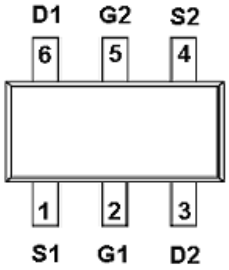
SPC1018
N & P Pair Enhancement Mode MOSFET

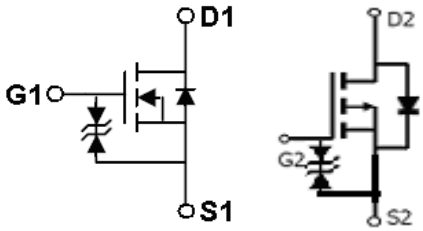
DESCRIPTION
The SPC1018 is the N- and P-Dual Channel enhancement mode power field effect transistors are produced using high cell density , DMOS trench technology. This high density process is especially tailored to minimize on-state resistance and provide superior switching performance. These devices are particularly suited for low voltage applications such as notebook computer power management and other battery powered circuits where high-side switching , low in-line power loss, and resistance to transients are needed.

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

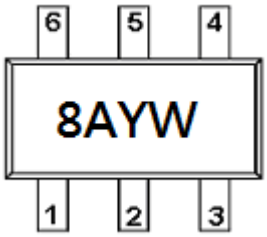
FEATURES
- N-Channel
  20V/0.65A,$R_{DS(ON)}$=380mΩ@V_{GS}=4.5V
  20V/0.55A,$R_{DS(ON)}$=450mΩ@V_{GS}=2.5V
  20V/0.45A,$R_{DS(ON)}$=800mΩ@V_{GS}=1.8V
- P-Channel
  -20V/0.45A,$R_{DS(ON)}$=520mΩ@V_{GS}=-4.5V
  -20V/0.35A,$R_{DS(ON)}$=700mΩ@V_{GS}=-2.5V
  -20V/0.25A,$R_{DS(ON)}$=1500mΩ@V_{GS}=-1.8V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- ESD protected
- SOT-563 (SC-89-6L) package design

PIN CONFIGURATION (SOT-563 / SC-89-6L)





PART MARKING



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PIN DESCRIPTION

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 Number	Package	Part Marking
SPC1018S56RGB	SOT-563	8A

※ SPC1018S56RGB : Tape Reel ; Pb – Free ; Halogen – Free

ABSOULTE MAXIMUM RATINGS

(T_A=25℃ Unless otherwise noted)

Parameter		Symbol	Typical		Unit
			N-Channel	P-Channel	
Drain-Source Voltage		V_{DSS}	20	-20	V
Gate –Source Voltage		V_{GSS}	±12	±12	V
Continuous Drain Current(T_J=150℃)	T_A=25℃	I_D	0.65	-0.45	A
	T_A=80℃		0.45	-0.35	
Pulsed Drain Current		I_{DM}	1.0	-1.0	A
Continuous Source Current(Diode Conduction)		I_S	0.3	-0.3	A
Power Dissipation	T_A=25℃	P_D	0.35		W
	T_A=70℃		0.19		
Operating Junction Temperature		T_J	-55/150		℃
Storage Temperature Range		T_{STG}	-55/150		℃

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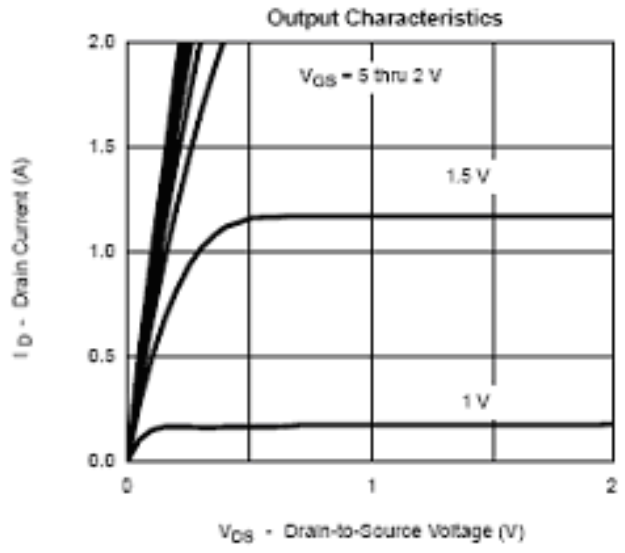
N & P Pair Enhancement Mode MOSFET

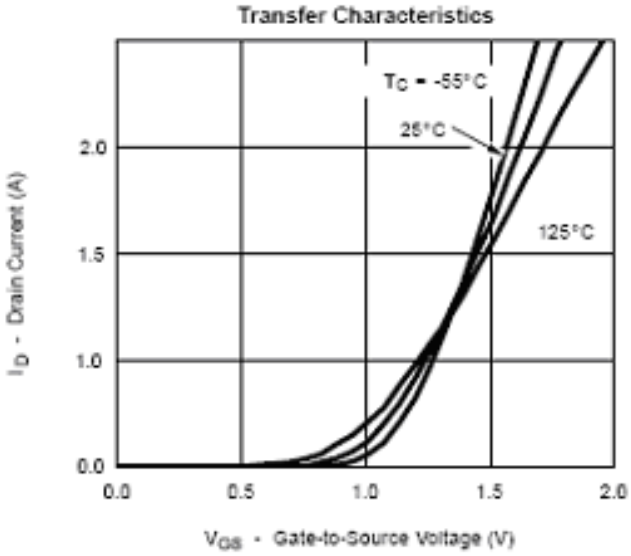
ELECTRICAL CHARACTERISTICS

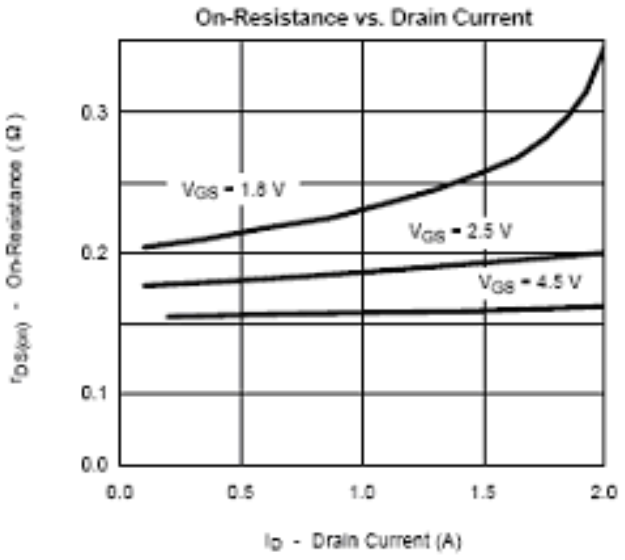
(T_A=25℃ Unless otherwise noted)

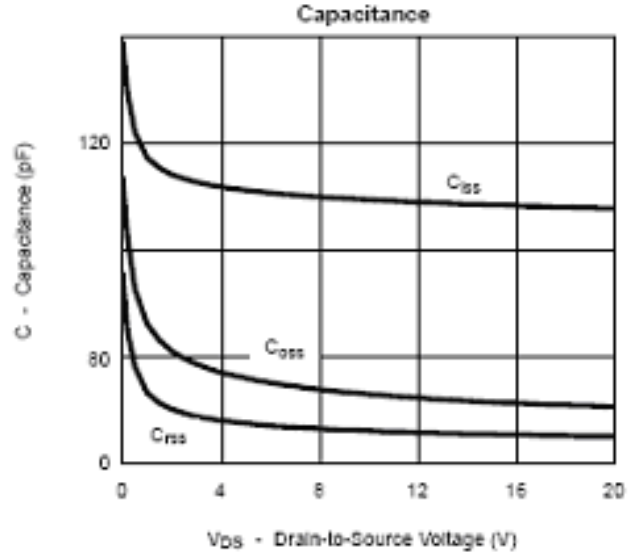
Parameter	Symbol	Conditions		Min.	Typ	Max.	Unit
Static							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250uA	N-Ch	20			V
		V_{GS}=0V,I_D=-250uA	P-Ch	-20			
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	N-Ch	0.35		1.0	
		V_{DS}=V_{GS},I_D=-250uA	P-Ch	-0.35		-1.0	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±12V	N-Ch			±10	uA
		V_{DS}=0V,V_{GS}=±12V	P-Ch			±10	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V,V_{GS}=0V	N-Ch			1	uA
		V_{DS}=-20V,V_{GS}=0V	P-Ch			-1	
		V_{DS}=20V,V_{GS}=0V T_J=55℃	N-Ch			10	
		V_{DS}=-20V,V_{GS}=0V T_J=55℃	P-Ch			-10	
On-State Drain Current	$I_{D(on)}$	V_{DS}≥ 4.5V,V_{GS}=5V	N-Ch	0.7			A
		V_{DS}≤ -4.5V,V_{GS}=-5V	P-Ch	-0.7			
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=4.5V,I_D=0.65A	N-Ch		0.26	0.38	Ω
		V_{GS}=-4.5V,I_D=-0.45A	P-Ch		0.42	0.52	
		V_{GS}=2.5V,I_D=0.55A	N-Ch		0.32	0.45	
		V_{GS}=-2.5V,I_D=-0.35A	P-Ch		0.58	0.70	
		V_{GS}=1.8V,I_D=0.45A	N-Ch		0.42	0.80	
		V_{GS}=-1.8V,I_D=-0.25A	P-Ch		0.95	1.5	
Forward Transconductance	gfs	V_{DS}=10V,I_D=0.4A	N-Ch		1.0		S
		V_{DS}=-10V,I_D=-0.25A	P-Ch		0.4		
Diode Forward Voltage	V_{SD}	I_S=0.15A,V_{GS}=0V	N-Ch		0.8	1.2	V
		I_S=-0.15A,V_{GS}=0V	P-Ch		-0.8	-1.2	
Dynamic							
Total Gate Charge	Q_g	N-Channel V_{DS}=10V,V_{GS}=4.5V,I_D=0.6A P-Channel V_{DS}=-10V,V_{GS}=-4.5V,I_D=-0.6A	N-Ch		1.2	1.5	nC
			P-Ch		1.5	2.0	
Gate-Source Charge	Q_{gs}		N-Ch		0.2		
			P-Ch		0.3		
Gate-Drain Charge	Q_{gd}		N-Ch		0.3		
			P-Ch		0.35		
Turn-On Time	$t_{d(on)}$	N-Channel V_{DD}=10V,R_L=10Ω , I_D=0.5A V_{GEN}=4.5V,R_G=6Ω P-Channel V_{DD}=-10V,R_L=10Ω , I_D=-0.4A V_{GEN}=-4.5V,R_G=6Ω	N-Ch		5	10	nS
			P-Ch		5	10	
	t_r		N-Ch		8	15	
			P-Ch		15	25	
Turn-Off Time	$t_{d(off)}$		N-Ch		10	18	
			P-Ch		8	15	
	t_f		N-Ch		1.2	2.8	
			P-Ch		1.4	1.8	

TYPICAL CHARACTERISTICS (N-Channel)



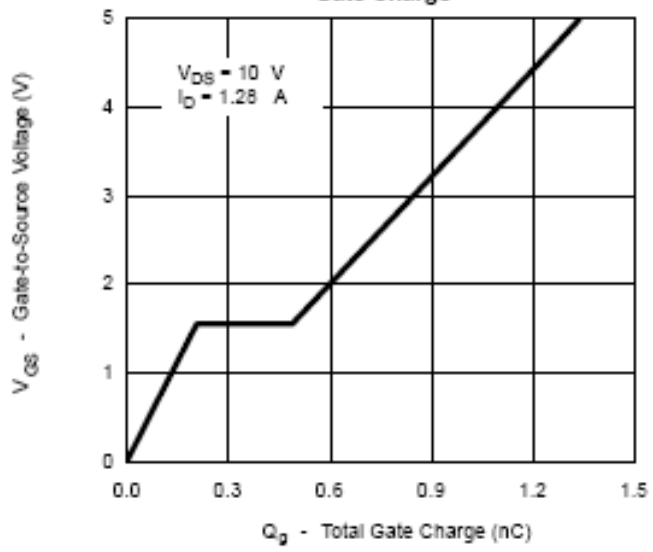




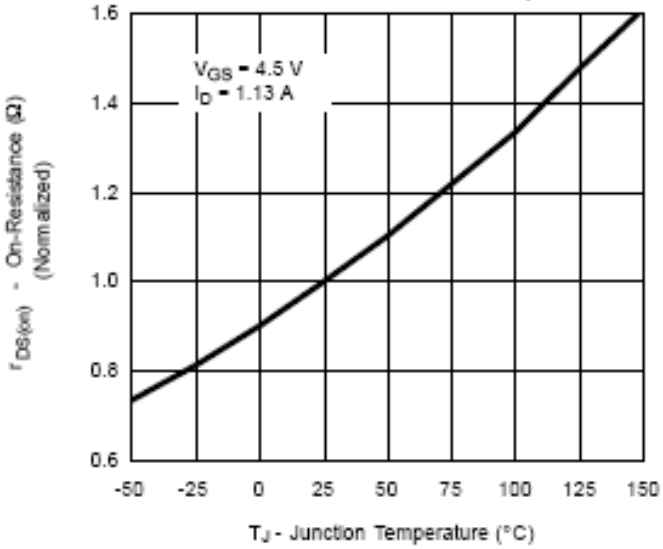


TYPICAL CHARACTERISTICS (N-Channel)

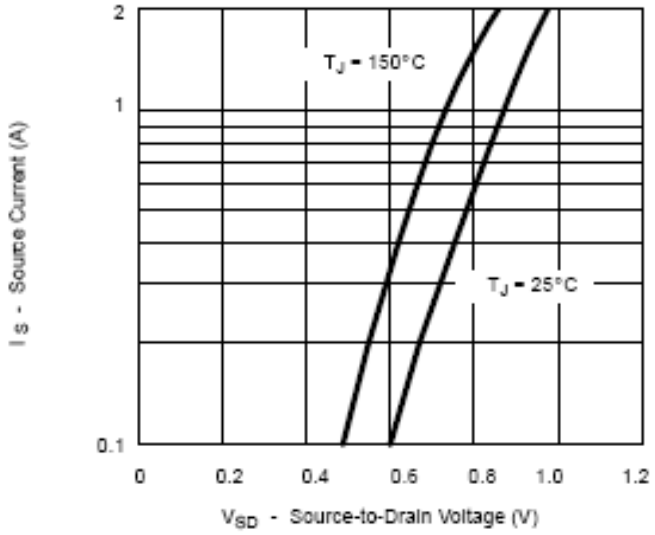
Gate Charge



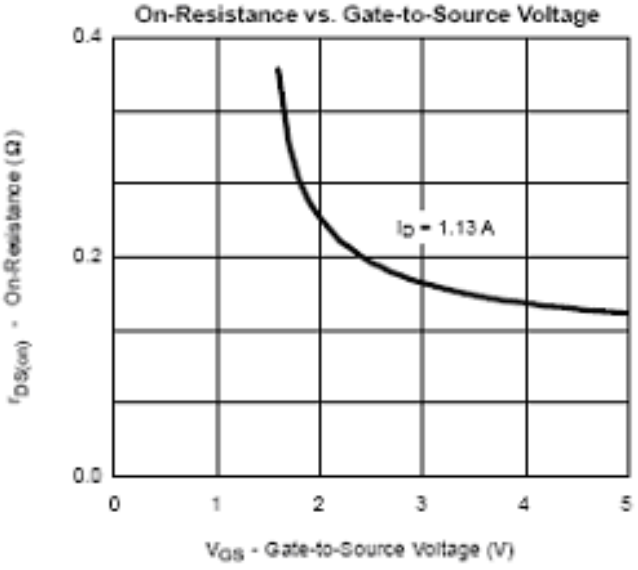
On-Resistance vs. Junction Temperature



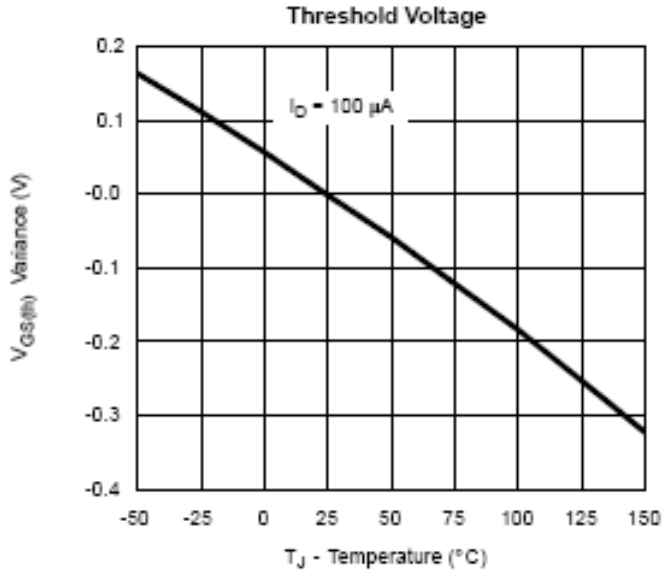
Source-Drain Diode Forward Voltage

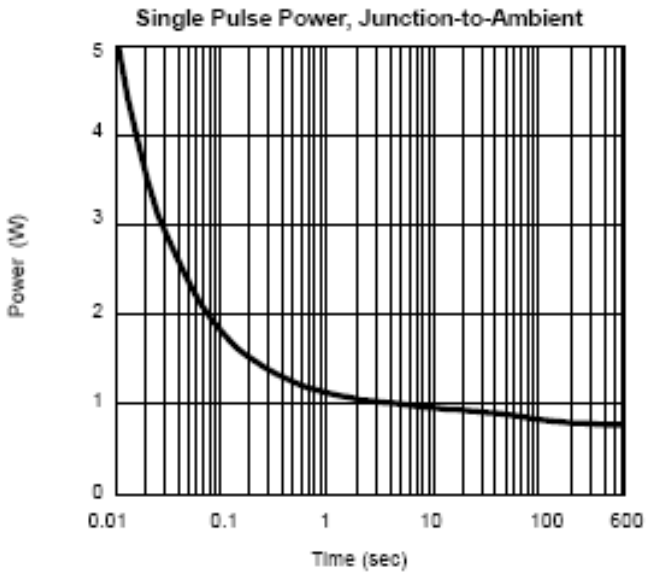


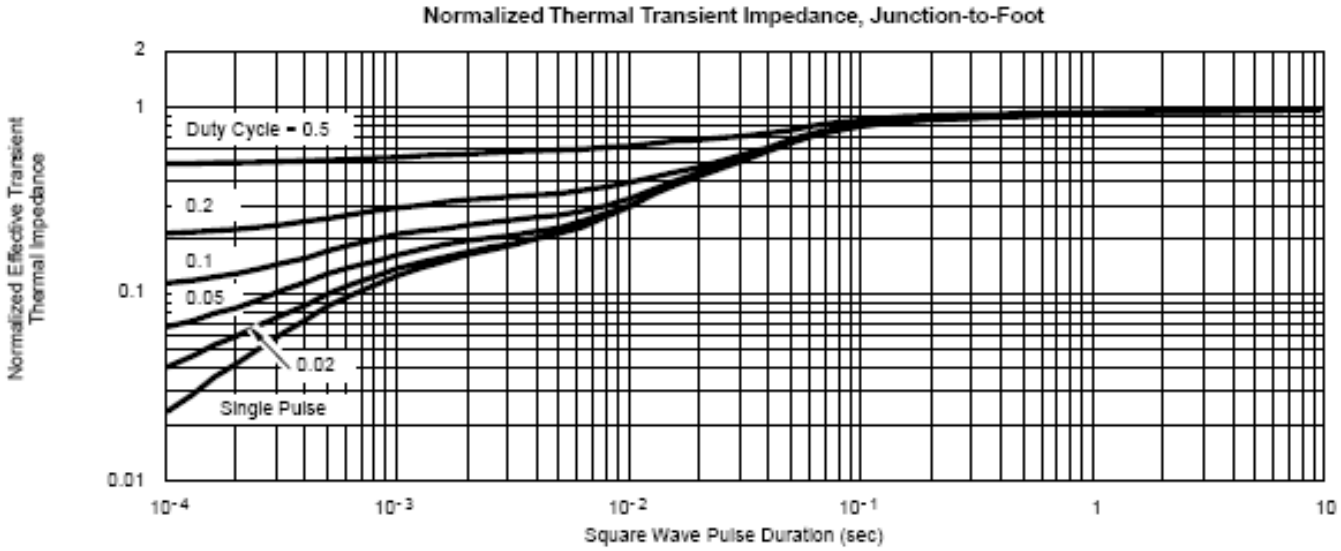
On-Resistance vs. Gate-to-Source Voltage



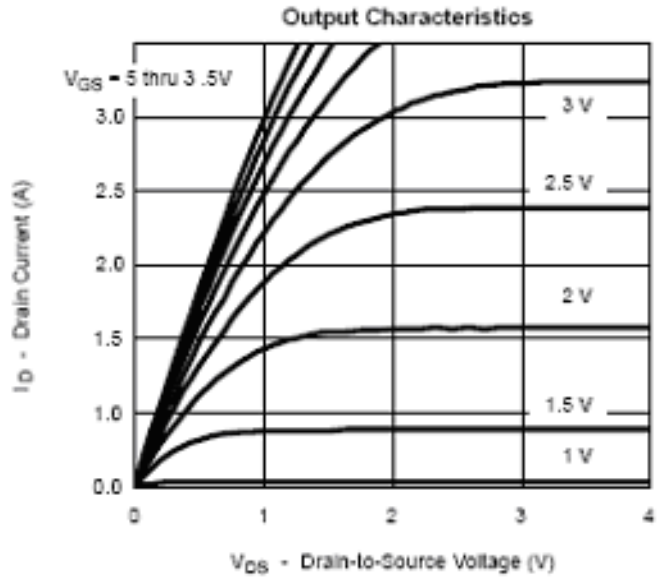
TYPICAL CHARACTERISTICS (N-Channel)

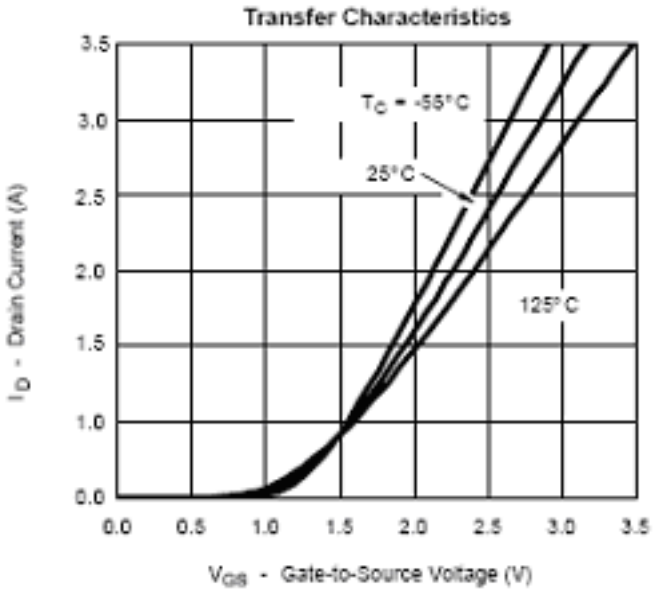


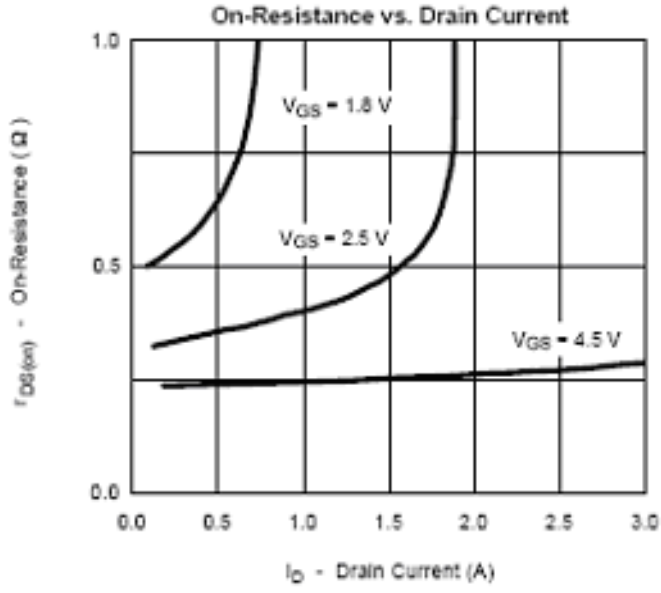


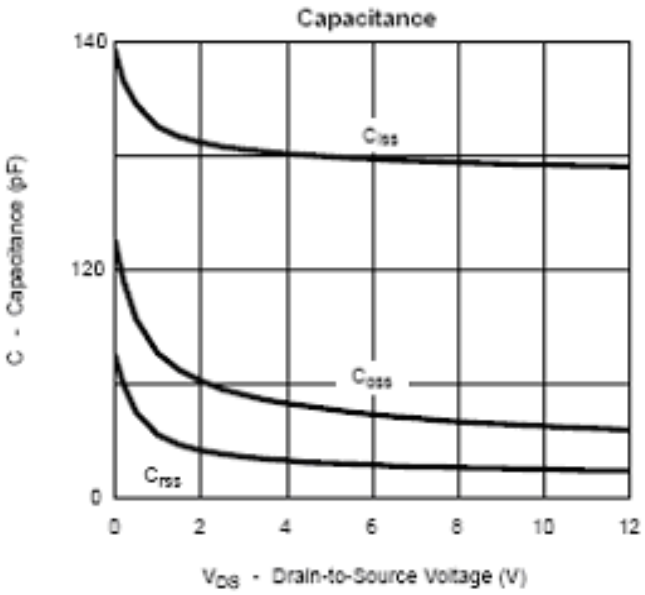


TYPICAL CHARACTERISTICS (P-Channel)



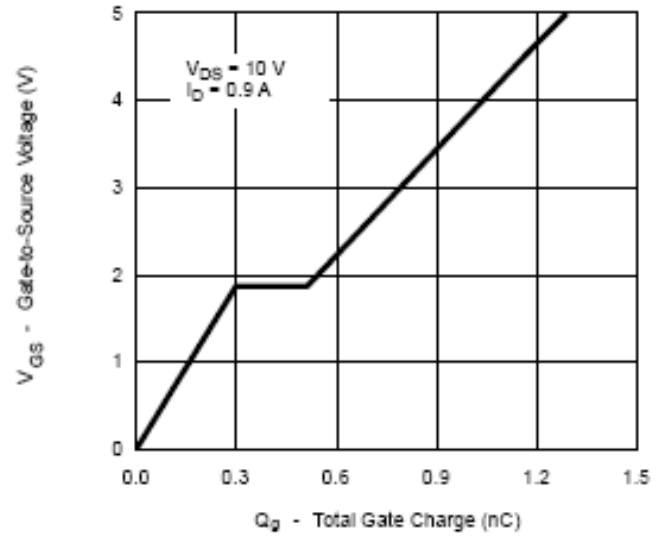




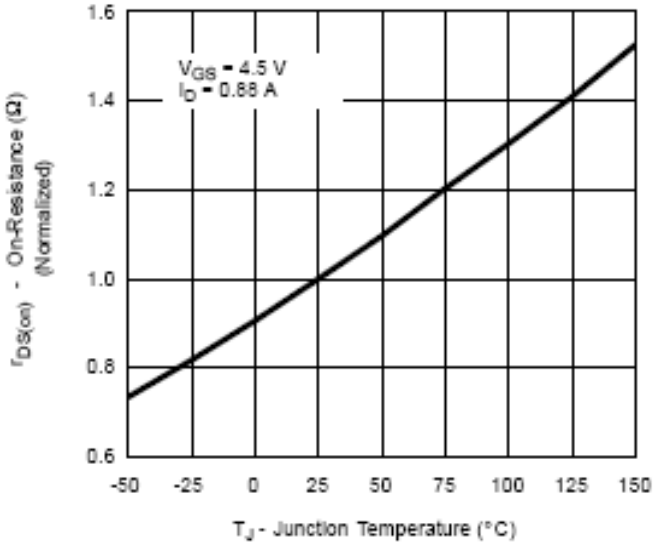


TYPICAL CHARACTERISTICS (P-Channel)

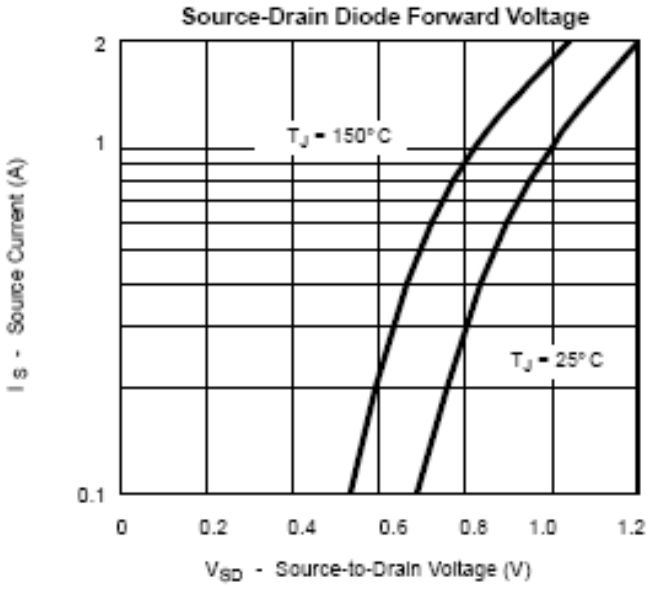
Gate Charge



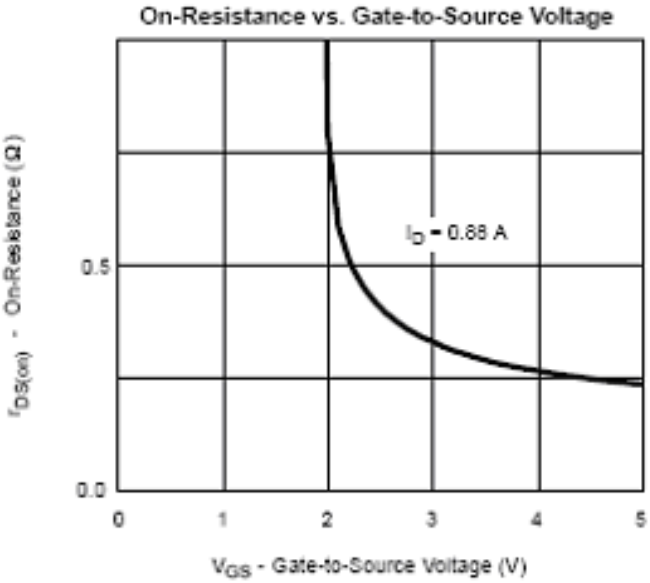
On-Resistance vs. Junction Temperature



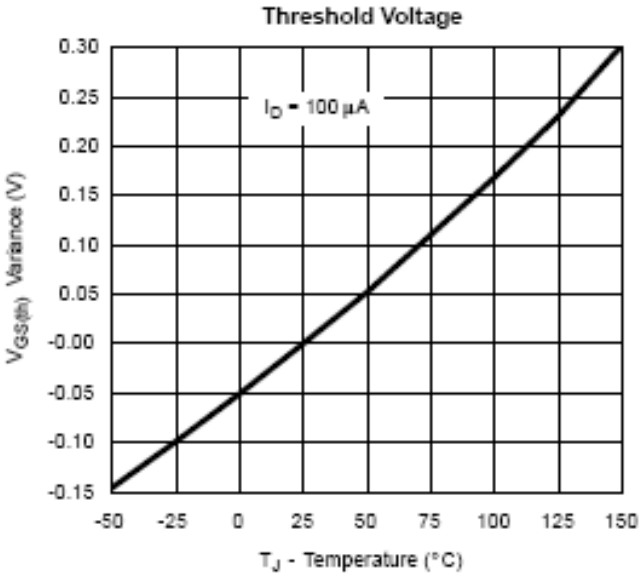
Source-Drain Diode Forward Voltage

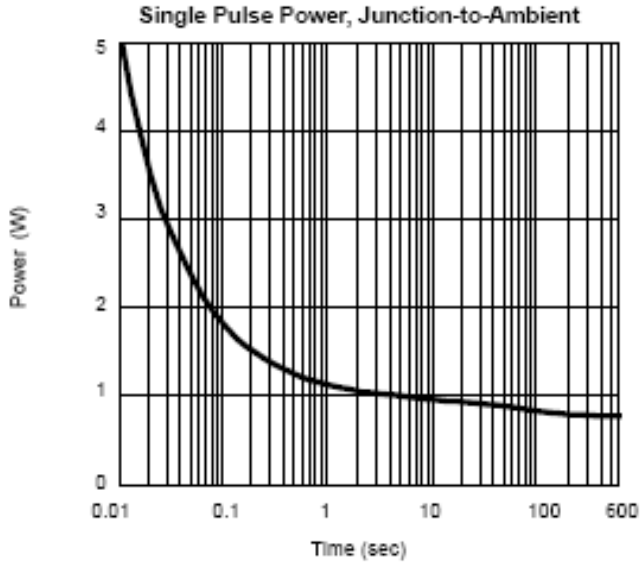


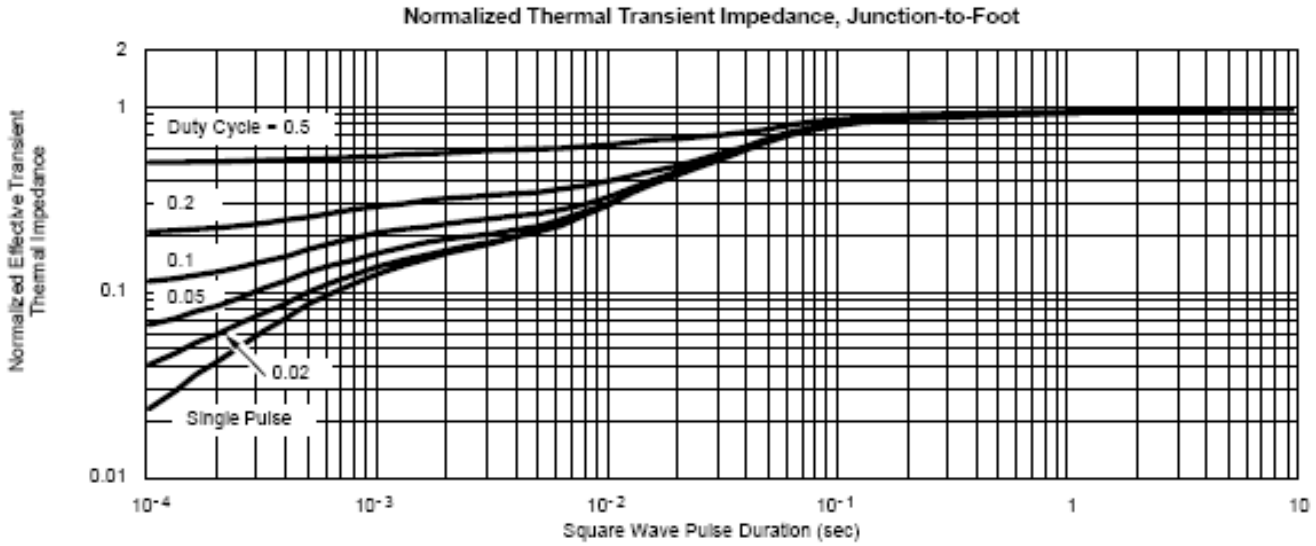
On-Resistance vs. Gate-to-Source Voltage



TYPICAL CHARACTERISTICS (P-Channel)







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