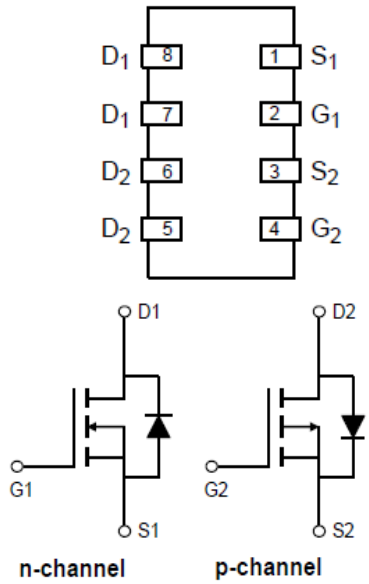
SPC4606
N & P Pair Enhancement Mode MOSFET

DESCRIPTION
The SPC4606 is the N- and P-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.

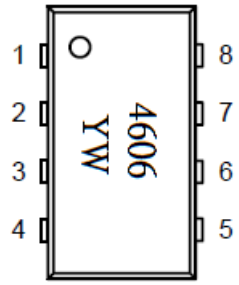
APPLICATIONS
- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

FEATURES
- N-Channel
  30V/4.0A,$R_{DS(ON)}$=40mΩ@V_{GS}=10V
  30V/3.6A,$R_{DS(ON)}$=50mΩ@V_{GS}=4.5V
- P-Channel
  -30V/-4.0A,$R_{DS(ON)}$=70mΩ@V_{GS}=-10V
  -30V/-3.2A,$R_{DS(ON)}$=95mΩ@V_{GS}=-4.5V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- PPAK3x2–8L package design

PIN CONFIGURATION(PPAK3x2–8L)



PART MARKING



Y : Year Code
W : Week Code

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PIN DESCRIPTION

Pin	Symbol	Description
1	S1	Source 1
2	G1	Gate 1
3	S2	Source 2
4	G2	Gate 2
5	D2	Drain 2
6	D2	Drain 2
7	D1	Drain 1
8	D1	Drain 1

ORDERING INFORMATION

Part Number	Package	Part Marking
SPC4606DN8RGB	PPAK3x2–8L	4606

※ SPC4606DN8RGB 13" 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}	30	-30	V
Gate –Source Voltage		V_{GSS}	20	-20	V
Continuous Drain Current(T_J=150℃)	T_A=25℃	I_D	4.0	-3.6	A
	T_A=70℃		3.2	-3.0	
Pulsed Drain Current		I_{DM}	25	-15	A
Continuous Source Current(Diode Conduction)		I_S	1.7	-1.0	A
Power Dissipation	T_A=25℃	P_D	2.0	1.25	W
	T_A=70℃		1.3	0.8	
Operating Junction Temperature		T_J	-55/150		℃
Storage Temperature Range		T_{STG}	-55/150		℃
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	100	375	℃/W

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ELECTRICAL CHARACTERISTICS (NMOS)

(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	30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	0.6		1.8	
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}=1.0V			1	uA
		V_{DS}=24V,V_{GS}=0V T_J=55℃			10	
On-State Drain Current	$I_{D(on)}$	V_{DS}≧4.5V,V_{GS}=4.5V	10			A
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=4.0A		28	40	mΩ
		V_{GS}=4.5V,I_D=3.6A		35	50	
Forward Transconductance	gfs	V_{DS}=4.5V,I_D=5.4A		12		S
Diode Forward Voltage	V_{SD}	I_S=1.7A,V_{GS} =0V		0.8	1.2	V
Dynamic						
Input Capacitance	C_{iss}	V_{DS}=15,V_{GS}=0V f =1MHz		450		pF
Output Capacitance	C_{oss}			240		
Reverse Transfer Capacitance	C_{rss}			38		
Total Gate Charge	Q_g	V_{DS}=15V,V_{GS}=10V I_D=6.7A		10	18	nC
Gate-Source Charge	Q_{gs}			1.6		
Gate-Drain Charge	Q_{gd}			3.2		
Turn-On Time	$t_{d(on)}$	V_{DD}=15,R_L=15Ω V_{GEN}=10V,R_G=6Ω		7	15	nS
	t_r			10	20	
Turn-Off Time	$t_{d(off)}$			20	40	
	t_f			11	20	

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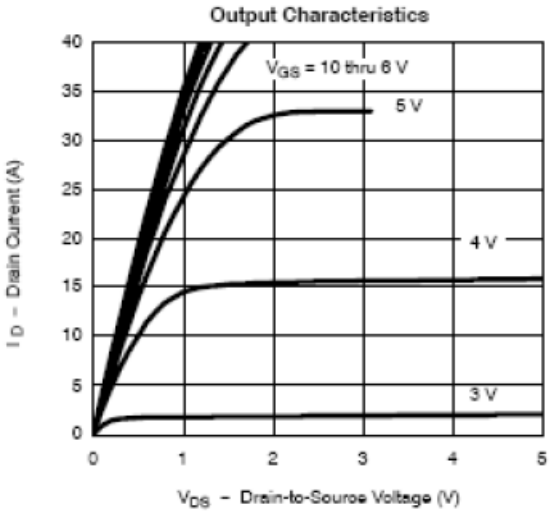
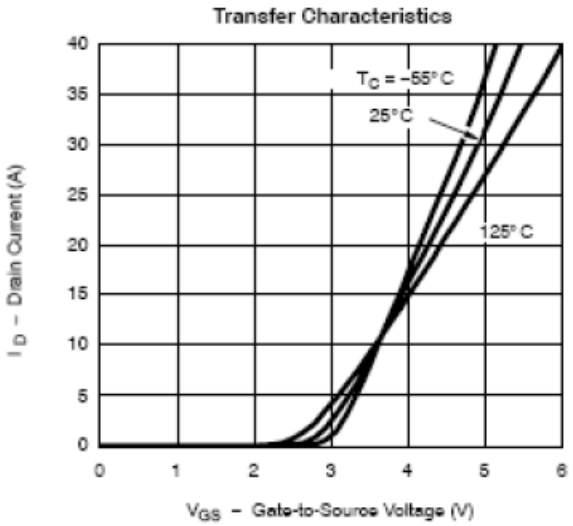
ELECTRICAL CHARACTERISTICS (PMOS)

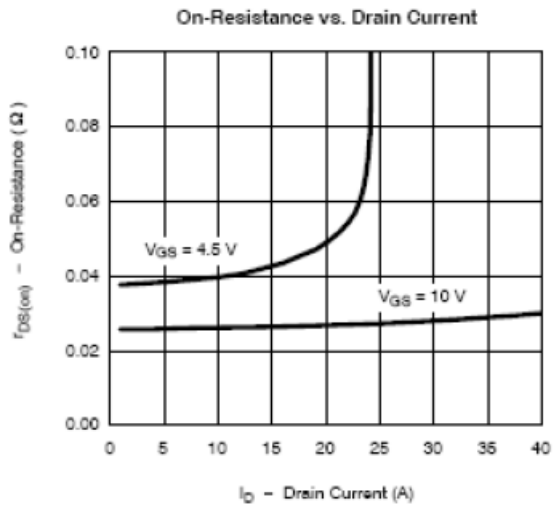
(T_A=25℃ Unless otherwise noted)

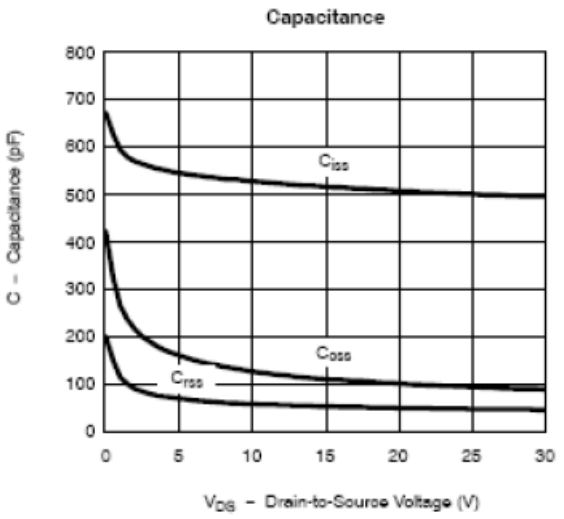
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=-250uA	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250uA	-0.8		-2.5	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-24V,V_{GS}=0V			-1	uA
		V_{DS}=-24V,V_{GS}=0V T_J=55°C			-10	
On-State Drain Current	$I_{D(on)}$	V_{DS}≦-5V,V_{GS}=-10V	-10			A
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=-10V,I_D=-4.0A		62	70	mΩ
		V_{GS}=-4.5V,I_D=-3.2A		85	95	
Forward Transconductance	gfs	V_{DS}=-5.0V,I_D=-4.0A		10		S
Diode Forward Voltage	V_{SD}	I_S=-1.0A,V_{GS}=0V		-0.8	-1.2	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=-15V,V_{GS}=-10V I_D=-3.5A		10	18	nC
Gate-Source Charge	Q_{gs}			1.6		
Gate-Drain Charge	Q_{gd}			3.0		
Input Capacitance	C_{iss}	V_{DS}=-15V,V_{GS}=0V f=1MHz		450		pF
Output Capacitance	C_{oss}			95		
Reverse Transfer Capacitance	C_{rss}			55		
Turn-On Time	$t_{d(on)}$	V_{DD}=-15V,R_L=15Ω I_D=-1.0A,V_{GEN}=-10V R_G=6Ω		8	18	nS
	t_r			8	18	
Turn-Off Time	$t_{d(off)}$			25	50	
	t_f			25	35	

TYPICAL CHARACTERISTICS (NMOS)









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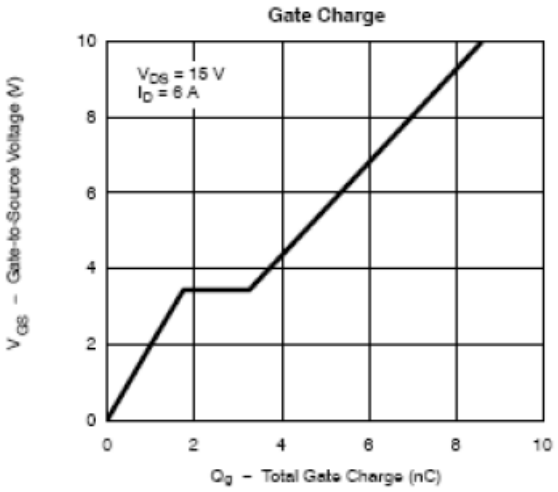

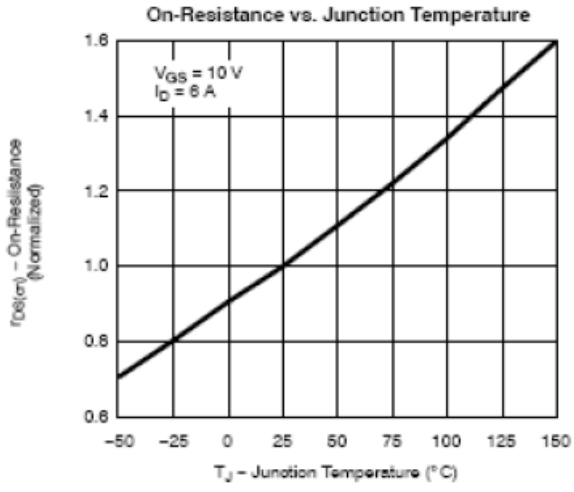

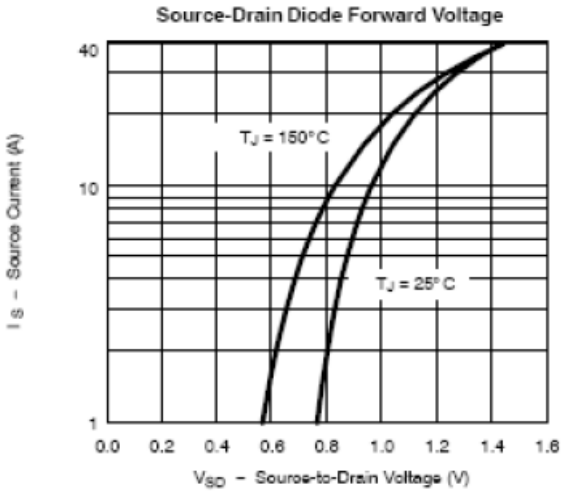

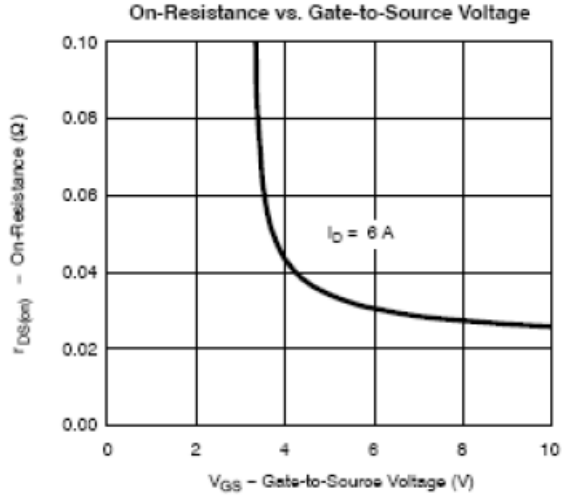

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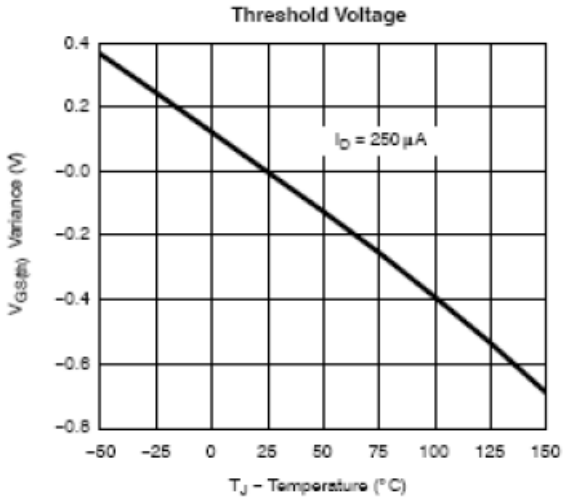
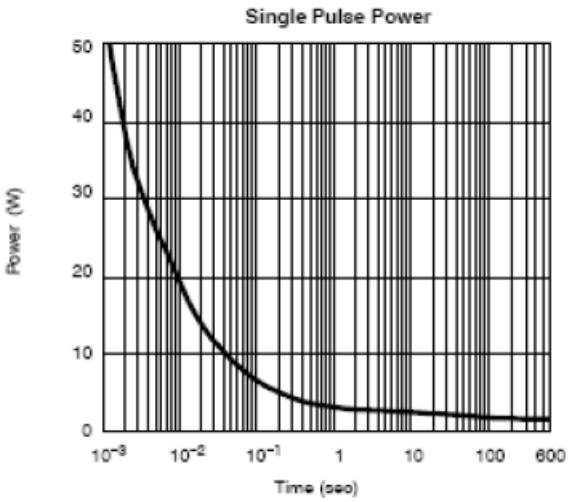
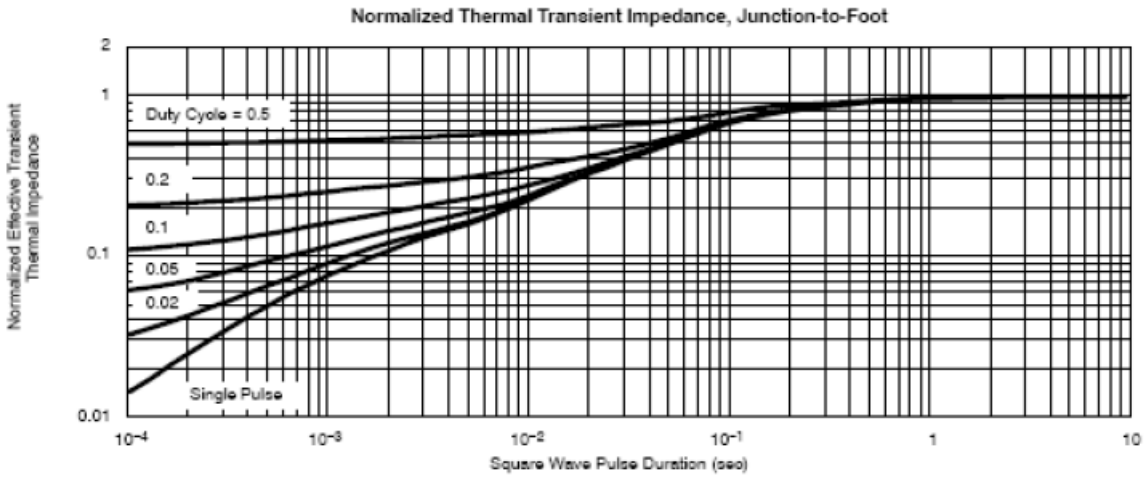
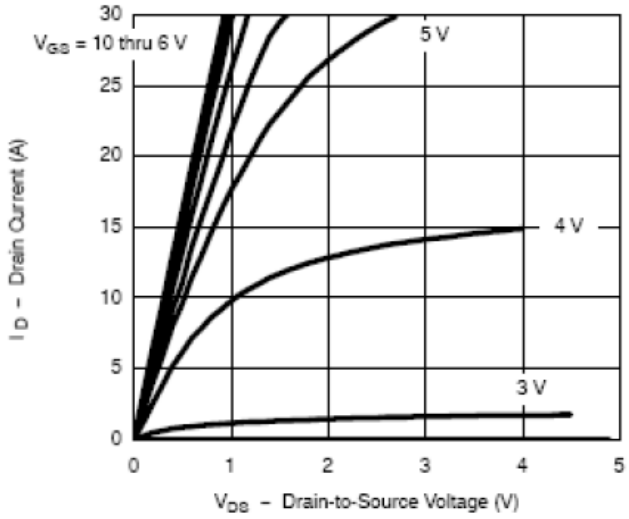




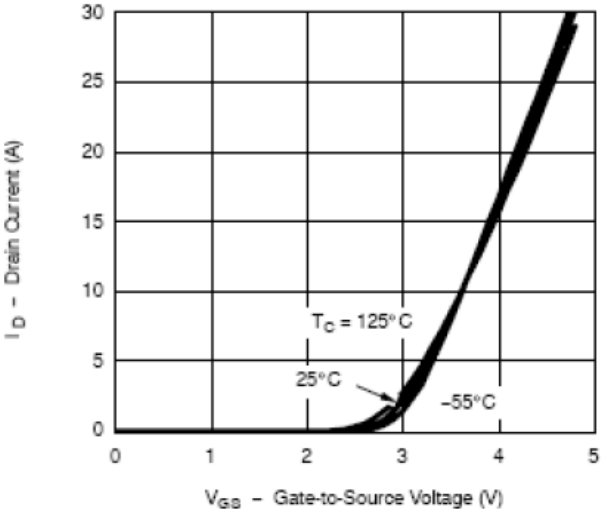


TYPICAL CHARACTERISTICS (PMOS)

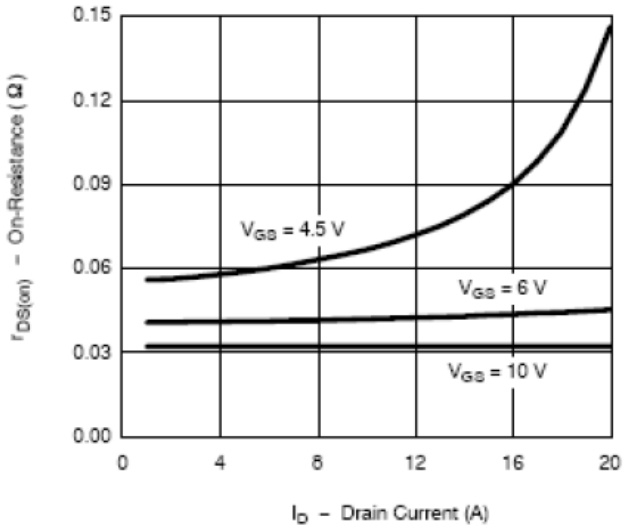
Output Characteristics



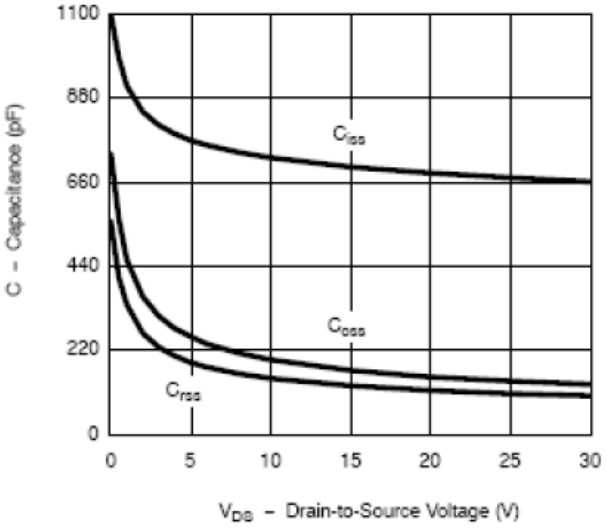
Transfer Characteristics



On-Resistance vs. Drain Current



Capacitance



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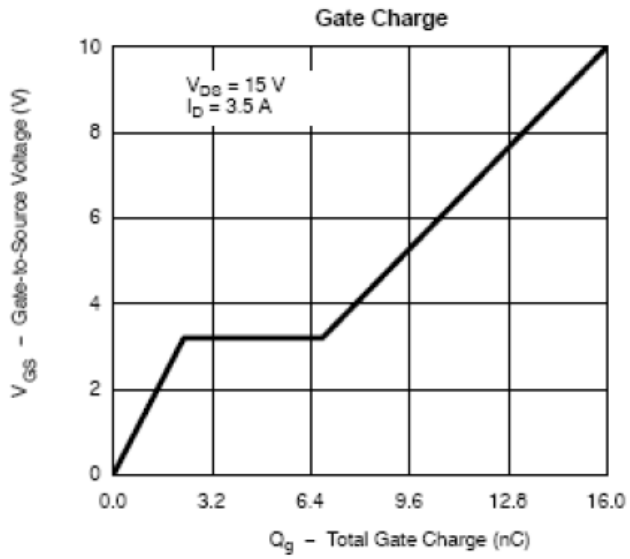

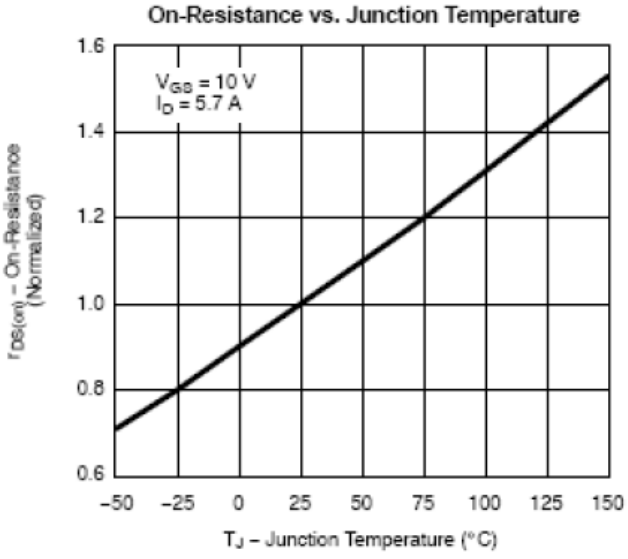

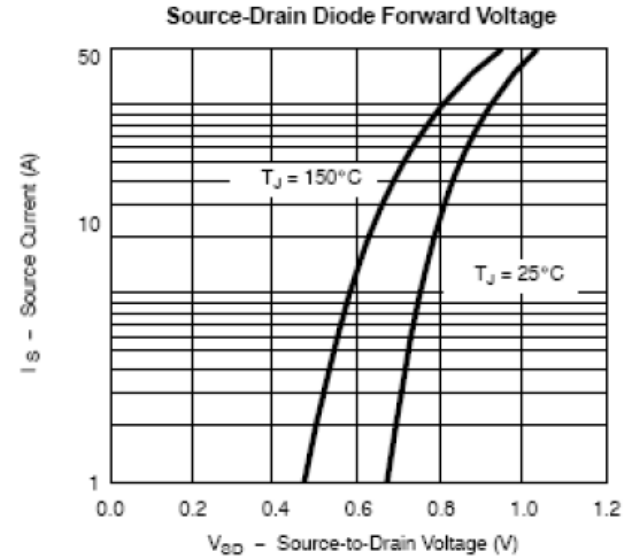

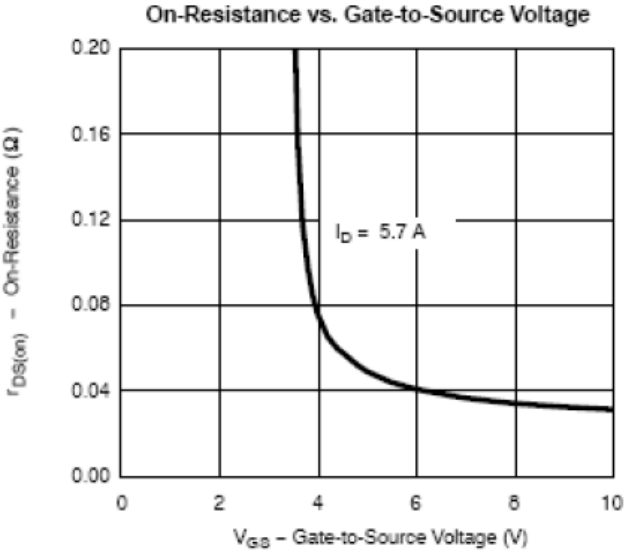

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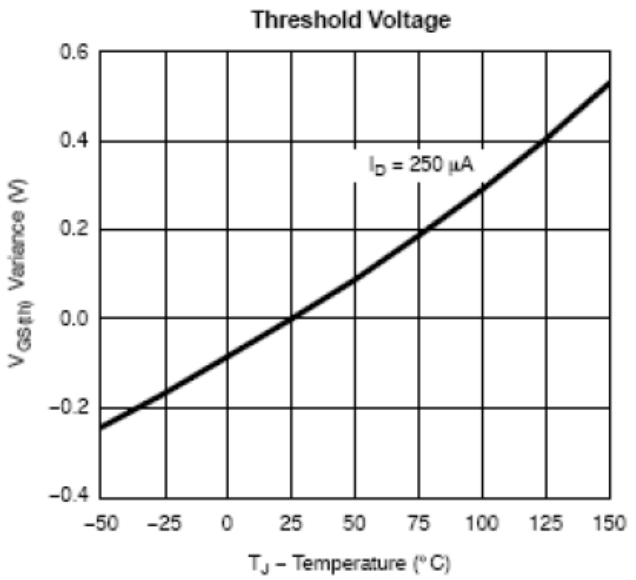

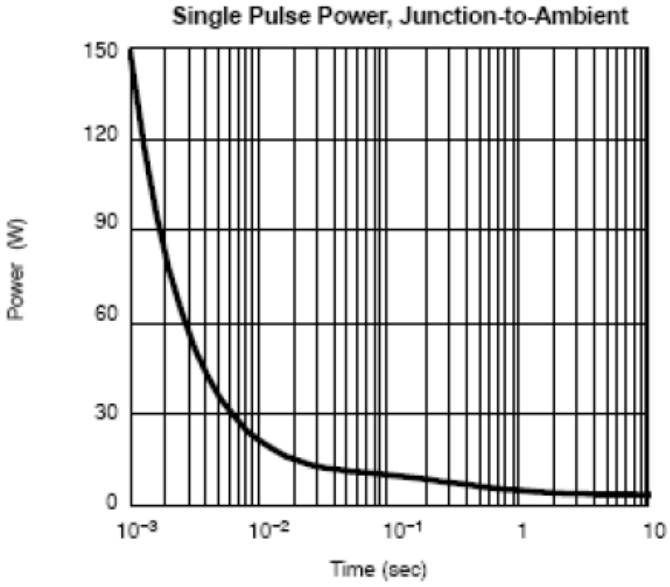

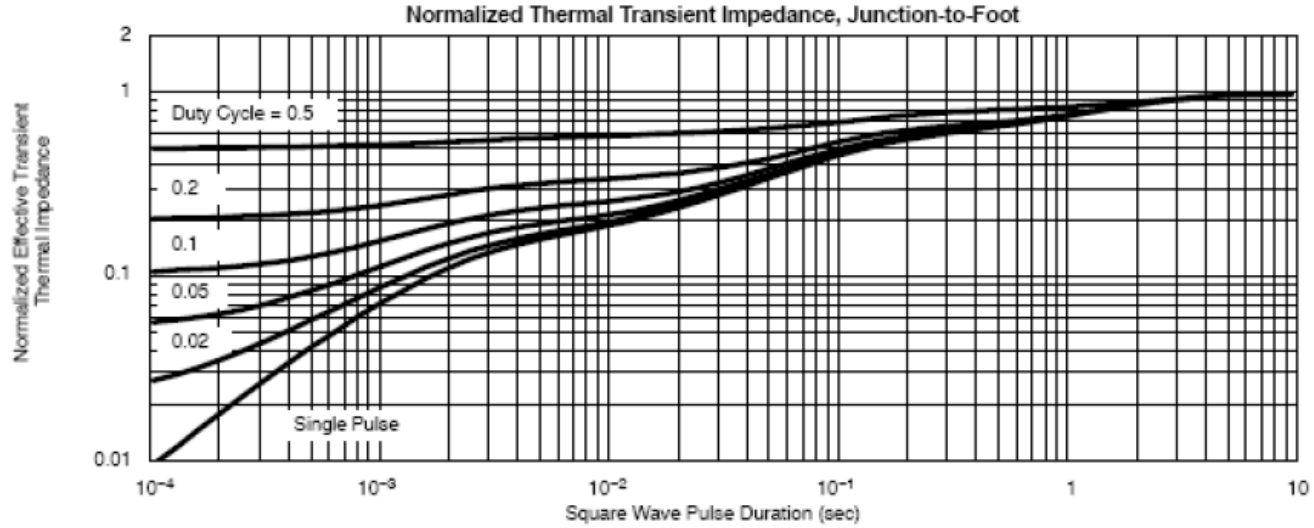

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