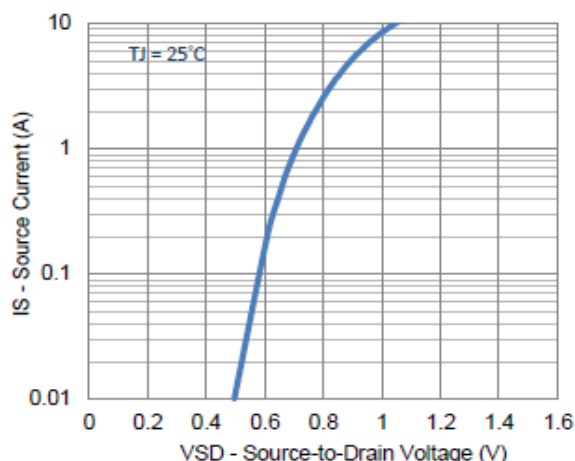
1. On-Resistance vs. Drain Current



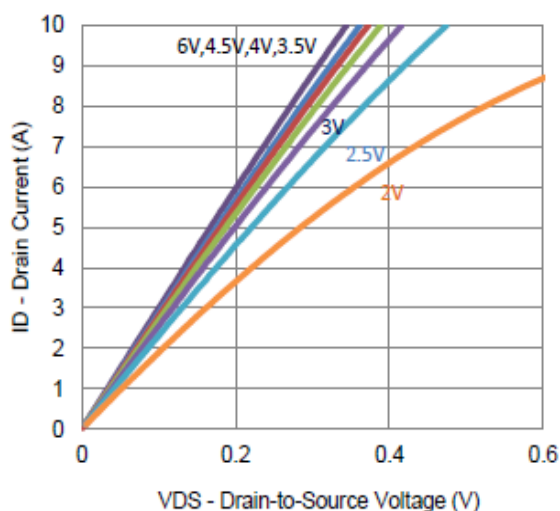
2. Transfer Characteristics



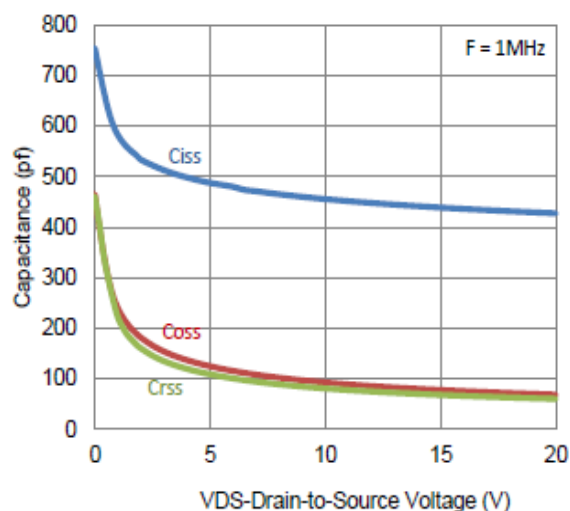
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

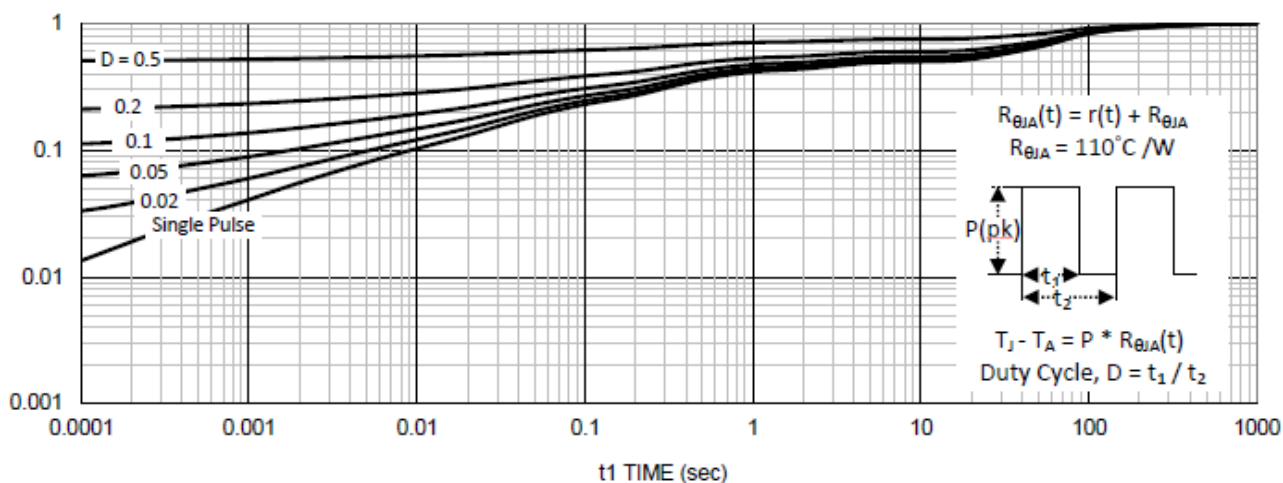
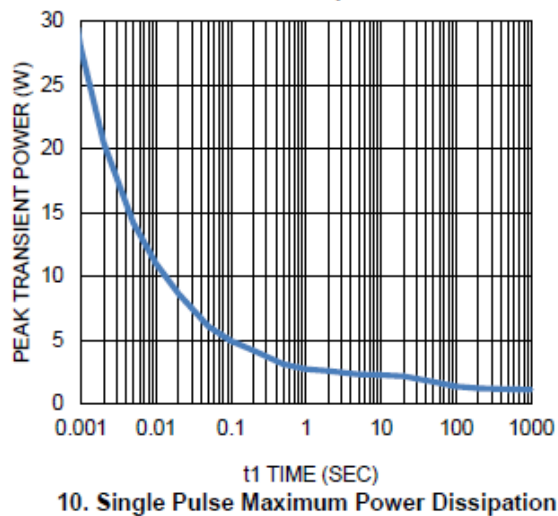
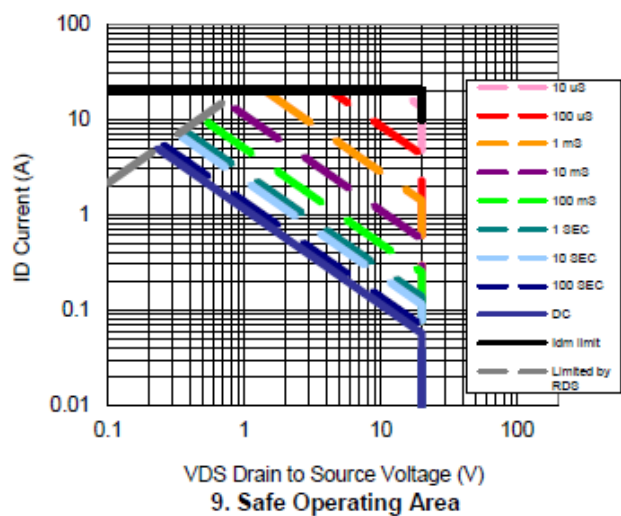
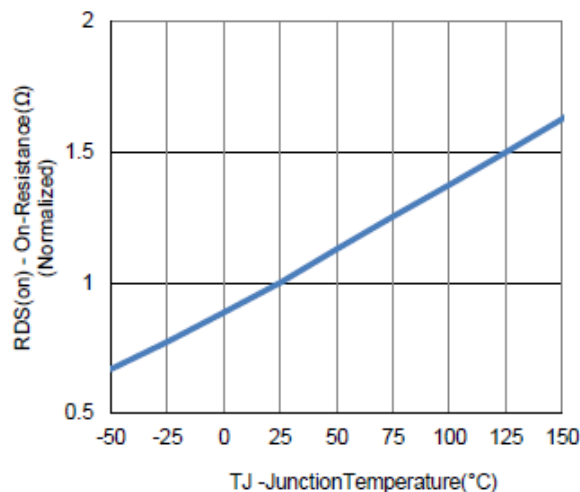
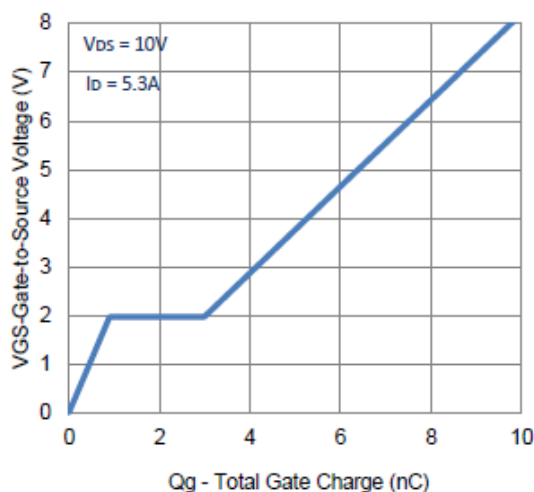


5. Output Characteristics

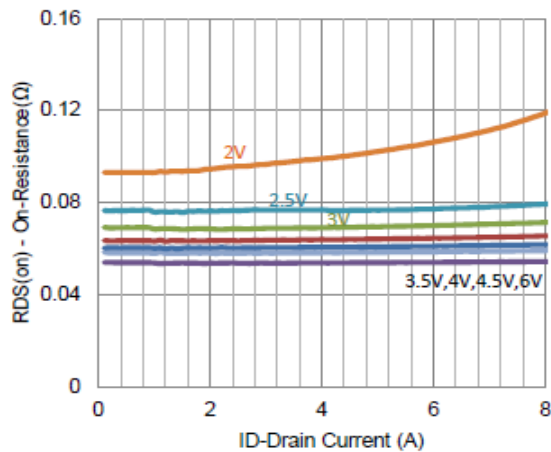


6. Capacitance

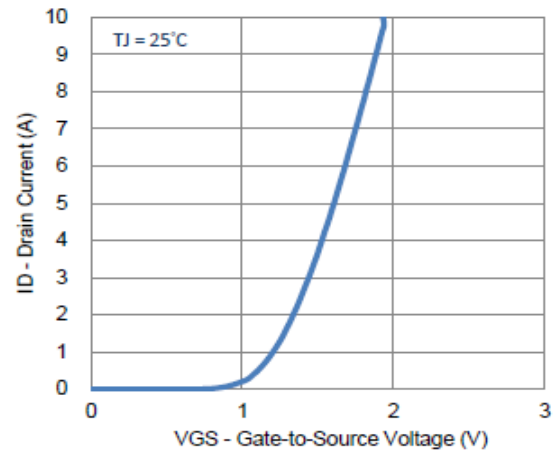
CHARACTERISTIC CURVES



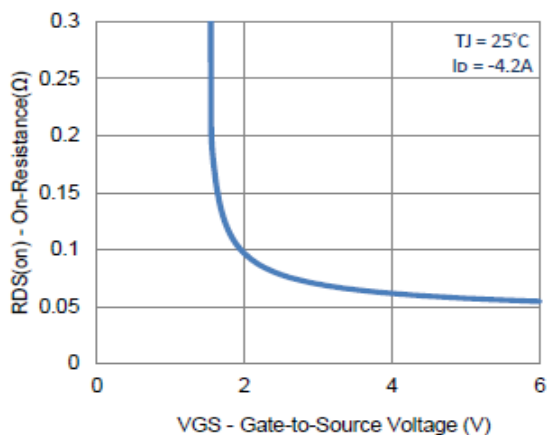
CHARACTERISTIC CURVES (P-Channel)



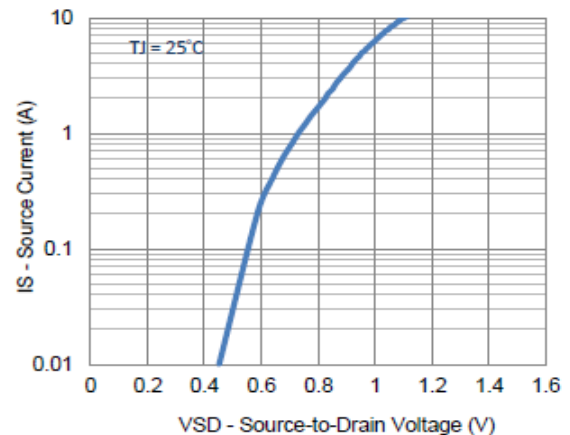
1. On-Resistance vs. Drain Current



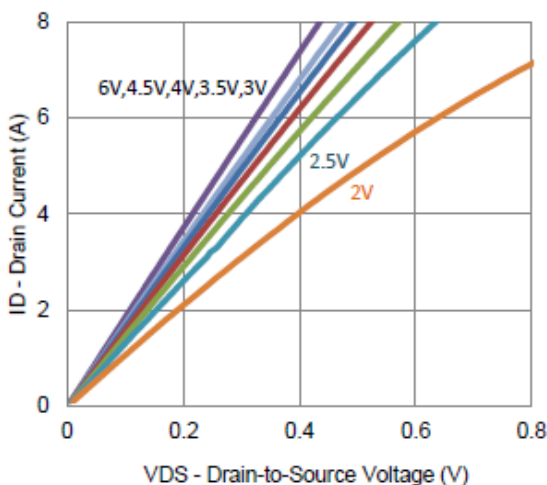
2. Transfer Characteristics



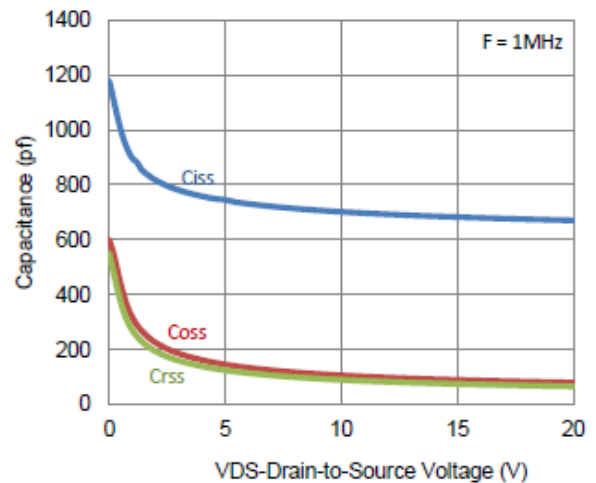
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage



5. Output Characteristics



6. Capacitance

CHARACTERISTIC CURVES

