



SPC6604

N & P Pair Enhancement Mode MOSFET

DESCRIPTION

The SPC6604 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.

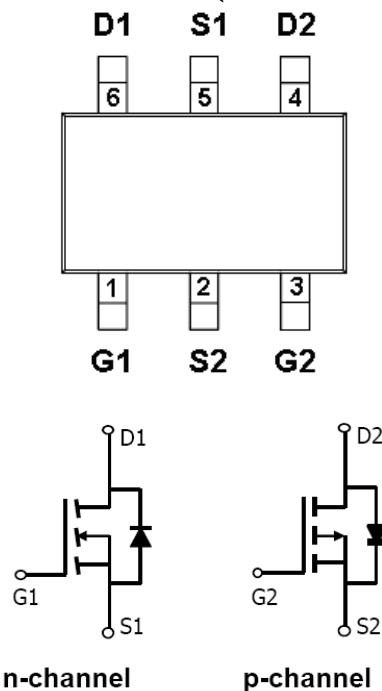
FEATURES

- ◆ N-Channel
20V/4.0A, $R_{DS(ON)}=50m\Omega@V_{GS}=4.5V$
20V/3.4A, $R_{DS(ON)}=60m\Omega@V_{GS}=2.5V$
20V/2.8A, $R_{DS(ON)}=75m\Omega@V_{GS}=1.8V$
- ◆ P-Channel
-20V/-3.4A, $R_{DS(ON)}=85m\Omega@V_{GS}=-4.5V$
-20V/-2.4A, $R_{DS(ON)}=110m\Omega@V_{GS}=-2.5V$
-20V/-1.7A, $R_{DS(ON)}=130m\Omega@V_{GS}=-1.8V$
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ TSOT-23-6L package design

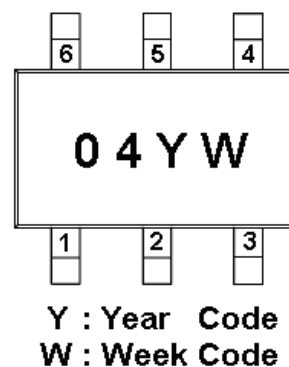
APPLICATIONS

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

PIN CONFIGURATION(TSOT-23-6L)



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
SPC6604TS26RGB	TSOT-23-6L	04

※ Week Code : A ~ Z (1 ~ 26) ; a ~ z (27 ~ 52)

※ SPC6604TS26RGB : Tape Reel ; Pb – Free ; Halogen -Free

ABSOLUTE MAXIMUM RATINGS

(TA=25°C 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°C)	T _A =25°C	I _D	3.4	-2.8	A
	T _A =70°C		2.4	-2.1	
Pulsed Drain Current		I _{DM}	10	-8	A
Continuous Source Current(Diode Conduction)		I _S	1.6	-1.4	A
Power Dissipation	T _A =25°C	P _D	1.15		W
	T _A =70°C		0.75		
Operating Junction Temperature		T _J	-55/150		°C
Storage Temperature Range		T _{STG}	-55/150		°C
Thermal Resistance-Junction to Ambient	T ≤ 10sec	R _{θJA}	50	52	°C/W
	Steady State		90	90	
Thermal Resistance-Junction to Lead	Steady State	R _{θJL}	42	44	



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ELECTRICAL CHARACTERISTICS

(T_A=25°C Unless otherwise noted)

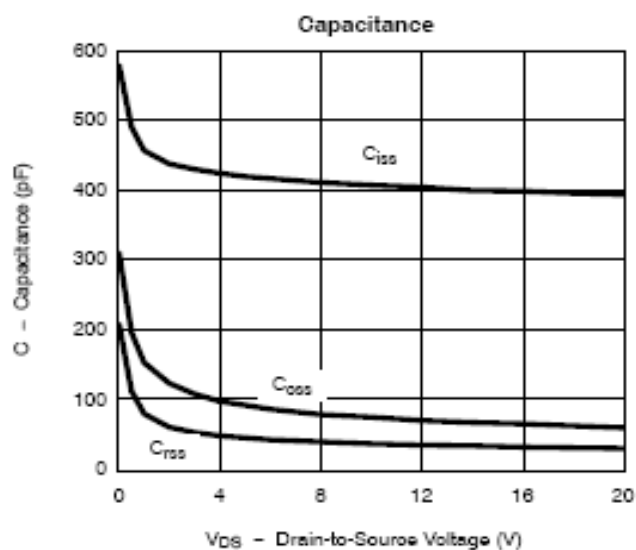
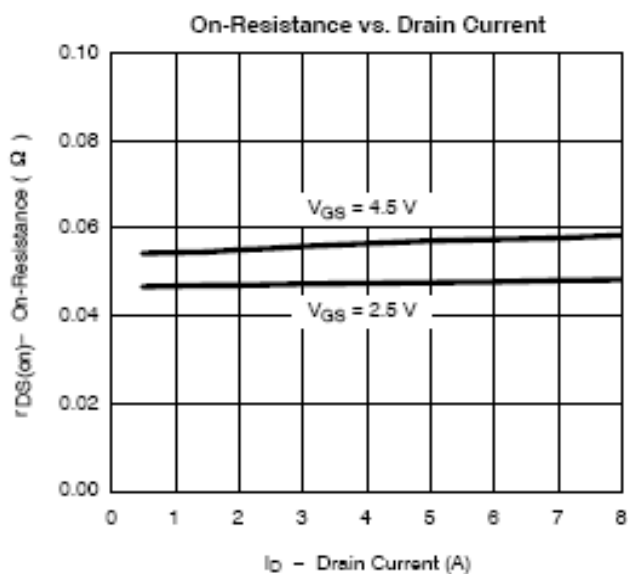
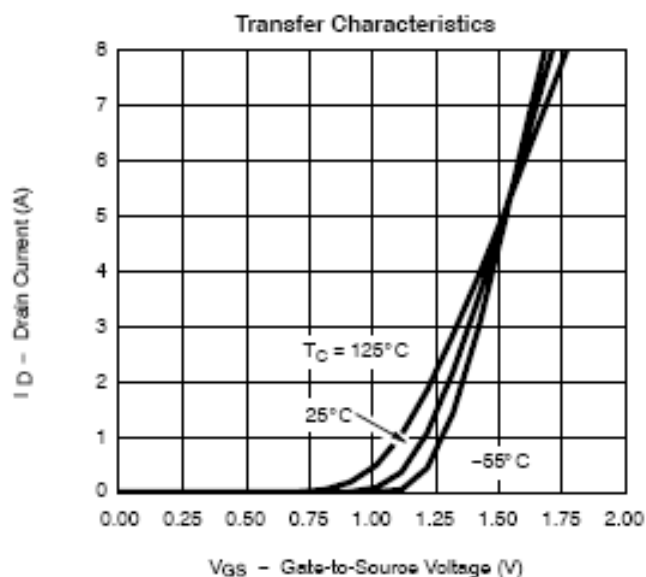
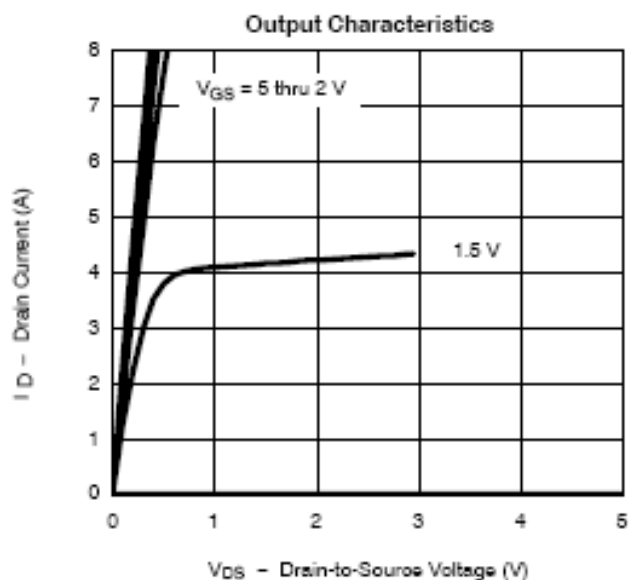
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit	
Static							
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V,I _D = 250uA	N-Ch	20		V	
		V _{GS} =0V,I _D =-250uA	P-Ch	-20			
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =250uA	N-Ch	0.4	1.0		
		V _{DS} =V _{GS} ,I _D =-250uA	P-Ch	-0.35	-0.8		
Gate Leakage Current	I _{GSS}	V _{DS} =0V,V _{GS} =±12V	N-Ch		±100	nA	
		V _{DS} =0V,V _{GS} =±12V	P-Ch		±100		
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 16V,V _{GS} =0V	N-Ch		1	uA	
		V _{DS} =-16V,V _{GS} =0V	P-Ch		-1		
		V _{DS} = 16V,V _{GS} =0V T _J =55°C	N-Ch		10		
		V _{DS} =-16V,V _{GS} =0V T _J =55°C	P-Ch		-10		
On-State Drain Current	I _{D(on)}	V _{DS} ≥ 4.5V,V _{GS} = 10V	N-Ch	6		A	
		V _{DS} ≤ -4.5V,V _{GS} =-10V	P-Ch	-6			
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =4.5V,I _D =4.0A	N-Ch		0.040	Ω	
		V _{GS} =-4.5V,I _D =-3.4A	P-Ch		0.068		
		V _{GS} =2.5V,I _D =3.4A	N-Ch		0.046		
		V _{GS} =-2.5V,I _D =-2.4A	P-Ch		0.090		
		V _{GS} =1.8V,I _D =2.8A	N-Ch		0.056		
		V _{GS} =-1.8V,I _D =-1.7A	P-Ch		0.113		
Forward Transconductance	g _{fs}	V _{DS} =5V,I _D =-3.6A	N-Ch		10	S	
		V _{DS} =-5V,I _D =-2.8A	P-Ch		6		
Diode Forward Voltage	V _{SD}	I _S =1.6A,V _{GS} =0V	N-Ch		0.8	1.2	V
		I _S =-1.5A,V _{GS} =0V	P-Ch		-0.8	-1.2	
Dynamic							
Total Gate Charge	Q _g	N-Channel V _{DS} =6V,V _{GS} =4.5V, I _D ≡2.8A P-Channel V _{DS} =-6V,V _{GS} =-4.5V ,I _D ≡-2.8A	N-Ch		3.9	nC	
			P-Ch		8.3		
Gate-Source Charge	Q _{gs}		N-Ch		1.4		
			P-Ch		1.0		
Gate-Drain Charge	Q _{gd}		N-Ch		1.6		
			P-Ch		2.0		
Input Capacitance	C _{iss}	N-Channel V _{DS} =10V, V _{GS} =0V, f=1MHz P-Channel V _{DS} =-10V, V _{GS} =0V, f=1MHz	N-Ch	208	263	323	pF
			P-Ch		480		
Output Capacitance	C _{oss}		N-Ch	35	50	65	
			P-Ch		82		
Reverse Transfer Capacitance	C _{rss}		N-Ch	18	29	40	
			P-Ch		72		
Turn-On Time	t _{d(on)}	N-Channel V _{DD} =6V,R _L =6Ω ,I _D ≡1.0A V _{GEN} =4.5V ,R _G =6Ω P-Channel V _{DD} =-6V,R _L =6Ω ,I _D ≡-1.0A V _{GEN} =-4.5V ,R _G =6Ω	N-Ch		8	14	nS
			P-Ch		10	16	
	t _r		N-Ch		12	18	
			P-Ch		13	23	
Turn-Off Time	t _{d(off)}		N-Ch		23	28	
			P-Ch		18	25	
	t _f		N-Ch		12	16	
			P-Ch		15	20	



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TYPICAL CHARACTERISTICS (N-Channel)

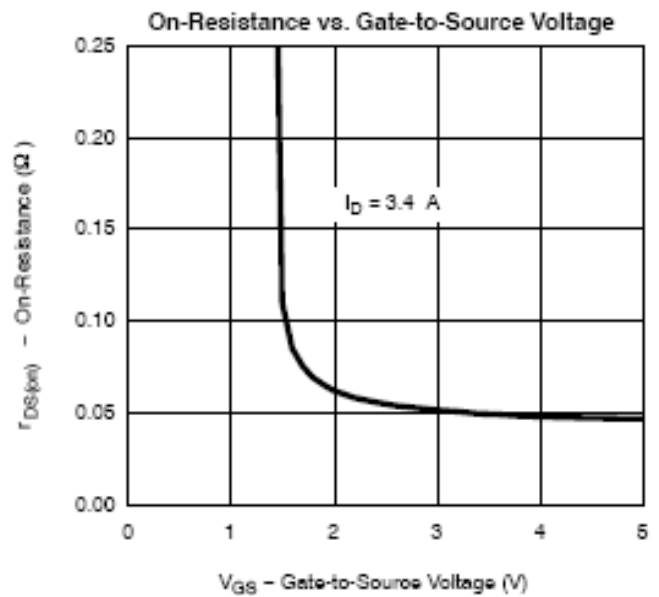
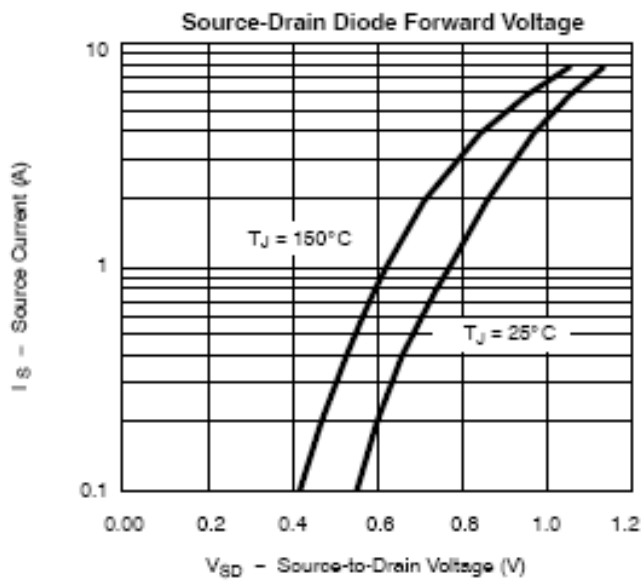
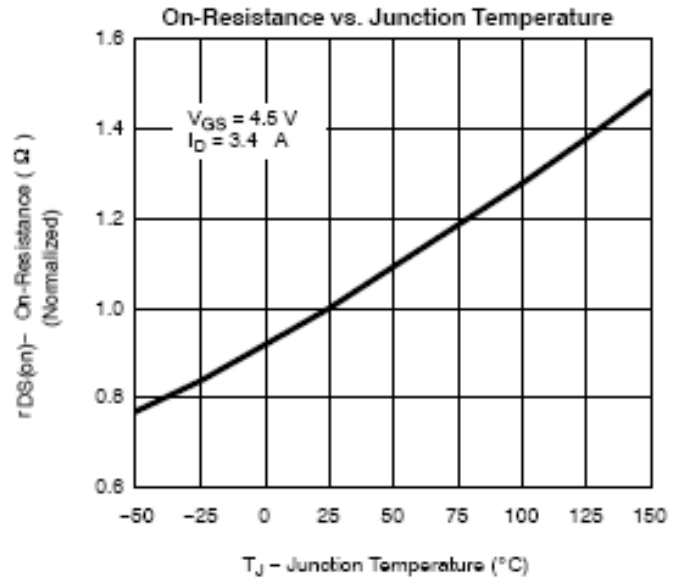
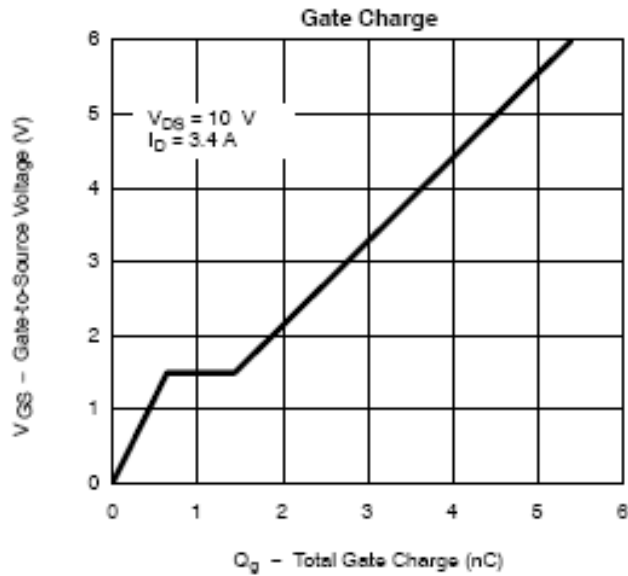




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TYPICAL CHARACTERISTICS (N-Channel)

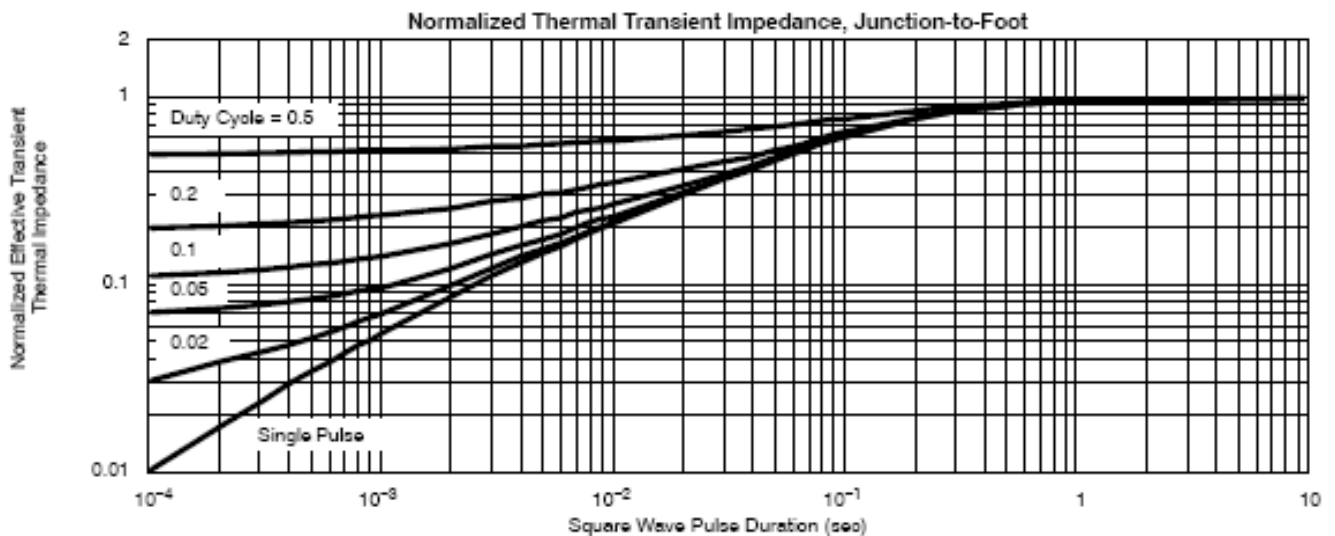
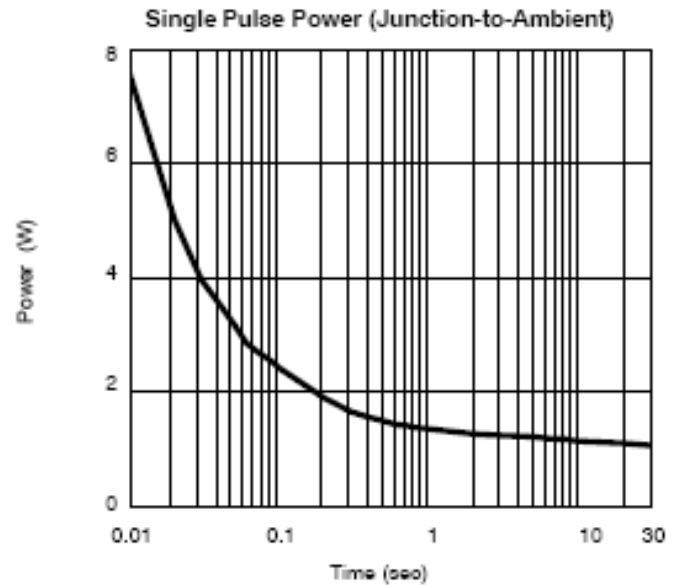
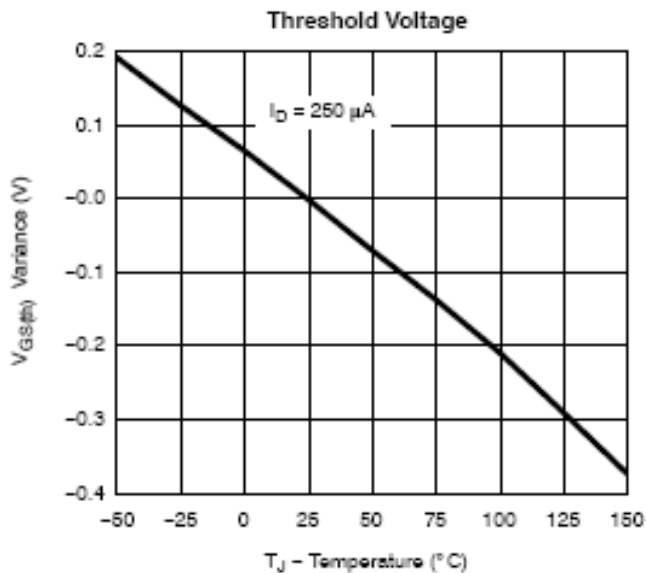




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TYPICAL CHARACTERISTICS (N-Channel)



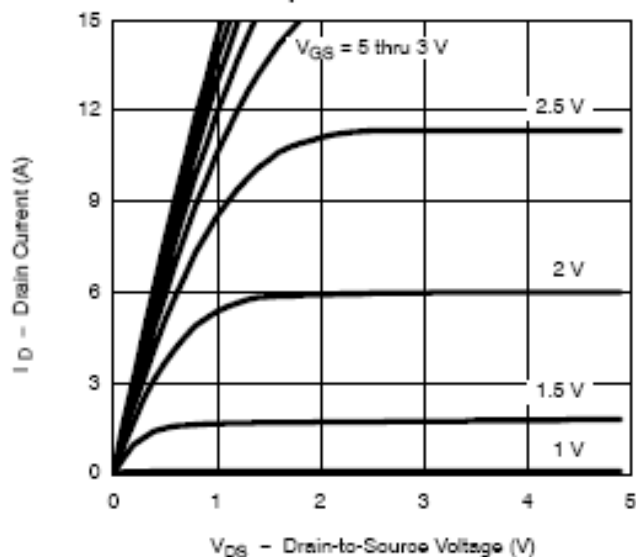


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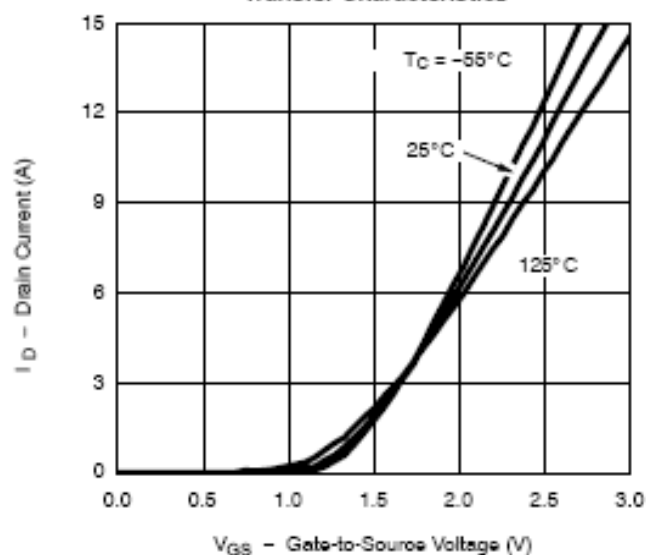
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TYPICAL CHARACTERISTICS (P-Channel)

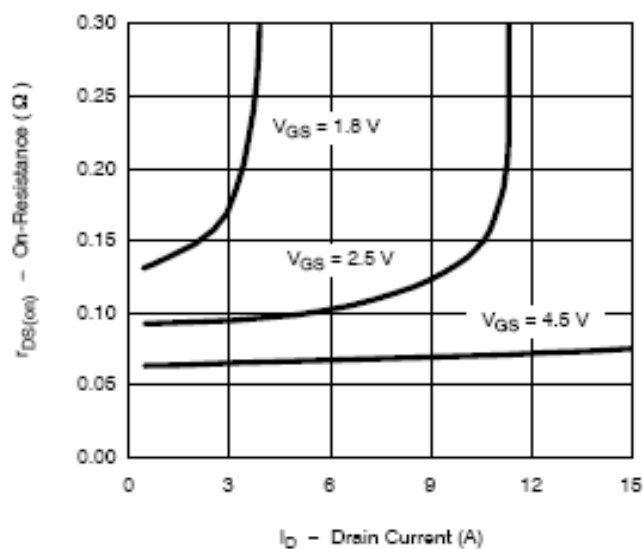
Output Characteristics



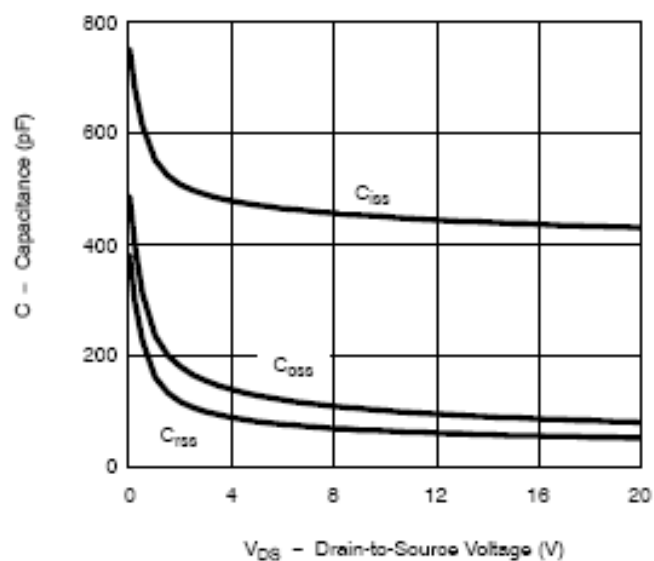
Transfer Characteristics



On-Resistance vs. Drain Current



Capacitance

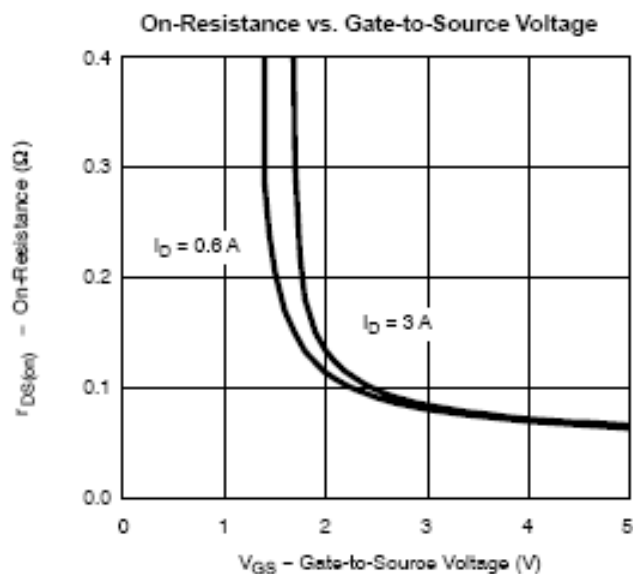
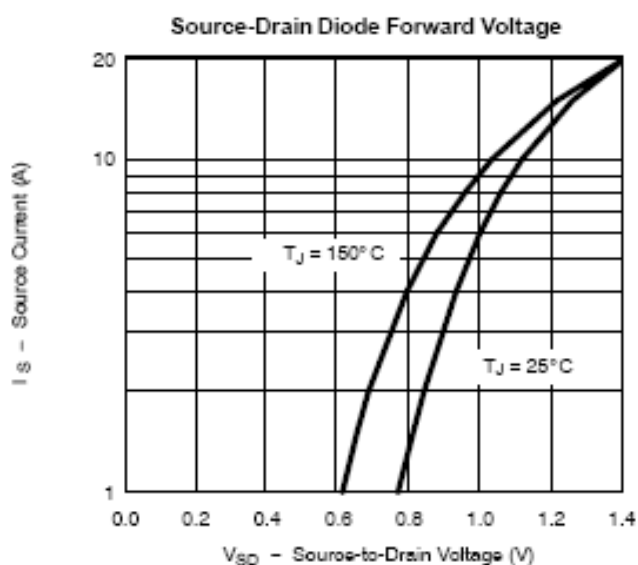
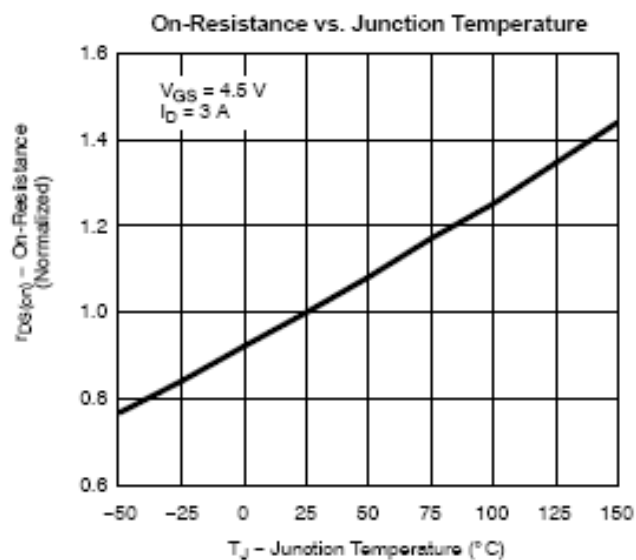
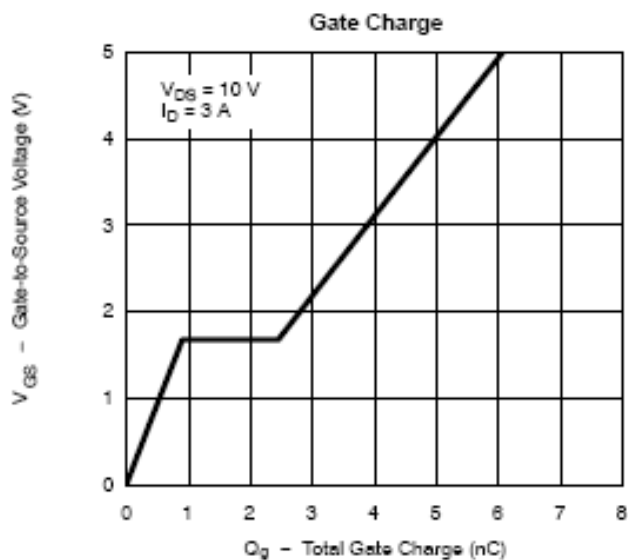




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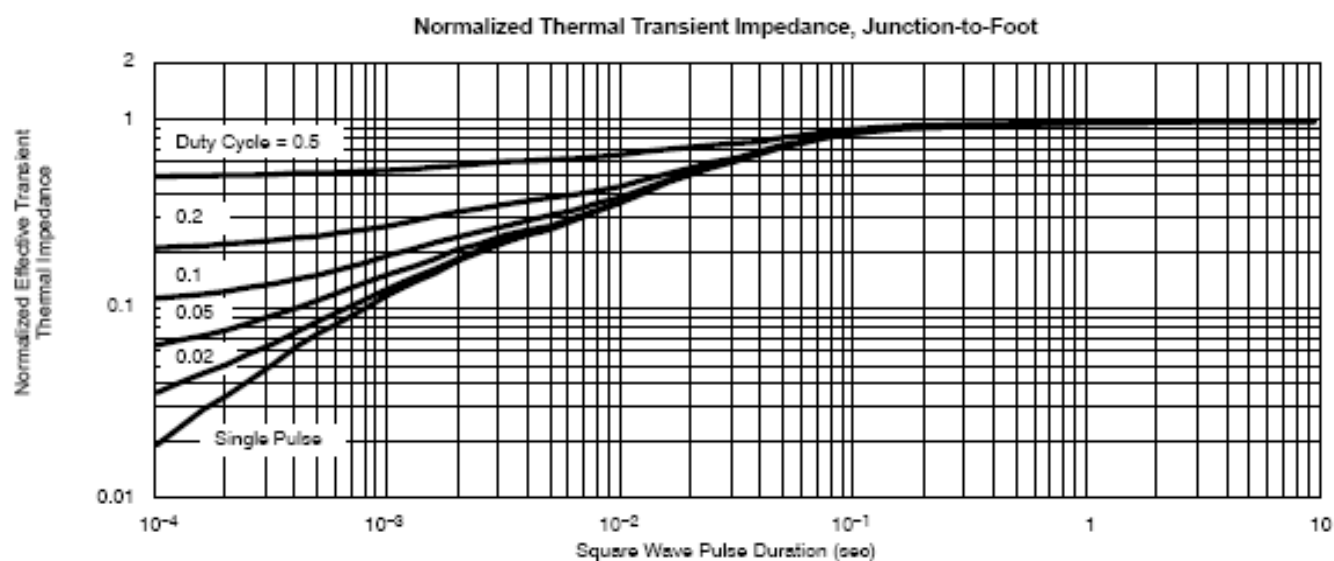
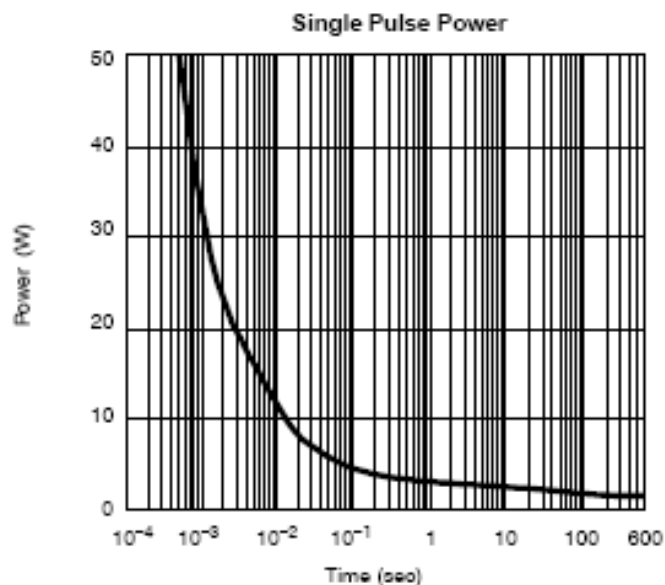
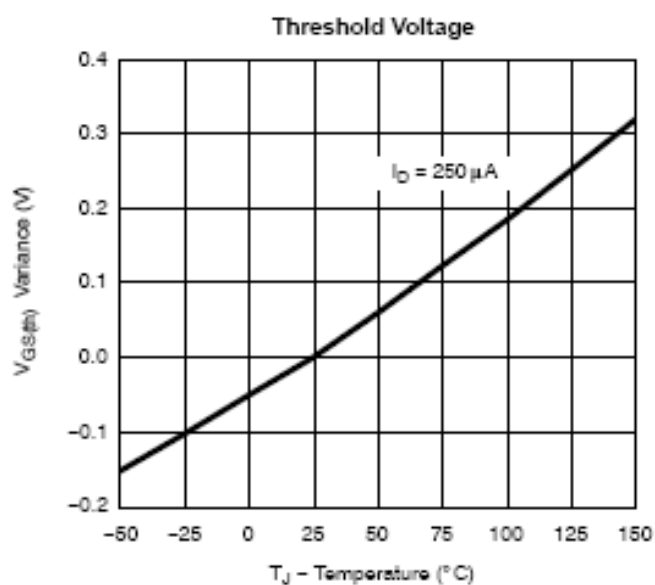




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