



# SPC4567 N & P Pair Enhancement Mode MOSFET

## DESCRIPTION

The SPC4567 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

- 40V/6.0A,  $R_{DS(ON)}=53m\Omega @ V_{GS}=10V$
- 40V/5.0A,  $R_{DS(ON)}=63m\Omega @ V_{GS}=4.5V$
- 40V/4.5A,  $R_{DS(ON)}=78m\Omega @ V_{GS}=2.5V$

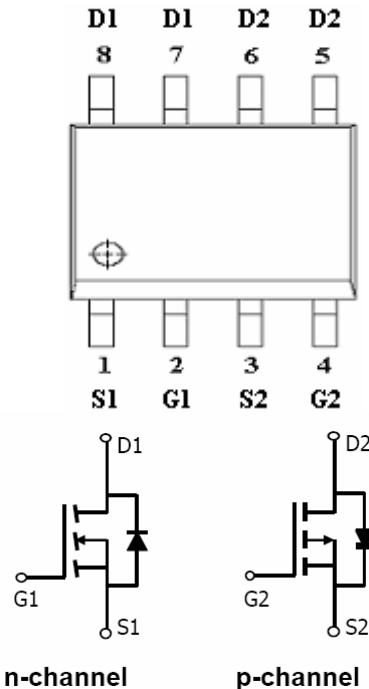
### P-Channel

- -40V/-7.2A,  $R_{DS(ON)}=95m\Omega @ V_{GS}=-10V$
- -40V/-5.0A,  $R_{DS(ON)}=110m\Omega @ V_{GS}=-4.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOP-8 package design

## APPLICATIONS

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

## PIN CONFIGURATION(SOP-8)



## PART MARKING





# SPC4567

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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
SPC4567S8RGB	SOP-8	SPC4567

※ SPC4567S8RGB 13" 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 <sub>DSS</sub>	40	-40	V	
Gate –Source Voltage	V <sub>GSS</sub>	20	-20	V	
Continuous Drain Current(T <sub>J</sub> =150°C)	I <sub>D</sub>	T <sub>A</sub> =25°C	6.0	-7.2	A
		T <sub>A</sub> =70°C	5.0	-5.0	
Pulsed Drain Current	I <sub>DM</sub>	25	-25	A	
Continuous Source Current(Diode Conduction)	I <sub>S</sub>	2.3	-2.3	A	
Power Dissipation	P <sub>D</sub>	T <sub>A</sub> =25°C	2.5	2.8	W
		T <sub>A</sub> =70°C	1.6	1.8	
Operating Junction Temperature	T <sub>J</sub>	-55/150		°C	
Storage Temperature Range	T <sub>STG</sub>	-55/150		°C	
Thermal Resistance-Junction to Ambient	R <sub>θJA</sub>	T ≤ 10sec	50	52	°C/W
		Steady State	80	80	



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### ELECTRICAL CHARACTERISTICS ( NMOS )

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	40			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5		1.0	
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 12V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=40V, V_{GS}=0V$			1	uA
		$V_{DS}=40V, V_{GS}=0V$ $T_J=85^\circ C$			5	
On-State Drain Current	$I_{D(on)}$	$V_{DS}= 5V, V_{GS} =4.5V$	10			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}= 10V, I_D=6.0A$		42	53	mΩ
		$V_{GS}=4.5V, I_D=5.0A$		52	63	
		$V_{GS}=2.5V, I_D=4.5A$		67	78	
Forward Transconductance	$g_{fs}$	$V_{DS}=15V, I_D=6.2A$		13		S
Diode Forward Voltage	$V_{SD}$	$I_S=2.3A, V_{GS}=0V$		0.8	1.2	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=15V, V_{GS}=10V$ $I_D=2A$		16	24	nC
Gate-Source Charge	$Q_{gs}$			3		
Gate-Drain Charge	$Q_{gd}$			2.5		
Turn-On Time	$t_{d(on)}$	$V_{DD}=15V, R_L=15\Omega$ $I_D=1.0A, V_{GEN}=10V$ $R_G=6\Omega$		15	20	nS
	$t_r$			6	12	
Turn-Off Time	$t_{d(off)}$			10	20	
	$t_f$			40	80	



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### ELECTRICAL CHARACTERISTICS ( PMOS )

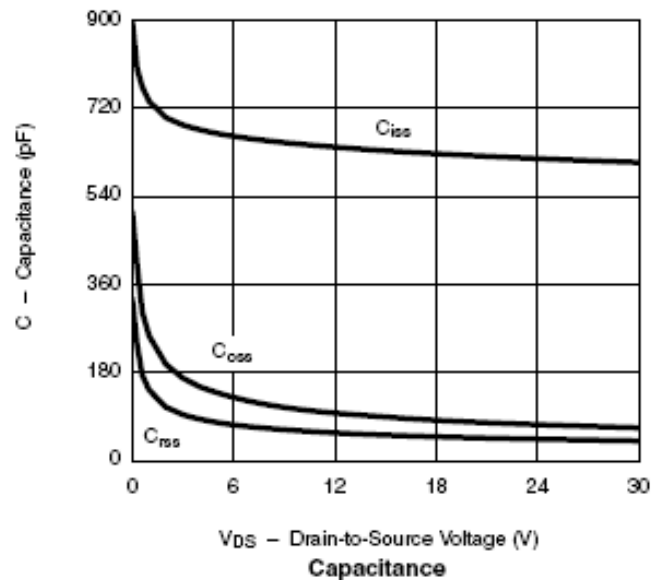
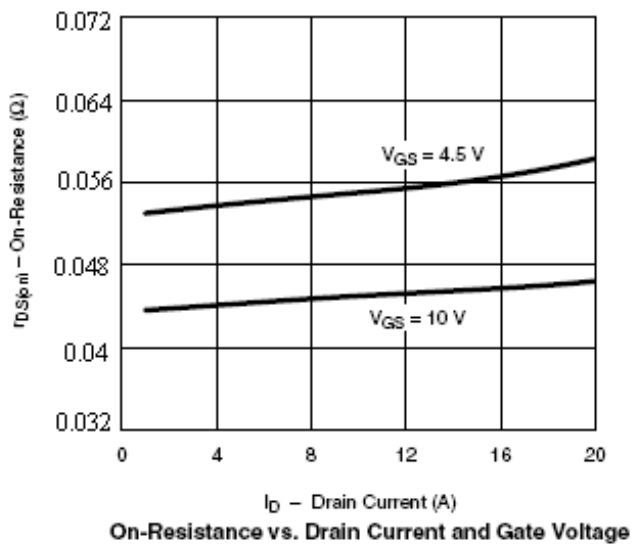
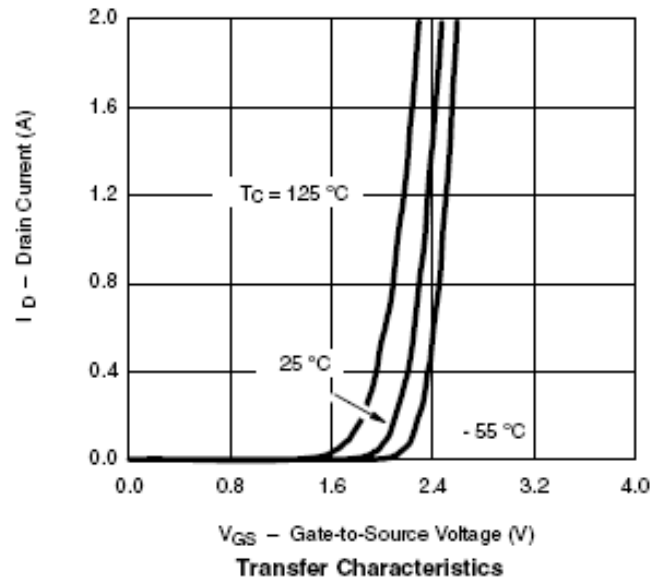
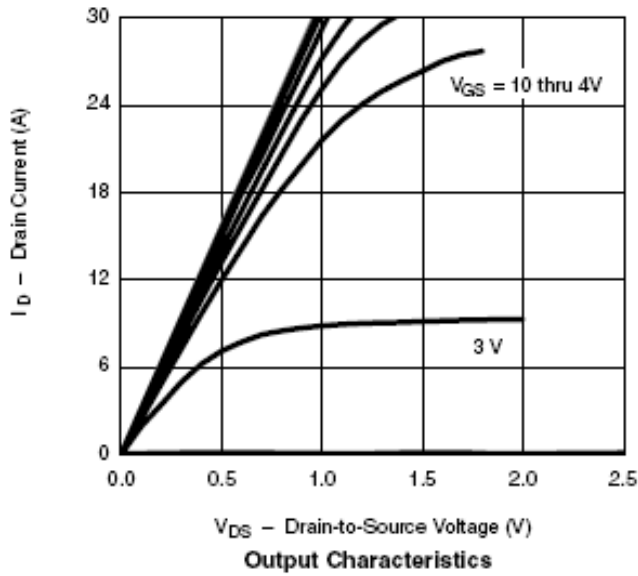
(TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-40			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.8		-2.5	
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-36V, V_{GS}=0V$			-1	uA
		$V_{DS}=-36V, V_{GS}=0V$ $T_J=85^\circ C$			-5	
On-State Drain Current	$I_{D(on)}$	$V_{DS}=-5V, V_{GS}=-4.5V$	-10			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-7.2A$		82	95	mΩ
		$V_{GS}=-4.5V, I_D=-5.0A$		95	110	
Forward Transconductance	$g_{fs}$	$V_{DS}=-15V, I_D=-5.7A$		13		S
Diode Forward Voltage	$V_{SD}$	$I_S=-1.3A, V_{GS}=0V$		-0.55	-1.0	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=-15V, V_{GS}=-10V$ $I_D=-3.5A$		9	12	nC
Gate-Source Charge	$Q_{gs}$			1.5		
Gate-Drain Charge	$Q_{gd}$			2.0		
Input Capacitance	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V$ $f=1MHz$		500		pF
Output Capacitance	$C_{oss}$			95		
Reverse Transfer Capacitance	$C_{rss}$			50		
Turn-On Time	$t_{d(on)}$	$V_{DD}=-15V, R_L=15\Omega$ $I_D=-1.0A, V_{GEN}=-10V$ $R_G=6\Omega$		8	20	nS
	$t_r$			10	20	
Turn-Off Time	$t_{d(off)}$			30	35	
	$t_f$			15	20	



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## TYPICAL CHARACTERISTICS (NMOS)

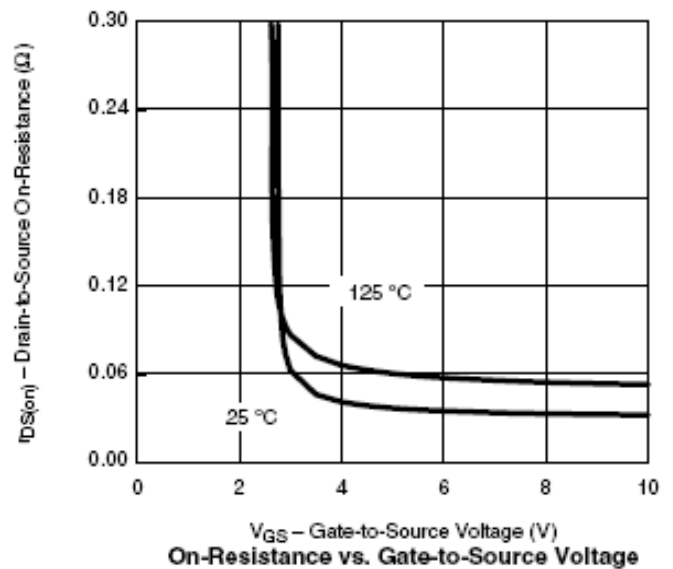
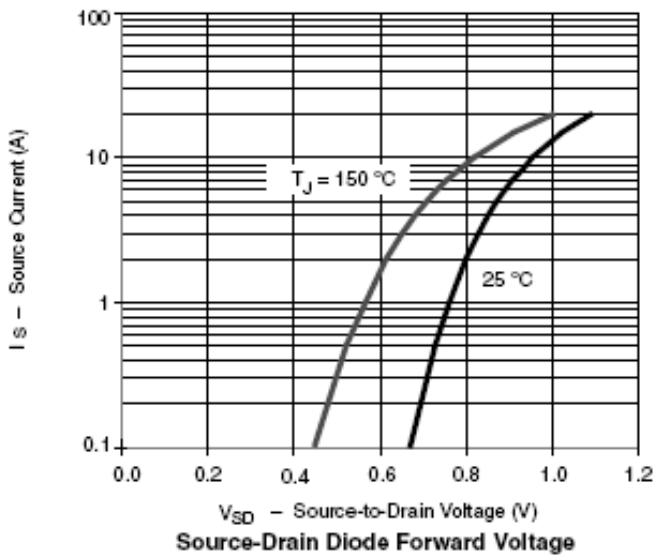
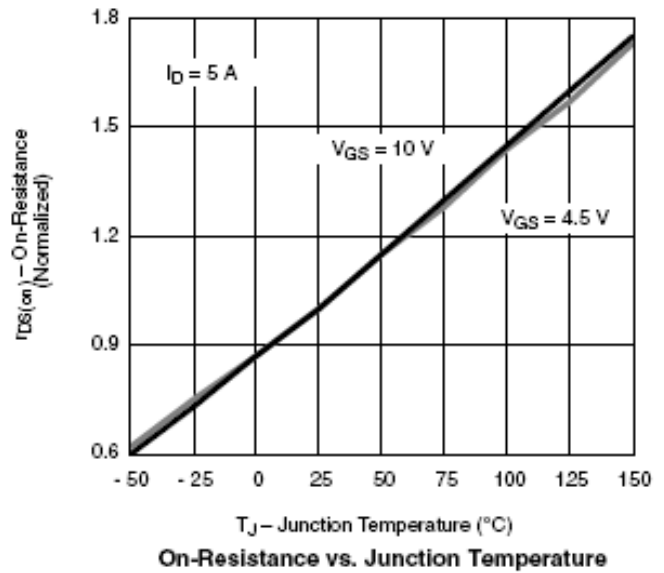
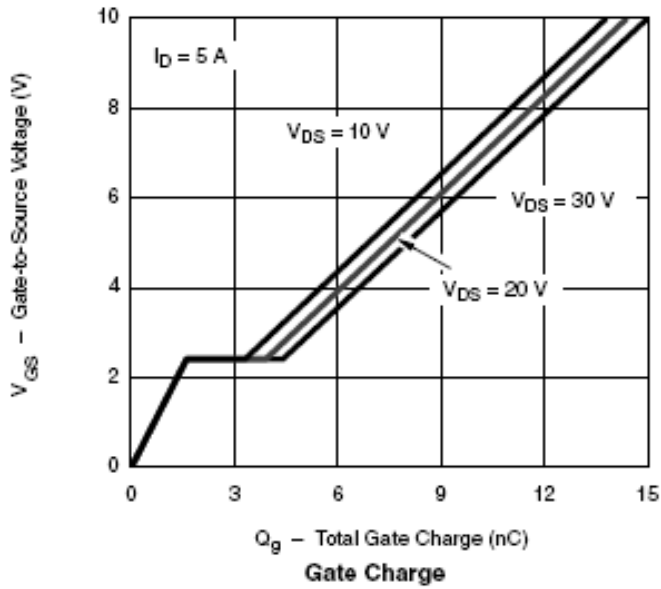




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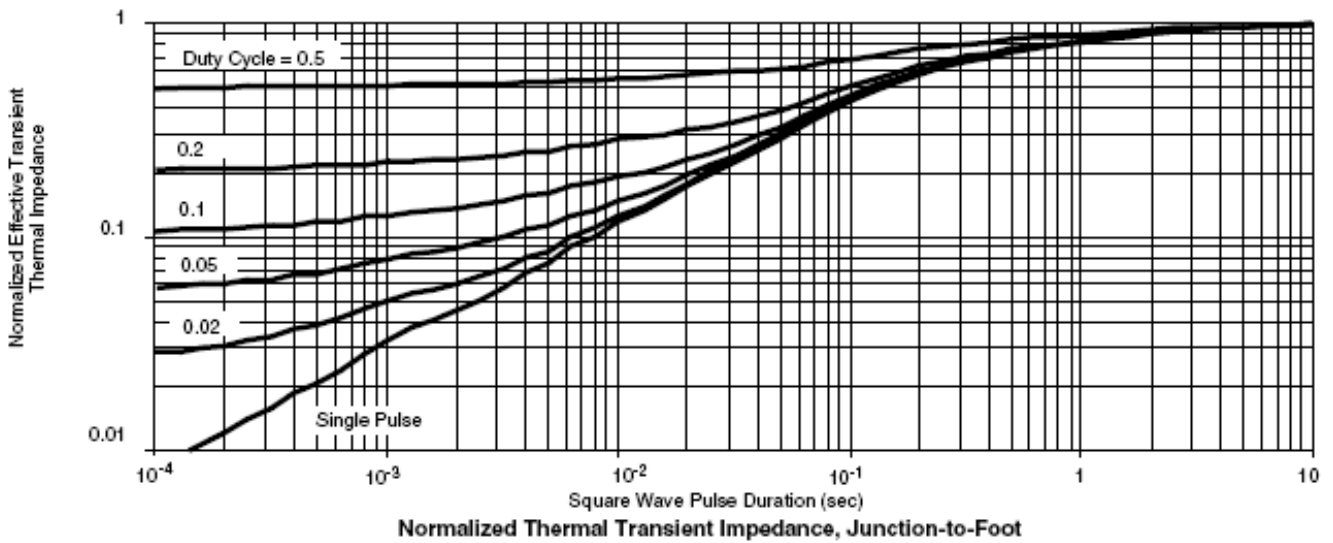
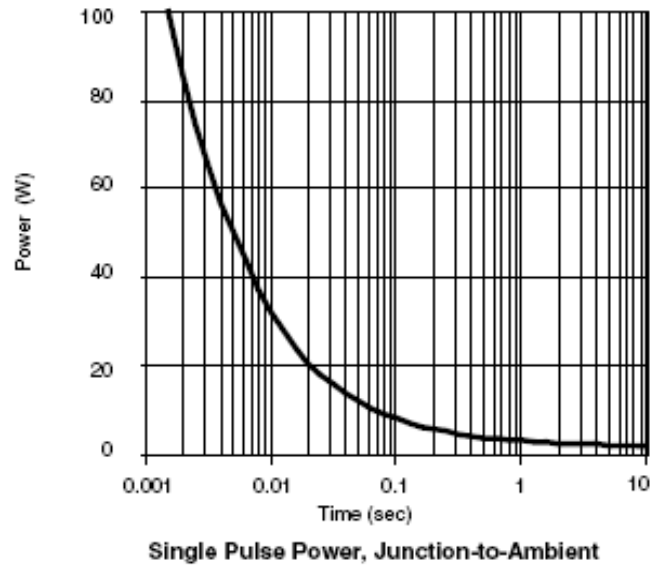
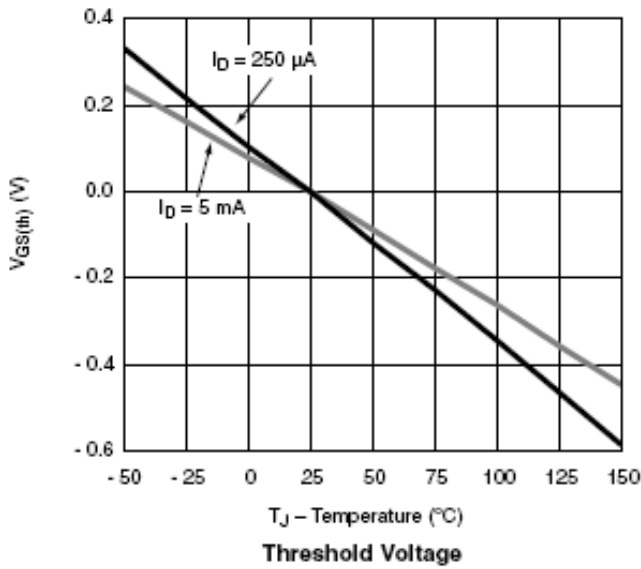




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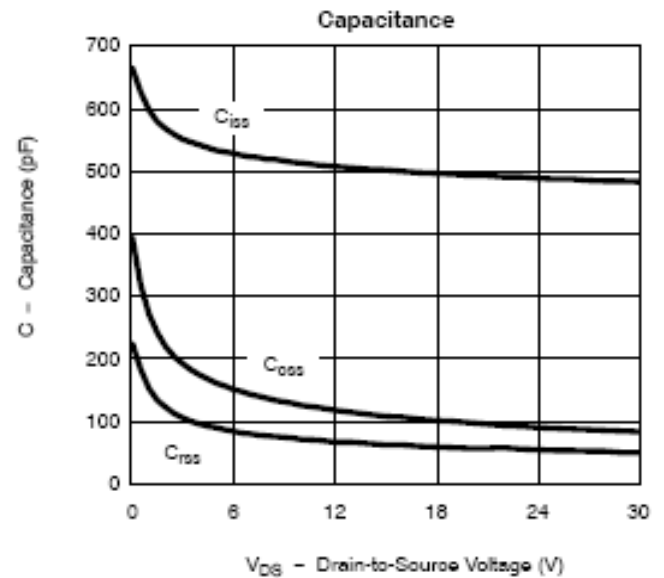
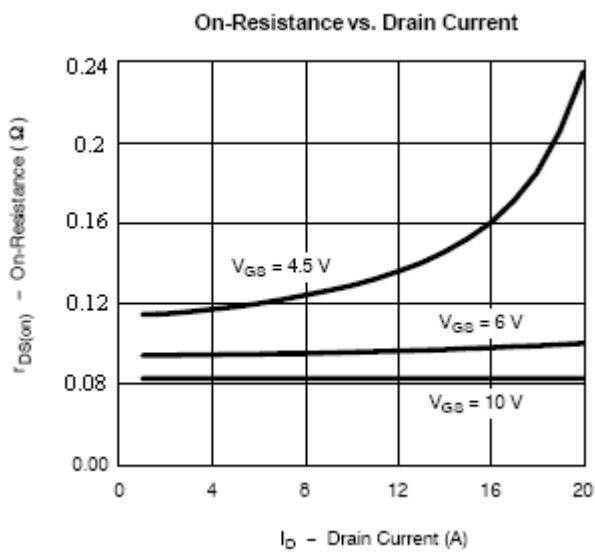
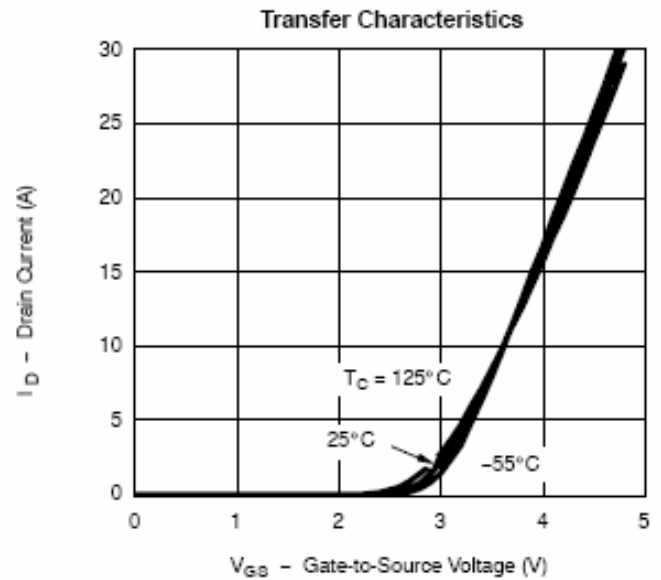
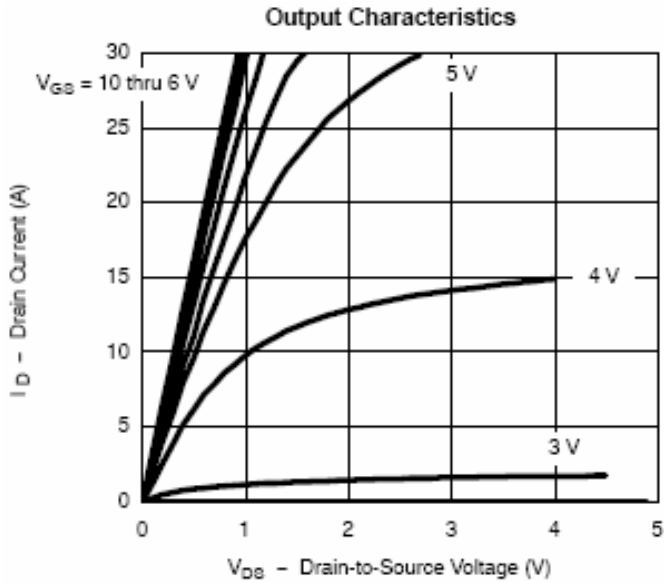
### TYPICAL CHARACTERISTICS (NMOS)





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## TYPICAL CHARACTERISTICS (PMOS)



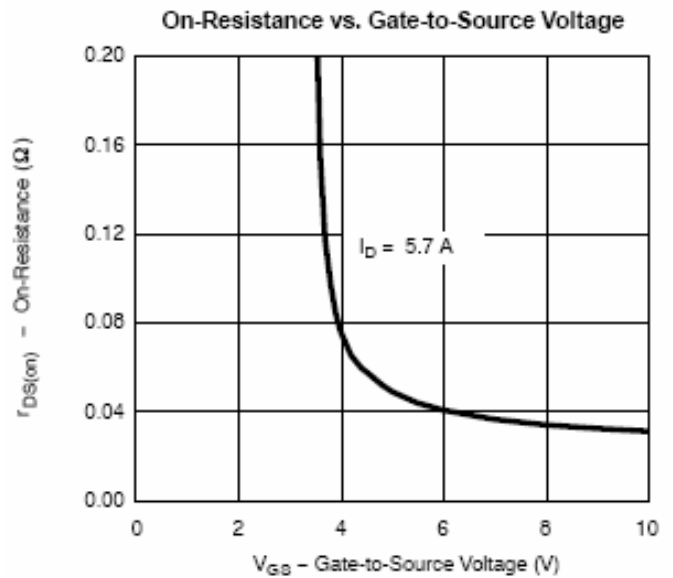
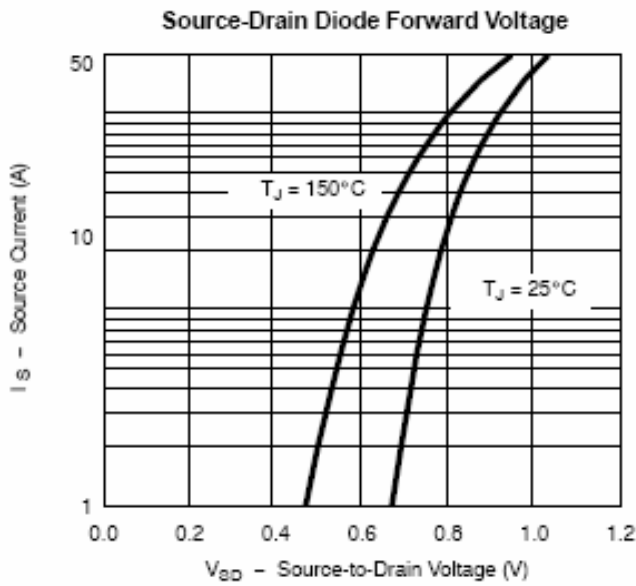
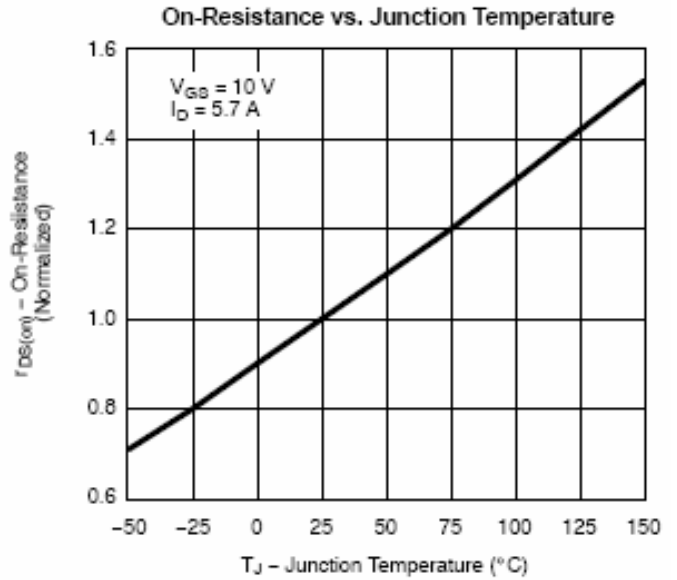
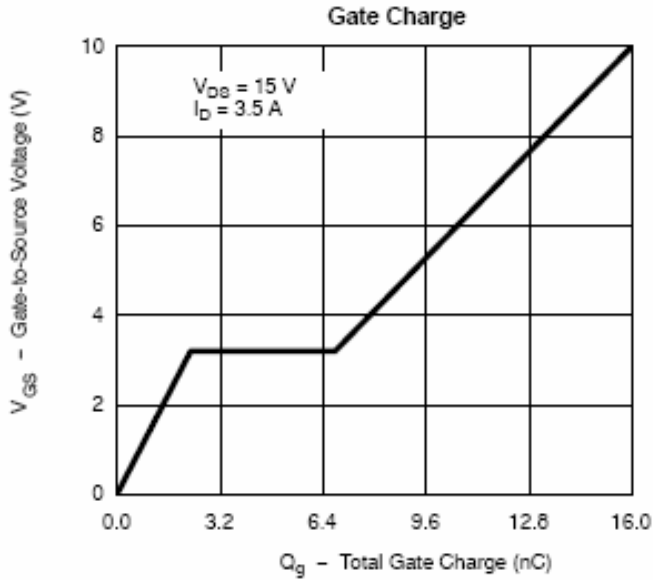




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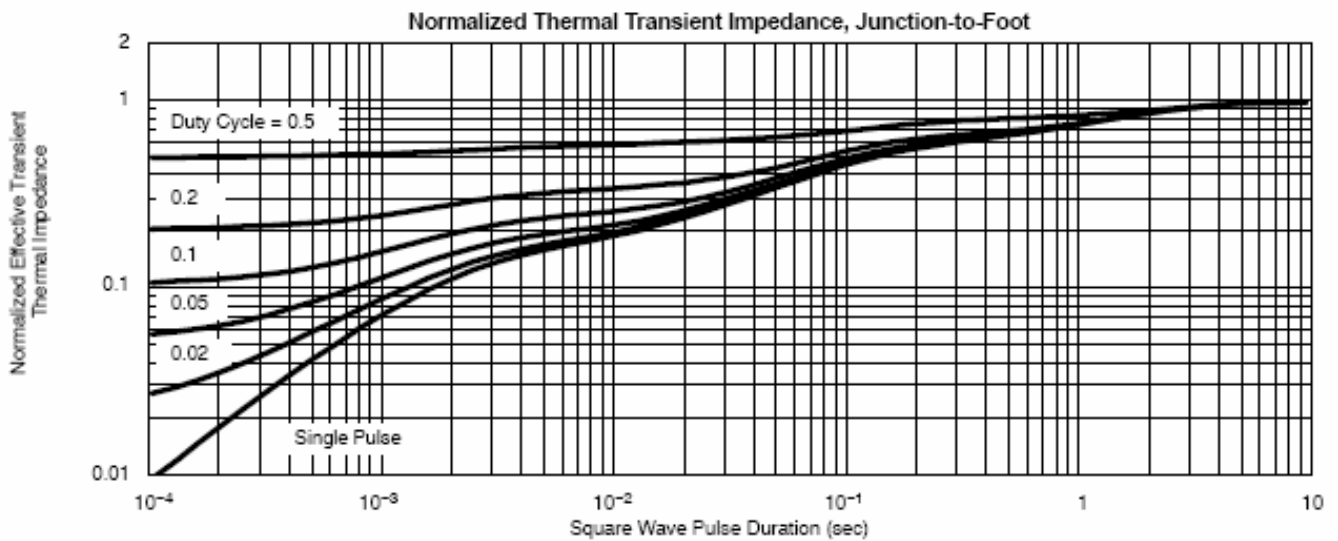
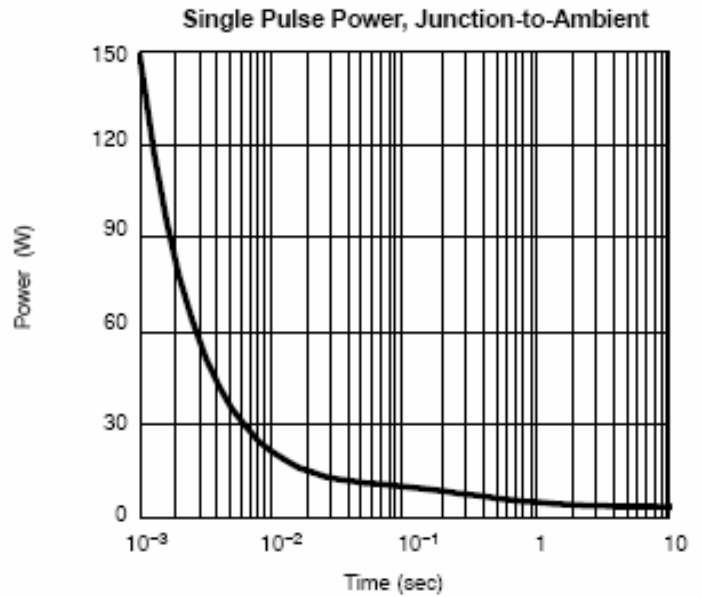
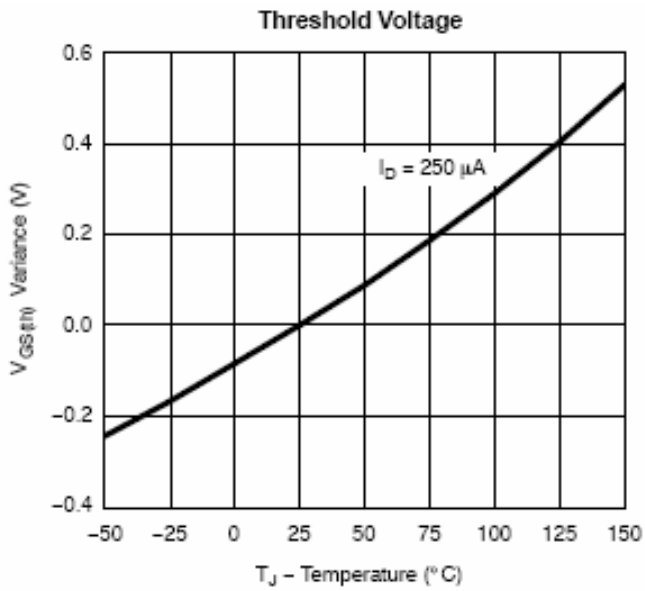
### TYPICAL CHARACTERISTICS (PMOS)





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## TYPICAL CHARACTERISTICS ( PMOS )





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